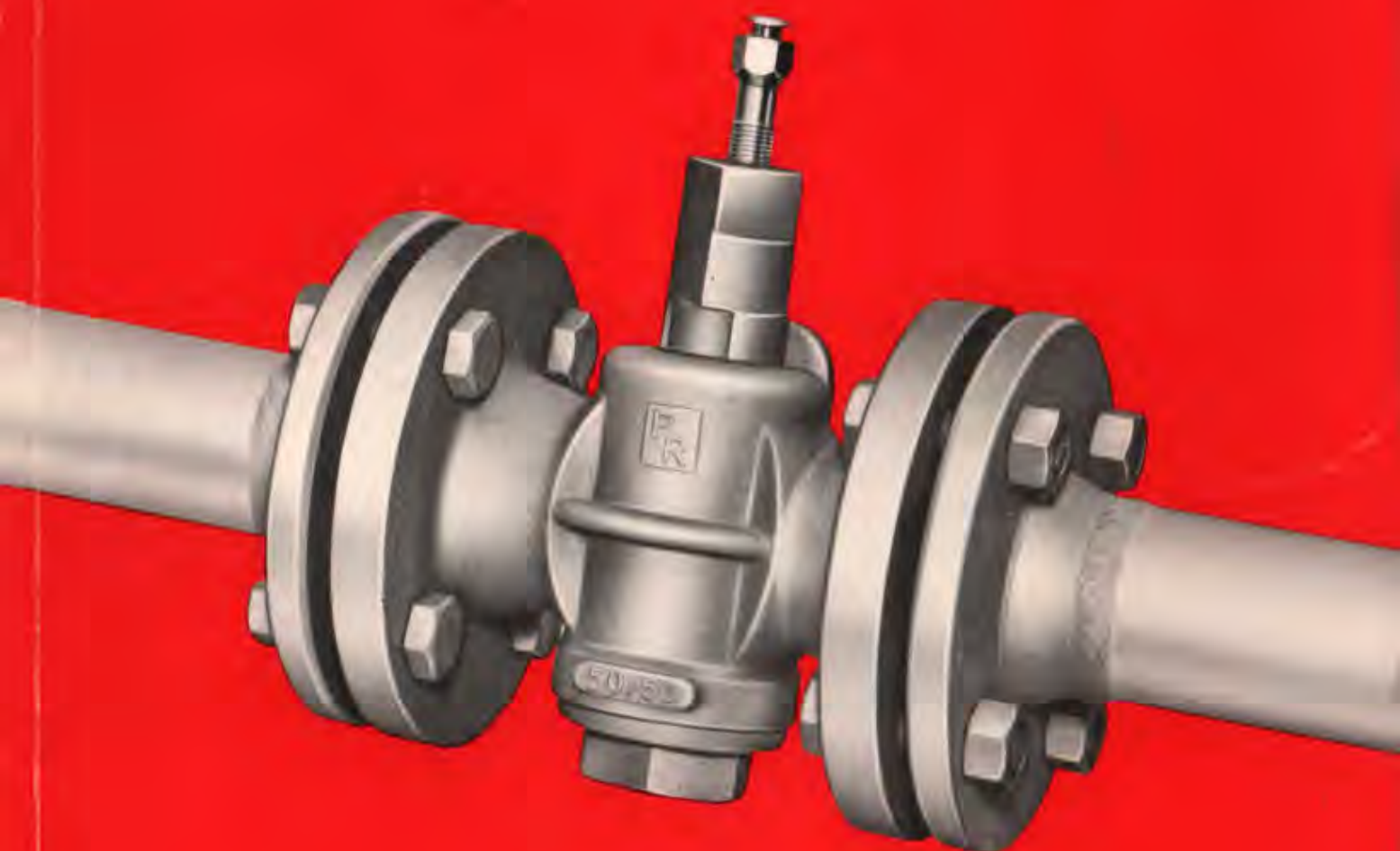


LUBRICATED

PR

PLUG VALVES



BRDR. CHRISTENSENS ApS · Broksøvej 79, Skuderløse 4690 Haslev · Denmark



The PR Factory in Skuderløse. Founded in 1942.

This catalogue covers standard parallel plug design to the ANSI pressure class 125 – 150 – 250 – 300 – 400 – 600.

To identify the correct type of valve, please use the PR-Code on the following page, by means of which the valve figure number is specified in the shape of letters and figures.

When sending inquiries or orders to the supplier/representatives, it is important to state the exact details of the service (working conditions). Therefore, additional to the identification number, quantity and size, please state the following information:

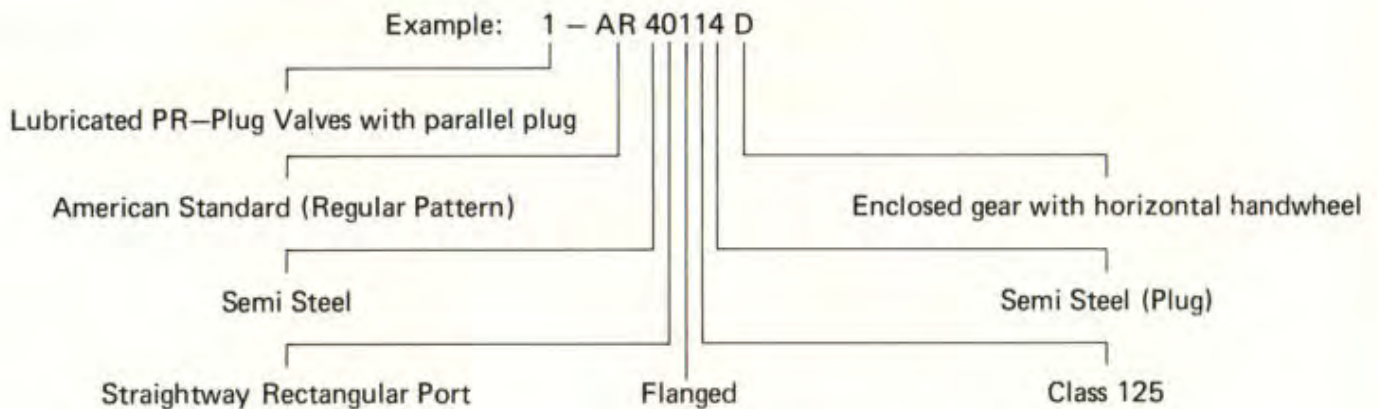
- Nature of service
- Range of temperature
- Normal working pressure
- Type of flanges (raised face/ring joint or other)
- Dimension of pipe (only when valves have butt or socket welding ends)
- Accessories, if any.

For information on valve types not covered by this catalogue, please contact our sole agent/representative in your country.

PR Valves are available in a wide range of variants, each being identified by figures and letters which provide all pertinent characteristics of each individual valve required. In addition always specify temperature, pressure, and medium the valve is to be used on. This facilitates our choosing the appropriate lubricant.

Before the actual Identification number, the number of the required Product Group must be stated.

Note: Combinations shown in a thin print are not shown in this catalogue.



Symbol:

| | | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. |
|--|---|----|-----------|----|----|----|----|-----|-----|
| Product Group | PR Valve (parallel plug) | 1 | | | | | | | |
| | PR Valve (parallel plug) with O-Ring in the plug face | 4 | | | | | | | |
| | PR Valve (tapered plug) "Pressure Balanced Design" | 5 | | | | | | | |
| | PR Valve (parallel plug) with double O-Ring in the plug face | 6 | | | | | | | |
| | PR Valve (tapered plug) "Pilot Plug Design" | 9 | | | | | | | |
| | PR Valve (parallel plug) and Steam Jacketed | 11 | | | | | | | |
| Standard | Danish (Regular) | | DR | | | | | | |
| | Danish (Venturi) | | DV | | | | | | |
| | German (Regular) | | TR | | | | | | |
| | German (Venturi) | | TV | | | | | | |
| | British (Regular Pattern) | | BR | | | | | | |
| | British (Short Pattern) | | BS | | | | | | |
| | British (Venturi Pattern) | | BV | | | | | | |
| | American (Regular) API 6A | | AD | | | | | | |
| | American (Venturi) API 6A | | AE | | | | | | |
| | American (Full Bore) API 6A | | AF | | | | | | |
| | American (Regular Pattern) API 599 and API 6D | | AR | | | | | | |
| American (Short Pattern) API 599 and API 6D | | AS | | | | | | | |
| American (Venturi Pattern) API 599 and API 6D | | AV | | | | | | | |
| Materials in Body | Ductile Iron | | | 2 | | | | | |
| | Semi Steel | | | 4 | | | | | |
| | Bronze | | | 6 | | | | | |
| | Cast Steel | | | 7 | | | | | |
| | Stainless Steel | | | 8 | | | | | |
| | Special Alloy Steel (To order) | | | 9 | | | | | |
| Port | Straightway, rectangular | | | | 0 | | | | |
| | Straightway, round | | | | 1 | | | | |
| | Regulating valve | | | | 2 | | | | |
| | Straightway, rectangular Pressure Transient Equalizeing System | | | | 3 | | | | |
| | Threeway, round L-port | | | | 4 | | | | |
| | Threeway, round T-port | | | | 5 | | | | |
| | Fourway, round straightway | | | | 6 | | | | |
| | Threeway, rectangular L-port | | | | 7 | | | | |
| | Threeway, rectangular T-port | | | | 8 | | | | |
| Fourway, rectangular double L-ported | | | | 9 | | | | | |
| Ends | Screwed | | | | | 0 | | | |
| | Flanged | | | | | 1 | | | |
| | Clamps | | | | | 4 | | | |
| | Welding Ends | | | | | 5 | | | |
| | Socket Welding Ends | | | | | 6 | | | |
| Pressure Stage | API 6D | | API 6A | | | | | | |
| | Class 125 | | | | | | 1 | | |
| | Class 150 (PN 20) | | | | | | 2 | | |
| | Class 250 | | | | | | 3 | | |
| | Class 300 (PN 50) | | | | | | 4 | | |
| | Class 400 (PN 68) | | | | | | 5 | | |
| | Class 600 (PN 100) | | 2000 PSI | | | | 6 | | |
| | Class 900 (PN 150) | | 3000 PSI | | | | 7 | | |
| | Class 1500 (PN 250) | | 5000 PSI | | | | 8 | | |
| | Class 2500 (PN 420) | | 10000 PSI | | | | 9 | | |
| Materials in Plug | Ductile Iron | | | | | | | 2 | |
| | Semi Steel | | | | | | | 4 | |
| | Bronze | | | | | | | 6 | |
| | Cast Steel | | | | | | | 7 | |
| | Stainless Steel | | | | | | | 8 | |
| | Special Alloy Steel (To order) | | | | | | | 9 | |
| Methods of Operation | Wrenchoperated, no symbol | | | | | | | | |
| | Open gear unit vertical handwheel | | | | | | | | A |
| | Enclosed gear unit, vertical handwheel | | | | | | | | C |
| | Enclosed gear unit, horizontal handwheel | | | | | | | | D |
| | Electrical gear unit, vertical handwheel | | | | | | | | CE |
| | Electrical gear unit, horizontal handwheel | | | | | | | | DE |
| | Electrical gear unit, (explosionproof) vertical handwheel | | | | | | | | CX |
| | Electrical gear unit, (explosionproof) horizontal handwheel | | | | | | | | DX |
| | Pneumatic Actuator double acting | | | | | | | | F |
| | Pneumatic single acting and spring return | | | | | | | | FF |
| | Pneumatic Cylinder Unit | | | | | | | | G |
| | Air Motor gear unit, vertical handwheel | | | | | | | | CI |
| | Air Motor gear unit, horizontal handwheel | | | | | | | | DI |
| | Hydraulic Actuator double acting | | | | | | | | J |
| | Hydraulic Actuator single acting by electrical power unit and spring return | | | | | | | | JF |
| | Electric Linear Actuator | | | | | | | | K |
| | Operating spindle and flanged for mounting of part-turn Actuator | | | | | | | | L |
| | Elevated, enclosed gear unit, vertical handwheel | | | | | | | | CHG |
| Elevated, enclosed gear unit, horizontal handwheel | | | | | | | | DHG | |

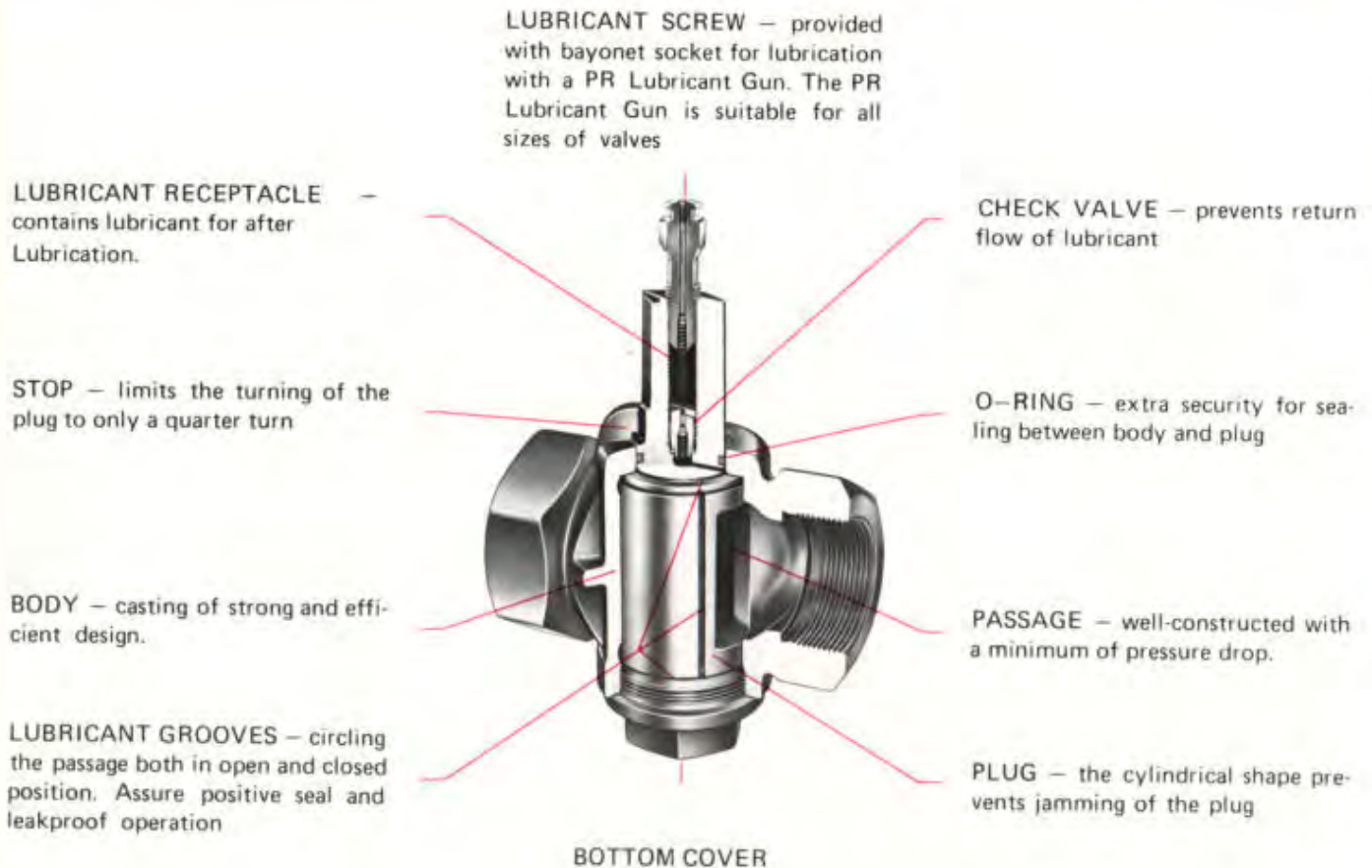
Straightway—Section B

| Identification | Page | Identification | Page | Identification | Page | Identification | Page | Identification | Page |
|----------------|------|----------------|------|----------------|------|----------------|------|----------------|------|
| 1-AR 40014 | B1 | 1-AR 70047 | B16 | 1-AR 70147 C | B25 | 1-AR 70544 | B40 | 1-AR 71027 A | B52 |
| 1-AV 40014 | B2 | 1-AR 70047 C | B16 | 1-AS 70147 C | B26 | 1-AS 70544 | B40 | 1-AR 71027 C | B52 |
| 1-AR 40014 C | B1 | 1-AR 70054 | B17 | 1-AV 70147 C | B27 | 1-AV 70544 | B41 | 1-AR 71044 | B53 |
| 1-AV 40014 C | B2 | 1-AR 70054 C | B17 | 1-AR 70147 D | B25 | 1-AR 70544 C | B40 | 1-AR 71044 C | B53 |
| 1-AR 40034 | B3 | 1-AR 70057 | B17 | 1-AS 70147 D | B26 | 1-AS 70544 C | B40 | 1-AR 71047 | B53 |
| 1-AV 40034 | B4 | 1-AR 70057 C | B17 | 1-AV 70147 D | B27 | 1-AV 70544 C | B41 | 1-AR 71047 C | B53 |
| 1-AR 40034 C | B3 | 1-AR 70064 | B18 | 1-AR 70154 | B28 | 1-AR 70544 D | B40 | 1-AR 71124 | B59 |
| 1-AV 40034 C | B4 | 1-AR 70064 C | B18 | 1-AV 70154 | B29 | 1-AS 70544 D | B40 | 1-AR 71124 A | B59 |
| 1-AR 40114 | B7 | 1-AR 70067 | B18 | 1-AR 70154 C | B28 | 1-AV 70544 D | B41 | 1-AR 71124 C | B59 |
| 1-AS 40114 | B8 | 1-AR 70067 C | B18 | 1-AV 70154 C | B29 | 1-AR 70547 | B40 | 1-AR 71124 D | B59 |
| 1-AV 40114 | B9 | 1-AR 70124 | B22 | 1-AR 70154 D | B28 | 1-AS 70547 | B40 | 1-AR 71127 | B59 |
| 1-AR 40114 A | B7 | 1-AS 70124 | B23 | 1-AV 70154 D | B29 | 1-AV 70547 | B41 | 1-AR 71127 A | B59 |
| 1-AS 40114 A | B8 | 1-AV 70124 | B24 | 1-AR 70157 | B28 | 1-AR 70547 C | B40 | 1-AR 71127 C | B59 |
| 1-AV 40114 A | B9 | 1-AR 70124 A | B22 | 1-AV 70157 | B29 | 1-AS 70547 C | B40 | 1-AR 71127 D | B59 |
| 1-AR 40114 C | B7 | 1-AS 70124 A | B23 | 1-AR 70157 C | B28 | 1-AV 70547 C | B41 | 1-AR 71524 | B66 |
| 1-AS 40114 C | B8 | 1-AV 70124 A | B24 | 1-AV 70157 C | B29 | 1-AR 70547 D | B40 | 1-AR 71524 A | B66 |
| 1-AV 40114 C | B9 | 1-AR 70124 C | B22 | 1-AR 70157 D | B28 | 1-AS 70547 D | B40 | 1-AR 71524 C | B66 |
| 1-AR 40114 D | B7 | 1-AS 70124 C | B23 | 1-AV 70157 D | B29 | 1-AV 70547 D | B41 | 1-AR 71524 D | B66 |
| 1-AS 40114 D | B8 | 1-AV 70124 C | B24 | 1-AR 70164 | B30 | 1-AR 70554 | B42 | 1-AR 71527 | B66 |
| 1-AV 40114 D | B9 | 1-AR 70124 D | B22 | 1-AV 70164 | B31 | 1-AV 70554 | B43 | 1-AR 71527 A | B66 |
| 1-AR 40134 | B10 | 1-AS 70124 D | B23 | 1-AR 70164 C | B30 | 1-AR 70554 C | B42 | 1-AR 71527 C | B66 |
| 1-AS 40134 | B11 | 1-AV 70124 D | B24 | 1-AV 70164 C | B31 | 1-AV 70554 C | B43 | 1-AR 71527 D | B66 |
| 1-AV 40134 | B12 | 1-AR 70127 | B22 | 1-AR 70164 D | B30 | 1-AR 70554 D | B42 | | |
| 1-AR 40134 C | B10 | 1-AS 70127 | B23 | 1-AV 70164 D | B31 | 1-AV 70554 D | B43 | | |
| 1-AS 40134 C | B11 | 1-AV 70127 | B24 | 1-AR 70167 | B30 | 1-AR 70557 | B42 | | |
| 1-AV 40134 C | B12 | 1-AR 70127 A | B22 | 1-AV 70167 | B31 | 1-AV 70557 | B43 | | |
| 1-AR 40134 D | B10 | 1-AS 70127 A | B23 | 1-AR 70167 C | B30 | 1-AR 70557 C | B42 | | |
| 1-AV 40134 D | B12 | 1-AV 70127 A | B24 | 1-AV 70167 C | B31 | 1-AV 70557 C | B43 | | |
| 1-AR 41014 | B5 | 1-AR 70127 C | B22 | 1-AR 70167 D | B30 | 1-AR 70557 D | B42 | | |
| 1-AR 41014 A | B5 | 1-AS 70127 C | B23 | 1-AV 70167 D | B31 | 1-AV 70557 D | B43 | | |
| 1-AR 41014 C | B5 | 1-AV 70127 C | B24 | 1-AR 70524 | B38 | 1-AR 70564 | B44 | | |
| 1-AR 41034 | B6 | 1-AR 70127 D | B22 | 1-AV 70524 | B39 | 1-AV 70564 | B45 | | |
| 1-AR 41034 C | B6 | 1-AS 70127 D | B23 | 1-AR 70524 A | B38 | 1-AR 70564 C | B44 | | |
| 1-AR 41114 | B13 | 1-AV 70127 D | B24 | 1-AV 70524 A | B39 | 1-AV 70564 C | B45 | | |
| 1-AR 41114 A | B13 | 1-AR 70144 | B25 | 1-AR 70524 C | B38 | 1-AR 70564 D | B44 | | |
| 1-AR 41114 C | B13 | 1-AS 70144 | B26 | 1-AV 70524 C | B39 | 1-AV 70564 D | B45 | | |
| 1-AR 41114 D | B13 | 1-AV 70144 | B27 | 1-AR 70524 D | B38 | 1-AR 70567 | B44 | | |
| 1-AR 41134 | B14 | 1-AR 70144 C | B25 | 1-AV 70524 D | B39 | 1-AV 70567 | B45 | | |
| 1-AR 41134 C | B14 | 1-AS 70144 C | B26 | 1-AR 70527 | B38 | 1-AR 70567 C | B44 | | |
| 1-AR 41134 D | B14 | 1-AV 70144 C | B27 | 1-AV 70527 | B39 | 1-AV 70567 C | B45 | | |
| 1-AR 70024 | B15 | 1-AR 70144 D | B25 | 1-AR 70527 A | B38 | 1-AR 70567 D | B44 | | |
| 1-AR 70024 C | B15 | 1-AS 70144 D | B26 | 1-AV 70527 A | B39 | 1-AV 70567 D | B45 | | |
| 1-AR 70027 | B15 | 1-AV 70144 D | B27 | 1-AR 70527 C | B38 | 1-AR 71024 | B52 | | |
| 1-AR 70027 C | B15 | 1-AR 70147 | B25 | 1-AV 70527 C | B39 | 1-AR 71024 A | B52 | | |
| 1-AR 70044 | B16 | 1-AS 70147 | B26 | 1-AR 70527 D | B38 | 1-AR 71024 C | B52 | | |
| 1-AR 70044 C | B16 | 1-AV 70147 | B27 | 1-AV 70527 D | B39 | 1-AR 71027 | B52 | | |

| Threeway—Section C | | | |
|--------------------|------|----------------|------|
| Identification | Page | Identification | Page |
| 1-AR 47014 | C1 | 1-AR 78047 | C6 |
| 1-AR 47014 C | C1 | 1-AR 78047 C | C6 |
| 1-AR 47034 | C2 | 1-AR 78124 | C12 |
| 1-AR 47034 C | C2 | 1-AR 78124 C | C12 |
| 1-AR 47114 | C3 | 1-AR 78124 D | C12 |
| 1-AR 47114 C | C3 | 1-AR 78127 | C12 |
| 1-AR 47114 D | C3 | 1-AR 78127 C | C12 |
| 1-AR 47134 | C4 | 1-AR 78127 D | C12 |
| 1-AR 47134 C | C4 | 1-AR 78144 | C13 |
| 1-AR 47134 D | C4 | 1-AR 78144 C | C13 |
| 1-AR 48014 | C1 | 1-AR 78144 D | C13 |
| 1-AR 48014 C | C1 | 1-AR 78147 | C13 |
| 1-AR 48034 | C2 | 1-AR 78147 C | C13 |
| 1-AR 48034 C | C2 | 1-AR 78147 D | C13 |
| 1-AR 48114 | C3 | | |
| 1-AR 48114 C | C3 | | |
| 1-AR 48114 D | C3 | | |
| 1-AR 48134 | C4 | | |
| 1-AR 48134 C | C4 | | |
| 1-AR 48134 D | C4 | | |
| 1-AR 77024 | C5 | | |
| 1-AR 77024 C | C5 | | |
| 1-AR 77027 | C5 | | |
| 1-AR 77027 C | C5 | | |
| 1-AR 77044 | C6 | | |
| 1-AR 77044 C | C6 | | |
| 1-AR 77047 | C6 | | |
| 1-AR 77047 C | C6 | | |
| 1-AR 77124 | C12 | | |
| 1-AR 77124 C | C12 | | |
| 1-AR 77124 D | C12 | | |
| 1-AR 77127 | C12 | | |
| 1-AR 77127 C | C12 | | |
| 1-AR 77127 D | C12 | | |
| 1-AR 77144 | C13 | | |
| 1-AR 77144 C | C13 | | |
| 1-AR 77144 D | C13 | | |
| 1-AR 77147 | C13 | | |
| 1-AR 77147 C | C13 | | |
| 1-AR 77147 D | C13 | | |
| 1-AR 78024 | C5 | | |
| 1-AR 78024 C | C5 | | |
| 1-AR 78027 | C5 | | |
| 1-AR 78027 C | C5 | | |
| 1-AR 78044 | C6 | | |
| 1-AR 78044 C | C6 | | |

| Fourway—Section D | |
|-------------------|------|
| Identification | Page |
| 1-AR 49014 | D1 |
| 1-AR 49034 | D2 |
| 1-AR 49114 | D3 |
| 1-AR 49114 D | D3 |
| 1-AR 49134 | D4 |
| 1-AR 49134 D | D4 |
| 1-AR 79024 | D5 |
| 1-AR 79027 | D5 |
| 1-AR 79044 | D6 |
| 1-AR 79047 | D6 |
| 1-AR 79124 | D12 |
| 1-AR 79124 D | D12 |
| 1-AR 79127 | D12 |
| 1-AR 79127 D | D12 |
| 1-AR 79144 | D13 |
| 1-AR 79144 D | D13 |
| 1-AR 79147 | D13 |
| 1-AR 79147 D | D13 |

| | Page |
|---|------|
| Information — Low Pressure Valve | A1 |
| Information — High Pressure Valve | A2 |
| Valve Lubrication | A3 |
| Gear Lubrication | A4 |
| Pattern Types | A5 |
| Multiport Valves | A6 |
| Multiport Valves — Port Arrangements | A7 |
| End Connections | A8 |
| Wrench Operators | A9 |
| Wrench Dimension | A10 |
| Operation — Gearing | A11 |
| Gear Ratios | A12 |
| Electric Operator | A13 |
| Electric Operator | A14 |
| Electric Operator — Accessories | A15 |
| Electric Operator — Methods of Operating | A16 |
| Electric Operator — Specifications | A17 |
| Electric Operator — Time of Operation | A18 |
| Electric Operator — Dimensions | A19 |
| Electric Operator — Dimensions | A20 |
| Actuator | A21 |
| Actuator | A22 |
| Actuator — Accessories | A23 |
| Actuator — Dimensions | A24 |
| Actuator — Air Consumption and Torque | A25 |
| Actuator — Size Table | A26 |
| Air Cylinder | A27 |
| Air Cylinder — Air Consumption | A28 |
| Torque Table | A29 |
| Torque Table | A30 |
| Materials | A31 |
| Sealing Compound | A32 |
| Socket—Welding Ends Dimensions | A39 |
| Pressure Test/Inspection | A40 |
| Cv and Kv Values — Straightway Rectangular | A41 |
| Cv and Kv Values — Three- and Fourway Rectangular | A42 |
| Dimension and Area of Port | A43 |
| Dimension and Area of Port | A44 |
| Dimension and Area of Port | A45 |
| Air Motor Operator | A49 |
| Air Motor Operator — Accessories | A50 |
| Air Motor Operator — Specifications — Time of Operation | A51 |
| Air Motor Operator — Dimensions | A52 |
| Electric Linear Actuator | A53 |



PR lubricated valves are the ideal shut-off device for almost any medium, even under the most severe operating conditions.

They are used in all those places where fast, trouble-free and positive sealing is required.

The design is very compact it requires little space to install, and can be mounted in any position required.

The basic operation of the PR valve is very simple, as the only moving part is the plug. In open plug position the passage area is free and in line with the pipe line. On turning the plug through 90° to closed valve position, the passage is shut off, thus providing efficient closure.

The PR valve is furnished with a lubrication system which allows feeding special lubricant into the valve. On lubrication, the grease is forced into a groove system wherefrom it is distributed between the seating faces of the valve body and those of the plug, forming a sealing and corrosion preventive lubricating film.

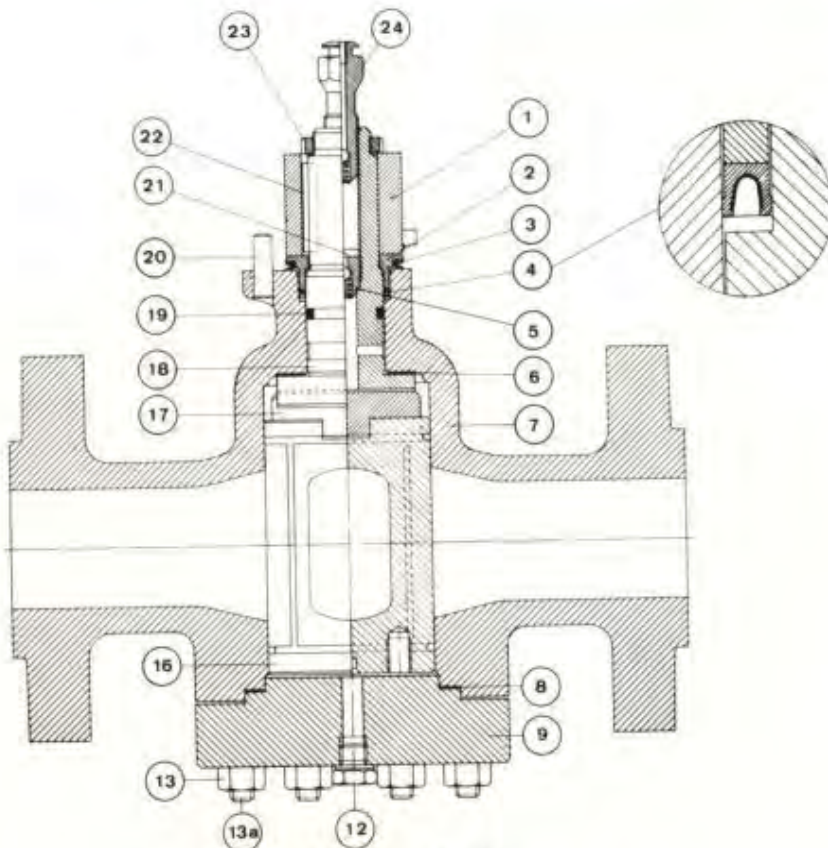
The plug is therefore surrounded by grease on all surfaces which besides the two advantages already mentioned provides for smooth-acting control even after long periods of service interruption.

The big advantage of the PR lubricated valve is that a positive seal can be obtained easily without disturbing the operation, just by lubricating the valve.

The PR valve plug is cylindrical and fits into the body with close tolerance. The cylindrical shape allows the plug to move freely up and down in axial direction, and still retain the same tolerance between body and plug.

At the top of the plug neck, the PR valve is provided with an O-seal ring, while at the bottom it is closed by the bottom cover.

Operation of the PR valve can take place manually as well as automatically (electrically, pneumatically or hydraulically).



1. Operating square
2. Stem bearing
3. V-Ring
4. Sealing Ring
5. Gasket
6. Thrust Plate
7. Body
8. Gasket
9. Bottom Cover
12. Bottom Screw
13. Nuts
- 13a. Stud
16. Plug
17. Equalizer Ring
18. Operating Stem
19. O-Ring
20. Stop
21. Check Valve
22. Parallel Key
23. Nut for stem
24. Lubricant Screw

Item no. 12 minium size 4".

High Pressure Design Class 400 – 600 – 900 – 1500 and 2500.

PR lubricated valves are the ideal shut-off device for almost any medium, even under the most severe operating conditions.

They are used in all those places where fast, trouble-free and positive sealing is required.

The design is very compact, it requires little space to install, and can be mounted in any position required.

The basic operation of the PR valve is very simple, as the only moving part is the plug. In open plug position the passage area is free and in line with the pipe line. On turning the plug through 90° to closed valve position, the passage is shut off, thus providing efficient closure.

The cylindrical plug is adapted to the valve body individually with very close tolerances.

The PR valve is furnished with a lubrication system which allows feeding special lubricant into the valve.

On lubrication, the grease is forced into a groove system wherefrom it is distributed between the seating faces of the valve body and those of the plug, forming a sealing and corrosion preventive lubricating film.

The plug is therefore surrounded by grease on all surfaces which besides the two advantages already mentioned provides for smooth-acting control even after long periods of service interruption.

The plug (16) and the operating stem (18) are two separate parts, which are connected by means of the equalizer disc (17) through a strong driving tang and slot arrangement.

This way the plug "floats", i.e. the pressure of the medium is exercised equally on the top and the bottom of the plug, and a balance in the axial direction is allowed. This also ensures that the plug is free to move in the direction of the

closed – off port of the body; furthermore, the operating stem will not jam causing leakage.

In order to avoid seizing between plug and valve body the plug is plated with nickel after the "electroless" method. Moreover, in order to reduce friction when operating the plug is coated with P.T.F.E. (Hostafion VP5875).

The tightness between the body (7) and the operating stem (18) is provided by three independent seals. Seal (3) prevents penetration of water, dirt, etc. from outside into the stem bearing.

Seal (4) is P.T.F.E. (teflon) sealing ring with an embedded spring of Stainless Steel or Hasteloy C. This ring ensures optimum safety even in the presence of extreme pressure and temperature variations.

The ring can be replaced from the outside.

The seal (19) is a regular O-ring of synthetic rubber or P.T.F.E., depending on the application of the valve.

In order to reduce the torque requirement, the bearing surface between the operating stem and the neck of the valve body is provided with a thrust (6) made of P.T.F.E. of high load capacity and low friction coefficient.

The operating stem is provided with an operating square (1), held in place by the stem nut (23) and a parallel key (22). The bottom cover (9) is bolted on the body (7) and the gasket (8) is placed in a groove, which secures it against blow out by higher pressure.

The plug can be operated with a wrench directly on the operating square (1) or by a gear exchange with handwheel. (See the paragraph concerning "Operation").

Furthermore all PR valves can be provided with various forms of automatic operation (electric, pneumatic or hydraulic).

The PR valve is grease packed, i.e. the plug rests on a lubricating film in the valve body.

The lubricant has three functions: to protect the internal closing surfaces of the valve from corrosion, to grease seal the valve, and to contribute to easy handling. With an eye to achieving the best possible action, it is therefore important to relubricate the valve. The number of relubrications will depend on the operating conditions and the demands made on sealing.

Thus a valve operating at high temperature is to be lubricated more frequently than a valve operating at low temperature. If frequently handled, the valve is to be lubricated more often, too, to obtain a good sealing.

As the lubricant dries up faster at rising temperatures, the below time intervals indicate when relubrication should take place.

Lubrication intervals for water, steam and air.

| Temp. between | 0 to 90°C 32 to 200°F | 90 to 120°C 200 to 250°F | 120 to 150°C 250 to 300°F | 150 to 180°C 300 to 350°F | 180 to 200°C 350 to 400°F |
|---------------|--------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|
| Time interval | 24 months | 12 - 18 months | 8 - 12 months | 4 - 8 months | 2 - 4 months |

The amount of grease for relubrication also depends on the operating conditions, however, the normal amount is as stated in the table.

Besides there is noticeable increase in the lubricating pressure when the valve is properly lubricated.

For Regular Pattern Valves in sizes up to 7" there is one lubrication point (see Fig. 1), valve sizes between 8" and 18" have three lubrication points (see Fig. 2) while sizes from 20" have five lubrication points.

There is one PR Lubricant for each flow medium (see lubrication chart). It is therefore important to relubricate the valve with the proper type. If the valve is ordered specifically for a given medium, then the type of lubricant is stamped on the hexagonal head of the lubricating screw. Use only original PR Lubricant.

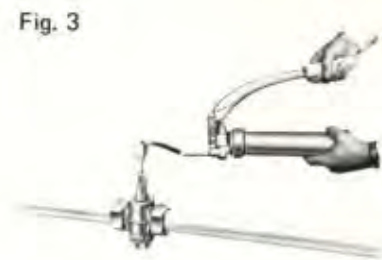
Procedure—a) Lubricant gun

The best and fastest result is achieved by using a PR Lubricant Gun (see Fig. 3). The lubricating nipple (push on connection) of the lubricant gun is fastened directly to the lubricating screw (if there is a tightening thumb screw on the lubricating screw head, this must be removed).

b) Lowering of the lubricating screw

Lubrication can also be effected by turning the lubricating screw into the lubricant chamber. In doing so, the lubricant under the screw is pressed into the lubricating channels of the valve (see Fig. 4).

Refilling of the lubricant chamber is done removing the lubricating screw, inserting a new lubricant cartridge (see Fig. 5), and then turning in the lubricating screw.



Gear lubrication follows the "principle of dry lubrication", i.e. to the teeth and worms a layer of antiseizing paste (70% molybdenum disulphide powder, in petroleum jelly) is applied, while the gear bearings are lubricated through lubricating nipples by applying high-temperature grease, containing at least 10% molybdenum disulphide.

The gear is lubricated at the factory and needs no lubrication within the first year of valve action.

Relubrication of gear:

The gear bearings are lubricated through grease nipples once a year or so. The diagrams below show the arrangement of the grease nipples on the gear types.

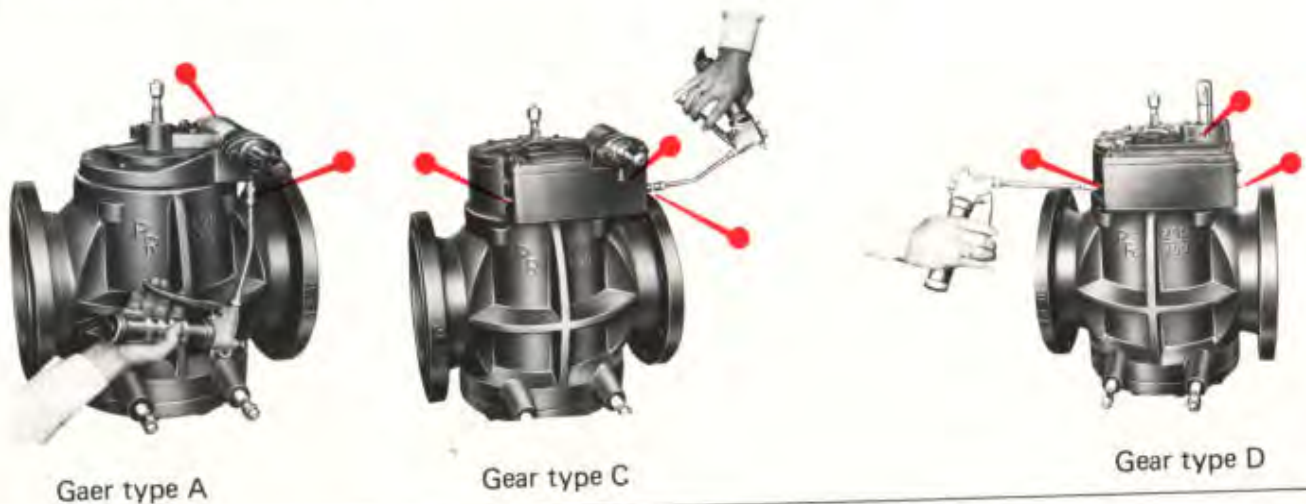
The gear tooth racks on worms and worm wheels are, as a rule, never relubricated. However, in case of trouble of control, making handling difficult, a penetrating and almost screaming sound will indicate a lack of lubrication. In such cases, a relubrication of the tooth racks is necessary. For gear type C or D, a removal of the gear cover is necessary to make the gear parts accessible. The lubricating paste is then applied to all tooth racks of both worms and worm wheels in a layer of about 1 millimetre (1/32").

(Concentrated powdered molybdenum disulphide cannot be recommended, as layer thickness here is too thin).

Recommended for use by the factory are:

For bearings: CASTROL SPHEEROL BM3 below 130°C. OKS 230 over 130°C.

For worms and gears: CASTROL IMPERVIA AS below 130°C. OKS 230 over 130°C.



Gaer type A

Gear type C

Gear type D

PR Electric gear



Gear type E (DE)

Toothed gear in oilbath with coupling for emergency operation. Built-in position indicator and limit switches. All electric gears are delivered in series with a lubricant type 0 or 00 e.g. Castrol ALPHA SP 220. Having mounted the gear on the valve, it has to be checked if the oil plug on the very top has a breather.

Otherwise, the 2 oil plugs - one on top of the gear and one below - must switch places. Change of lubricant: By temperatures exleeding 150°C at least once a year.

Amount of oil: Type E2 1 litre - Type E4 3 litres - Type E6 6 litres.

Quality: Lubricant Type 0 or 00 e.g. Castrol ALPHA SP 220.

On valves with fitted-on electric gears, the limit switches are factory-adjusted.

Important:

Never use the motor drive towards the mechanical stop, as this will heavily overload both the motor and the gear. Therefore, closely observe the instructions for connection to be found in the switchbox of the electric gear.

The word "pattern" in this catalogue refers to the shape of the valve port and the laying length of the valve. PR valves are made in four patterns.

Regular Pattern Valves Fig. 1 and 3. These valves have face-to-face dimensions in accordance with the appropriate British and American standards where applicable. This ensures the maximum interchangeability between valves of different types and end connections.

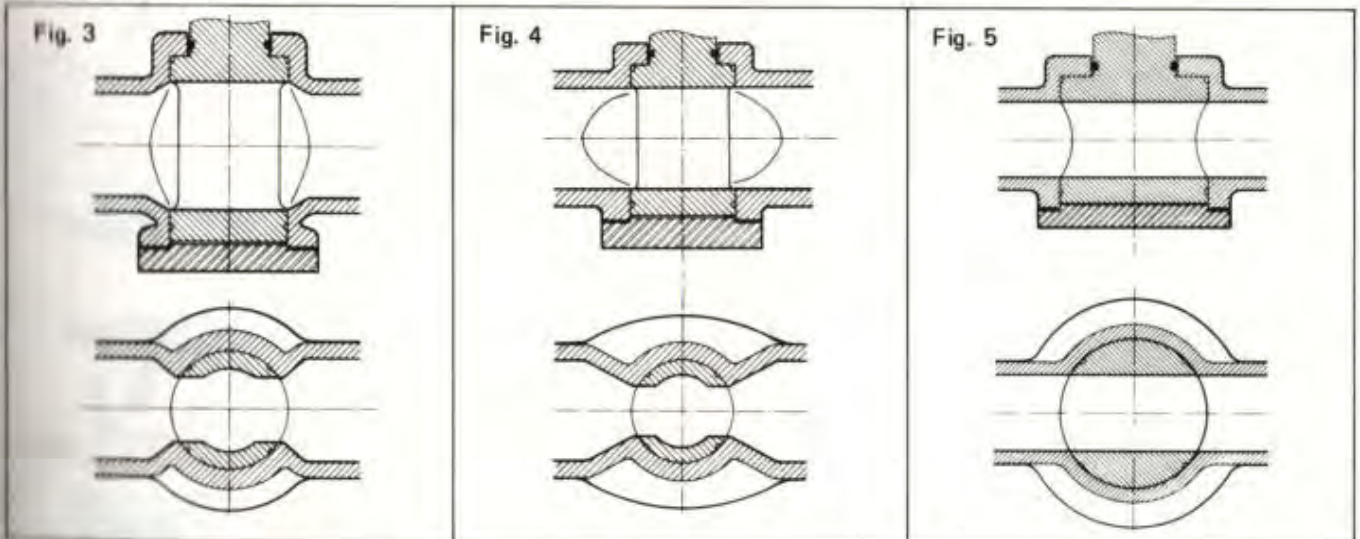
The plug ports of these valves are approximately rectangular in section and have an area substantially equal to the full bore of the pipe. The transition from the round body end ports to the rectangular seat ports is smooth, and entails no sudden alterations in shape or section which might cause excessive changes in velocity or direction of the fluid flowing in the pipeline. This feature makes these valves particularly suitable for installations where it is essential to keep pressure losses in the piping to a minimum, for example, on long suction lines to pumps or similar applications where head losses due to pipe bends and fittings are critical.

Short Pattern Valves. These valves are made in Class 125 and Class 250 Iron, Class 150 and Class 300 Steel. They have face-to-face dimensions to the requirements of British and American standards (Short Pattern for the Petroleum Industry) and are interchangeable with Class 125 and Class 150 Gate Valves. These valves are suitable for all pipelines and plant installations where a gate valve generally is desired, with the exception of very long suction lines where even a small pressure drop can cause difficulties. This particularly applies to the larger sizes where the short overall length necessitates the use of a plug with a port smaller than full pipe bore in a body with rather abrupt changes of throat shape between the flanges and the plug.

Venturi Pattern Valves Fig. 1 and 4. These valves have face-to-face dimensions in accordance with the appropriate British and American standards where applicable, in order to ensure the maximum interchangeability between different valves.

The Plug ports of these valves are of reduced area, but the change of section through the body throat is so designed as to produce a Venturi effect to restore a large percentage of the velocity head losses through the valve, thus resulting in a relatively low pressure drop. These valves are ideally suited for all normal pipeline applications, particularly in the larger sizes where there is a considerable saving in cost.

Round Port Valves Fig. 2 and 5. These have circular ports, the diameter of which, unless otherwise stated, is equal to, or greater than, the inside diameter of the corresponding pipe. The valves are intended for use when it is necessary to pass a scraper or other tool through the valve body, or for other special applications. The face-to-face dimensions are greater than for the corresponding Regular Pattern valve but comply with British and American Standards where applicable. This type valve is particularly suited for raw scudge application in sewage treatment plants, hot taps for pipelines, etc.



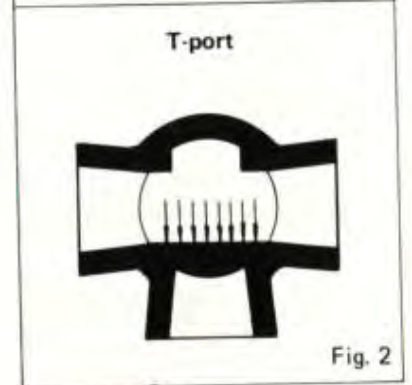
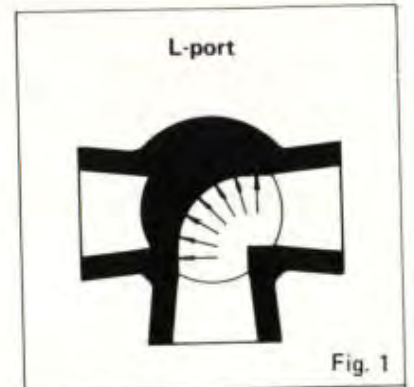
Regular Pattern
Rectangular port, full bore

Venturi Pattern
Rectangular port, reduced bore

Round port, full bore

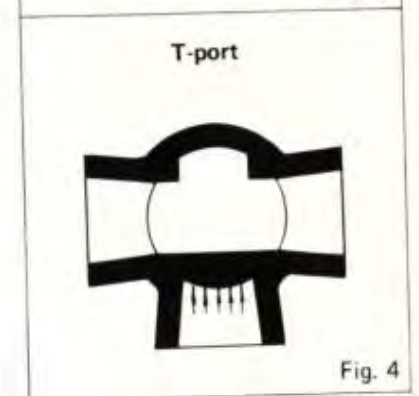
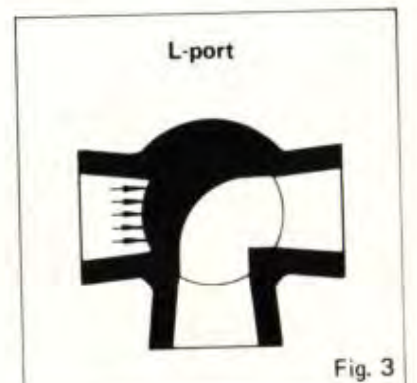
Positive shut-off

Multiport valves can be expected to provide shut-off against full rated working pressure only in the positive direction, that is with the line pressure acting to hold the plug against the body port or ports which are to be cut off from the higher pressure, as illustrated in Figs. 1 and 2. In Fig. 1 the flow is from the right hand to the centre connection and the left hand connection is shut-off. In Fig. 2 the flow is from the left hand to the right hand connection or vice versa and the centre connection is shut-off. In both cases the pressure inside the valve is trying to escape and tends to force the plug against the port that is to be cut off.



Negative shut-off

Multiport valves are not expected to shut-off high differential pressures when the line pressure is in a negative direction as illustrated in Figs. 3 and 4. In these examples the pressure is from the left hand and centre connections respectively, and in both cases pressure is trying to enter the valve. Under these conditions the pressure can force the plug away from the inlet port, by-pass around the plug and escape at the connections.



Threeway L-port

| | | | | |
|----------|------------|--|--|--|
| Standard | L1 180° | | | |
| | L2 90° | | | |
| | L3 180° | | | |

Threeway T-port

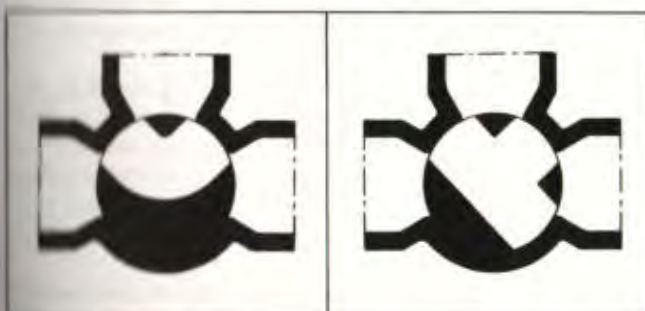
| | | | | |
|----------|------------|--|--|--|
| Standard | T1 180° | | | |
| | T2 180° | | | |
| | T3 90° | | | |
| | T4 90° | | | |
| | T5 90° | | | |
| | T6 90° | | | |
| | T7 180° | | | |
| | T8 180° | | | |

Fourway

| | | | |
|----------|------------|--|--|
| Standard | X5 90° | | |
| | L6 180° | | |
| | L7 90° | | |

Transflow Pattern

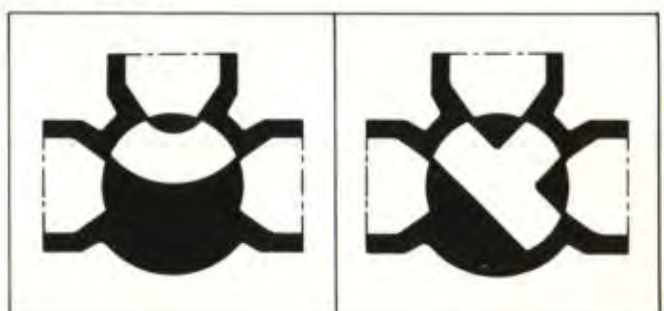
When the plug of a Transflow pattern valve is rotated from one flow position to another, the second flow position starts to open before the first flow position is completely closed. This flow pattern is essential when even momentary interruption of flow is not permissible, for example, on the outlet from a positive displacement pump.



Non-Transflow Pattern

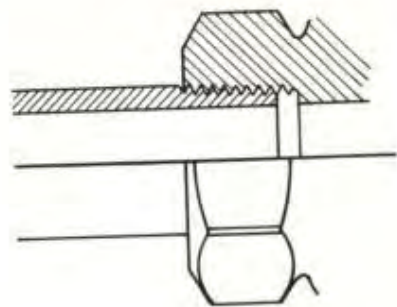
When the plug of a Non-Transflow pattern valve is rotated from one flow position to another, the first flow position is isolated before the second flow position starts to open. The midway position, however, is not intended to be used as a shut-off.

This form of valve is essential when momentary flow into one port from two others is not permissible, for example, on the outlet of a measuring vessel and on certain types of tank manifold.



Screwed Ends:

Designed in accordance with API Line Pipe threads API Std. 5B Table 2.1 or ANSI Std. B2.1.
Available in sizes 1/2" to 4".



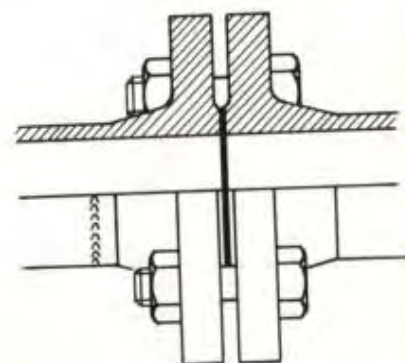
Flanges:

Designed in accordance with the ANSI standard, as indicated on the dimension sheets.

On certain sizes of Short Pattern Valves (AS) the bolt holes are tapped to facilitate the use of cap screws this, where space does not allow the fitting of a nut to regular stud bolts.

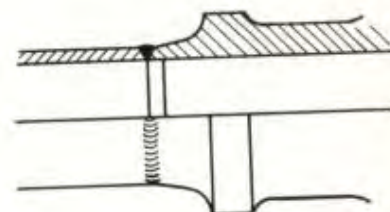
Unless otherwise specified, all flanges are supplied with either Flat or Raised Face.

The surface on the Flat or Raised Face is in accordance with ANSI B16.5 Standard.

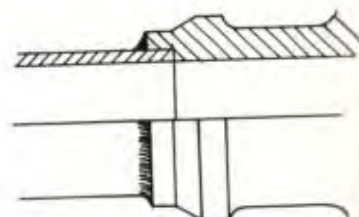


Butt Welding Ends:

For direct welding in the pipeline.
Designed in accordance with ANSI B16.25



Socket-Welding Ends: For direct welding in the pipeline.
Designed in accordance with ANSI B16.11.
Dimensions, page A39.

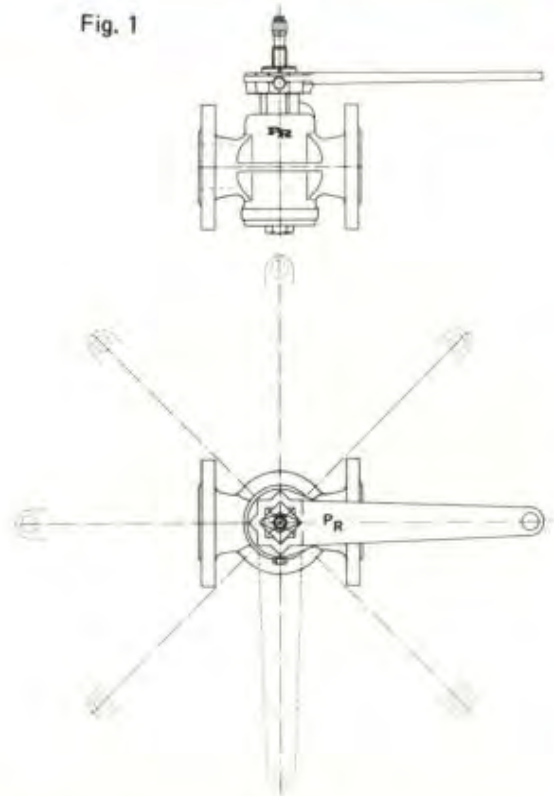


The simplest method of operating the PR valve is by using a wrench on top of the valve plug.

Straight-way valves open and close by rotating through 90° while three-way and four-way valves have rotary motions through $90^\circ - 180^\circ - 270^\circ - 360^\circ$.

Wrench operation is used on relatively small valve sizes, as indicated in the table below.

Fig. 1



Rectangular port

| Pattern | Max. recommended valve size for wrench operation. | | | | | | | | |
|---------|---|----------------------------------|----------------------------------|----------------------------------|----------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| | (CWP) 200 psi 14 Kg/cm ² | 275 psi 19 Kg/cm ² | 500 psi 35 Kg/cm ² | 720 psi 50 Kg/cm ² | 960 psi 67 Kg/cm ² | 1440 psi 100 Kg/cm ² | 2160 psi 152 Kg/cm ² | 3600 psi 250 Kg/cm ² | 6000 psi 420 Kg/cm ² |
| AR | 6" | 6" | 5" | 5" | 4" | 4" | 3" | 2 1/2" | 2" |
| AV | 8" | 8" | 6" | 6" | 5" | 5" | 4" | 3" | 2 1/2" |
| AS | 8" | 8" | 5" | 5" | | | | | |

Round port

| | | | | | | | | | |
|----|----|----|----|----|--------|--------|----|--------|--------|
| AR | 4" | 4" | 3" | 3" | 2 1/2" | 2 1/2" | 2" | 1 1/2" | 1 1/4" |
|----|----|----|----|----|--------|--------|----|--------|--------|

PR valve wrenches are available in octagonal or two-faced design. Fig. 2 shows the octagonal wrench head used most frequently.

The wrench can be fitted on the square of the valve plug in eight different positions. This is a big advantage in places with limited space.

The wrench is available in a short and a long version as type 8K and type 8L.

(See dimension sheet next page).

Fig. 3 shows the two-faced wrench head, type 2K, to be used in those places where the wrench must be parallel to the pipeline in open valve position, and transverse to it in closed position.

This type of wrench is only used where the plug is specially designed with flat shanks parallel to flow ports.

The wrench is made of semi-steel (Dimensions equal those of type 8K).

Fig. 2 Wrench head type 8K and 8L

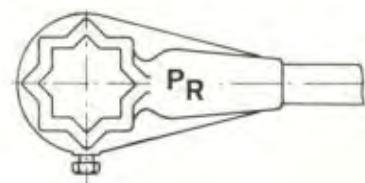
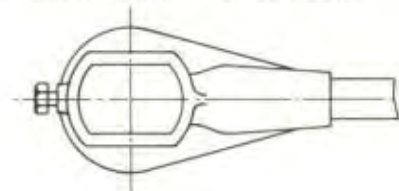
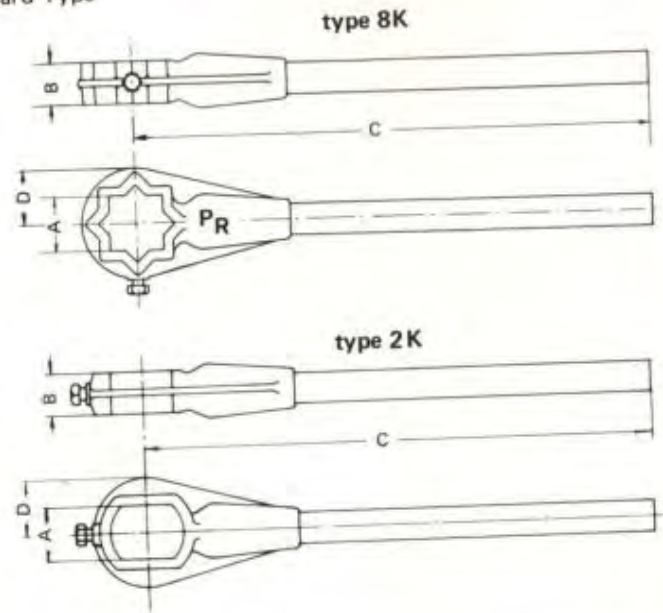
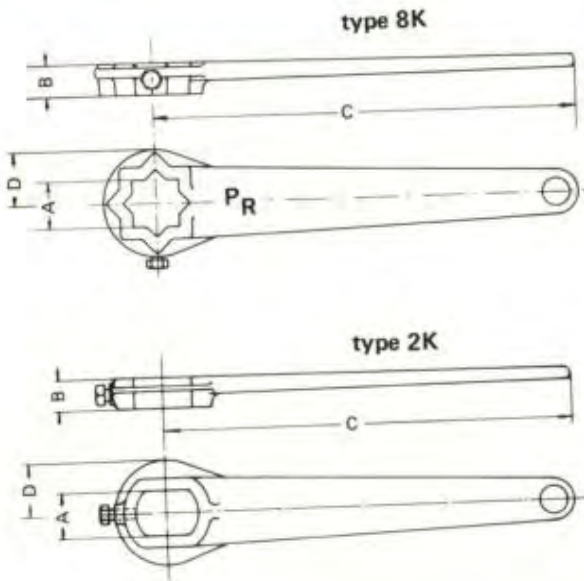


Fig. 3 Wrench head type 2K



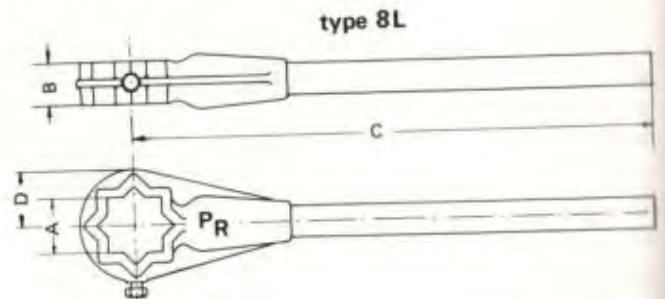
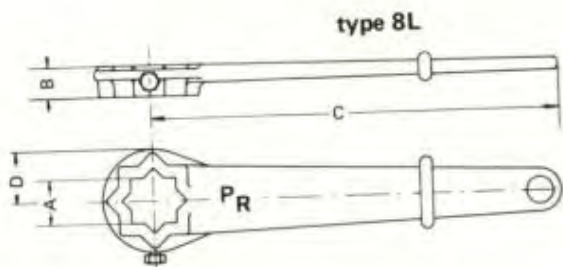
Standard Type



| A mm | B | | C | | D | |
|---------|--------|----|--------|-----|--------|----|
| | in | mm | in | mm | in | mm |
| 17 | 9/16 | 14 | 5 1/2 | 140 | 3/4 | 20 |
| 19 | 5/8 | 16 | 5 7/8 | 150 | 7/8 | 22 |
| 24 | 3/4 | 18 | 7 7/8 | 200 | 1 | 26 |
| 27 | 3/4 | 20 | 8 7/8 | 225 | 1 1/16 | 30 |
| 30 | 7/8 | 22 | 11 | 280 | 1 3/16 | 33 |
| 36 | 1 1/16 | 26 | 13 | 330 | 1 1/2 | 38 |
| 50 | 1 9/16 | 40 | 16 1/2 | 420 | 2 | 52 |

| A mm | B | | C | | D | |
|---------|-------|----|----|------|-------|----|
| | in | mm | in | mm | in | mm |
| 55 | 1 3/4 | 45 | 32 | 815 | 2 1/4 | 58 |
| 65 | 2 | 50 | 37 | 940 | 2 3/4 | 70 |
| 70 | 2 | 50 | 43 | 1090 | 3 | 76 |

Special Type
Extra Long



| A mm | B | | C | | D | |
|---------|--------|----|--------|-----|--------|----|
| | in | mm | in | mm | in | mm |
| 24 | 3/4 | 20 | 11 7/8 | 300 | 1 3/16 | 30 |
| 27 | 7/8 | 22 | 13 3/8 | 340 | 1 5/16 | 33 |
| 30 | 1 1/16 | 26 | 16 1/2 | 420 | 1 1/2 | 38 |
| 36 | 1 1/16 | 26 | 18 1/2 | 470 | 1 5/8 | 42 |

| A mm | B | | C | | D | |
|---------|-------|----|----|------|-------|----|
| | in | mm | in | mm | in | mm |
| 50 | 1 3/4 | 45 | 32 | 815 | 2 1/4 | 58 |
| 55 | 2 | 50 | 43 | 1090 | 2 3/4 | 70 |
| 65 | 2 | 50 | 50 | 1270 | 3 1/8 | 80 |

Gear, type A, is an open worm gear with the handwheel located horizontally on side of the valve.

The worm rests in heavy bronze bearings, and the axial load stress is absorbed by ball bearings.

The gear has fixed stops at extreme positions, plus position indicator (Lubrication — see page A4).

Gear, type A, is only available in class 125 and class 150 in the following valve sizes:

Rectangular port

AR (Regular Pattern) 5" — 6" — 7" — 8" and 10"

AV (Venturi Pattern) 6" — 8" — 10" and 12"

AS (Short Pattern) 6" — 8" — 10" and 12"

Round port

AR (Regular Pattern) 3" — 4" — 5" — 6" and 7"



Gear, type C, is enclosed in a water-proof casing, with the handwheel located vertically on side of the valve.

Worm and worm wheel are embedded in heavy bronze bearings, and the axial load stress is absorbed by ball bearings.

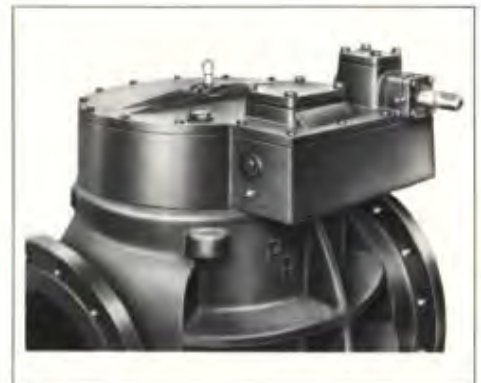
Both bearings and tooth racks are lubricated with concentrated molybdenum grease to resist high temperatures (See lubrication of gear, page A4).

The gear has fixed stops at extreme positions, plus position indicator.

Gear, type C, is available in all pressure classes and valve sizes.

Gear reductions — see page A12.

Type C can be fitted with electric gear operator.



Gear, type D, is enclosed in a water-proof casing, with the handwheel located horizontally on top of the valve.

Worm and worm wheel are embedded in heavy bronze bearings, and the axial load stress is absorbed by ball bearings.

Both bearings and tooth racks are lubricated with concentrated molybdenum grease to resist high temperatures (See lubrication of gear, page A4).

The gear has fixed stops at extreme positions, plus position indicator.

Gear, type D, is available in all pressure classes (For valve sizes — see dimension sheets).

Gear reductions — see page A12.

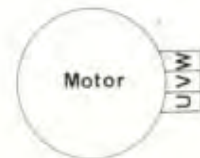
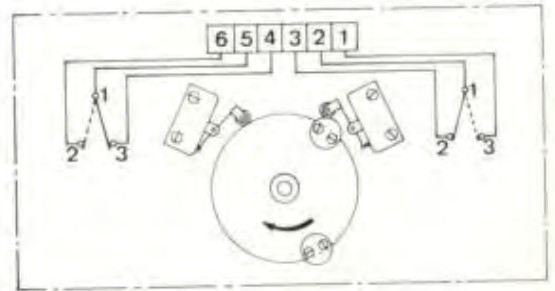
Gear, type D, can be fitted with electric gear operator.



| Valve size Rectangular Port | Venturi Pattern | Short Pattern | Valve pressure stage (CWP) | | | | | | | | | | | | | | | | | |
|--------------------------------|--------------------|------------------|------------------------------------|------|------|--------|------|-------|------------------|-----|-------|------------------|------|------|------------------|------|------|--------------------|-----|-------|
| | | | 200 and 285 PSI PN 10 and PN 16 | | | | | | 500 PSI PN 25 | | | 740 PSI PN 40 | | | 985 PSI PN 64 | | | 1480 PSI PN 100 | | |
| | | | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | | | |
| Regular Pattern 1/2" | | | 1:24 | 6 | 1,6 | 1:24 | 6 | 1,6 | 1:24 | 6 | 1,6 | 1:24 | 6 | 1,6 | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 |
| 3/4" | 1" | | 1:24 | 6 | 1,6 | 1:24 | 6 | 1,6 | 1:24 | 6 | 1,6 | 1:24 | 6 | 1,6 | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 |
| 1" | 1 1/4" | 1" | 1:24 | 6 | 1,6 | 1:24 | 6 | 1,6 | 1:24 | 6 | 1,6 | 1:24 | 6 | 1,6 | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 |
| 1 1/4" | 1 1/2" | 1 1/4" | 1:24 | 6 | 1,6 | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 |
| 1 1/2" | 2" | 1 1/2" | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 | 1:32 | 8 | 2,1 | 1:32 | 8 | 2,1 |
| 2" | 2 1/2" | 2" | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 | 1:32 | 8 | 2,1 | 1:36 | 9 | 2,4 | 1:36 | 9 | 2,4 |
| 2 1/2" | 3" | 2 1/2" | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 | 1:20 | 5 | 1,3 | 1:36 | 9 | 2,4 | 1:36 | 9 | 2,4 | 1:36 | 9 | 2,4 |
| 3" | 4" | 3" | 1:20 | 5 | 1,3 | 1:32 | 8 | 2,1 | 1:32 | 8 | 2,1 | 1:36 | 9 | 2,4 | 1:36 | 9 | 2,4 | 1:36 | 9 | 2,4 |
| 4" | 5" | 4" | 1:32 | 8 | 2,1 | 1:32 | 8 | 2,1 | 1:32 | 8 | 2,1 | 1:36 | 9 | 2,4 | 1:36 | 9 | 2,4 | 1:36 | 9 | 2,4 |
| 5" | 6" | 5" | 1:32 | 8 | 2,1 | 1:36 | 9 | 2,4 | 1:36 | 9 | 2,4 | 1:36 | 9 | 2,4 | 1:36 | 9 | 2,4 | 1:36 | 9 | 2,4 |
| 6" | 8" | 6" | 1:36 | 9 | 2,4 | 1:77 | 19,3 | 5,2 | 1:103 | 26 | 7,1 | 1:105 | 26,2 | 7,0 | 1:105 | 26,2 | 7,0 | 1:140 | 35 | 9,3 |
| 8" | 10" | 8" | 1:77 | 19,3 | 5,2 | 1:105 | 26,2 | 7,0 | 1:103 | 26 | 7,1 | 1:189 | 47 | 12,4 | 1:105 | 26,2 | 7,0 | 1:262 | 66 | 18,0 |
| 10" | 12" | 10" | 1:105 | 26,2 | 7,0 | 1:140 | 35 | 9,3 | 1:140 | 35 | 9,3 | 1:189 | 47 | 12,4 | 1:105 | 26,2 | 7,0 | 1:262 | 66 | 18,0 |
| 12" | | 12" | 1:140 | 35 | 9,3 | 1:210 | 53 | 14,5 | 1:210 | 53 | 14,5 | 1:358 | 90 | 24,4 | 1:140 | 35 | 9,3 | 1:262 | 66 | 18,0 |
| 14" | | 14" | 1:189 | 47 | 12,4 | 1:262 | 66 | 18,0 | 1:262 | 66 | 18,0 | 1:358 | 90 | 24,4 | 1:189 | 47 | 12,4 | 1:262 | 66 | 18,0 |
| 16" | | 16" | 1:259 | 65 | 17,5 | 1:358 | 90 | 24,4 | 1:358 | 90 | 24,4 | 1:406 | 102 | 26,4 | 1:259 | 65 | 17,5 | 1:358 | 90 | 24,4 |
| 18" | | 18" | 1:294 | 74 | 19,3 | 1:406 | 102 | 26,4 | 1:406 | 102 | 26,4 | 1:387 | 97 | 25,0 | 1:294 | 74 | 19,3 | 1:406 | 102 | 26,4 |
| 20" | | 20" | 1:387 | 97 | 23,9 | 1:580 | 145 | 33,4 | 1:580 | 145 | 33,4 | 1:638 | 160 | 37,7 | 1:387 | 97 | 25,0 | 1:580 | 145 | 33,4 |
| 24" | | 24" | 1:426 | 107 | 25,4 | 1:638 | 160 | 37,7 | 1:638 | 160 | 37,7 | 1:696 | 174 | 40,6 | 1:426 | 107 | 25,4 | 1:638 | 160 | 37,7 |
| 28" | | 28" | 1:696 | 174 | 38,7 | 1:1440 | 360 | 80,0 | 1:1440 | 360 | 80,0 | | | | 1:696 | 174 | 38,7 | 1:1440 | 360 | 80,0 |
| 32" | | 32" | 1:899 | 225 | 45,2 | 1:1860 | 465 | 93,0 | 1:1860 | 465 | 93,0 | | | | 1:899 | 225 | 45,2 | 1:1860 | 465 | 93,0 |
| 36" | | 36" | 1:798 | 200 | 36,0 | 1:1650 | 413 | 73,8 | 1:1650 | 413 | 73,8 | | | | 1:798 | 200 | 36,0 | 1:1650 | 413 | 73,8 |
| | | | 1:1054 | 264 | 47,3 | 1:2170 | 543 | 97,0 | 1:2170 | 543 | 97,0 | | | | 1:1054 | 264 | 47,3 | 1:2170 | 543 | 97,0 |
| | | | 1:1258 | 315 | 56,4 | 1:2590 | 648 | 115,6 | 1:2590 | 648 | 115,6 | | | | 1:1258 | 315 | 56,4 | 1:2590 | 648 | 115,6 |

A = gear ratio.
 B = number of turns of handwheel from open to closed position (turning of plug through 90°).
 C = number of turns of handwheel from closed position of plug to position of initial flow through valve.





Type E

The type E operator is specially designed for use on PR lubricated plug valves, and can be mounted on all types of valves equipped with a type C or type D manual gear operator.

The Type E operator is sturdy and compact in design with power transmission from the motor to the output shaft being accomplished through straight-tooth spur gearing supported by solid ball bearings.

A handwheel spindle is provided permitting manual operation of the valve simply by turning the clutch lever a half turn, to re-engage the operator, simply reverse the procedure. When the operator is functioning, the handwheel remains stationary.

The electric control unit is mounted in a watertight compartment located on top of the gearing. The unit consists of two adjustable cams mounted on a disc, these cams activate limit switches which control the turning angle of the plug, at each extreme position.

Type E operators are supplied with a standard fully enclosed, fan cooled motor with all gearing running in an oilbath.

Type E operators are manufactured in 3 basic sizes, each of which can, by use of a few standard parts, be modified to give different gear ratios.

Basic Sizes

E 2 and E 3 for valves from 1 1/2" to 5"

E 4 and E 5 for valves from 6" to 24"

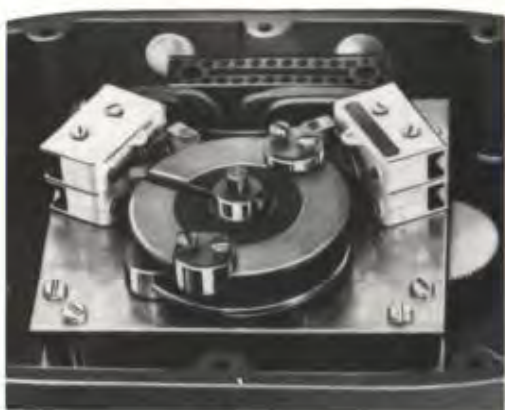
E 6 and E 8 for valves from 28" to 40"

All components used in the manufacture of the E Gear operator and accessories are of high quality and approved by C.S.A. — Demko.

Note: Special voltages, designs, incl. explosion proof, made to specifications, are available. Consult us for your specific requirements.

Potentiometer

Where remote indication is required, the E gear operator can have either one or two potentiometers mounted.
Make: Colvern, type CLR 5001, 4 watt, 100 OHM (or OHM to requirement).

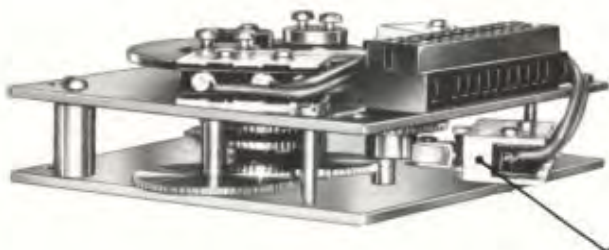


Additional Set of Limit Switches

An additional set of limit switches can be supplied with the E operator, thus having two independent switches at each extreme position.
Make: Burgess Type V13MR

Adjustable Torque Switch

The electric gear can be supplied with an adjustable torque switch.
If the pre-set operating torque is exceeded, the limit switch connected with the control current relay will be activated to break the current. The system functions both directions.



Where required an additional limit switch is incorporated into the electric gear operator. The switch is mechanically actuated. When the gear is rotating a signal is transmitted to either the local or remote control panel activating a flashing light, indicating the valve is operating.

1. LOCAL CONTROL:

This consists of the operator and one control cabinet H30 which is normally located close to the valve. The three pushbuttons are marked "Open", "Stop", and "Close". The valve will open, stop or close respectively, when the appropriate button is pressed. The yellow indicating light will glow when the valve is being operated; in addition the green indicating light will glow when the valve is fully open or moving towards the open position, the red indicating light will glow when the valve is fully closed or moving to the closed position.


If the "Stop" button is pressed before the valve is in either the fully open or fully closed position, all indicating lights will go out.

2. REMOTE CONTROL:

The arrangement consists of the control cabinet described under "Local Control", H30, plus an additional cabinet H10. The function of either of cabinet is the same as that described under "Local Control", only now the valve can also be operated from a control room remote from the valve, as well as locally.

3. REMOTE CONTROL WITH REMOTE INDICATION:

This method of operating incorporates two cabinets, the H30 as described under "Local Control" and the H50. Operation is the same as that described for "Remote Control" the only difference being that it includes a potentiometer which allows the operator to see the position of the plug between its two extreme positions.

| Control Cabinet H30 | Control Cabinet H10 | Control Cabinet H50 |
|---|---|---|
|  |  |  |
| <p>Dimension Height 360 mm, width 215 mm, depth 150 mm 2 pcs. Relays 3 pcs. Pushbuttons 3 pcs. Indication lamps 1 pcs. Terminal strip</p> <p>Standard execution: Grade of protection IP65</p> | <p>Dimension Height 180 mm, width 240 mm, depth 150 mm 3 pcs. Pushbuttons 3 pcs. Indication lamps 1 pcs. Terminal strip</p> <p>Standard execution: Grade of protection IP65</p> | <p>Dimension Height 480 mm, width 240 mm, depth 150 mm 1 pcs. Indicator Instrument 1 pcs. Adjustable potentiometer 3 pcs. Pushbuttons 3 pcs. Indication lamps 1 pcs. Terminal strip</p> <p>Standard execution: Grade of protection IP65</p> |

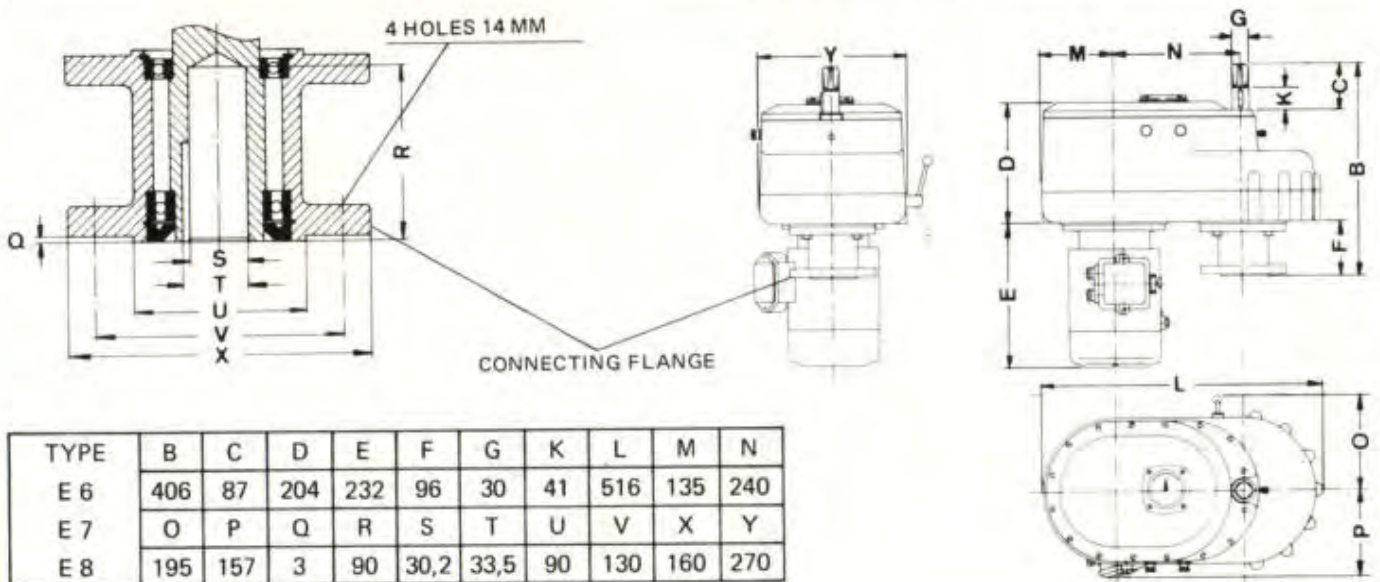
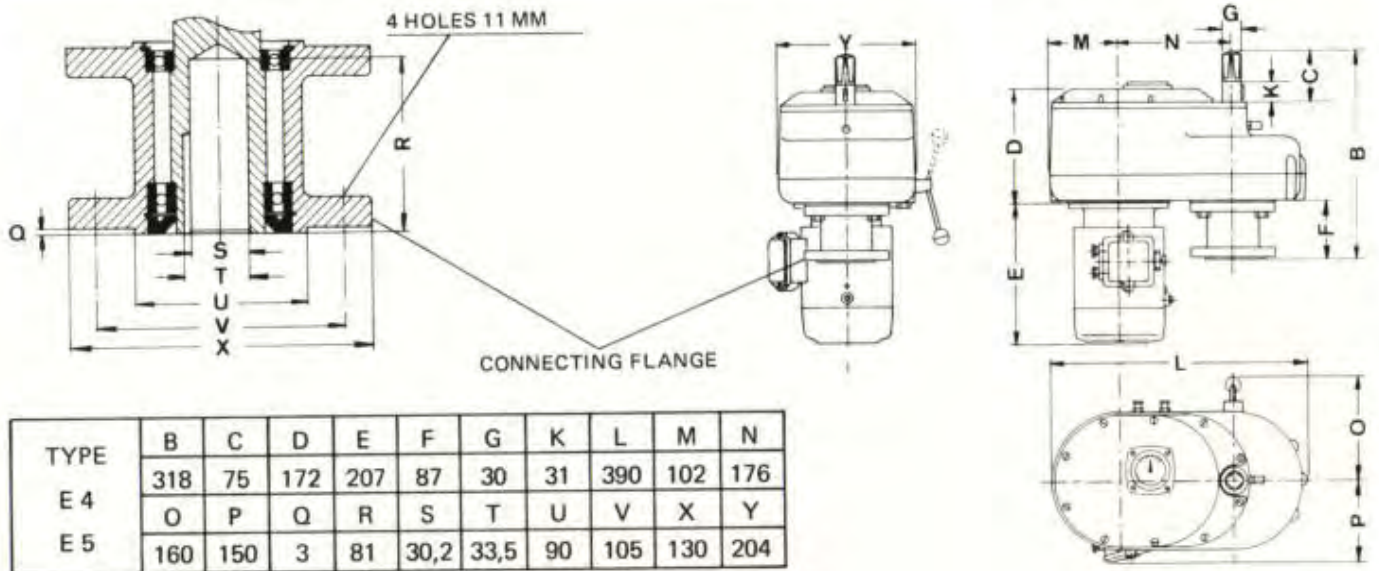
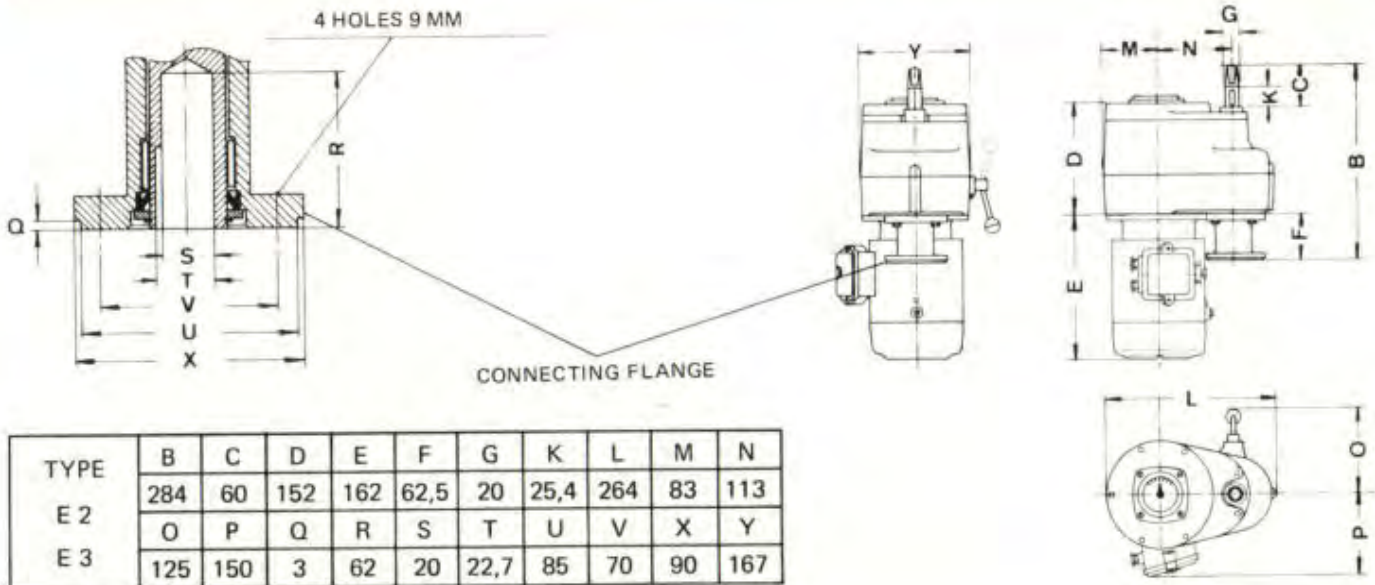
Wiring Diagram shows 3 phase 380 volts A.C. control unit current 220 volts A.C.

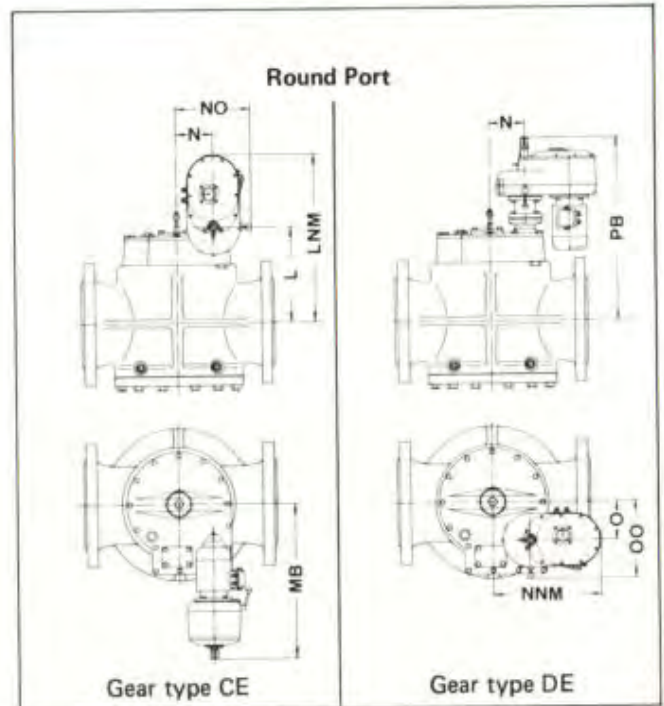
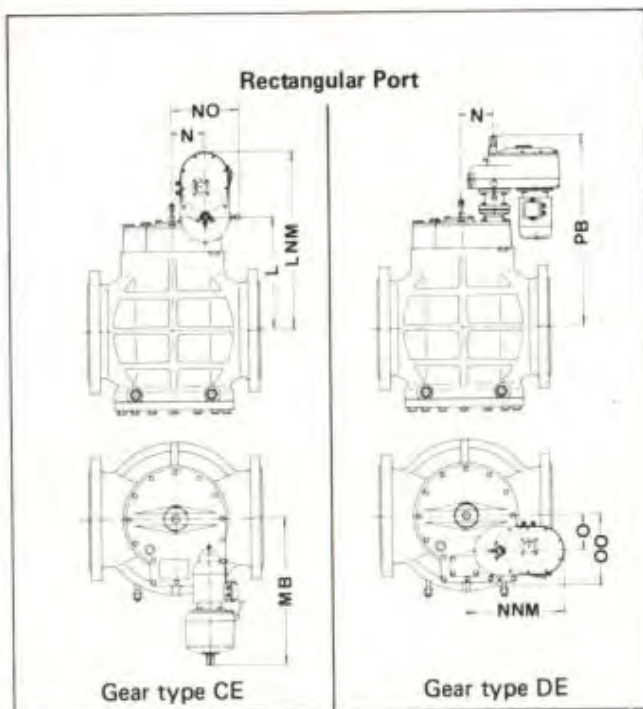
All components used are well known products of high quality and approved by V.D.E., C.S.A. and DEMKO.

Note: Special function, voltages or execution are available. Consult us for your specific requirements.

| Gear type | Speed RPM by 60 cycles | | KW | HP | Torque in Lb/ft | Torque in Kpm. | Amps at 220 V | Amps at 380 V | Amps at 500 V | Amps at 550 V |
|-----------|---------------------------|-------|------|------|-----------------------|----------------------|------------------|------------------|------------------|------------------|
| | Output shaft | Motor | | | | | | | | |
| E2-13 | 15,2 | 840 | 0,06 | 0,08 | 26,1 | 3,6 | | | | |
| E2-16 | 19,9 | 1080 | 0,08 | 0,12 | 29,1 | 4,1 | | | | |
| * E2-25 | 30,0 | 1680 | 0,12 | 0,16 | 26,8 | 3,7 | 0,77 | 0,45 | 0,34 | 0,31 |
| E2-51 | 61,2 | 3360 | 0,18 | 0,25 | 23,0 | 2,8 | 0,90 | 0,52 | 0,40 | 0,36 |
| E3-13 | 15,2 | 840 | 0,09 | 0,13 | 43,9 | 5,9 | | | | |
| E3-16 | 19,9 | 1080 | 0,12 | 0,16 | 39,3 | 5,5 | | | | |
| * E3-25 | 30,0 | 1680 | 0,18 | 0,25 | 39,3 | 5,5 | 1,2 | 0,71 | 0,54 | 0,49 |
| E3-51 | 61,2 | 3360 | 0,25 | 0,34 | 27,6 | 3,8 | 1,2 | 0,71 | 0,54 | 0,49 |
| E4-16 | 19,2 | 840 | 0,12 | 0,16 | 41,4 | 5,7 | 0,96 | 0,55 | 0,42 | 0,38 |
| E4-21 | 25,2 | 1080 | 0,18 | 0,25 | 42,0 | 6,8 | 1,1 | 0,65 | 0,49 | 0,45 |
| E4-27 | 32,4 | 1080 | 0,37 | 0,5 | 72,5 | 10,3 | 2,2 | 1,25 | 0,95 | 0,87 |
| * E4-32 | 38,4 | 1680 | 0,25 | 0,34 | 43,5 | 6,0 | 1,5 | 0,88 | 0,67 | 0,60 |
| E4-42 | 50,4 | 1680 | 0,55 | 0,75 | 73,2 | 10,1 | 3,1 | 1,75 | 1,35 | 1,2 |
| E4-65 | 78,0 | 3360 | 0,37 | 0,5 | 31,9 | 4,4 | 1,7 | 0,98 | 0,74 | 0,66 |
| E4-85 | 102,0 | 3360 | 0,75 | 1,0 | 48,5 | 6,7 | 3,3 | 1,9 | 1,45 | 1,25 |
| E5-21 | 25,2 | 1080 | 0,25 | 0,34 | 66,0 | 9,1 | 1,5 | 0,87 | 0,67 | 0,59 |
| E5-27 | 32,4 | 1080 | 0,55 | 0,75 | 113,0 | 15,6 | 2,9 | 1,7 | 1,3 | 1,15 |
| * E5-32 | 38,4 | 1680 | 0,37 | 0,5 | 63,7 | 8,8 | 2,1 | 1,2 | 0,92 | 0,82 |
| E5-42 | 50,4 | 1680 | 0,75 | 1,0 | 98,0 | 13,5 | 3,8 | 2,2 | 1,7 | 1,55 |
| E5-65 | 78,0 | 3360 | 0,55 | 0,75 | 47,0 | 6,5 | 2,4 | 1,4 | 1,1 | 0,95 |
| E5-85 | 102,0 | 3360 | 1,1 | 1,5 | 72,5 | 10,0 | 4,6 | 2,7 | 2,0 | 1,80 |
| E5-128 | 153,6 | 3360 | 1,1 | 1,5 | 49,3 | 6,8 | 4,6 | 2,7 | 2,0 | 1,80 |
| E6-18 | 21,6 | 840 | 0,25 | 0,34 | 77,5 | 10,7 | 1,8 | 1,05 | 0,79 | 0,72 |
| E6-23 | 27,6 | 1080 | 0,55 | 0,75 | 134,0 | 18,5 | 2,9 | 1,7 | 1,3 | 1,15 |
| * E6-36 | 43,2 | 1680 | 0,75 | 1,0 | 114,5 | 15,8 | 3,8 | 2,2 | 1,7 | 1,55 |
| E7-20 | 24,0 | 840 | 0,55 | 0,75 | 153,0 | 21,1 | 3,7 | 2,1 | 1,65 | 1,5 |
| E7-26 | 31,1 | 1080 | 1,1 | 1,5 | 237,0 | 32,7 | 5,6 | 3,2 | 2,4 | 2,2 |
| E7-41 | 49,2 | 1680 | 1,1 | 1,5 | 150,5 | 20,7 | 4,8 | 2,8 | 2,1 | 1,95 |
| E7-82 | 98,4 | 3360 | 1,5 | 2,0 | 98,5 | 13,6 | 5,9 | 3,4 | 2,6 | 2,4 |
| E8-82 | 98,4 | 3360 | 2,2 | 3,0 | 149,5 | 20,3 | 8,4 | 4,9 | 3,7 | 3,4 |

* Standard type.





Rectangular Port (Class 125 - 150 - 250)

| Regular Pattern | Venturi Pattern | Short Pattern | Operator Type | MB | L | LNM | N | NO | NNM | O | OO | PB |
|-----------------|-----------------|---------------|---------------|------|-----|------|-----|-----|-----|-----|-----|------|
| 3" | 4" | 3" | E2 and E3 | 379 | 153 | 348 | 65 | 191 | | | | |
| 4" | 5" | 4" and 5" | E2 and E3 | 379 | 156 | 351 | 65 | 191 | | | | |
| 5" | 6" | 6" | E2 and E3 | 379 | 163 | 360 | 71 | 198 | | | | |
| | | 8" | E4 | 485 | 267 | 545 | 85 | 245 | 363 | 40 | 200 | 607 |
| 6" | 8" | | E4 | 485 | 243 | 521 | 85 | 245 | 363 | 40 | 200 | 583 |
| 7" | | | E4 | 510 | 270 | 548 | 100 | 260 | 378 | 70 | 230 | 611 |
| | | 10" | E4 | 510 | 277 | 555 | 100 | 260 | 378 | 70 | 230 | 653 |
| 8" | 10" | | E4 and E5 | 510 | 290 | 570 | 100 | 260 | 378 | 70 | 230 | 629 |
| | | 12" | E4 and E5 | 510 | 356 | 634 | 100 | 260 | 378 | 70 | 230 | 697 |
| | 12" | | E4 and E5 | 510 | 308 | 587 | 100 | 260 | 378 | 70 | 230 | 648 |
| 10" | | | E4 and E5 | 578 | 375 | 654 | 135 | 295 | 414 | 69 | 230 | 724 |
| | 14" | | E4 and E5 | 578 | 397 | 676 | 135 | 295 | 414 | 68 | 229 | 746 |
| 12" | 16" | | E4 and E5 | 616 | 415 | 695 | 160 | 321 | 440 | 107 | 268 | 765 |
| 14" | 18" | | E5 | 641 | 452 | 730 | 175 | 335 | 454 | 136 | 297 | 800 |
| 16" | 20" | | E5 | 676 | 492 | 772 | 176 | 338 | 457 | 169 | 329 | 841 |
| 18" | | | E5 | 699 | 528 | 807 | 196 | 357 | 476 | 192 | 352 | 876 |
| 20" | 24" | | E5 | 718 | 570 | 849 | 200 | 360 | 479 | 216 | 376 | 921 |
| 24" | 28" | | E5 | 784 | 645 | 926 | 246 | 408 | 527 | 279 | 440 | 991 |
| 28" | 32" | | E6 and E7 | 965 | 835 | 1210 | 299 | 484 | 664 | 270 | 465 | 1296 |
| 30" | | | E6 and E7 | 965 | 835 | 1210 | 299 | 484 | 664 | 270 | 465 | 1296 |
| 32" | 36" | | E6 and E7 | 1019 | 970 | 1345 | 311 | 506 | 686 | 296 | 491 | 1429 |

Round Port (Class 125 - 150 - 250)

| | | | | | | | | | | | | |
|--------|--|--|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 1/2" | | | E2 and E3 | 365 | 114 | 310 | 48 | 175 | 245 | | | |
| 2" | | | E2 and E3 | 381 | 118 | 314 | 67 | 194 | 264 | | | |
| 2 1/2" | | | E2 and E3 | 381 | 118 | 314 | 67 | 194 | 264 | | | |
| 3" | | | E2 and E3 | 381 | 127 | 324 | 73 | 200 | 270 | | | |
| 4" | | | E4 and E5 | 428 | 143 | 422 | 86 | 248 | 365 | | | |
| 5" | | | E4 and E5 | 510 | 232 | 510 | 100 | 264 | 381 | 70 | 232 | 572 |
| 6" | | | E4 and E5 | 578 | 292 | 572 | 137 | 298 | 416 | 70 | 232 | 646 |
| 8" | | | E4 and E5 | 616 | 330 | 610 | 162 | 324 | 442 | 108 | 270 | 680 |
| 10" | | | E4 and E5 | 676 | 368 | 648 | 178 | 340 | 458 | 169 | 330 | 718 |
| 12" | | | E4 and E5 | 798 | 397 | 676 | 197 | 360 | 477 | 194 | 356 | 747 |

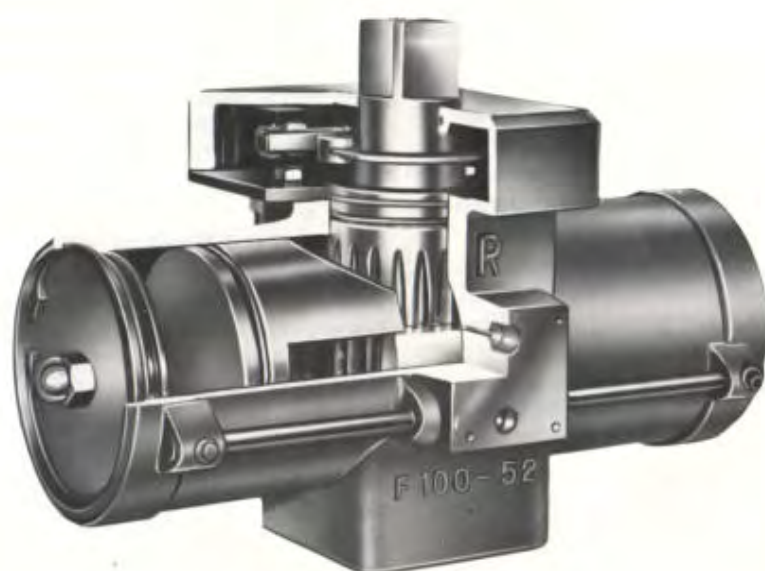
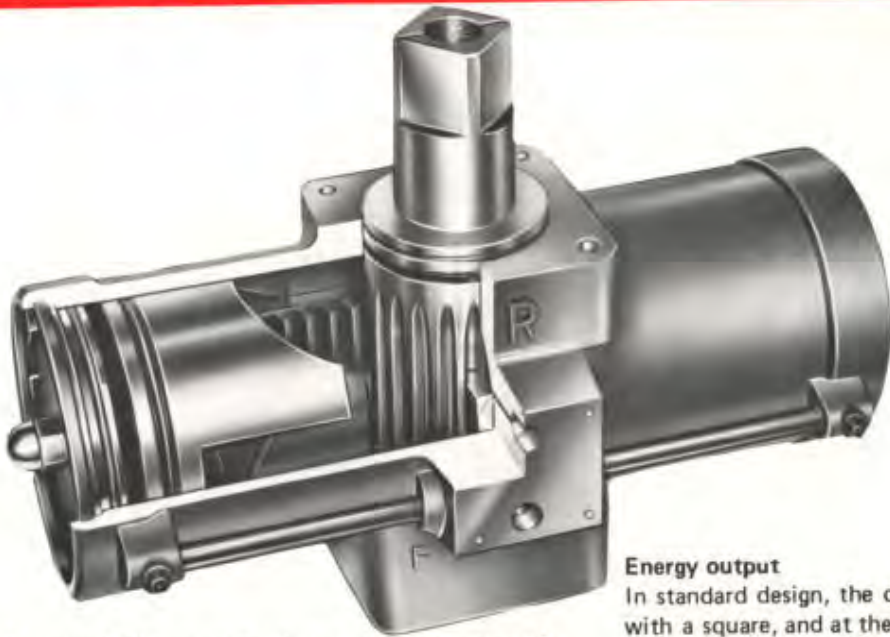


Fig. 1



The PR Actuator "F" is specially designed for operating PR Valves, but can also be used in all those cases where a rotary motion within 90° is required. The source of energy is normally pressurized air, but other media, such as gas or different types of oil may be used too, provided that the pressure does not exceed 150 psi. It is a completely new construction which differs essentially from other similar constructions. Its design is compact with small outer dimensions in proportion to its performance. The two-piston revolving cylinder is double-acting which means that two pistons are actuated by the energy source in both directions of movement. The forward and backward motion of the pistons is transmitted to the pinion through racks. A new feature of the construction is that the racks are positioned alongside the cylinder wall and thus are guided by it. This gives the pinion a relatively large diameter, thus relieving the pressure at pitch line, and ensuring longlife. The large pinion diameter also has the advantage that the connection to the part to be revolved becomes solid and strong. The left-hand (anticlockwise) working stroke of the revolving cylinder takes place when pressurized air gets into the piston area and presses the pistons apart from each other. The racks, which are fastened to the pistons, thus rotate the pinion. In its extreme position, the piston motion is stopped by two adjusting screws, one at each cylinder end. The right-hand (clockwise) rotary motion takes place when pressurized air is led through the by-pass pipe to the far side of the pistons, and presses them inwards. Maximum rotary motion is 94° . The torque of the "F"-Actuator is the same throughout the entire rotary motion, and in both directions.

Fig. 2

**Energy output**

In standard design, the output shaft is at the top provided with a square, and at the bottom with a self-centering shell-end with two parallel surfaces (see measures of installation).

Connection

The "F"-Actuator has two connections (like an ordinary double-acting air cylinder) for right and left-hand rotation respectively.

When air enters at the upper branch, spindle rotation is anticlockwise, and return air leaves at the lower branch. The opposite takes place at clockwise rotation where air enters through the lower branch and leaves through the upper branch. The connection holes are placed centrally on the one side of the revolving cylinder. See fig. 2.

Securing to the valve

In standard execution, "F"-Actuator is bolted direct to the valve body (fig. 2), forming a unit of good shape. This execution favours an effective insulation of the valve.

In fig. 3, the actuator is secured to a plate by clamps fitted tightly to the pipeline. This type of fastening is used when ordinary wrench-operated valves already installed are to be operated pneumatically.

Accessories

The "F"-Actuator may be equipped with pneumatic as well as electric limit switches for signalling in the two extreme positions. The switches are actuated by adjustable cams which are fixed to a circular disk.

The whole arrangement is mounted in a massive waterproof case.

The actuator is available with mounted-on manual control valve (fig. 2). The valve has two positions for right-hand and left-hand rotation respectively.

With the valve fitted on the actuator, there is only one inlet and one blow-off branch.

Fig. 3



ACCESSORIES

The "F" - Actuator may be equipped with pneumatic as well electric limit switches for signalling in the two extreme positions. The switches are actuated by adjustable cams which are fixed to a circular disk. The whole arrangement is mounted in a massive waterproof case.

Fig. 1



Fig. 2



ELECTRIC LIMIT SWITCHES

2 pcs. of Burgess type V13MR (change-over type),
10A-125 250 V.A.C.
5A 480 V.A.C.

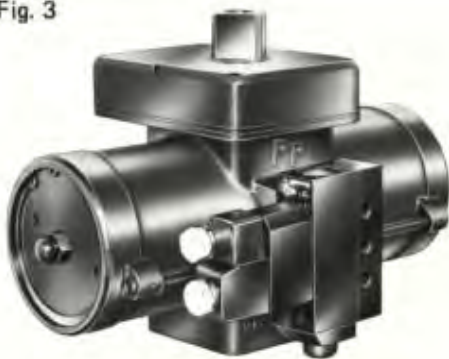
PNEUMATIC END-STOP VALVES

2 pcs. of Atlas Copco type VE13-W-S-5

Connection: 2 pcs. B.S.P. 1/8" threaded connection for each end-stop valve plus one connection for venting.

A total of 5 connections.

Fig. 3



EQUIPPED WITH ELECTRICAL CONTROL VALVE

Manufacture: Martonair Type M1700/152—solenoid pilot actuated, air return or Type M1700/123—solenoid pilot set, solenoid pilot reset.

Automatic return in case of pressure drop.

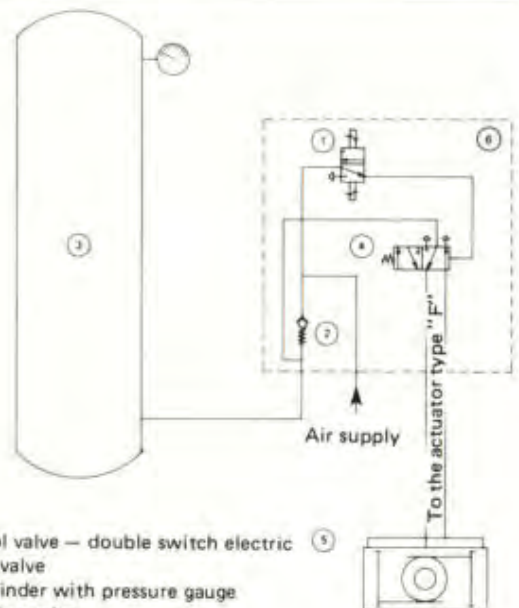
Safety system for PR Lubricated Plug Valves equipped with type "F" actuator, which opens or closes the valve automatically in case of pressure drop.

Compressed air flows into the system and enters through a check valve (2) into the air cylinder (3) and into the reversing valve (4), the reversing valve plunger moves to the left and switches over, so that the air can now flow to the actuator, which in turn will rotate into the opposite extreme position.

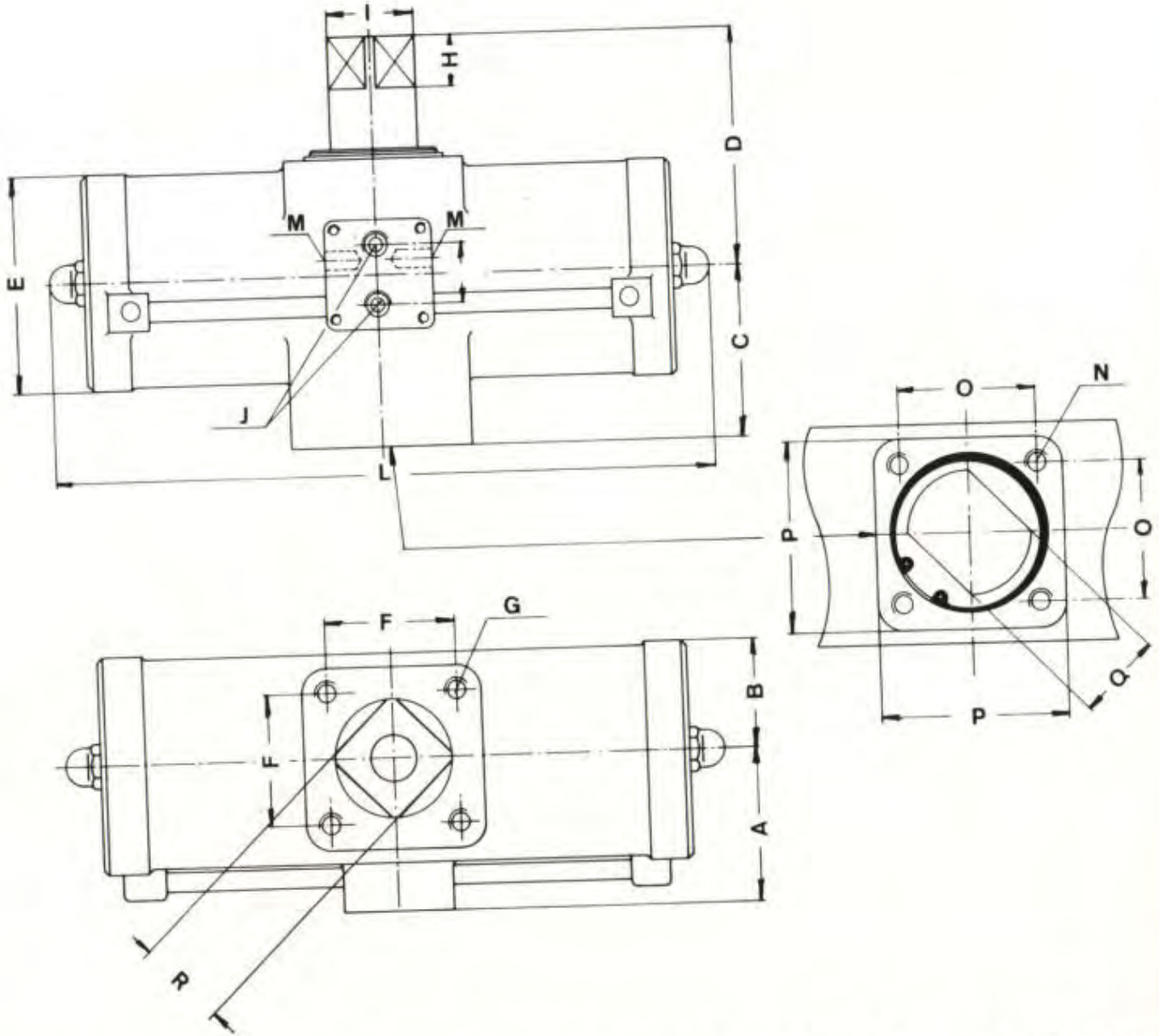
Should there be a pressure drop in the air supply line, the check valve (2) will close. The spring inside the reversing valve (4) moves the plunger to the right, and switches over, so that the air contained in the air cylinder (3) will flow into the actuator, which will now rotate into the other extreme position.

In addition to this system a manual operation can be used with pushbuttons etc. An electrical control valve (1) can be inserted into the system, as shown.

This valve can be operated electrically, pneumatically, or mechanically.



1. Control valve — double switch electric
2. Check valve
3. Air cylinder with pressure gauge
4. Reversing valve
5. Actuator
6. Cabinet for components 1 - 2 - 4



| Type | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |
|---------|-----|----|-----|-----|-----|-----|-----|----|----|--------|----|-----|--------|-----|-----|-----|----|----|
| F50-24 | 45 | 32 | 54 | 100 | 65 | 40 | M6 | 19 | 29 | R 1/4" | 34 | 200 | — | M6 | 40 | 55 | 17 | 19 |
| F65-33 | 63 | 39 | 67 | 112 | 78 | 48 | M6 | 21 | 32 | R 1/4" | 34 | 250 | R 1/4" | M8 | 48 | 65 | 19 | 24 |
| F65-33 | 63 | 39 | 67 | 112 | 78 | 48 | M6 | 21 | 32 | R 1/4" | 34 | 250 | R 1/4" | M8 | 48 | 65 | 24 | 24 |
| F83-44 | 73 | 50 | 78 | 122 | 100 | 70 | M6 | 22 | 40 | R 1/4" | 34 | 300 | R 1/4" | M10 | 70 | 92 | 27 | 30 |
| F83-44 | 73 | 50 | 78 | 122 | 100 | 70 | M6 | 22 | 40 | R 1/4" | 34 | 300 | R 1/4" | M10 | 70 | 92 | 30 | 30 |
| F100-52 | 82 | 60 | 87 | 140 | 120 | 78 | M8 | 32 | 46 | R 1/4" | 34 | 360 | R 1/4" | M12 | 78 | 102 | 36 | 36 |
| F110-62 | 90 | 65 | 108 | 163 | 130 | 90 | M8 | 38 | 68 | R 1/4" | 34 | 400 | R 1/4" | M14 | 100 | 125 | 50 | 50 |
| F125-71 | 98 | 74 | 137 | 193 | 148 | 110 | M10 | 50 | 75 | R 1/4" | 34 | 445 | R 1/4" | M16 | 115 | 145 | 55 | 55 |
| F143-76 | 120 | 84 | 150 | 205 | 168 | 110 | M10 | 50 | 75 | R 1/2" | 50 | 510 | R 1/2" | M16 | 115 | 145 | 55 | 55 |
| F162-88 | 130 | 92 | 180 | 230 | 184 | 125 | M12 | 58 | 88 | R 1/2" | 50 | 565 | R 1/2" | M18 | 140 | 176 | 65 | 65 |

M = Only to be used when the control valve is fitted.

| Actuator type | Cubic feet = CF (Free Air/stroke) | | | | | | | | | | | |
|------------------|-----------------------------------|---------------|--------------------------------|---------------|--------------------------------|---------------|---------------------------------|---------------|---------------------------------|---------------|---------------------------------|---------------|
| | 60 PSI 4 Kg/cm ² | | 70 PSI 5 Kg/cm ² | | 85 PSI 6 Kg/cm ² | | 100 PSI 7 Kg/cm ² | | 115 PSI 8 Kg/cm ² | | 130 PSI 9 Kg/cm ² | |
| | Left Turn | Right Turn | Left Turn | Right Turn | Left Turn | Right Turn | Left Turn | Right Turn | Left Turn | Right Turn | Left Turn | Right Turn |
| F50-24 | 0,0234 | 0,0166 | 0,2860 | 0,0202 | 0,0330 | 0,0233 | 0,0378 | 0,0265 | 0,0428 | 0,0300 | 0,0477 | 0,0336 |
| F65-33 | 0,0516 | 0,0386 | 0,0619 | 0,0460 | 0,0778 | 0,0537 | 0,0827 | 0,0615 | 0,0930 | 0,0684 | 1,0350 | 0,0770 |
| F83-44 | 0,1215 | 0,0840 | 0,1460 | 0,1070 | 0,1695 | 0,1181 | 0,1945 | 0,1342 | 0,2190 | 0,1520 | 0,2420 | 0,1680 |
| F100-52 | 0,2390 | 0,1450 | 0,2440 | 0,1730 | 0,2830 | 0,2190 | 0,3280 | 0,2340 | 0,3620 | 0,2580 | 0,4030 | 0,2860 |
| F110-62 | 0,2860 | 0,2060 | 0,3450 | 0,2510 | 0,3900 | 0,2900 | 0,4560 | 0,3320 | 0,4850 | 0,3530 | 0,5720 | 0,4170 |
| F125-71 | 0,4080 | 0,3070 | 0,4680 | 0,3530 | 0,5670 | 0,4280 | 0,6500 | 0,4920 | 0,7300 | 0,4930 | 0,8300 | 0,6150 |
| F143-76 | 0,5890 | 0,4320 | 0,4680 | 0,5160 | 0,8200 | 0,6020 | 0,9360 | 0,6790 | 1,0550 | 0,7740 | 1,1760 | 0,8630 |
| F162-88 | 0,9430 | 0,6430 | 1,0850 | 0,7700 | 1,2650 | 0,9120 | 1,4430 | 1,0250 | 1,6250 | 1,1510 | 1,8020 | 1,2790 |

| Actuator type | Dm ³ = Liter (Free Air/stroke) | | | | | | | | | | | |
|------------------|---|---------------|--------------------------------|---------------|--------------------------------|---------------|---------------------------------|---------------|---------------------------------|---------------|---------------------------------|---------------|
| | 4 Kg/cm ² 60 PSI | | 5 Kg/cm ² 70 PSI | | 6 Kg/cm ² 85 PSI | | 7 Kg/cm ² 100 PSI | | 8 Kg/cm ² 115 PSI | | 9 Kg/cm ² 130 PSI | |
| | Left Turn | Right Turn | Left Turn | Right Turn | Left Turn | Right Turn | Left Turn | Right Turn | Left Turn | Right Turn | Left Turn | Right Turn |
| F50-24 | 0,67 | 0,47 | 0,81 | 0,57 | 0,94 | 0,66 | 1,07 | 0,75 | 1,21 | 0,85 | 1,35 | 0,95 |
| F65-33 | 1,46 | 1,09 | 1,75 | 1,30 | 2,20 | 1,52 | 2,34 | 1,74 | 2,63 | 1,96 | 2,93 | 2,18 |
| F83-44 | 3,44 | 2,38 | 4,12 | 2,85 | 4,80 | 3,32 | 5,50 | 3,80 | 6,21 | 4,30 | 6,86 | 4,75 |
| F100-52 | 5,76 | 4,10 | 6,90 | 4,90 | 8,02 | 5,70 | 9,29 | 6,60 | 10,25 | 7,30 | 11,40 | 8,10 |
| F110-62 | 8,10 | 5,90 | 9,75 | 7,10 | 11,28 | 8,20 | 12,90 | 9,40 | 13,72 | 10,00 | 16,20 | 11,80 |
| F125-71 | 11,55 | 8,70 | 13,25 | 10,00 | 16,03 | 12,10 | 18,40 | 13,90 | 20,63 | 15,60 | 23,05 | 17,40 |
| F143-76 | 16,65 | 12,20 | 19,90 | 14,60 | 23,10 | 17,00 | 26,50 | 19,50 | 29,90 | 21,90 | 33,30 | 24,40 |
| F162-88 | 25,62 | 18,20 | 30,70 | 21,80 | 35,80 | 25,40 | 40,90 | 29,00 | 46,00 | 32,60 | 51,00 | 36,20 |

| Actuator type | Torque Requirements (FT. LBS.) | | | | | |
|------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | 60 PSI 4 Kg/cm ² | 70 PSI 5 Kg/cm ² | 85 PSI 6 Kg/cm ² | 100 PSI 7 Kg/cm ² | 115 PSI 8 Kg/cm ² | 130 PSI 9 Kg/cm ² |
| | F50-24 | 15,0 | 18,8 | 22,5 | 26,3 | 30,0 |
| F65-33 | 32,2 | 40,0 | 48,2 | 56,3 | 64,4 | 72,5 |
| F83-44 | 69,4 | 86,7 | 104,0 | 122,0 | 138,8 | 156,1 |
| F100-52 | 119,5 | 149,2 | 179,2 | 209,0 | 239,0 | 269,0 |
| F110-62 | 183,5 | 228,5 | 275,5 | 322,0 | 368,0 | 415,0 |
| F125-71 | 254,2 | 318,0 | 382,0 | 445,0 | 500,8 | 572,0 |
| F143-76 | 366,0 | 458,0 | 550,0 | 640,0 | 732,5 | 825,0 |
| F162-88 | 524,0 | 655,0 | 785,0 | 916,0 | 1048,0 | 1178,0 |

| Actuator type | Torque Requirements (Kgm.) | | | | | |
|------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | 4 Kg/cm ² 60 PSI | 5 Kg/cm ² 70 PSI | 6 Kg/cm ² 85 PSI | 7 Kg/cm ² 100 PSI | 8 Kg/cm ² 115 PSI | 9 Kg/cm ² 130 PSI |
| | F50-24 | 2,1 | 2,6 | 3,1 | 3,6 | 4,2 |
| F65-33 | 4,5 | 5,6 | 6,7 | 7,8 | 9,0 | 10,1 |
| F83-44 | 9,7 | 12,1 | 14,5 | 17,0 | 19,4 | 21,8 |
| F100-52 | 16,7 | 20,8 | 25,0 | 29,2 | 33,4 | 37,5 |
| F110-62 | 25,7 | 32,0 | 38,5 | 45,0 | 51,5 | 58,0 |
| F125-71 | 35,6 | 44,5 | 53,4 | 62,3 | 71,2 | 80,0 |
| F143-76 | 51,2 | 64,0 | 77,0 | 90,0 | 102,5 | 115,5 |
| F162-88 | 73,2 | 91,5 | 110,0 | 128,0 | 146,5 | 165,0 |



| Pipe Line Conditions | | | | Available air pressure for actuator | | | | | | | | | | | |
|----------------------------|--------|------------------|------|-------------------------------------|---------|--------------------|---------|--------------------|---------|--------------------|---------|--------------------|---------|--------------------|-----|
| Max. Pressure | | Max. Temperature | | Kg/cm ² | | PSI | | Kg/cm ² | | PSI | | Kg/cm ² | | PSI | |
| Kg/cm ² | PSI | C | F | Kg/cm ² | PSI | Kg/cm ² | PSI | Kg/cm ² | PSI | Kg/cm ² | PSI | Kg/cm ² | PSI | Kg/cm ² | PSI |
| 7 | 100 | 93° | 200° | 4 | 60 | 5 | 70 | 6 | 80 | 7 | 100 | 8 | 115 | 9 | 130 |
| 18 | 275 | 150° | 300° | 6 | 80 | 7 | 100 | 8 | 115 | 9 | 130 | | | | |
| 27 | 400 | 170° | 340° | 7 | 100 | 8 | 115 | 9 | 130 | | | | | | |
| Valve size—Regular Pattern | 1/2" | | | F50-24 | | F50-24 | | F50-24 | | F50-24 | | F50-24 | | F50-24 | |
| | 3/4" | | | F50-24 | | F50-24 | | F50-24 | | F50-24 | | F50-24 | | F50-24 | |
| | 1" | | | F65-33 | | F50-24 | | F50-24 | | F50-24 | | F50-24 | | F50-24 | |
| | 1 1/4" | | | F65-33 | | F65-33 | | F65-33 | | F65-33 | | F65-33 | | F65-33 | |
| | 1 1/2" | | | F83-44 | | F65-33 | | F65-33 | | F65-33 | | F65-33 | | F65-33 | |
| | 2" | | | F83-44 | | F83-44 | | F83-44 | | F83-44 | | F83-44 | | F83-44 | |
| | 2 1/2" | | | F100-52 | | F100-52 | | F83-44 | | F83-44 | | F83-44 | | F83-44 | |
| | 3" | | | F110-62 | | F100-52 | | F100-52 | | F100-52 | | F100-52 | | F100-52 | |
| | 4" | | | F125-71 | | F110-62 | | F100-52 | | F100-52 | | F100-52 | | F100-52 | |
| | 5" | | | F143-76 | | F125-71 | | F110-62 | | F110-62 | | F110-62 | | F110-62 | |
| | 6" | | | F162-88 | | F143-76 | | F143-76 | | F125-71 | | F110-62 | | F110-62 | |
| 8" | | | | | F162-88 | | F162-88 | | F162-88 | | F143-76 | | F125-71 | | |
| 10" | | | | | | | | | F162-88 | | F162-88 | | F162-88 | | |

| | | | | | | | |
|--------------------------|--------|---------|---------|---------|---------|---------|---------|
| Valve size—Short Pattern | 1/2" | F50-24 | F50-24 | F50-24 | F50-24 | F50-24 | F50-24 |
| | 3/4" | F50-24 | F50-24 | F50-24 | F50-24 | F50-24 | F50-24 |
| | 1" | F65-33 | F50-24 | F50-24 | F50-24 | F50-24 | F50-24 |
| | 1 1/4" | F65-33 | F65-33 | F65-33 | F50-24 | F50-24 | F50-24 |
| | 1 1/2" | F83-44 | F65-33 | F65-33 | F65-33 | F65-33 | F65-33 |
| | 2" | F83-44 | F83-44 | F83-44 | F65-33 | F65-33 | F65-33 |
| | 2 1/2" | F100-52 | F100-52 | F83-44 | F83-44 | F83-44 | F83-44 |
| | 3" | F110-62 | F100-52 | F100-52 | F100-52 | F100-52 | F100-52 |
| | 4" | F125-71 | F110-62 | F100-52 | F100-52 | F100-52 | F100-52 |
| | 5" | F125-71 | F110-62 | F100-52 | F100-52 | F100-52 | F100-52 |
| | 6" | F143-76 | F125-71 | F110-62 | F110-62 | F110-62 | F110-62 |
| | 8" | F162-88 | F143-76 | F143-76 | F125-71 | F110-62 | F110-62 |
| | 10" | | F162-88 | F162-88 | F143-76 | F143-76 | F125-71 |
| 12" | | | F162-88 | F162-88 | F143-76 | F143-76 | |

| | | | | | | | |
|----------------------------|--------|---------|---------|---------|---------|---------|---------|
| Valve size—Venturi Pattern | 3/4" | F50-24 | F50-24 | F50-24 | F50-24 | F50-24 | F50-24 |
| | 1" | F50-24 | F50-24 | F50-24 | F50-24 | F50-24 | F50-24 |
| | 1 1/4" | F65-33 | F50-24 | F50-24 | F50-24 | F50-24 | F50-24 |
| | 1 1/2" | F65-33 | F65-33 | F65-33 | F50-24 | F50-24 | F50-24 |
| | 2" | F83-44 | F65-33 | F65-33 | F65-33 | F65-33 | F65-33 |
| | 2 1/2" | F83-44 | F83-44 | F83-44 | F65-33 | F65-33 | F65-33 |
| | 3" | F100-52 | F100-52 | F83-44 | F83-44 | F83-44 | F83-44 |
| | 4" | F110-62 | F100-52 | F100-52 | F100-52 | F100-52 | F100-52 |
| | 5" | F125-71 | F110-62 | F100-52 | F100-52 | F100-52 | F100-52 |
| | 6" | F143-76 | F125-71 | F110-62 | F110-62 | F110-62 | F110-62 |
| | 8" | F162-88 | F143-76 | F143-76 | F125-71 | F110-62 | F110-62 |
| | 10" | | F162-88 | F162-88 | F143-76 | F143-76 | F125-71 |
| 12" | | | | F162-88 | F162-88 | F162-88 | |

Adaptable for use on all wrench-operated PR valves, the type G gear can also be fitted on existing valves. This unit consists of an air cylinder the rear end of which is attached to a bracket which in turn is clamped on to the pipeline, while the cylinder piston rod is pivotally linked to the connecting arm secured to the valve plug head. The stroke of the cylinder will impart exactly a 90° turn of the plug, so that the valve stop will not take up the thrust of the cylinder.

The connecting arm is provided with a lever enabling the valve to be turned by hand. The lever may accommodate a tubular extension, if required.

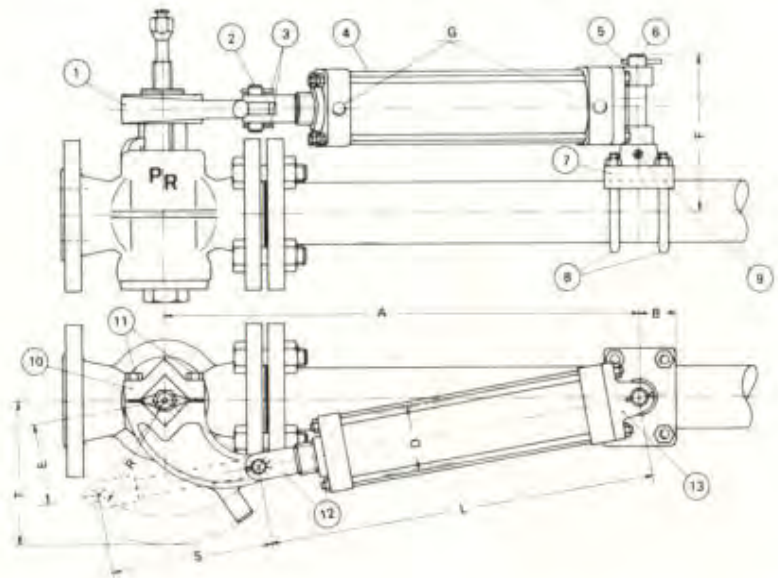
Of double-acting construction, the cylinder has adjustable brakes at either extreme position.

The line supplying the operating medium must be flexible to allow for the swivelling movement of the cylinder at each operation. Compressed air is the most commonly used operating medium, but gas, hydraulic oil or water may be employed as well.



Minimum pressure 4 atm., maximum pressure 10 atm. When required, the cylinder may be supplied stainless throughout. In addition, the standard cylinder may be supplied with stainless or hand-chrome plated piston rod. Combining constructional simplicity with efficiency in operation, this system lends itself readily to remote control, e.g. by installing a solenoid valve in the supply line.

1. Connecting Arm
2. Swivel Pin (Connecting Arm)
3. Cotter Pins (Connecting Arm Swivel Pin)
4. Cylinder
5. Cotter Pin (Bracket)
6. Swivel Pin (Bracket)
7. Bracket
8. Clamp Bolts (Bracket)
9. Locking Screw
10. Clamp (Connecting Arm)
11. Clamp Bolts (Connecting Arm)
12. Piston Rod Fork
13. Cylinder Swivel Piece



| Valve Size | | A | B | D | E | F | G | L | R | S | T | Size of plug square | Cylinder type |
|---------------------------------------|-----------------|------|-----|-----|-----|-----|------|------|-----|-----|-----|---------------------|---------------|
| Class 125 - 150 - 250 Venturi Pattern | Regular Pattern | | | | | | | | | | | | |
| | 1/2" | 407 | 28 | 45 | 75 | 105 | 1/4" | 335 | 106 | 150 | 150 | 17 | M9175/150 |
| 1" | 3/4" | 407 | 28 | 45 | 75 | 105 | | 335 | 106 | 150 | 150 | 17 | M9175/150 |
| 1 1/4" | 1" | 407 | 28 | 45 | 75 | 112 | | 335 | 106 | 150 | 150 | 19 | M9175/150 |
| 1 1/2" | 1 1/4" | 534 | 34 | 45 | 112 | 124 | | 410 | 159 | 225 | 200 | 24 | M9175/225 |
| 2" | 1 1/2" | 534 | 37 | 45 | 112 | 134 | | 410 | 159 | 225 | 200 | 27 | M9175/225 |
| 2 1/2" | 2" | 588 | 40 | 65 | 112 | 158 | | 465 | 159 | 225 | 202 | 30 | M925/225 |
| 3" | 2 1/2" | 620 | 46 | 75 | 112 | 170 | 3/8" | 498 | 159 | 225 | 205 | 36 | M930/225 |
| 4" | 3" | 658 | 55 | 100 | 112 | 188 | | 536 | 159 | 225 | 220 | 50 | M940/225 |
| 5" | 4" | 776 | 63 | 100 | 150 | 208 | | 611 | 212 | 300 | 294 | 55 | M940/300 |
| 6" | 5" | 764 | 75 | 125 | 125 | 272 | 1/2" | 628 | 176 | 250 | 252 | 55 | M950/250 |
| 8" | 6" | 959 | 94 | 125 | 187 | 304 | | 753 | 265 | 375 | 360 | 65 | M950/375 |
| 9" | 7" | 970 | 105 | 150 | 187 | 336 | | 765 | 265 | 375 | 335 | 70 | M960/375 |
| 10" | 8" | 970 | 115 | 150 | 187 | 368 | 3/4" | 765 | 265 | 375 | 335 | 70 | M960/375 |
| | 10" | 1231 | 170 | 200 | 251 | 446 | | 957 | 356 | 500 | 410 | 100 | M980/500 |
| 12" | | 1660 | 200 | 254 | 355 | 424 | 1" | 1270 | 500 | 710 | 620 | 100 | M9100/710 |
| 14" | | 1870 | 250 | 254 | 425 | 485 | | 1410 | 599 | 850 | 800 | 125 | M9100/850 |
| 16" | 12" | 1651 | 200 | 254 | 355 | 510 | | 1270 | 500 | 710 | 620 | 100 | M9100/710 |

| Cubic feet = CF (Free Air/stroke) | | | | | | | |
|-----------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|----------------------------------|
| Cylinder type | 50 PSI 4 Kg/cm ² | 70 PSI 5 Kg/cm ² | 85 PSI 6 Kg/cm ² | 100 PSI 7 Kg/cm ² | 115 PSI 8 Kg/cm ² | 130 PSI 9 Kg/cm ² | 140 PSI 10 Kg/cm ² |
| M9175/150 | 0,041 | 0,049 | 0,058 | 0,066 | 0,074 | 0,084 | 0,090 |
| M9175/225 | 0,062 | 0,073 | 0,087 | 0,098 | 0,111 | 0,126 | 0,135 |
| M925/225 | 0,125 | 0,152 | 0,177 | 0,200 | 0,220 | 0,255 | 0,278 |
| M930/225 | 0,181 | 0,218 | 0,253 | 0,290 | 0,325 | 0,360 | 0,400 |
| M940/225 | 0,325 | 0,390 | 0,455 | 0,520 | 0,572 | 0,645 | 0,705 |
| M940/300 | 0,430 | 0,520 | 0,610 | 0,693 | 0,765 | 0,850 | 0,955 |
| M950/250 | 0,560 | 0,672 | 0,780 | 0,890 | 1,020 | 1,150 | 1,240 |
| M950/375 | 0,840 | 1,000 | 1,172 | 1,335 | 1,520 | 1,720 | 1,850 |
| M960/375 | 1,220 | 1,450 | 1,690 | 1,930 | 2,190 | 2,390 | 2,650 |
| M980/500 | 2,860 | 3,440 | 4,000 | 4,560 | 5,120 | 5,650 | 6,180 |
| M9100/710 | 6,360 | 7,640 | 9,250 | 10,150 | 11,300 | 12,550 | 13,350 |

| Dm ³ = Liter (Free Air/stroke) | | | | | | | |
|---|--------------------------------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|----------------------------------|
| Cylinder type | 4 Kg/cm ² 60 PSI | 5 Kg/cm ² 70 PSI | 6 Kg/cm ² 85 PSI | 7 Kg/cm ² 100 PSI | 8 Kg/cm ² 115 PSI | 9 Kg/cm ² 130 PSI | 10 Kg/cm ² 140 PSI |
| M9175/150 | 1,17 | 1,39 | 1,63 | 1,86 | 2,09 | 2,38 | 2,56 |
| M9175/225 | 1,75 | 2,08 | 2,45 | 2,78 | 3,14 | 3,57 | 3,82 |
| M925/225 | 3,55 | 4,27 | 5,00 | 5,70 | 6,30 | 7,20 | 7,85 |
| M930/225 | 5,12 | 6,16 | 7,16 | 8,20 | 9,20 | 10,20 | 11,30 |
| M940/225 | 9,20 | 11,00 | 12,90 | 14,70 | 16,20 | 18,20 | 20,00 |
| M940/300 | 12,20 | 14,70 | 17,20 | 19,60 | 21,60 | 24,00 | 27,00 |
| M950/250 | 15,80 | 19,00 | 22,10 | 25,20 | 28,80 | 32,50 | 35,00 |
| M950/375 | 23,80 | 28,50 | 33,20 | 37,80 | 43,00 | 48,60 | 52,50 |
| M960/375 | 34,50 | 41,00 | 47,80 | 54,50 | 62,00 | 67,50 | 75,00 |
| M980/500 | 81,00 | 97,30 | 113,00 | 129,00 | 145,00 | 160,00 | 175,00 |
| M9100/710 | 180,00 | 216,00 | 262,00 | 287,00 | 320,00 | 355,00 | 378,00 |

| Valve size | | | Valve pressure stage (CWP) | | | | | | | | | | | | | |
|------------|--------|----------|----------------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|--------------------|-------|
| | | | Unmounted | | 200 PSI ND 10 | | 275 PSI ND 16 | | 500 PSI ND 25 | | 720 PSI ND 40 | | 960 PSI ND 64 | | 1440 PSI ND 100 | |
| | | | Kgm. | Lb/Ft | Kgm. | Lb/Ft | Kgm. | Lb/Ft | Kgm. | Lb/Ft | Kgm. | Lb/Ft | Kgm. | Lb/Ft | Kgm. | Lb/Ft |
| 1/2" | | | 0,3 | 2,1 | 1,2 | 8,7 | 1,4 | 10,1 | 1,7 | 12,3 | 2,1 | 15,2 | 2,5 | 18,1 | 3,5 | 25,3 |
| 3/4" | 1" | | 0,3 | 2,1 | 1,2 | 8,7 | 1,4 | 10,1 | 1,7 | 12,3 | 2,1 | 15,2 | 2,5 | 18,1 | 3,5 | 25,3 |
| 1" | 1 1/4" | 1" | 0,4 | 2,9 | 1,6 | 11,5 | 1,8 | 13,0 | 2,3 | 16,6 | 2,9 | 21,0 | 3,3 | 23,8 | 4,5 | 32,5 |
| 1 1/4" | 1 1/2" | 1 1/4" | 0,7 | 5,0 | 2,3 | 16,6 | 2,5 | 18,1 | 3,1 | 22,4 | 4,0 | 29,0 | 4,5 | 32,5 | 6,1 | 44,0 |
| 1 1/2" | 2" | 1 1/2" | 1,0 | 7,2 | 3,3 | 23,8 | 3,7 | 26,7 | 4,5 | 32,5 | 5,6 | 40,5 | 6,4 | 46,2 | 8,8 | 63,5 |
| 2" | 2 1/2" | 2" | 1,5 | 10,8 | 4,8 | 34,6 | 5,4 | 39,0 | 6,4 | 46,2 | 7,9 | 57,0 | 9,2 | 66,5 | 13,0 | 94,0 |
| 2 1/2" | 3" | 2 1/2" | 3,0 | 21,6 | 8,4 | 60,6 | 9,5 | 68,5 | 11,2 | 81,0 | 13,7 | 99,0 | 16,0 | 115 | 25,0 | 181 |
| 3" | 4" | 3" | 3,8 | 27,4 | 10,6 | 76,5 | 11,9 | 86,0 | 14,0 | 101 | 17,0 | 122 | 20,2 | 146 | 31,0 | 223 |
| 4" | 5" | 4" 5" | 6,0 | 43,2 | 15,2 | 110 | 17,5 | 126 | 20,5 | 148 | 24,8 | 180 | 30,0 | 217 | 45,0 | 325 |
| 5" | 6" | 6" | 9,2 | 66,0 | 23,0 | 166 | 26,0 | 188 | 29,8 | 215 | 35,0 | 252 | 42,0 | 302 | 66,0 | 475 |
| 6" | 8" | 8" | 14,0 | 101 | 32,0 | 230 | 35,0 | 252 | 39,0 | 280 | 50,0 | 360 | 56,0 | 405 | 86,0 | 620 |
| 7" | | 10" | 19,0 | 137 | 42,0 | 302 | 45,0 | 325 | 48,0 | 347 | 66,0 | 475 | 72,0 | 520 | 106,0 | 765 |
| 8" | 10" | 12" | 23,0 | 165 | 51,0 | 370 | 54,0 | 390 | 58,0 | 420 | | | | | | |
| 10" | 12" | | 31,0 | 223 | 68,0 | 490 | 71,0 | 512 | | | | | | | | |

— = Max. valve size for normal wrench operation.

| Valve size | | | Valve pressure stage (CWP) | | | | | | | | | | | | | |
|--------------------|--------------------|------------------|----------------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|--------------------|-------|
| | | | Unmounted | | 200 PSI ND 10 | | 275 PSI ND 16 | | 500 PSI ND 25 | | 720 PSI ND 40 | | 960 PSI ND 64 | | 1440 PSI ND 100 | |
| Regular Pattern | Venturi Pattern | Short Pattern | Kgm. | Lb/Ft | Kgm. | Lb/Ft | Kgm. | Lb/Ft | Kgm. | Lb/Ft | Kgm. | Lb/Ft | Kgm. | Lb/Ft | Kgm. | Lb/Ft |
| 3" | 4" | 3" | 0,2 | 1,4 | 1,0 | 7,2 | 1,3 | 9,4 | 1,6 | 11,6 | 2,0 | 14,5 | 3,0 | 21,7 | 4,2 | 30,4 |
| 4" | 5" | 4" 5" | 0,2 | 1,4 | 1,3 | 9,4 | 1,6 | 11,6 | 1,9 | 13,7 | 2,3 | 16,6 | 3,3 | 24,8 | 4,5 | 32,5 |
| 5" | 6" | 6" | 0,2 | 1,4 | 1,6 | 11,6 | 1,9 | 13,7 | 2,2 | 15,9 | 2,6 | 18,8 | 3,6 | 26,0 | 4,8 | 34,7 |
| 6" | 8" | 8" | 0,3 | 2,1 | 1,8 | 13,0 | 2,1 | 15,2 | 2,4 | 17,3 | 2,9 | 21,0 | 3,8 | 27,4 | 5,0 | 36,2 |
| 7" | | 10" | 0,4 | 2,9 | 2,0 | 14,5 | 2,3 | 16,6 | 2,7 | 19,5 | 3,2 | 23,2 | 4,1 | 29,6 | 5,2 | 37,6 |
| 8" | 10" | 12" | 0,5 | 3,6 | 2,3 | 16,6 | 2,6 | 18,8 | 2,8 | 20,2 | 3,4 | 24,6 | 4,4 | 31,8 | 5,6 | 40,5 |
| 9" | | | 0,6 | 4,3 | 2,5 | 18,1 | 2,8 | 20,2 | 3,1 | 22,4 | 3,6 | 26,0 | 4,6 | 33,2 | 5,8 | 42,0 |
| 10" | 12" | | 0,7 | 5,0 | 2,8 | 20,2 | 3,0 | 21,7 | 3,4 | 24,6 | 3,9 | 28,2 | 4,9 | 35,4 | 6,2 | 44,8 |
| 11" | 14" | | 0,8 | 5,8 | 2,9 | 21,0 | 3,2 | 23,2 | 3,6 | 26,0 | 4,2 | 30,4 | 5,2 | 37,6 | 6,4 | 46,3 |
| 12" | 16" | | 0,8 | 5,8 | 3,2 | 23,2 | 3,5 | 25,3 | 3,8 | 27,4 | 4,4 | 31,8 | 5,4 | 39,0 | 6,7 | 48,5 |
| 14" | 18" | | 1,1 | 7,9 | 3,7 | 26,7 | 3,9 | 28,2 | 4,3 | 31,0 | 4,9 | 35,4 | 6,0 | 43,4 | 7,3 | 52,7 |
| 16" | 20" | | 1,3 | 9,4 | 4,2 | 30,4 | 4,5 | 32,5 | 4,7 | 34,0 | 5,4 | 39,0 | 6,4 | 46,3 | 7,7 | 55,7 |
| 18" | | | 1,4 | 10,1 | 4,6 | 33,2 | 4,8 | 34,7 | 5,3 | 38,3 | 6,0 | 43,4 | 7,0 | 50,5 | 8,3 | 60,0 |
| 20" | 24" | | 1,7 | 12,3 | 5,1 | 36,8 | 5,3 | 38,3 | 5,8 | 42,0 | 6,5 | 47,0 | 7,5 | 54,2 | 8,9 | 63,5 |
| 24" | 28" | | 2,0 | 14,4 | 6,0 | 43,4 | 6,3 | 45,6 | 6,8 | 49,2 | 7,5 | 54,2 | 8,5 | 61,5 | 10,0 | 72,0 |
| 28" | 32" | | 2,4 | 17,3 | 7,2 | 52,0 | 7,6 | 55,0 | 8,2 | 59,3 | 8,9 | 63,5 | | | | |
| 30" | | | 2,7 | 19,5 | 7,9 | 57,0 | 8,4 | 61,0 | 9,0 | 65,0 | | | | | | |
| 32" | 36" | | 3,0 | 21,6 | 8,7 | 63,0 | 9,2 | 66,5 | 10,0 | 72,0 | | | | | | |

SEMI STEEL

ASTM A 126 Class B (High strength grey iron).
Tensile Strength: min. 31000 PSI (214 N/mm²).

Semi steel material is very economical and suitable for most common service conditions such as air, water, gas and oil at medium pressures and temperatures. It possesses good resistance to corrosion in most organic solutions, alkalies and many acids of higher concentrations at normal temperatures.

DUCTILE IRON (Cast Iron with spheroidal Graphite).

ASTM 536 Gr. 60-40-18.

Tensile Strength: min. 60000 PSI (414 N/mm²).

This material is especially used where semi steel (cast iron) does not fulfil the requirements and where cast steel is too expensive.

CARBON STEEL

ASTM A 216 Grade WCB.

Tensile Strength: min. 70000 PSI (485 N/mm²).

PR valves of cast steel are made in accordance with the specifications of the mentioned ASTM standard.

To counteract seizing steel plugs have a thin coat of nickel (25 My) by means of electroless process, and then covered with a coat of P.T.F.E. (Hostafon type SE VP 5875).

Carbon steel is suited for valves in cold or hot water services without corrosive impurities. It is also suitable for oil, gas, air and other line fluids where valves are required of high strength, toughness and stability against vibration, blows and fire, except for extremely high or low temperatures which require steel alloys.

Our valves are also available to NACE Standard MR-01-75. Hardness level of Rc 22 or lower.

LEAD-BRONZE 80/10/10

CuPb10Sn10

ISO 1338 - ASTM B30 937

Tensile Strength: min. 12500 PSI (180 N/mm²)

Brinell Hardness: 65

Chemical Properties: Resistant to actions of ordinary services.

Physical Properties: Good pressure tightness and resistant to wear.

Other alloys, fx. 90/10 or 88/10/2,0 are delivered on inquiry.

STAINLESS ACID-RESISTING STEEL

Rust and acid resisting.

Chromium Nickel Molybdenum

Cr. 18% to 21% 9 to 12% 2 to 3%

ASTM A 351 Grade CF8M or AISI 316.

Tensile Strength: min. 70000 PSI (485 N/mm²).

To counteract seizing plugs in stainless steel have a thin coat of nickel (25 My) by means of electroless process, and then covered with a coat of P.T.F.E. (Hostafon type SE VP 5875).

CROMONIN

Stainless steel quality according to SANDVIK SAF 2205 and MANNESMANN AF 22.

Chromium Nickel Molybdenum Nitrogen

Cr 22% Ni 5,5% Mo 3,0% N 0,14%

Tensile Strength: min. 91000 - 113000 PSI (640 - 800 N/mm²).

Cromonin is a ferritic/austenitic stainless steel with high mechanical properties and excellent resistance to stress corrosion cracking (SCC) as well as pitting corrosion in chloride containing environments.

The resistance to sulphide stress cracking (SSC) in hydrogen sulphide environments is also excellent.

Due to the above mentioned properties cromonin can be used under severe wear and corrosive service conditions and also as an economic alternative to higher alloyed stainless steel qualities.

To counteract seizing plugs in cromonin steel have a thin coat of nickel (25 My) by means of electroless process, and then covered with a coat of P.T.F.E. (Hostafon type SE VP 5875).

SPECIAL ALLOY STEEL

To order.

COLOUR CODE

To facilitate identification PR Valves are normally painted as follows:

Semi Steel: Green

Steel: Blue

Stainless Steel: Silver grey

Ductile: Dark grey

Bronze: unpainted

Cromonin: Light grey

Standard Lubricants – mainly to be used

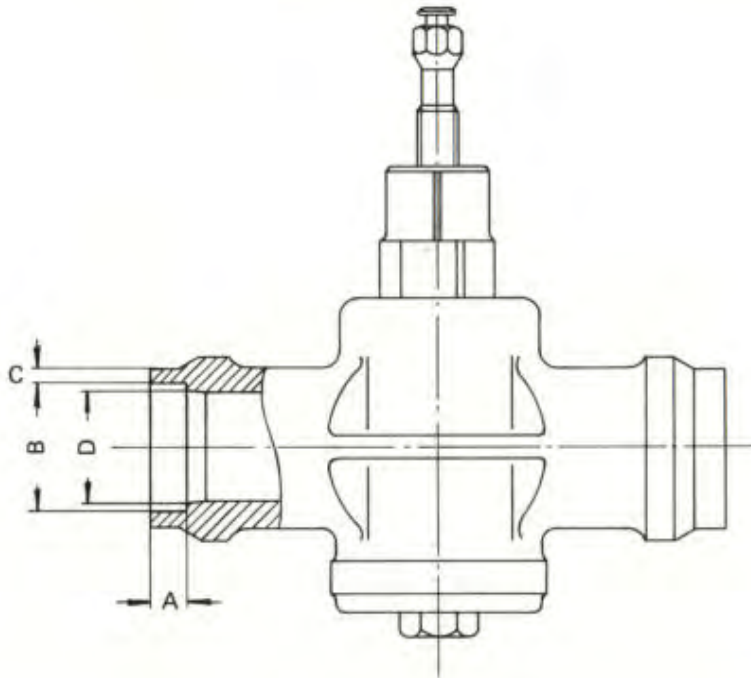
| Lubricant No. | Colour of compound | Temperature Range | | RECOMMENDATIONS |
|---------------|--------------------|-------------------|---------------|---|
| | | C | F | |
| 80 | Black | - 10 + 180 | + 14 + 356 | Cold and hot water up to 180°C, conditional up to 200°C. Cold and hot air. 50% lye up to 50°C conditional up to 100°C, 50% acids up to 50°C, inorganic saline solutions up to 100°C, steam conditional up to 200°C. Suitable for town gas, propane, butane and natural gas. Not suitable for gas condensate. |
| 711 | Black | - 10 + 225 | + 14 + 437 | Petroleum products. Butane and propane (max. 100°C). Gasoline, kerosene, asphalt and bitumen, oils and most hydrocarbon solvents. Also suitable for gases (max. 170°C). Cold and hot air. Not suitable for hot water, strong alkalis and aromatic solvents. |

Special Lubricants – normally to be used only where the standard lubricants cannot be used.

| Lubricant No. | Colour of compound | Temperature Range | | RECOMMENDATIONS |
|---------------|-------------------------|-------------------|---------------|--|
| | | C | F | |
| 40 | Clear | - 10 + 100 | + 14 + 212 | Cold and Warm Water. General Aqueous Solutions. Alcohols. |
| 45 | Yellowish - beige clear | - 20 + 130 | - 4 + 266 | For water at max. 100°C, drinking-water, beer, mineral water, milk, cocoa, cream, ammonia compound, acids and alkali disinfectant, fruit-acid and alcohol. |
| 60 | White | - 30 + 250 | - 22 + 482 | All diluted and concentrated acids and lyes, fluorine, chlorine, bromine, iodine, phosphorus oxychloride, ozone, hydrogen peroxide, all organic solvents (except hydrogen fluoride), all mineral, vegetable and animal oils and fats. Do not affect elastomers and plastics. |
| 70 | Black | - 0 + 180 | + 32 + 356 | All kinds of petrol, diesel fuels, aviation fuels, fuel oils, all mineral oils, vegetable oils, animal fats and oils, propylene, acids and saline solutions. |
| 280 | Black | - 10 + 200 | + 14 + 392 | Cold and hot air up to 200°C. Cold and hot water up to 180°C. Cold and hot gases up to 150°C. Not suitable for strong acids, petroleum products and aromatic and chlorinated solvents. |
| * 330 | White | - 30 + 250 | - 22 + 482 | Hot water and gases. Natural gas, propane, butane, asphalt and bitumen. General chemical aqueous solutions eg. alkalis and dilute acids. It is useful for hot air. Not suitable for light liquid hydrocarbons, aromatic and chlorinated solvents and strong mineral acids. |

* This type of lubricant ought to be avoided, if one of the other types can be used, as this contains silicone oil. The operating torque of the valve will increase considerably.

For exceptional working conditions and services not mentioned in the table, please ask for further information.



ANSI B16.11

| Valve size | A | B | C | | | D | | |
|------------|-------|--------|------------|------------|-------------|------------|------------|-------------|
| | | | Schedul 40 | Schedul 80 | Schedul 160 | Schedul 40 | Schedul 80 | Schedul 160 |
| 1/2" | 9,65 | 21,84 | 3,71 | 4,67 | 5,97 | 15,80 | 15,80 | 11,79 |
| 3/4" | 12,70 | 27,18 | 3,56 | 4,90 | 6,96 | 20,93 | 20,93 | 15,54 |
| 1" | 12,70 | 33,91 | 4,21 | 5,69 | 7,92 | 26,64 | 26,64 | 20,70 |
| 1 1/4" | 12,70 | 42,67 | 4,44 | 6,07 | 7,92 | 35,05 | 35,05 | 29,46 |
| 1 1/2" | 12,70 | 48,77 | 4,59 | 6,35 | 8,92 | 40,89 | 40,89 | 33,99 |
| 2" | 15,75 | 61,24 | 4,90 | 6,93 | 10,92 | 52,50 | 52,50 | 42,85 |
| 2 1/2" | 15,75 | 74,00 | 6,45 | 8,76 | | 62,71 | 62,71 | |
| 3" | 15,75 | 89,98 | 6,85 | 9,53 | | 77,93 | 77,93 | |
| 4" | 19,05 | 115,63 | 7,54 | 10,69 | | 102,26 | 102,26 | |

Tolerances: B = 1/2" - 2" = ±0,1
 2 1/2" - 4" = ±0,15

D = 1/2" - 2" = ±0,7
 2 1/2" - 4" = ±1,5

* Not included in ANSI B16.11.

After assembling, before delivery, all PR Plug Valves pass through a careful pressure test. The test is carried out acc. to the following standards: ANSI B 16.34, BS 5146, API 598 and ANSI B 16.1. If the customer or his representative wants to participate at the test - or, if there are special requirements to the pressure testing, this must be arranged with the manufacturer and stipulated in the purchase order.

| Material | | | ANSI Class | | | | (14" to 36") | |
|---------------------------------|-------------------------------|------------|---------------|-------------|--|--|--------------|-----------|
| | | | (1/2" to 12") | | | | 125 | 250 |
| | | | 125 | 250 | | | | |
| Semi Steel ASTM A126 Class B | Maximum Cold Working Pressure | PSI BAR | 200 13,8 | 500 34,5 | | | 150 11 | 300 21 |
| | Hydrostatic Shell Test | PSI BAR | 300 20,7 | 750 51,8 | | | 230 16 | 450 30 |
| | Seat Test | PSI BAR | 220 15,2 | 550 37,9 | | | 165 12 | 330 23 |

| Material | | | ANSI Class | | | | | | |
|-----------------------------------|-------------------------------|------------|-------------|-------------|--------------|---------------|---------------|---------------|---------------|
| | | | 150 | 300 | 400 | 600 | 900 | 1500 | 2500 |
| Carbon Steel ASTM A216 Gr. WCB | Maximum Cold Working Pressure | PSI BAR | 285 19,6 | 740 51,1 | 990 68,1 | 1480 102,1 | 2220 153,2 | 3705 255,3 | 6170 425,5 |
| | Hydrostatic Shell Test | PSI BAR | 450 30 | 1125 77 | 1500 103 | 2225 154 | 3350 230 | 5575 383 | 9275 639 |
| | Seat Test | PSI BAR | 315 21,5 | 815 56,2 | 1090 74,9 | 1630 112,3 | 2440 168,5 | 4075 280,8 | 6785 468 |

| Material | | | ANSI Class | | | | | | |
|----------------------------------|-------------------------------|------------|-------------|-------------|--------------|---------------|---------------|---------------|---------------|
| | | | 150 | 300 | 400 | 600 | 900 | 1500 | 2500 |
| Carbon Steel ASTM A352 Gr.LCB | Maximum Cold Working Pressure | PSI BAR | 265 18,4 | 695 47,9 | 925 63,8 | 1390 95,9 | 2085 143,8 | 3470 239,4 | 5785 399 |
| | Hydrostatic Shell Test | PSI BAR | 400 28 | 1050 72 | 1400 96 | 2100 144 | 3150 216 | 5225 360 | 8700 599 |
| | Seat Test | PSI BAR | 292 20,2 | 765 52,7 | 1018 70,2 | 1529 105,5 | 2294 158,2 | 3817 263,3 | 6364 438,9 |

| Material | | | ANSI Class | | | | | | |
|---|-------------------------------|------------|-------------|-------------|--------------|---------------|---------------|---------------|---------------|
| | | | 150 | 300 | 400 | 600 | 900 | 1500 | 2500 |
| Stainless Steel ASTM A351 Gr. CF8M or AISI 316 | Maximum Cold Working Pressure | PSI BAR | 275 19,0 | 720 49,6 | 960 66,2 | 1440 99,3 | 2160 148,9 | 3600 248,1 | 6000 413,6 |
| | Hydrostatic Shell Test | PSI BAR | 425 29 | 1100 75 | 1450 100 | 2175 149 | 3250 224 | 5400 373 | 9000 621 |
| | Seat Test | PSI BAR | 303 20,9 | 792 54,6 | 1056 72,8 | 1584 109,2 | 2376 163,7 | 3960 272,9 | 6600 454,9 |

| Material | | | ANSI Class | | | | | | |
|--|-------------------------------|------------|------------|-------------|--------------|---------------|---------------|---------------|---------------|
| | | | 150 | 300 | 400 | 600 | 900 | 1500 | 2500 |
| ASTM A216 Gr.WCC ASTM A352 Gr. LCC ASTM A352 Gr. LC2 Cromonin | Maximum Cold Working Pressure | PSI BAR | 290 20 | 750 51,7 | 1000 69 | 1500 103,4 | 2250 155,2 | 3750 258,6 | 6250 431,0 |
| | Hydrostatic Shell Test | PSI BAR | 435 30 | 1125 78 | 1500 104 | 2250 156 | 3375 233 | 5625 388 | 9375 647 |
| | Seat Test | PSI BAR | 319 22 | 825 56,9 | 1100 75,9 | 1650 113,7 | 2475 170,7 | 4125 284,5 | 6875 474,1 |

For runde gennemløb har vi brugt Seguro CV

5/03-19 stig

Sectional flow capacity.
Straightway rectangular bore.

Regular Pattern

| DN | Kv | Cv | ζ | Corresponding to meter std. pipe |
|--------|--------|--------|---------|----------------------------------|
| 1/2" | 12,6 | 14,8 | 0,50 | 0,27 |
| 3/4" | 23,1 | 27 | 0,47 | 0,38 |
| 1" | 36,5 | 42,7 | 0,46 | 0,48 |
| 1 1/4" | 60,4 | 76,7 | 0,45 | 0,63 |
| 1 1/2" | 97,7 | 114,3 | 0,42 | 0,76 |
| 2" | 150 | 175 | 0,44 | 1,00 |
| 2 1/2" | 298 | 348 | 0,43 | 1,10 |
| 3" | 396 | 463 | 0,41 | 1,80 |
| 4" | 626 | 732 | 0,40 | 2,20 |
| 5" | 990 | 1158 | 0,39 | 2,90 |
| 6" | 1474 | 1724 | 0,37 | 3,30 |
| 7" | 2049 | 2397 | 0,35 | 3,90 |
| 8" | 2717 | 3178 | 0,34 | 4,40 |
| 10" | 4437 | 5191 | 0,31 | 5,20 |
| 12" | 6734 | 7879 | 0,28 | 6,00 |
| 14" | 9699 | 11347 | 0,25 | 6,40 |
| 16" | 13013 | 15225 | 0,23 | 7,00 |
| 18" | 17494 | 20468 | 0,21 | 7,20 |
| 20" | 22768 | 26640 | 0,19 | 7,50 |
| 24" | 35638 | 41696 | 0,16 | 8,00 |
| 30" | 53423 | 62505 | 0,13 | 8,00 |
| 32" | 73128 | 85560 | 0,12 | 8,60 |
| 36" | 95247 | 111440 | 0,11 | 9,00 |
| 40" | 118793 | 138988 | 0,11 | 10,00 |
| 44" | 145000 | 169700 | 0,11 | |

Venturi Pattern

| DN | Kv | Cv | ζ | Corresponding to meter std. pipe |
|--------|--------|--------|---------|----------------------------------|
| 1" | 24,6 | 28,8 | 1,01 | 1,00 |
| 1 1/4" | 39,4 | 46 | 1,06 | 1,50 |
| 1 1/2" | 66,3 | 77,6 | 0,91 | 1,70 |
| 2" | 108,5 | 127 | 0,83 | 1,90 |
| 2 1/2" | 168,7 | 197 | 1,32 | 4,70 |
| 3" | 339 | 397 | 0,56 | 2,40 |
| 4" | 458 | 536 | 0,75 | 4,20 |
| 5" | 732 | 856 | 0,71 | 5,30 |
| 6" | 1173 | 1372 | 0,57 | 5,20 |
| 7" | 1798 | 2104 | 0,47 | 5,20 |
| 8" | 2158 | 2525 | 0,55 | 8,00 |
| 10" | 3314 | 3877 | 0,56 | 9,30 |
| 12" | 4295 | 5025 | 0,69 | 14,70 |
| 14" | 7015 | 8208 | 0,48 | 12,00 |
| 16" | 8430 | 9863 | 0,56 | 17,00 |
| 18" | 12270 | 14356 | 0,43 | 15,00 |
| 20" | 16591 | 19411 | 0,36 | 14,00 |
| 24" | 29416 | 34417 | 0,23 | 12,00 |
| 30" | 46614 | 54570 | 0,17 | 10,00 |
| 32" | 70518 | 82506 | 0,13 | 9,00 |
| 36" | 70518 | 82506 | 0,21 | 18,00 |
| 40" | 97260 | 113794 | 0,16 | 15,00 |
| 48" | 160370 | 187633 | 0,12 | 12,00 |

Cv = US gallons of water per minute by a pressure drop of 1 lb. per square inch.

Kv = Cubic meter of water per hour by a pressure drop of 1 Kg/cm².

ζ = Zeta Value.

Three- and fourway Valves with L- or T-Port

| DN | Kv | Cv | ζ |
|--------|--------|--------|---------|
| 1/2" | 8,0 | 9,3 | 1,25 |
| 3/4" | 14,6 | 17,1 | 1,18 |
| 1" | 15,7 | 18,4 | 1,43 |
| 1 1/4" | 25,6 | 29,9 | 1,40 |
| 1 1/2" | 45,6 | 53,4 | 1,32 |
| 2" | 70,4 | 82,4 | 1,28 |
| 2 1/2" | 138,9 | 162,3 | 1,24 |
| 3" | 184,8 | 216,2 | 1,20 |
| 4" | 302,3 | 353,7 | 1,15 |
| 5" | 592,9 | 693,7 | 1,06 |
| 6" | 899,6 | 1052,5 | 0,98 |
| 7" | 1249,6 | 1462,0 | 0,94 |
| 8" | 1668,7 | 1952,3 | 0,90 |
| 10" | 2730,8 | 3195,1 | 0,82 |
| 12" | 4114,1 | 4813,5 | 0,75 |
| 14" | 5877,6 | 6876,7 | 0,68 |
| 16" | 8049,9 | 9418,4 | 0,62 |
| 18" | 10614 | 12418 | 0,57 |
| 20" | 13729 | 16062 | 0,52 |
| 24" | 21490 | 25143 | 0,44 |
| 30" | 31484 | 36836 | 0,38 |
| 32" | 42797 | 50072 | 0,35 |
| 36" | 55756 | 65235 | 0,33 |
| 40" | 69456 | 81264 | 0,32 |

Fourway Valves with double L-Port

| DN | Kv | Cv | ζ |
|--------|--------|--------|---------|
| 1/2" | 8,0 | 9,3 | 1,25 |
| 3/4" | 8,2 | 9,6 | 1,65 |
| 1" | 11,9 | 13,9 | 1,72 |
| 1 1/4" | 16,1 | 18,8 | 1,90 |
| 1 1/2" | 25,7 | 30,0 | 1,89 |
| 2" | 43,1 | 53,5 | 1,77 |
| 2 1/2" | 94,8 | 111,0 | 1,61 |
| 3" | 119,5 | 139,9 | 1,60 |
| 4" | 209,4 | 245,0 | 1,46 |
| 5" | 349,4 | 408,8 | 1,44 |
| 6" | 505,8 | 591,7 | 1,43 |
| 7" | 695,0 | 813,2 | 1,38 |
| 8" | 930,0 | 1088,1 | 1,32 |
| 10" | 1505,8 | 1761,8 | 1,22 |
| 12" | 2287,4 | 2676,3 | 1,10 |
| 14" | 3259,8 | 3813,9 | 1,01 |
| 16" | 4490,9 | 5254,3 | 0,91 |
| 18" | 5974,7 | 6990,4 | 0,83 |
| 20" | 7581,6 | 8870,4 | 0,77 |
| 24" | 11300 | 13256 | 0,67 |
| 30" | 15941 | 18651 | 0,60 |
| 32" | 21747 | 25444 | 0,55 |
| 36" | 28376 | 33200 | 0,52 |
| 40" | 35638 | 41697 | 0,50 |

Cv = US gallons of water per minute by a pressure drop of 1 lb. per square inch.

Kv = Cubic meter of water per hour by a pressure drop of 1 kg/cm².

ζ = Zeta Value.



LUBRICATED VALVES

Dimension and area of port

| Valve size | THREE and FOURWAY with L or T-Port | | | | FOURWAY with double L-Port (X5) | | | |
|------------|--|-------------|-----------|-----------|--|-------------|-----------|-----------|
| | REGULAR | | | | REGULAR | | | |
| | Dimension of the rectangular port (in millimetres) | square inch | square cm | % of pipe | Dimension of the rectangular port (in millimetres) | square inch | square cm | % of pipe |
| 1/2" | 12.5x25 | 0.44 | 3.15 | 250 | 9x25 | 0.35 | 2.25 | 127 |
| 3/4" | 12.5x25 | 0.44 | 3.15 | 100 | 9x25 | 0.35 | 2.25 | 72 |
| 1" | 12x31 | 0.58 | 3.72 | 75 | 10x31 | 0.48 | 3.10 | 62 |
| 1 1/4" | 15x40 | 0.93 | 6.00 | 75 | 11x40 | 0.68 | 4.40 | 55 |
| 1 1/2" | 20x50 | 1.55 | 10.0 | 83 | 14x50 | 1.08 | 7.00 | 58 |
| 2" | 25x63 | 2.50 | 15.8 | 79 | 18x63 | 1.77 | 11.4 | 57 |
| 2 1/2" | 35x88 | 4.80 | 30.8 | 81 | 27x88 | 3.70 | 23.8 | 63 |
| 3" | 40x100 | 6.20 | 40.0 | 83 | 30x100 | 4.65 | 30.0 | 63 |
| 4" | 51x126 | 10.0 | 64.3 | 83 | 40x126 | 7.80 | 50.5 | 65 |
| 5" | 72x157 | 17.5 | 113 | 91 | 53x157 | 13.0 | 83.2 | 68 |
| 6" | 94x188 | 28.0 | 176 | 100 | 64x188 | 18.6 | 120 | 68 |
| 7" | 110x219 | 38.5 | 240 | 100 | 74x219 | 25.2 | 162 | 68 |
| 8" | 125x250 | 50.0 | 315 | 100 | 85x250 | 33.0 | 212 | 68 |
| 10" | 156x314 | 78.0 | 490 | 100 | 105x314 | 51.0 | 330 | 68 |
| 12" | 188x376 | 112 | 700 | 100 | 134x376 | 78.0 | 504 | 72 |
| 14" | 220x438 | 153 | 965 | 100 | 148x438 | 100 | 650 | 68 |
| 16" | 250x500 | 200 | 1250 | 100 | 170x500 | 132 | 850 | 68 |
| 18" | 282x564 | 255 | 1580 | 100 | 195x564 | 168 | 1080 | 68 |
| 20" | 312x628 | 310 | 1960 | 100 | 210x628 | 205 | 1320 | 68 |
| 24" | 376x752 | 450 | 2800 | 100 | 245x752 | 285 | 1840 | 66 |
| 28" | 440x876 | 610 | 3850 | 100 | 280x876 | 390 | 2450 | 64 |
| 30" | 470x936 | 700 | 4400 | 100 | 300x936 | 435 | 2800 | 64 |
| 32" | 500x1000 | 800 | 5000 | 100 | 320x1000 | 496 | 3200 | 64 |
| 36" | 564x1128 | 1010 | 6350 | 100 | 360x1128 | 630 | 4050 | 64 |
| 40" | 624x1256 | 1250 | 7800 | 100 | 400x1256 | 775 | 5000 | 64 |

d. 2 1/2" 5-17

| Valve size | REGULAR | | | | VENTURI | | | | SHORT | | | |
|------------|--|-------------|-----------|-----------|--|-------------|-----------|-----------|--|-------------|-----------|-----------|
| | Dimension of the rectangular port (in millimetres) | square inch | square cm | % of pipe | Dimension of the rectangular port (in millimetres) | square inch | square cm | % of pipe | Dimension of the rectangular port (in millimetres) | square inch | square cm | % of pipe |
| | 1/2" | 12.5x25 | 0.44 | 3.15 | 250 | | | | | | | |
| 3/4" | 12.5x25 | 0.44 | 3.15 | 100 | | | | | | | | |
| 1" | 16x31 | 0.78 | 5.00 | 100 | 12.5x25 | 0.44 | 3.15 | 63 | 12.5x25 | 0.44 | 3.15 | 63 |
| 1 1/4" | 20x40 | 1.22 | 8.00 | 100 | 16x31 | 0.78 | 5.00 | 63 | 16x31 | 0.78 | 5.00 | 63 |
| 1 1/2" | 25x50 | 1.75 | 12.0 | 100 | 20x40 | 1.22 | 8.00 | 67 | 20x40 | 1.22 | 8.00 | 67 |
| 2" | 31x63 | 3.15 | 20.0 | 100 | 25x50 | 1.75 | 12.0 | 60 | 25x50 | 1.75 | 12.0 | 60 |
| 2 1/2" | 44x88 | 6.00 | 38.0 | 100 | 31x63 | 3.15 | 20.0 | 53 | 31x63 | 3.15 | 20.0 | 53 |
| 3" | 50x100 | 7.00 | 48.0 | 100 | 44x88 | 6.00 | 38.0 | 79 | 44x88 | 6.00 | 38.0 | 79 |
| 4" | 62x126 | 12.4 | 78.0 | 100 | 50x100 | 7.00 | 48.0 | 62 | 50x100 | 7.00 | 48.0 | 62 |
| 5" | 78x157 | 19.6 | 124 | 100 | 62x126 | 12.4 | 78.0 | 63 | 62x126 | 12.4 | 78.0 | 63 |
| 6" | 94x188 | 28.0 | 176 | 100 | 78x157 | 19.6 | 124 | 71 | 78x157 | 19.6 | 124 | 71 |
| 7" | 110x219 | 38.5 | 240 | 100 | 94x188 | 28.0 | 176 | 73 | | | | |
| 8" | 125x250 | 50.0 | 315 | 100 | 94x188 | 28.0 | 176 | 56 | 78x232 | 28.0 | 181 | 57 |
| 10" | 156x314 | 78.0 | 490 | 100 | 125x250 | 50.0 | 315 | 64 | 94x288 | 42.0 | 270 | 55 |
| 12" | 188x376 | 112 | 700 | 100 | 141x282 | 63.5 | 395 | 57 | 125x345 | 66.8 | 430 | 61 |
| 14" | 220x438 | 153 | 965 | 100 | 172x344 | 88.0 | 590 | 61 | | | | |
| 16" | 250x500 | 200 | 1250 | 100 | 188x376 | 112 | 700 | 56 | | | | |
| 18" | 282x564 | 255 | 1580 | 100 | 220x438 | 153 | 965 | 61 | | | | |
| 20" | 312x628 | 310 | 1960 | 100 | 250x500 | 200 | 1250 | 64 | | | | |
| 24" | 376x752 | 450 | 2800 | 100 | 312x628 | 310 | 1960 | 70 | | | | |
| 28" | 440x876 | 610 | 3850 | 100 | 376x752 | 450 | 2800 | 73 | | | | |
| 30" | 470x936 | 700 | 4400 | 100 | 376x752 | 450 | 2800 | 64 | | | | |
| 32" | 500x1000 | 800 | 5000 | 100 | 440x876 | 610 | 3850 | 77 | | | | |
| 36" | 564x1128 | 1010 | 6350 | 100 | 500x1000 | 800 | 5000 | 79 | | | | |
| 40" | 624x1256 | 1250 | 7800 | 100 | 500x1000 | 800 | 5000 | 64 | | | | |



LUBRICATED VALVES

Dimension and area of port

| Valve size | Class 250 | | | | | | | | | | | | Class 300 | | | | | | | | | | | |
|------------|--|-------------|-----------|-----------|--|-------------|-----------|-----------|--|-------------|-----------|-----------|--|-------------|-----------|-----------|--|-------------|-----------|-----------|-------|--|--|--|
| | REGULAR | | | | VENTURI | | | | SHORT | | | | REGULAR | | | | VENTURI | | | | SHORT | | | |
| | Dimension of the rectangular port (in millimetres) | square inch | square cm | % of pipe | Dimension of the rectangular port (in millimetres) | square inch | square cm | % of pipe | Dimension of the rectangular port (in millimetres) | square inch | square cm | % of pipe | Dimension of the rectangular port (in millimetres) | square inch | square cm | % of pipe | Dimension of the rectangular port (in millimetres) | square inch | square cm | % of pipe | | | | |
| 1/2" | 12.5x25 | 0.44 | 3.15 | 250 | | | | | 12.5x25 | 0.44 | 3.15 | 250 | | | | | | | | | | | | |
| 3/4" | 12.5x25 | 0.44 | 3.15 | 100 | | | | | 12.5x25 | 0.44 | 3.15 | 100 | | | | | | | | | | | | |
| 1" | 16x31 | 0.78 | 5.0 | 100 | 12.5x25 | 0.44 | 3.15 | 63 | 16x31 | 0.78 | 5.00 | 100 | | | | | 16x31 | 0.78 | 5.00 | 100 | | | | |
| 1 1/4" | 20x40 | 1.22 | 8.0 | 100 | 16x31 | 0.78 | 5.00 | 63 | 20x40 | 1.22 | 8.00 | 100 | | | | | 20x40 | 1.22 | 8.00 | 100 | | | | |
| 1 1/2" | 25x50 | 1.75 | 12.0 | 100 | 20x40 | 1.22 | 8.00 | 67 | 25x50 | 1.75 | 12.0 | 100 | | | | | 25x50 | 1.75 | 12.0 | 100 | | | | |
| 2" | 31x63 | 3.15 | 20.0 | 100 | 25x50 | 1.75 | 12.0 | 60 | 31x63 | 3.15 | 20.0 | 100 | | | | | 31x63 | 3.15 | 20.0 | 100 | | | | |
| 2 1/2" | 44x88 | 6.00 | 38.0 | 100 | 31x63 | 3.15 | 20.0 | 53 | 44x88 | 6.00 | 38.0 | 100 | | | | | 44x88 | 6.00 | 38.0 | 100 | | | | |
| 3" | 50x100 | 7.00 | 48.0 | 100 | 44x88 | 6.00 | 38.0 | 79 | 50x100 | 7.00 | 48.0 | 100 | | | | | 50x100 | 7.00 | 48.0 | 100 | | | | |
| 4" | 62x126 | 12.4 | 78.0 | 100 | 50x100 | 7.00 | 48.0 | 62 | 62x126 | 12.4 | 78.0 | 100 | | | | | 62x126 | 12.4 | 78.0 | 100 | | | | |
| 5" | 78x157 | 19.6 | 124 | 100 | 62x126 | 12.4 | 78.0 | 63 | 78x157 | 19.6 | 124 | 100 | | | | | 78x157 | 19.6 | 124 | 100 | | | | |
| 6" | 94x188 | 28.0 | 176 | 100 | 78x157 | 19.6 | 124 | 71 | 94x188 | 28.0 | 176 | 100 | | | | | 94x188 | 28.0 | 176 | 100 | | | | |
| 7" | 110x219 | 38.5 | 240 | 100 | 94x188 | 28.0 | 176 | 73 | 110x219 | 38.5 | 240 | 100 | | | | | 110x219 | 38.5 | 240 | 100 | | | | |
| 8" | 125x250 | 50.0 | 315 | 100 | 94x188 | 28.0 | 176 | 56 | 125x250 | 50.0 | 315 | 100 | | | | | 94x188 | 28.0 | 176 | 100 | | | | |
| 10" | 156x314 | 78.0 | 490 | 100 | 125x250 | 50.0 | 315 | 64 | 156x314 | 78.0 | 490 | 100 | | | | | 125x250 | 50.0 | 315 | 100 | | | | |
| 12" | 188x376 | 112 | 700 | 100 | 141x282 | 63.5 | 395 | 57 | 188x376 | 112 | 700 | 100 | | | | | 141x282 | 63.5 | 395 | 83 | | | | |
| 14" | 203x438 | 138 | 890 | 100 | 172x344 | 88.0 | 590 | 66 | 203x438 | 138 | 890 | 100 | | | | | 172x344 | 88.0 | 590 | 66 | | | | |
| 16" | 235x500 | 182 | 1175 | 100 | 188x376 | 112 | 700 | 60 | 235x500 | 182 | 1175 | 100 | | | | | 188x376 | 112 | 700 | 60 | | | | |
| 18" | 260x564 | 226 | 1460 | 100 | 203x438 | 138 | 890 | 61 | 260x564 | 226 | 1460 | 100 | | | | | 203x438 | 138 | 890 | 61 | | | | |
| 20" | 290x628 | 282 | 1825 | 100 | 235x500 | 182 | 1175 | 65 | 290x628 | 282 | 1825 | 100 | | | | | 235x500 | 182 | 1175 | 65 | | | | |
| 24" | 354x752 | 412 | 2660 | 100 | 290x628 | 282 | 1825 | 69 | 354x752 | 412 | 2660 | 100 | | | | | 290x628 | 282 | 1825 | 69 | | | | |
| 28" | 420x876 | 570 | 3680 | 100 | 354x752 | 412 | 2660 | 72 | 420x876 | 570 | 3680 | 100 | | | | | 354x752 | 412 | 2660 | 72 | | | | |
| 30" | 450x936 | 660 | 4250 | 100 | 354x752 | 412 | 2660 | 65 | 450x936 | 660 | 4250 | 100 | | | | | 354x752 | 412 | 2660 | 65 | | | | |
| 32" | 470x1000 | 730 | 4700 | 100 | 420x876 | 570 | 3680 | 78 | 470x1000 | 730 | 4700 | 100 | | | | | 420x876 | 570 | 3680 | 78 | | | | |
| 36" | 532x1128 | 930 | 6000 | 100 | 470x1000 | 730 | 4700 | 78 | 532x1128 | 930 | 6000 | 100 | | | | | 470x1000 | 730 | 4700 | 78 | | | | |
| 40" | 598x1256 | 1160 | 7500 | 100 | 470x1000 | 730 | 4700 | 63 | 598x1256 | 1160 | 7500 | 100 | | | | | 470x1000 | 730 | 4700 | 63 | | | | |

| STRAIGHTWAY – RECTANGULAR | | | | | | | | | | | | | | |
|---------------------------|--|-------------|-----------|-----------|--------------|-----------|-----------|--|-------------|-----------|-----------|--------------|-----------|-----------|
| Class 400 | | | | | | Class 600 | | | | | | | | |
| DN | Dimension of the rectangular port (in millimetres) | Full Bore | | | Reduced Bore | | | Dimension of the rectangular port (in millimetres) | Full Bore | | | Reduced Bore | | |
| | | square inch | square cm | % of pipe | square inch | square cm | % of pipe | | square inch | square cm | % of pipe | square inch | square cm | % of pipe |
| 1/2" | 13 ^ø | 0,206 | 1,33 | 100 | | | | 13 ^ø | 0,206 | 1,33 | 100 | | | |
| 3/4" | 20 ^ø | 0,487 | 3,14 | 100 | | | | 20 ^ø | 0,487 | 3,14 | 100 | | | |
| 1" | 16 x 32 | 0,76 | 4,9 | 96 | | | | 16 x 32 | 0,76 | 4,9 | 96 | | | |
| 1 1/4" | 20 x 40 | 1,18 | 7,6 | 96 | | | | 20 x 40 | 1,18 | 7,6 | 96 | | | |
| 1 1/2" | 25 x 51 | 1,88 | 12,1 | 100 | | | | 25 x 51 | 1,88 | 12,1 | 100 | | | |
| 2" | 31 x 64 | 2,90 | 18,7 | 93 | | | | 31 x 64 | 2,90 | 18,7 | 93 | | | |
| 2 1/2" | 43 x 76 | 4,81 | 31,0 | 98 | | | | 43 x 76 | 4,81 | 31,0 | 98 | | | |
| 3" | 50 x 100 | 7,36 | 47,5 | 100 | | | | 50 x 100 | 7,36 | 47,5 | 100 | | | |
| 4" | 64 x 126 | 11,87 | 76,6 | 95 | | | | 64 x 126 | 11,87 | 76,6 | 95 | | | |
| 5" | 85 x 152 | 19,02 | 122,7 | 97 | | | | 85 x 152 | 19,02 | 122,7 | 97 | | | |
| 6" | 90 x 203 | 26,9 | 173,6 | 96 | | | | 90 x 203 | 26,9 | 173,6 | 96 | | | |
| 8" | 130 x 254 | 48,6 | 313,7 | 97 | | | | 130 x 254 | 48,6 | 313,7 | 100 | | | |
| 10" | 164 x 304 | 73,4 | 473,6 | 94 | | | | 164 x 304 | 73,4 | 473,6 | 100 | | | |
| 12" | 186 x 376 | 103,0 | 664,4 | 91 | | | | 186 x 376 | 103,0 | 664,4 | 95 | | | |
| 14" | 212 x 419 | 130,8 | 843,9 | 97 | | | | 212 x 419 | 130,8 | 843,9 | 100 | | | |
| 16" | 240 x 464 | 164,0 | 1057,9 | 93 | | | | 240 x 464 | 164,0 | 1057,9 | 96 | | | |
| 18" | 260 x 560 | 214,4 | 1383,2 | 95 | | | | 260 x 560 | 214,4 | 1383,2 | 100 | | | |
| 20" | | | | | | | | 240 x 464 | 164,0 | 1057,9 | 96 | | | |
| 24" | | | | | | | | 260 x 560 | 214,4 | 1383,2 | 96 | | | |



Type I

The type I operator is specially designed for use on PR lubricated plug valves, and can be mounted on all types of valves equipped with a type C or type D manual gear operator.

The Type I operator is sturdy and compact in design with power transmission from the motor to the output shaft being accomplished through straight-tooth spur gearing supported by solid ball bearings.

A handwheel spindle is provided permitting manual operation of the valve simply by turning the clutch lever a half turn, to re-engage the operator, simply reverse the procedure. When the operator is functioning, the handwheel remains stationary.

The electric or air control unit is mounted in a water-tight compartment located on top of the gearing. The

unit consists of two adjustable cams mounted on a disc, these cams activate limit switches which control the turning angle of the plug, at each extreme position.

Type I operators are manufactured in 3 basic sizes, each of which can, by use of a few standard parts, be modified to give different gear ratios.

Basic Sizes

- I 2 for valves from 1 1/2" to 5"
- I 4 for valves from 6" to 24"
- I 7 for valves from 28" to 40"

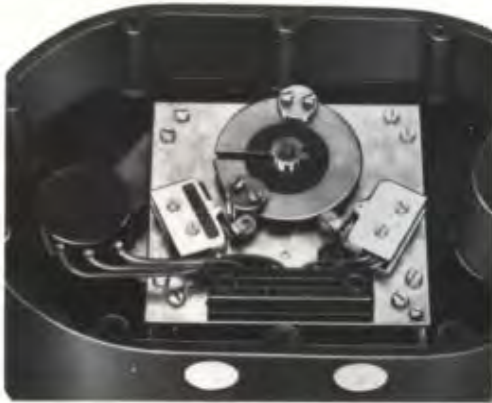
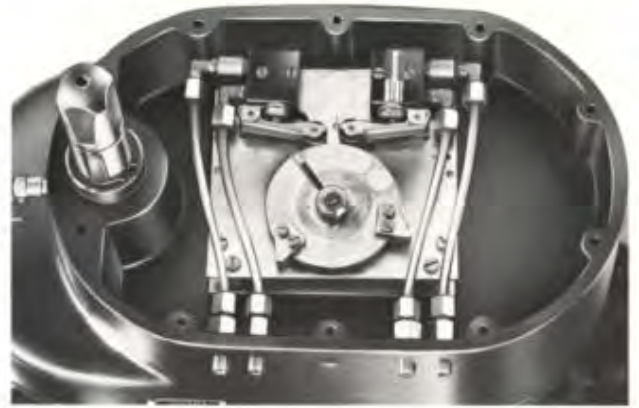
All components used in the manufacture of the I Gear operator and accessories are of high quality and approved by C.S.A. and Demko.

Pneumatic End-Stop Valves

2 pcs. of Atlas Copco type VE13-W-S-5

Connection: 2 pcs. B.S.P. 1/8" threaded connection for each end-stop valve plus one connection for venting.

A total of 5 connections.



Potentiometer

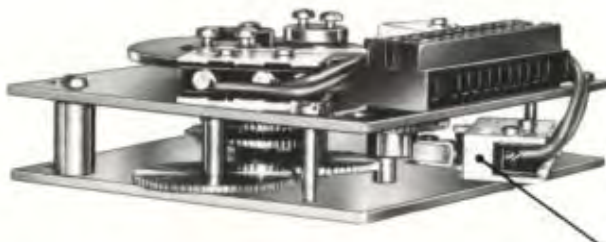
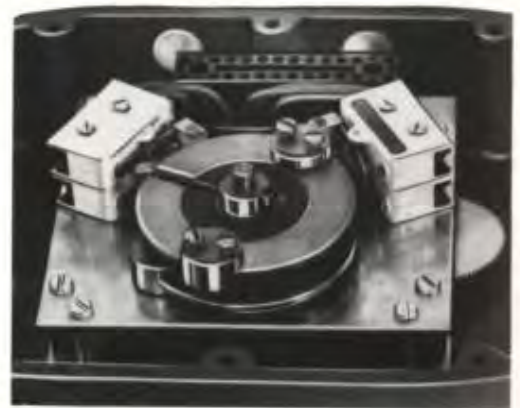
Where remote indication is required, the I gear operator can have either one or two potentiometers mounted.

Make: Colvern, type CLR 5001, 4 watt, 100 OHM (or OHM to requirement).

Additional Set of Limit Switches

An additional set of limit switches can be supplied with the I operator, thus having two independent switches at each extreme position.

Make: Burgess Type V13MR.



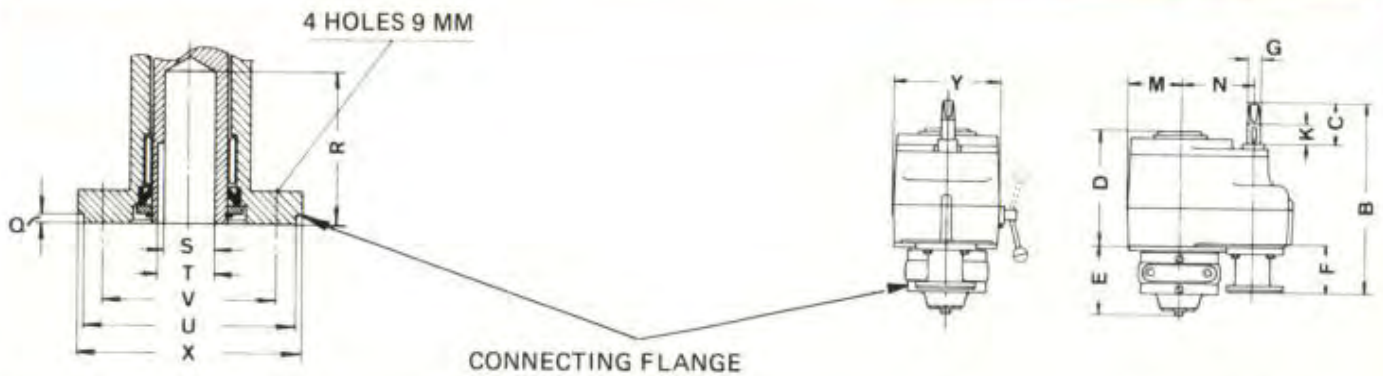
Where required an additional limit switch is incorporated into the gear operator. The switch is mechanically actuated.

When the gear is rotating a signal is transmitted to either the local or remote control panel activating a flashing light, indicating the valve is operating.

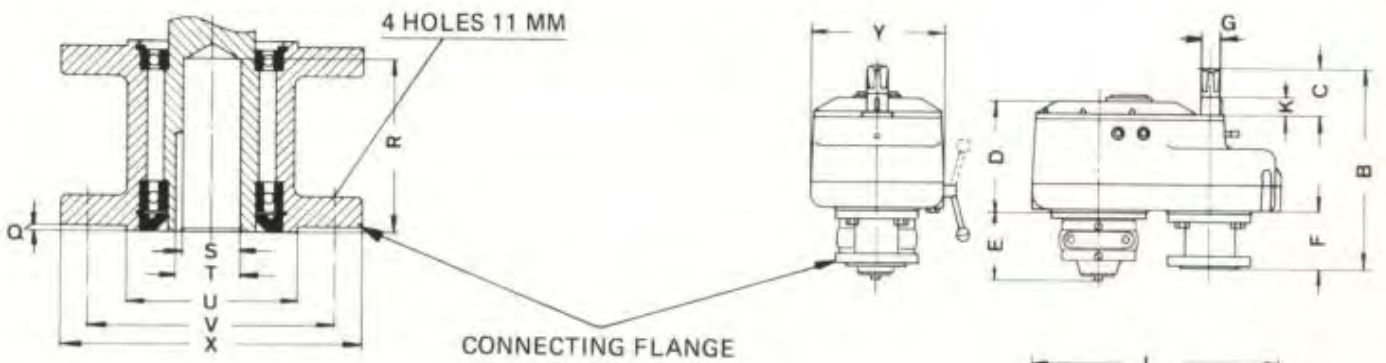
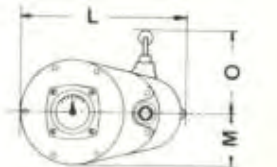
| Gear Type | Speed on Output Shaft in RPM | Motor Speed in RPM | Torque on output shaft in kgm. | | | Free Air Consumption L/min. | | | Air Motor Type |
|-----------|------------------------------|--------------------|--------------------------------|----------|----------|-----------------------------|----------|----------|----------------|
| | | | By 5 Bar | By 6 Bar | By 7 Bar | By 5 Bar | By 6 Bar | By 7 Bar | |
| I 2 | 16,6 | * 900 | 9,9 | 12,1 | 14,2 | 345 | 420 | 465 | 2 AM |
| | 25 | * 1400 | 9,3 | 11,3 | 13,4 | 420 | 490 | 560 | 2 AM |
| | 51 | * 2800 | 7,7 | 9,5 | 11,3 | 610 | 710 | 815 | 2 AM |
| I 4 | 21 | * 900 | 16,0 | 19,3 | 22,5 | 650 | 775 | 880 | 4 AM |
| | 32 | * 1400 | 14,7 | 17,8 | 20,7 | 845 | 1005 | 1150 | 4 AM |
| | 65 | * 2800 | 11,0 | 13,2 | 15,8 | 1405 | 1690 | 1900 | 4 AM |
| I 7 | 26 | * 900 | 28,1 | 33,0 | 37,9 | 1130 | 1350 | 1500 | 6 AM |
| | 41 | * 1400 | 26,6 | 31,5 | 35,8 | 1510 | 1800 | 2030 | 6 AM |
| | 82 | * 2800 | 22,3 | 26,6 | 29,9 | 2600 | 3100 | 3500 | 6 AM |

| Valve Size Rectangular Port | | | Max. C.W.P. Psi | TIME OF OPERATION IN SEC. FOR 90° TURNING OF PLUG | | | | | | | | |
|--------------------------------|---------|--------|--------------------|---|------|------|---|------|------|---|------|------|
| Regular | Venturi | Short | | Gear type I 2 by RPM on output shaft | | | Gear type I 4 by RPM on output shaft | | | Gear type I 7 by RPM on output shaft | | |
| | | | | * 16,6 | * 25 | * 51 | * 21 | * 32 | * 65 | * 26 | * 41 | * 82 |
| 1 1/2" | 2" | 1 1/2" | 500 | 18 | 12 | 6 | | | | | | |
| | | | 740 | | | | | | | | | |
| 2" | 2 1/2" | 2" | 500 | 18 | 12 | 6 | | | | | | |
| | | | 740 | | | | | | | | | |
| 2 1/2" | 3" | 2 1/2" | 500 | 18 | 12 | 6 | | | | | | |
| | | | 740 | | | | | | | | | |
| 3" | 4" | 3" | 500 | 29 | 19 | 10 | | | | | | |
| | | | 740 | | | | | | | | | |
| 4" | 5" | 4 - 5" | 500 | 29 | 19 | 10 | | | | | | |
| | | | 740 | | | | | | | | | |
| 5" | 6" | 6" | 500 | 33 | 22 | 12 | | | | | | |
| | | | 740 | | | | | | | | | |
| 6" | 7-8" | 8" | 500 | | | | 23 | 15 | 8 | | | |
| | | | 500 | | | | 29 | 19 | 9 | | | |
| 8" | 10" | 10" | 285 | | | | 75 | 49 | 24 | | | |
| | | | 500 | | | | 100 | 65 | 32 | | | |
| | | | 740 | | | | 152 | 98 | 49 | | | |
| 10" | 14" | 12" | 740 | | | | 300 | 193 | 97 | | | |
| | | | 285 | | | | 134 | 87 | 44 | | | |
| | | | 500 | | | | 188 | 120 | 61 | | | |
| 12" | 16" | 12" | 740 | | | | 280 | 180 | 91 | | | |
| | | | 740 | | | | 580 | 374 | 188 | | | |
| | | | 285 | | | | 186 | 120 | 60 | | | |
| 14" | 18" | 12" | 500 | | | | 254 | 165 | 83 | | | |
| | | | 740 | | | | 383 | 246 | 123 | | | |
| | | | 740 | | | | 795 | 512 | 256 | | | |
| 16" | 20" | 14" | 285 | | | | 212 | 138 | 68 | | | |
| | | | 500 | | | | 291 | 188 | 94 | | | |
| | | | 740 | | | | 434 | 280 | 140 | | | |
| 18" | 24" | 16" | 740 | | | | 900 | 580 | 291 | | | |
| | | | 285 | | | | 277 | 178 | 89 | | | |
| | | | 500 | | | | 690 | 267 | 134 | | | |
| 20" | 28" | 18" | 740 | | | | 858 | 552 | 277 | | | |
| | | | 285 | | | | 306 | 200 | 99 | | | |
| | | | 500 | | | | 457 | 294 | 148 | | | |
| 24" | 32" | 20" | 740 | | | | 942 | 600 | 305 | | | |
| | | | 285 | | | | 498 | 320 | 161 | | | |
| | | | 500 | | | | 1029 | 660 | 332 | | | |
| 28" | 36" | 24" | 285 | | | | 642 | 414 | 208 | | | |
| | | | 500 | | | | 1329 | 855 | 429 | | | |
| | | | 285 | | | | | | | 936 | 600 | 300 |
| 32" | | | 500 | | | | | | 1230 | 790 | 423 | |

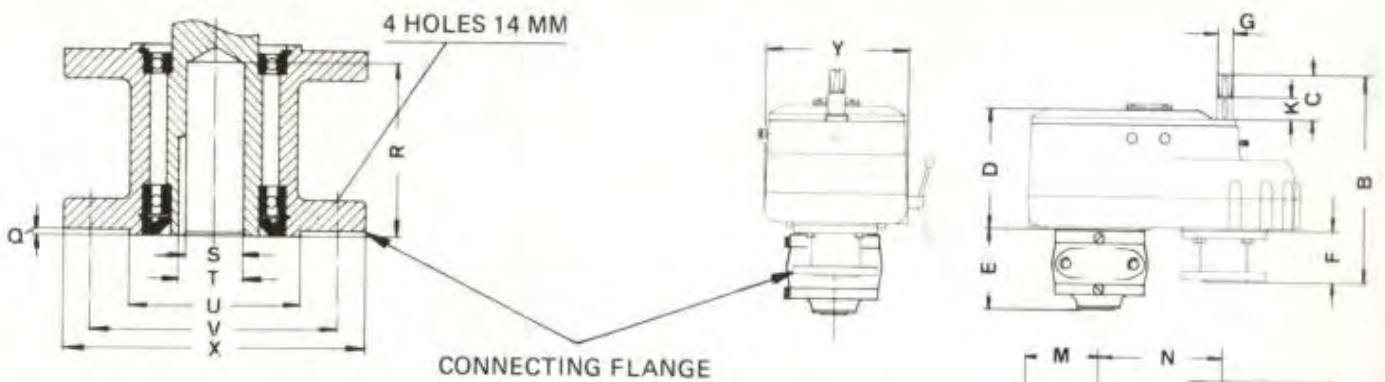
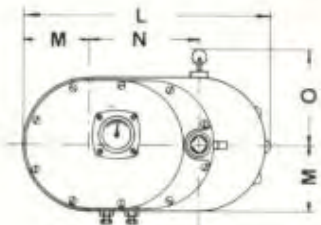
* RPM can be varied.



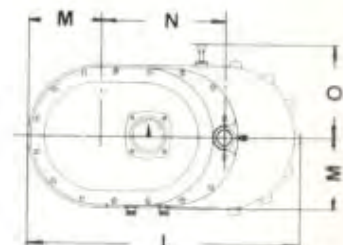
| TYPE I 2 | | | | | | | | | | | | | | | | | | |
|----------|----|-----|-----|------|----|------|-----|----|-----|-----|---|----|----|------|----|----|----|-----|
| B | C | D | E | F | G | K | L | M | N | O | Q | R | S | T | U | V | X | Y |
| 284 | 60 | 152 | 104 | 62,5 | 20 | 25,4 | 264 | 83 | 113 | 125 | 3 | 62 | 20 | 22,7 | 85 | 70 | 90 | 167 |



| TYPE I 4 | | | | | | | | | | | | | | | | | | |
|----------|----|-----|-----|----|----|----|-----|-----|-----|-----|---|----|------|------|----|-----|-----|-----|
| B | C | D | E | F | G | K | L | M | N | O | Q | R | S | T | U | V | X | Y |
| 318 | 75 | 172 | 126 | 87 | 30 | 31 | 390 | 102 | 176 | 160 | 3 | 81 | 30,2 | 33,5 | 90 | 105 | 130 | 204 |



| TYPE I 7 | | | | | | | | | | | | | | | | | | |
|----------|----|-----|-----|----|----|----|-----|-----|-----|-----|---|----|------|------|----|-----|-----|-----|
| B | C | D | E | F | G | K | L | M | N | O | Q | R | S | T | U | V | X | Y |
| 406 | 87 | 204 | 154 | 96 | 30 | 41 | 516 | 135 | 240 | 195 | 3 | 90 | 30,2 | 33,5 | 90 | 130 | 160 | 270 |



Adaptable for use on all wrench operated PR valves, the type K gear can also be mounted on existing valves.

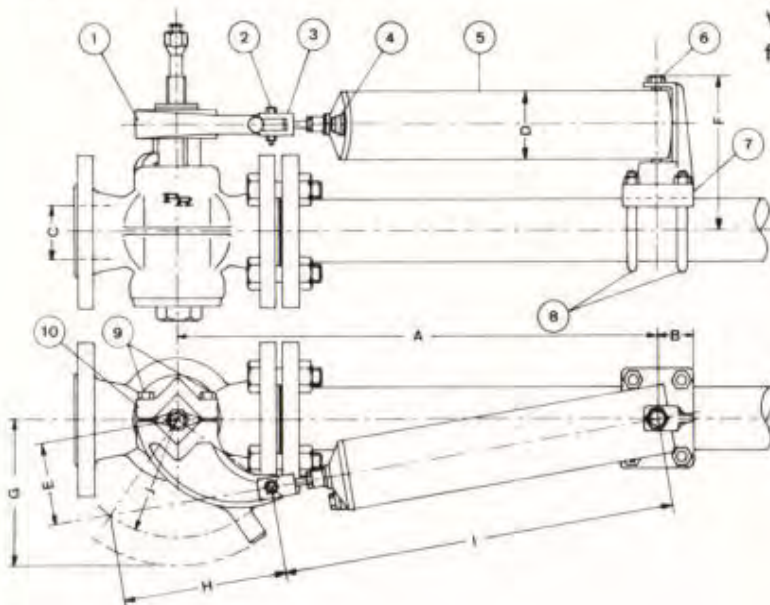
The unit consists of a linear actuator, the rear end of which is attached to a bracket which in turn is clamped to the pipeline. The connecting rod of the actuator is pivotally linked to the adapter arm which is secured to the plug head of the valve.

The stroke of the linear actuator will impart an exact 90° rotation of the plug, the valve stop does not take up any of the thrust of the linear actuator.

The adapter arm is provided with a lever allowing manual operation of the valve, a tubular extension can be utilized for this purpose if required.

Description of Linear Actuator.

Magnetic linear actuators are compact drive units, consisting of; a motor element and a control element.



The conversion of the rotary movement produced by the singlephase capacitor motor into a longitudinal movement is achieved by means of a threaded spindle rigidly coupled to the rotor shaft, and a nut fitted in the connecting rod.

The connecting rod is guided by a maintenance-free dry bearing. The capacitor and two limit switches which ensure automatic limiting of the stroke in the end position are incorporated in the control section.

Voltage and Frequency: normal 1 x 220 V, 50 Hz. Other frequencies are available.

1. Connecting Arm
2. Bolt (Connecting Arm)
3. Piston Rod Fork
4. Screwed Cable entry
5. Linear Actuators
6. Bolt
7. Bracket
8. Clamp Bolts (Bracket)
9. Clamp Bolts (Connecting Arm)
10. Clamp (Connecting Arm)

| Valve Size Class 125 - 150 | | A | B | C | D | E | F | G | H | I | J | Size of plug square | Magnetic Linear Actuators Type |
|-------------------------------|--------------------|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------|---|
| Regular Pattern | Venturi Pattern | | | | | | | | | | | | |
| 1/2" | | 409 | 28 | 15 | 65 | 95 | 116 | 185 | 200 | 304 | 145 | 17 | GC 8.4 SR-1 |
| 3/4" | 1" | 409 | 28 | 20 | 65 | 95 | 116 | 185 | 200 | 304 | 145 | 17 | |
| 1" | 1 1/4" | 409 | 28 | 25 | 65 | 95 | 123 | 185 | 200 | 304 | 145 | 19 | |
| 1 1/4" | 1 1/2" | 401 | 34 | 32 | 65 | 89 | 135 | 207 | 200 | 304 | 145 | 24 | |
| 1 1/2" | 2" | 401 | 37 | 40 | 65 | 89 | 145 | 207 | 200 | 304 | 145 | 27 | |
| 2" | 2 1/2" | 444 | 40 | 50 | 83 | 96 | 169 | 207 | 200 | 339 | 145 | 30 | HC 8.5 SR |
| 2 1/2" | 3" | 444 | 46 | 70 | 83 | 96 | 173 | 207 | 200 | 339 | 145 | 36 | |
| 3" | 4" | 560 | 55 | 80 | 113 | 119 | 206 | 240 | 250 | 429 | 181 | 50 | LC 12.6 ST |
| 4" | 5" | 564 | 63 | 100 | 113 | 122 | 227 | 265 | 250 | 429 | 181 | 55 | |



LUBRICATED STRAIGHTWAY VALVES

Straightway—Section B

| Identification | Page | Identification | Page | Identification | Page | Identification | Page | Identification | Page |
|----------------|------|----------------|------|----------------|------|----------------|------|----------------|------|
| 1-AR 40014 | B1 | 1-AR 70047 | B16 | 1-AR 70147 C | B25 | 1-AR 70544 | B40 | 1-AR 71027 A | B52 |
| 1-AV 40014 | B2 | 1-AR 70047 C | B16 | 1-AS 70147 C | B26 | 1-AS 70544 | B40 | 1-AR 71027 C | B52 |
| 1-AR 40014 C | B1 | 1-AR 70054 | B17 | 1-AV 70147 C | B27 | 1-AV 70544 | B41 | 1-AR 71044 | B53 |
| 1-AV 40014 C | B2 | 1-AR 70054 C | B17 | 1-AR 70147 D | B25 | 1-AR 70544 C | B40 | 1-AR 71044 C | B53 |
| 1-AR 40034 | B3 | 1-AR 70057 | B17 | 1-AS 70147 D | B26 | 1-AS 70544 C | B40 | 1-AR 71047 | B53 |
| 1-AV 40034 | B4 | 1-AR 70057 C | B17 | 1-AV 70147 D | B27 | 1-AV 70544 C | B41 | 1-AR 71047 C | B53 |
| 1-AR 40034 C | B3 | 1-AR 70064 | B18 | 1-AR 70154 | B28 | 1-AR 70544 D | B40 | 1-AR 71124 | B59 |
| 1-AV 40034 C | B4 | 1-AR 70064 C | B18 | 1-AV 70154 | B29 | 1-AS 70544 D | B40 | 1-AR 71124 A | B59 |
| 1-AR 40114 | B7 | 1-AR 70067 | B18 | 1-AR 70154 C | B28 | 1-AV 70544 D | B41 | 1-AR 71124 C | B59 |
| 1-AS 40114 | B8 | 1-AR 70067 C | B18 | 1-AV 70154 C | B29 | 1-AR 70547 | B40 | 1-AR 71124 D | B59 |
| 1-AV 40114 | B9 | 1-AR 70124 | B22 | 1-AR 70154 D | B28 | 1-AS 70547 | B40 | 1-AR 71127 | B59 |
| 1-AR 40114 A | B7 | 1-AS 70124 | B23 | 1-AV 70154 D | B29 | 1-AV 70547 | B41 | 1-AR 71127 A | B59 |
| 1-AS 40114 A | B8 | 1-AV 70124 | B24 | 1-AR 70157 | B28 | 1-AR 70547 C | B40 | 1-AR 71127 C | B59 |
| 1-AV 40114 A | B9 | 1-AR 70124 A | B22 | 1-AV 70157 | B29 | 1-AS 70547 C | B40 | 1-AR 71127 D | B59 |
| 1-AR 40114 C | B7 | 1-AS 70124 A | B23 | 1-AR 70157 C | B28 | 1-AV 70547 C | B41 | 1-AR 71524 | B66 |
| 1-AS 40114 C | B8 | 1-AV 70124 A | B24 | 1-AV 70157 C | B29 | 1-AR 70547 D | B40 | 1-AR 71524 A | B66 |
| 1-AV 40114 C | B9 | 1-AR 70124 C | B22 | 1-AR 70157 D | B28 | 1-AS 70547 D | B40 | 1-AR 71524 C | B66 |
| 1-AR 40114 D | B7 | 1-AS 70124 C | B23 | 1-AV 70157 D | B29 | 1-AV 70547 D | B41 | 1-AR 71524 D | B66 |
| 1-AS 40114 D | B8 | 1-AV 70124 C | B24 | 1-AR 70164 | B30 | 1-AR 70554 | B42 | 1-AR 71527 | B66 |
| 1-AV 40114 D | B9 | 1-AR 70124 D | B22 | 1-AV 70164 | B31 | 1-AV 70554 | B43 | 1-AR 71527 A | B66 |
| 1-AR 40134 | B10 | 1-AS 70124 D | B23 | 1-AR 70164 C | B30 | 1-AR 70554 C | B42 | 1-AR 71527 C | B66 |
| 1-AS 40134 | B11 | 1-AV 70124 D | B24 | 1-AV 70164 C | B31 | 1-AV 70554 C | B43 | 1-AR 71527 D | B66 |
| 1-AV 40134 | B12 | 1-AR 70127 | B22 | 1-AR 70164 D | B30 | 1-AR 70554 D | B42 | | |
| 1-AR 40134 C | B10 | 1-AS 70127 | B23 | 1-AV 70164 D | B31 | 1-AV 70554 D | B43 | | |
| 1-AS 40134 C | B11 | 1-AV 70127 | B24 | 1-AR 70167 | B30 | 1-AR 70557 | B42 | | |
| 1-AV 40134 C | B12 | 1-AR 70127 A | B22 | 1-AV 70167 | B31 | 1-AV 70557 | B43 | | |
| 1-AR 40134 D | B10 | 1-AS 70127 A | B23 | 1-AR 70167 C | B30 | 1-AR 70557 C | B42 | | |
| 1-AV 40134 D | B12 | 1-AV 70127 A | B24 | 1-AV 70167 C | B31 | 1-AV 70557 C | B43 | | |
| 1-AR 41014 | B5 | 1-AR 70127 C | B22 | 1-AR 70167 D | B30 | 1-AR 70557 D | B42 | | |
| 1-AR 41014 A | B5 | 1-AS 70127 C | B23 | 1-AV 70167 D | B31 | 1-AV 70557 D | B43 | | |
| 1-AR 41014 C | B5 | 1-AV 70127 C | B24 | 1-AR 70524 | B38 | 1-AR 70564 | B44 | | |
| 1-AR 41034 | B6 | 1-AR 70127 D | B22 | 1-AV 70524 | B39 | 1-AV 70564 | B45 | | |
| 1-AR 41034 C | B6 | 1-AS 70127 D | B23 | 1-AR 70524 A | B38 | 1-AR 70564 C | B44 | | |
| 1-AR 41114 | B13 | 1-AV 70127 D | B24 | 1-AV 70524 A | B39 | 1-AV 70564 C | B45 | | |
| 1-AR 41114 A | B13 | 1-AR 70144 | B25 | 1-AR 70524 C | B38 | 1-AR 70564 D | B44 | | |
| 1-AR 41114 C | B13 | 1-AS 70144 | B26 | 1-AV 70524 C | B39 | 1-AV 70564 D | B45 | | |
| 1-AR 41114 D | B13 | 1-AV 70144 | B27 | 1-AR 70524 D | B38 | 1-AR 70567 | B44 | | |
| 1-AR 41134 | B14 | 1-AR 70144 C | B25 | 1-AV 70524 D | B39 | 1-AV 70567 | B45 | | |
| 1-AR 41134 C | B14 | 1-AS 70144 C | B26 | 1-AR 70527 | B38 | 1-AR 70567 C | B44 | | |
| 1-AR 41134 D | B14 | 1-AV 70144 C | B27 | 1-AV 70527 | B39 | 1-AV 70567 C | B45 | | |
| 1-AR 70024 | B15 | 1-AR 70144 D | B25 | 1-AR 70527 A | B38 | 1-AR 70567 D | B44 | | |
| 1-AR 70024 C | B15 | 1-AS 70144 D | B26 | 1-AV 70527 A | B39 | 1-AV 70567 D | B45 | | |
| 1-AR 70027 | B15 | 1-AV 70144 D | B27 | 1-AR 70527 C | B38 | 1-AR 71024 | B52 | | |
| 1-AR 70027 C | B15 | 1-AR 70147 | B25 | 1-AV 70527 C | B39 | 1-AR 71024 A | B52 | | |
| 1-AR 70044 | B16 | 1-AS 70147 | B26 | 1-AR 70527 D | B38 | 1-AR 71024 C | B52 | | |
| 1-AR 70044 C | B16 | 1-AV 70147 | B27 | 1-AV 70527 D | B39 | 1-AR 71027 | B52 | | |



LUBRICATED STRAIGHTWAY VALVES

Straightway—Section B

| Identification | Page | Identification | Page | Identification | Page | Identification | Page | Identification | Page |
|----------------|------|----------------|------|----------------|------|----------------|------|----------------|------|
| 1-AR 40014 | B1 | 1-AR 70047 | B16 | 1-AR 70147 C | B25 | 1-AR 70544 | B40 | 1-AR 71027 A | B52 |
| 1-AV 40014 | B2 | 1-AR 70047 C | B16 | 1-AS 70147 C | B26 | 1-AS 70544 | B40 | 1-AR 71027 C | B52 |
| 1-AR 40014 C | B1 | 1-AR 70054 | B17 | 1-AV 70147 C | B27 | 1-AV 70544 | B41 | 1-AR 71044 | B53 |
| 1-AV 40014 C | B2 | 1-AR 70054 C | B17 | 1-AR 70147 D | B25 | 1-AR 70544 C | B40 | 1-AR 71044 C | B53 |
| 1-AR 40034 | B3 | 1-AR 70057 | B17 | 1-AS 70147 D | B26 | 1-AS 70544 C | B40 | 1-AR 71047 | B53 |
| 1-AV 40034 | B4 | 1-AR 70057 C | B17 | 1-AV 70147 D | B27 | 1-AV 70544 C | B41 | 1-AR 71047 C | B53 |
| 1-AR 40034 C | B3 | 1-AR 70064 | B18 | 1-AR 70154 | B28 | 1-AR 70544 D | B40 | 1-AR 71124 | B59 |
| 1-AV 40034 C | B4 | 1-AR 70064 C | B18 | 1-AV 70154 | B29 | 1-AS 70544 D | B40 | 1-AR 71124 A | B59 |
| 1-AR 40114 | B7 | 1-AR 70067 | B18 | 1-AR 70154 C | B28 | 1-AV 70544 D | B41 | 1-AR 71124 C | B59 |
| 1-AS 40114 | B8 | 1-AR 70067 C | B18 | 1-AV 70154 C | B29 | 1-AR 70547 | B40 | 1-AR 71124 D | B59 |
| 1-AV 40114 | B9 | 1-AR 70124 | B22 | 1-AR 70154 D | B28 | 1-AS 70547 | B40 | 1-AR 71127 | B59 |
| 1-AR 40114 A | B7 | 1-AS 70124 | B23 | 1-AV 70154 D | B29 | 1-AV 70547 | B41 | 1-AR 71127 A | B59 |
| 1-AS 40114 A | B8 | 1-AV 70124 | B24 | 1-AR 70157 | B28 | 1-AR 70547 C | B40 | 1-AR 71127 C | B59 |
| 1-AV 40114 A | B9 | 1-AR 70124 A | B22 | 1-AV 70157 | B29 | 1-AS 70547 C | B40 | 1-AR 71127 D | B59 |
| 1-AR 40114 C | B7 | 1-AS 70124 A | B23 | 1-AR 70157 C | B28 | 1-AV 70547 C | B41 | 1-AR 71524 | B66 |
| 1-AS 40114 C | B8 | 1-AV 70124 A | B24 | 1-AV 70157 C | B29 | 1-AR 70547 D | B40 | 1-AR 71524 A | B66 |
| 1-AV 40114 C | B9 | 1-AR 70124 C | B22 | 1-AR 70157 D | B28 | 1-AS 70547 D | B40 | 1-AR 71524 C | B66 |
| 1-AR 40114 D | B7 | 1-AS 70124 C | B23 | 1-AV 70157 D | B29 | 1-AV 70547 D | B41 | 1-AR 71524 D | B66 |
| 1-AS 40114 D | B8 | 1-AV 70124 C | B24 | 1-AR 70164 | B30 | 1-AR 70554 | B42 | 1-AR 71527 | B66 |
| 1-AV 40114 D | B9 | 1-AR 70124 D | B22 | 1-AV 70164 | B31 | 1-AV 70554 | B43 | 1-AR 71527 A | B66 |
| 1-AR 40134 | B10 | 1-AS 70124 D | B23 | 1-AR 70164 C | B30 | 1-AR 70554 C | B42 | 1-AR 71527 C | B66 |
| 1-AS 40134 | B11 | 1-AV 70124 D | B24 | 1-AV 70164 C | B31 | 1-AV 70554 C | B43 | 1-AR 71527 D | B66 |
| 1-AV 40134 | B12 | 1-AR 70127 | B22 | 1-AR 70164 D | B30 | 1-AR 70554 D | B42 | | |
| 1-AR 40134 C | B10 | 1-AS 70127 | B23 | 1-AV 70164 D | B31 | 1-AV 70554 D | B43 | | |
| 1-AS 40134 C | B11 | 1-AV 70127 | B24 | 1-AR 70167 | B30 | 1-AR 70557 | B42 | | |
| 1-AV 40134 C | B12 | 1-AR 70127 A | B22 | 1-AV 70167 | B31 | 1-AV 70557 | B43 | | |
| 1-AR 40134 D | B10 | 1-AS 70127 A | B23 | 1-AR 70167 C | B30 | 1-AR 70557 C | B42 | | |
| 1-AV 40134 D | B12 | 1-AV 70127 A | B24 | 1-AV 70167 C | B31 | 1-AV 70557 C | B43 | | |
| 1-AR 41014 | B5 | 1-AR 70127 C | B22 | 1-AR 70167 D | B30 | 1-AR 70557 D | B42 | | |
| 1-AR 41014 A | B5 | 1-AS 70127 C | B23 | 1-AV 70167 D | B31 | 1-AV 70557 D | B43 | | |
| 1-AR 41014 C | B5 | 1-AV 70127 C | B24 | 1-AR 70524 | B38 | 1-AR 70564 | B44 | | |
| 1-AR 41034 | B6 | 1-AR 70127 D | B22 | 1-AV 70524 | B39 | 1-AV 70564 | B45 | | |
| 1-AR 41034 C | B6 | 1-AS 70127 D | B23 | 1-AR 70524 A | B38 | 1-AR 70564 C | B44 | | |
| 1-AR 41114 | B13 | 1-AV 70127 D | B24 | 1-AV 70524 A | B39 | 1-AV 70564 C | B45 | | |
| 1-AR 41114 A | B13 | 1-AR 70144 | B25 | 1-AR 70524 C | B38 | 1-AR 70564 D | B44 | | |
| 1-AR 41114 C | B13 | 1-AS 70144 | B26 | 1-AV 70524 C | B39 | 1-AV 70564 D | B45 | | |
| 1-AR 41114 D | B13 | 1-AV 70144 | B27 | 1-AR 70524 D | B38 | 1-AR 70567 | B44 | | |
| 1-AR 41134 | B14 | 1-AR 70144 C | B25 | 1-AV 70524 D | B39 | 1-AV 70567 | B45 | | |
| 1-AR 41134 C | B14 | 1-AS 70144 C | B26 | 1-AR 70527 | B38 | 1-AR 70567 C | B44 | | |
| 1-AR 41134 D | B14 | 1-AV 70144 C | B27 | 1-AV 70527 | B39 | 1-AV 70567 C | B45 | | |
| 1-AR 70024 | B15 | 1-AR 70144 D | B25 | 1-AR 70527 A | B38 | 1-AR 70567 D | B44 | | |
| 1-AR 70024 C | B15 | 1-AS 70144 D | B26 | 1-AV 70527 A | B39 | 1-AV 70567 D | B45 | | |
| 1-AR 70027 | B15 | 1-AV 70144 D | B27 | 1-AR 70527 C | B38 | 1-AR 71024 | B52 | | |
| 1-AR 70027 C | B15 | 1-AR 70147 | B25 | 1-AV 70527 C | B39 | 1-AR 71024 A | B52 | | |
| 1-AR 70044 | B16 | 1-AS 70147 | B26 | 1-AR 70527 D | B38 | 1-AR 71024 C | B52 | | |
| 1-AR 70044 C | B16 | 1-AV 70147 | B27 | 1-AV 70527 D | B39 | 1-AR 71027 | B52 | | |



1" 1-AR 40034



3" 1-AS 40114



6" 1-AR 70124 A



16" 1-AR 70124 C



16" 1-AR 70124 D

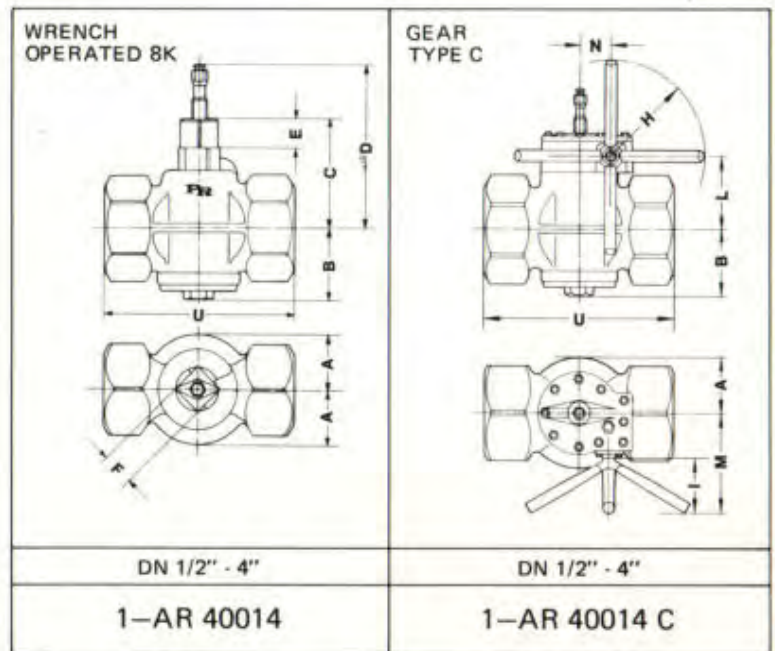


18" 1-AR 70524 DE

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 200 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|--------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 125 | 200 Psi | Shell 300 Psi Seat 220 Psi | Straightway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectangular Full bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

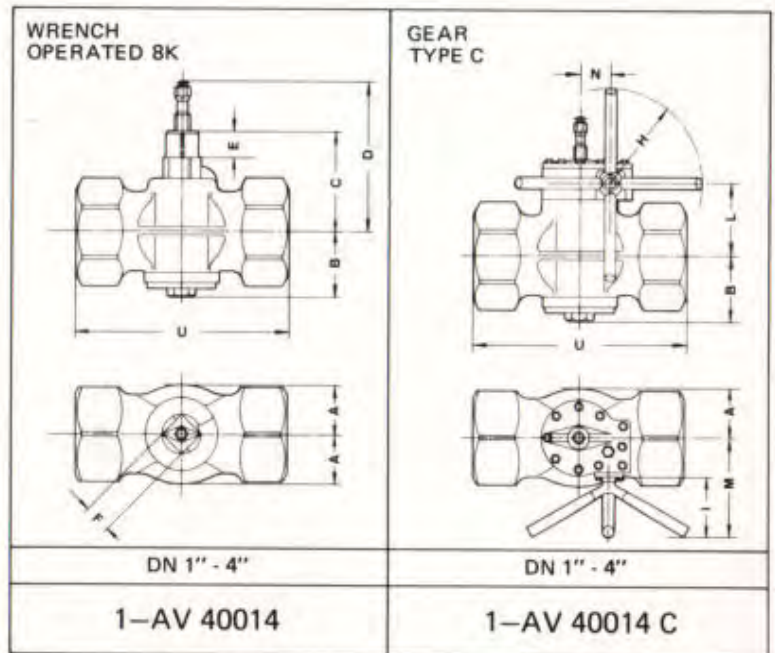


| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 89 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 95 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | 108 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | 121 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | 140 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | 152 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | 222 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 55 | 238 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | 273 |

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 200 Lbs
VENTURI PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|-----------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 125 | 200 Psi | Shell 300 Psi Seat 220 Psi | Straightway Venturi | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectangular Reduced bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

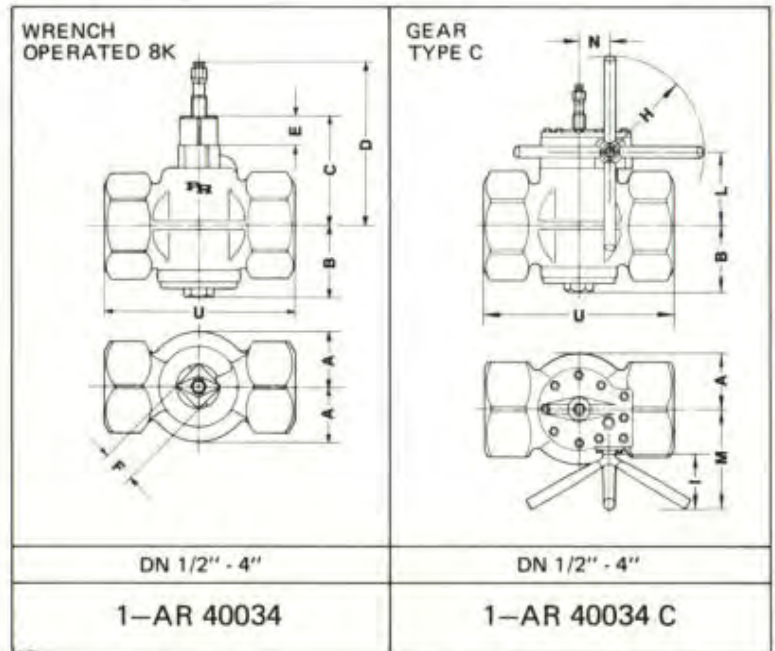


| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 108 |
| 1 1/4" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | 121 |
| 1 1/2" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | 140 |
| 2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | 152 |
| 2 1/2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | 222 |
| 3" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | 238 |
| 4" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | 273 |

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 500 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|--------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 250 | 500 Psi | Shell 750 Psi Seat 550 Psi | Straightway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectangular Full bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

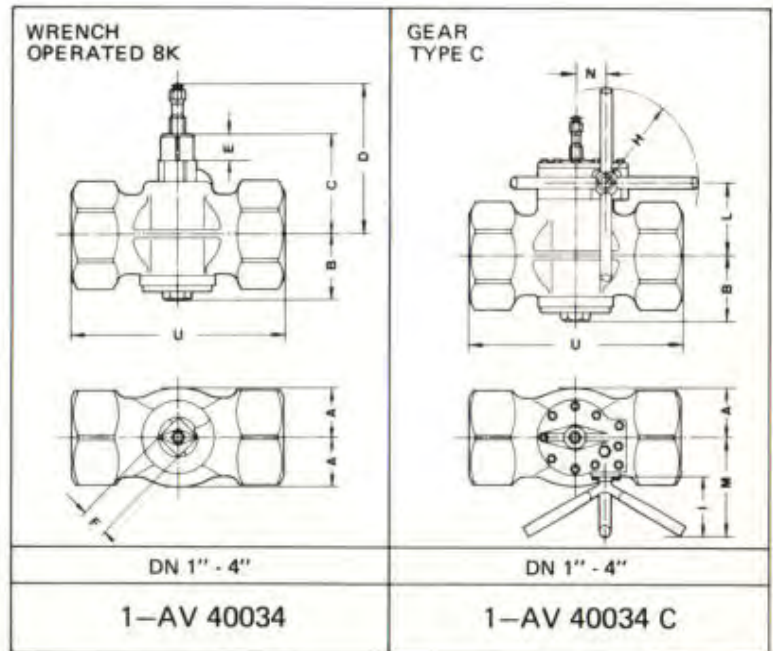


| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 89 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 95 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | 108 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | 121 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | 140 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | 152 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | 222 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | 238 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | 273 |

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 500 Lbs
VENTURI PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-----------------------|---------------------|---------------------------------------|--------------------------|-------------------------------|-------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 250 | 500 Psi | Shell 750 Seat 550 | Straightway Venturi | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectangular Reduced bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

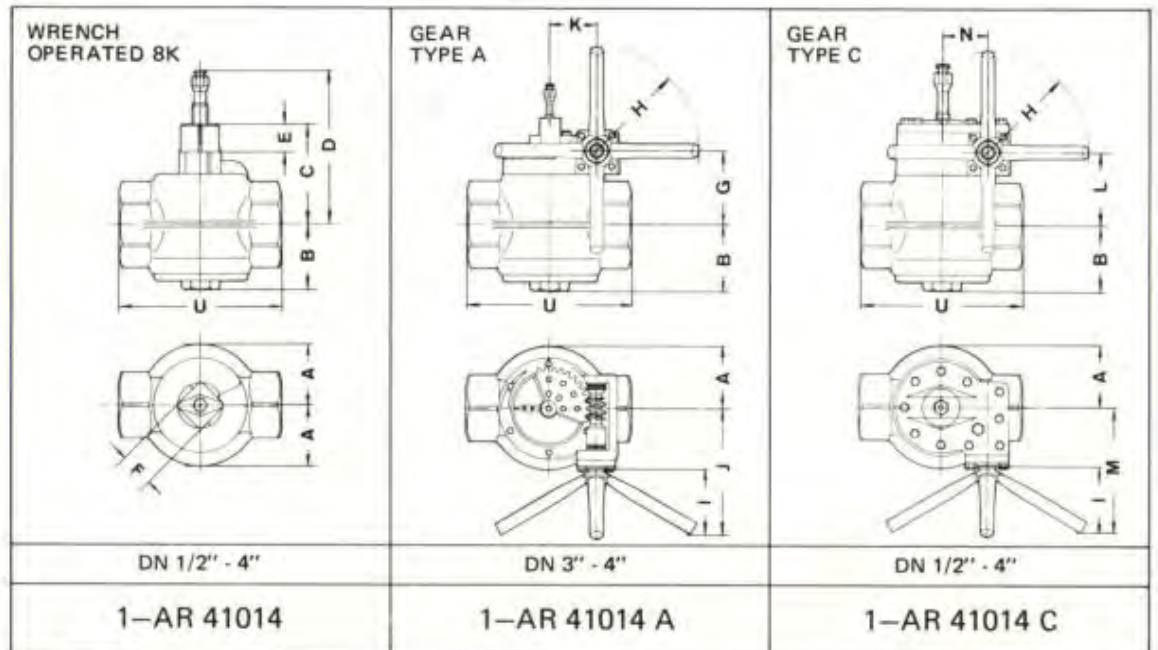


| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 108 |
| 1 1/4" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | 121 |
| 1 1/2" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | 140 |
| 2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | 152 |
| 2 1/2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | 222 |
| 3" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | 238 |
| 4" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | 273 |

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 200 Lbs
REGULAR PATTERN
ROUND PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|--------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 125 | 200 Psi | Shell 300 Psi Seat 220 Psi | Straightway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Round Full bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |



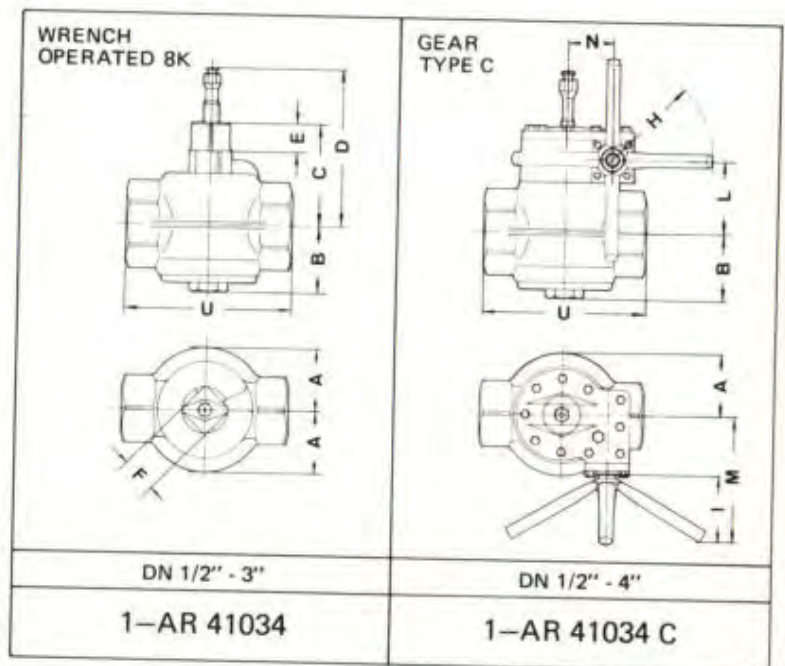
Note: Bolted cover from DN 65 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | U |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|----|-----|
| 1/2" | 32 | 48 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | 102 |
| 3/4" | 34 | 50 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | 102 |
| 1" | 42 | 60 | 90 | 138 | 20 | 24 | | 150 | 101 | | | 102 | 184 | 47 | 118 |
| 1 1/4" | 48 | 68 | 100 | 148 | 20 | 24 | | 150 | 101 | | | 110 | 181 | 47 | 130 |
| 1 1/2" | 61 | 78 | 105 | 165 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | 155 |
| 2" | 76 | 92 | 123 | 183 | 23 | 30 | | 150 | 101 | | | 118 | 195 | 65 | 185 |
| 2 1/2" | 107 | 95 | 132 | 192 | 33 | 36 | | 150 | 101 | | | 118 | 195 | 65 | 250 |
| 3" | 120 | 102 | 154 | 234 | 40 | 50 | 127 | 150 | 101 | 195 | 71 | 127 | 195 | 71 | 270 |
| 4" | 147 | 120 | 182 | 262 | 42 | 55 | 141 | 214 | 157 | 268 | 84 | 143 | 268 | 84 | 330 |

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 500 Lbs
REGULAR PATTERN
ROUND PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|--------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 250 | 500 Psi | Shell 750 Psi Seat 550 Psi | Straightway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Round Full bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |



Note: Bolted cover from DN 65 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | U |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|----|-----|
| 1/2" | 32 | 48 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | 102 |
| 3/4" | 34 | 50 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | 102 |
| 1" | 42 | 60 | 90 | 138 | 20 | 24 | | 150 | 101 | | | 102 | 184 | 47 | 118 |
| 1 1/4" | 48 | 68 | 100 | 148 | 20 | 24 | | 150 | 101 | | | 110 | 181 | 47 | 130 |
| 1 1/2" | 61 | 78 | 105 | 165 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | 155 |
| 2" | 76 | 92 | 123 | 183 | 23 | 30 | | 150 | 101 | | | 118 | 195 | 65 | 185 |
| 2 1/2" | 107 | 95 | 132 | 192 | 33 | 36 | | 150 | 101 | | | 118 | 195 | 65 | 250 |
| 3" | 120 | 102 | 154 | 234 | 40 | 50 | 127 | 150 | 101 | 195 | 71 | 127 | 195 | 71 | 270 |
| 4" | 147 | 120 | 182 | 262 | 42 | 55 | 141 | 214 | 157 | 268 | 84 | 143 | 268 | 84 | 330 |

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 200 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|--------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 125 | 200 Psi | Shell 300 Psi Seat 220 Psi | Straightway Regular | Flanges F.F. ANSI B 16.1 Face to Face ANSI B 16.10 | Rectangular Full bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

| WRENCH OPERATED 8K | GEAR TYPE A | GEAR TYPE C | GEAR TYPE D |
|--------------------|--------------|---------------|--------------|
| | | | |
| DN 1/2" - 6" | DN 5" - 10" | DN 1/2" - 30" | DN 6" - 30" |
| 1-AR 40114 | 1-AR 40114 A | 1-AR 40114 C | 1-AR 40114 D |

Note: Bolted cover from DN 125 mm.

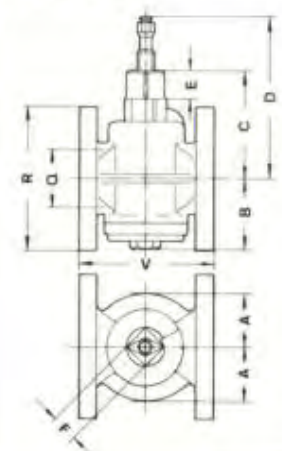
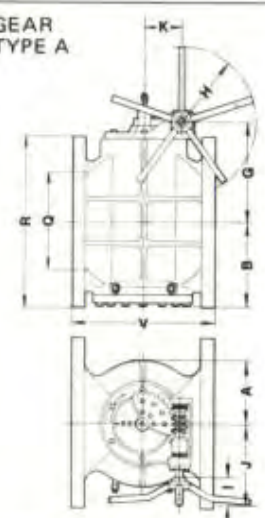
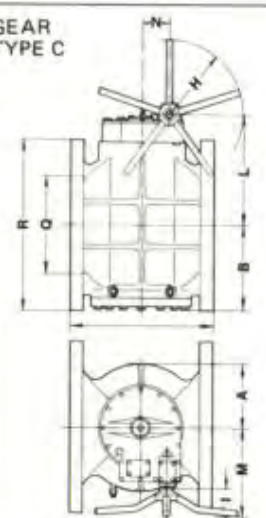
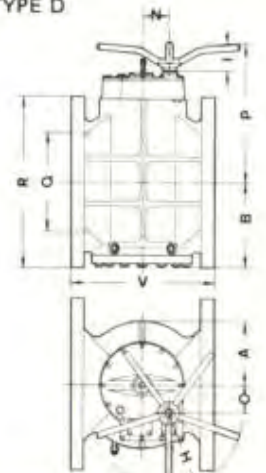
| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|--------|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | * 13 | * 89 | * 121 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | * 19 | * 98 | * 121 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | | 45 | 16 | | | 80 | 104 | 32 | | | 25 | 108 | 140 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | | 45 | 16 | | | 95 | 104 | 32 | | | 32 | 118 | 165 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | 38 | 127 | 165 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | | 150 | 101 | | | 130 | 181 | 47 | | | 51 | 152 | 191 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | | 150 | 101 | | | 132 | 181 | 47 | | | 64 | 178 | 210 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | | 150 | 101 | | | 153 | 195 | 65 | | | 76 | 191 | 229 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | | 150 | 101 | | | 156 | 195 | 65 | | | 102 | 229 | 229 |
| 5" | 120 | 145 | 214 | 294 | 53 | 55 | 163 | 150 | 101 | 195 | 71 | 163 | 195 | 71 | | | 127 | 254 | 356 |
| 6" | 140 | 170 | 252 | 332 | 65 | 65 | 182 | 214 | 101 | 268 | 84 | 243 | 268 | 85 | 40 | 366 | 152 | 279 | 394 |
| 8" | 185 | 210 | 306 | 386 | 73 | 70 | 230 | 300 | 101 | 273 | 120 | 290 | 293 | 100 | 70 | 416 | 203 | 343 | 457 |
| 10" | 225 | 250 | 380 | 460 | 93 | 100 | 275 | 300 | 101 | 310 | 156 | 375 | 361 | 135 | 69 | 508 | 254 | 406 | 533 |
| 12" | 262 | 295 | 420 | 500 | 93 | 100 | | 300 | 101 | | | 415 | 400 | 160 | 108 | 549 | 305 | 483 | 610 |
| 14" | 305 | 335 | 492 | 572 | 120 | 125 | | 350 | 101 | | | 452 | 423 | 175 | 130 | 585 | 356 | 533 | 686 |
| 16" | 350 | 362 | | | | | | 350 | 101 | | | 492 | 460 | 176 | 168 | 625 | 406 | 597 | 762 |
| 18" | 385 | 419 | | | | | | 350 | 101 | | | 528 | 483 | 196 | 192 | 660 | 457 | 635 | 864 |
| 20" | 425 | 460 | | | | | | 450 | 101 | | | 570 | 501 | 200 | 210 | 704 | 508 | 699 | 914 |
| 24" | 520 | 545 | | | | | | 450 | 101 | | | 645 | 568 | 246 | 279 | 775 | 610 | 813 | * 1067 |
| 30" | 540 | 619 | | | | | | 450 | 111 | | | 835 | 660 | 299 | 270 | 988 | 762 | 984 | * 1295 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 200 Lbs
SHORT PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------|----------------------|---|-------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 125 | 200 Psi | Shell 300 Psi Seat 220 | Straightway Short | Flanges F.F. ANSI B 16.1 Face to Face ANSI B 16.10 | Rectangular | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

| WRENCH OPERATED 8K | GEAR TYPE A | GEAR TYPE C | GEAR TYPE D |
|--|--|---|--|
|  |  |  |  |
| DN 1" - 8" | DN 6" - 12" | DN 1" - 12" | DN 8" - 12" |
| 1-AS 40114 | 1-AS 40114 A | 1-AS 40114 C | 1-AS 40114 D |

Note: Bolted cover from DN 150 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | V |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|
| 1" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | 25 | 108 | 140 |
| 1 1/2" | 34 | 64 | 95 | 143 | 20 | 24 | | 45 | 16 | | | 95 | 104 | 32 | | | 38 | 127 | 165 |
| 2" | 42 | 74 | 106 | 166 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | 51 | 152 | 178 |
| 2 1/2" | 48 | 85 | 120 | 180 | 23 | 30 | | 150 | 101 | | | 130 | 181 | 47 | | | 64 | 178 | 191 |
| 3" | 67 | 105 | 130 | 190 | 33 | 36 | | 150 | 101 | | | 132 | 181 | 47 | | | 76 | 191 | 203 |
| 4" | 76 | 120 | 151 | 231 | 40 | 50 | | 150 | 101 | | | 153 | 195 | 65 | | | 102 | 229 | 229 |
| 5" | 94 | 145 | 173 | 253 | 42 | 55 | | 150 | 101 | | | 156 | 195 | 65 | | | 127 | 254 | 254 |
| 6" | 120 | 145 | 214 | 294 | 53 | 55 | 163 | 150 | 101 | 195 | 71 | 163 | 195 | 71 | | | 152 | 279 | 267 |
| 8" | 120 | 184 | 252 | 332 | 53 | 55 | 205 | 214 | 101 | 268 | 84 | 267 | 268 | 85 | 46 | 390 | 203 | 343 | 292 |
| 10" | 140 | 220 | 302 | 382 | 65 | 65 | 251 | 300 | 101 | 273 | 120 | 313 | 293 | 100 | 70 | 437 | 254 | 406 | 330 |
| 12" | 185 | 258 | 354 | 434 | 73 | 70 | 278 | 300 | 101 | 273 | 120 | 338 | 293 | 100 | 70 | 464 | 305 | 483 | 356 |

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 200 Lbs
VENTURI PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|--|--------------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 125 | 200 Psi | Shell 300 Psi Seat 220 Psi | Straightway Venturi | Flanges F.F. ANSI B. 16.1 Face to Face ANSI B 16.10 | Rectangular Reduced bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

| WRENCH OPERATED 8K | GEAR TYPE A | GEAR TYPE C | GEAR TYPE D |
|--------------------|--------------|--------------|--------------|
| | | | |
| DN 1" - 8" | DN 6" - 14" | DN 1" - 36" | DN 8" - 36" |
| 1-AV 40114 | 1-AV 40114 A | 1-AV 40114 C | 1-AV 40114 D |

Note: Bolted cover from DN 150 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|-------|
| 1" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | 25 | 108 | * 140 |
| 1 1/4" | 32 | 57 | 82 | 118 | 18 | 19 | | 45 | 16 | | | 80 | 104 | 32 | | | 32 | 118 | * 165 |
| 1 1/2" | 34 | 64 | 95 | 143 | 20 | 24 | | 45 | 16 | | | 95 | 104 | 32 | | | 38 | 127 | * 165 |
| 2" | 42 | 74 | 106 | 166 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | 51 | 152 | * 191 |
| 2 1/2" | 48 | 85 | 120 | 180 | 23 | 30 | | 150 | 101 | | | 130 | 181 | 47 | | | 64 | 178 | * 210 |
| 3" | 67 | 105 | 130 | 190 | 33 | 36 | | 150 | 101 | | | 132 | 181 | 47 | | | 76 | 191 | * 229 |
| 4" | 76 | 120 | 151 | 231 | 40 | 50 | | 150 | 101 | | | 153 | 195 | 65 | | | 102 | 229 | * 229 |
| 5" | 94 | 145 | 173 | 253 | 42 | 55 | | 150 | 101 | | | 156 | 195 | 65 | | | 127 | 254 | * 356 |
| 6" | 120 | 145 | 214 | 294 | 53 | 55 | 163 | 150 | 101 | 195 | 71 | 163 | 195 | 71 | | | 152 | 279 | 394 |
| 8" | 140 | 170 | 252 | 332 | 65 | 65 | 182 | 214 | 101 | 268 | 84 | 243 | 268 | 85 | 40 | 366 | 203 | 343 | 457 |
| 10" | 185 | 210 | 306 | 386 | 73 | 70 | 230 | 300 | 101 | 273 | 120 | 290 | 293 | 100 | 70 | 416 | 254 | 406 | 533 |
| 12" | 205 | 230 | 324 | 404 | 73 | 70 | 248 | 300 | 101 | 273 | 120 | 308 | 293 | 100 | 70 | 434 | 305 | 483 | 610 |
| 14" | 245 | 270 | 402 | 482 | 93 | 100 | 297 | 300 | 101 | 310 | 156 | 397 | 361 | 135 | 69 | 530 | 356 | 533 | 686 |
| 16" | 262 | 295 | 420 | 500 | 93 | 100 | | 300 | 101 | | | 415 | 400 | 160 | 108 | 549 | 406 | 597 | 762 |
| 18" | 305 | 335 | 492 | 572 | 120 | 125 | | 350 | 101 | | | 452 | 423 | 175 | 130 | 585 | 457 | 635 | 864 |
| 20" | 350 | 362 | | | | | | 350 | 101 | | | 492 | 460 | 176 | 168 | 625 | 508 | 699 | 914 |
| 24" | 425 | 460 | | | | | | 450 | 101 | | | 570 | 501 | 200 | 210 | 704 | 610 | 813 | 1067 |
| 30" | 520 | 545 | | | | | | 450 | 101 | | | 645 | 568 | 246 | 279 | 775 | 762 | 984 | 1295 |
| 36" | 655 | 700 | | | | | | 550 | 111 | | | 970 | 725 | 311 | 297 | 1135 | 914 | 1168 | 1600 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 500 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------|------------------------|---|--------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 250 | 500 Psi | Shell 750 Psi Seat 550 | Straightway Regular | Flanges R.F. ANSI B 16.1 Face to face ANSI B 16.10 | Rectangular Full bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

| | | |
|---------------------------|--------------------|--------------------|
| <p>WRENCH OPERATED 8K</p> | <p>GEAR TYPE C</p> | <p>GEAR TYPE D</p> |
| DN 1/2" - 5" | DN 1/2" - 30" | DN 6" - 30" |
| 1-AR 40134 | 1-AR 40134 C | 1-AR 40134 D |

Note: Bolted cover from DN 125 mm.

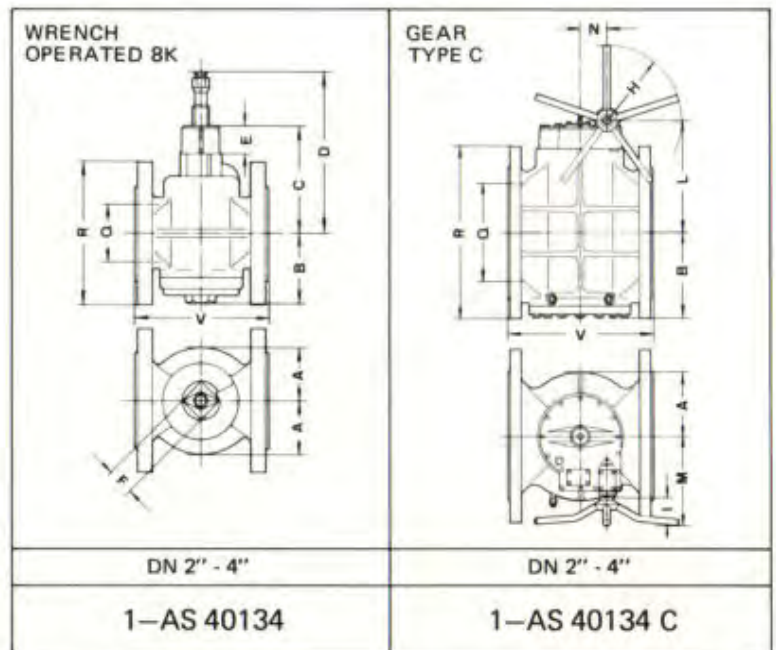
| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|-------|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | * 13 | * 95 | * 130 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | * 19 | * 118 | * 150 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | | 45 | 16 | | | 80 | 104 | 32 | | | 25 | 124 | 159 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | | 45 | 16 | | | 95 | 104 | 32 | | | 32 | 133 | * 180 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | 38 | 156 | 191 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | | 150 | 101 | | | 130 | 181 | 47 | | | 51 | 165 | 216 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | | 150 | 101 | | | 132 | 181 | 47 | | | 64 | 191 | 241 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | | 150 | 101 | | | 153 | 195 | 65 | | | 76 | 210 | 283 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | | 150 | 101 | | | 156 | 195 | 65 | | | 102 | 254 | 305 |
| 5" | 120 | 145 | 214 | 294 | 53 | 55 | 163 | 150 | 101 | 195 | 71 | 163 | 195 | 71 | | | 127 | 279 | 387 |
| 6" | 140 | 170 | 252 | 332 | 65 | 65 | 182 | 214 | 101 | 268 | 84 | 243 | 268 | 85 | 40 | 366 | 152 | 318 | 426 |
| 8" | 185 | 210 | 306 | 386 | 73 | 70 | 230 | 300 | 101 | 273 | 120 | 290 | 293 | 100 | 70 | 416 | 203 | 381 | 502 |
| 10" | 225 | 250 | 380 | 460 | 93 | 100 | 275 | 300 | 101 | 310 | 156 | 375 | 361 | 135 | 69 | 508 | 254 | 445 | 597 |
| 12" | 262 | 295 | 420 | 500 | 93 | 100 | | 300 | 101 | | | 415 | 400 | 160 | 108 | 549 | 305 | 521 | 711 |
| 14" | 305 | 335 | 492 | 572 | 120 | 125 | | 350 | 101 | | | 452 | 423 | 175 | 130 | 585 | 337 | 584 | * 762 |
| 16" | 350 | 362 | | | | | | 350 | 101 | | | 492 | 460 | 176 | 168 | 625 | 387 | 648 | * 838 |
| 18" | 385 | 419 | | | | | | 350 | 101 | | | 528 | 483 | 196 | 192 | 660 | 432 | 711 | * 914 |
| 20" | 425 | 460 | | | | | | 450 | 101 | | | 570 | 501 | 200 | 210 | 704 | 483 | 775 | * 991 |
| 24" | 520 | 545 | | | | | | 450 | 101 | | | 645 | 568 | 246 | 279 | 775 | 584 | 914 | *1143 |
| 30" | 540 | 619 | | | | | | 450 | 111 | | | 835 | 660 | 299 | 270 | 988 | 737 | 1092 | *1397 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 500 Lbs
SHORT PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|----------------------|---|-------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 250 | 500 Psi | Shell 750 Psi Seat 550 Psi | Straightway Short | Flanges R.F. ANSI B 16.1 Face to Face ANSI B 16.10 | Rectangular | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

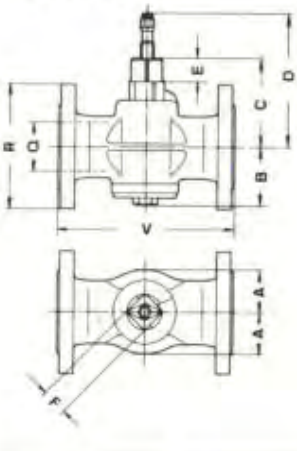
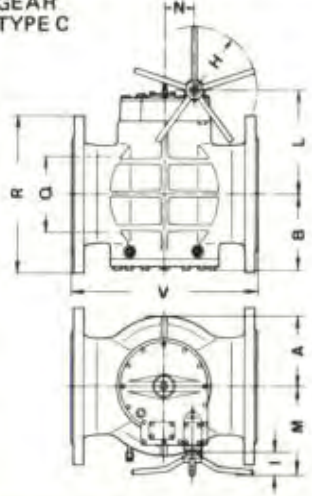
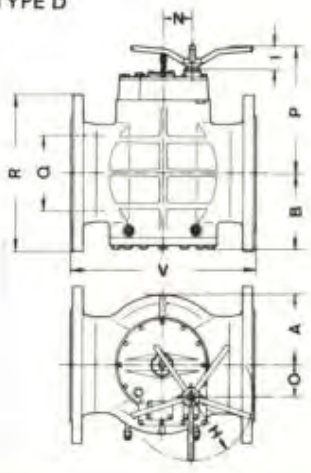


| DN | A | B | C | D | E | F | H | I | L | M | N | Q | R | V |
|--------|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|-----|
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | 51 | 165 | 184 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | 64 | 191 | 203 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | 76 | 210 | 235 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | 102 | 254 | 267 |

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 500 Lbs
VENTURI PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|-----------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 250 | 500 Psi | Shell 750 Psi Seat 550 Psi | Straightway Venturi | Flanges R.F. ANSI B 16.1 Face to Face ANSI B 16.10 | Rectangular Reduced bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

| WRENCH OPERATED 8K | GEAR TYPE C | GEAR TYPE D |
|--|---|--|
|  |  |  |
| DN 1" - 6" | DN 1" - 36" | DN 8" - 36" |
| 1-AV 40134 | 1-AV 40134 C | 1-AV 40134 D |

Note: Bolted cover from DN 150 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|------|--------|
| 1" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | 25 | 124 | * 159 |
| 1 1/4" | 32 | 57 | 82 | 118 | 18 | 19 | | 45 | 16 | | | 80 | 104 | 32 | | | 32 | 133 | * 180 |
| 1 1/2" | 34 | 64 | 95 | 143 | 20 | 24 | | 45 | 16 | | | 95 | 104 | 32 | | | 38 | 156 | * 191 |
| 2" | 42 | 74 | 106 | 166 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | 51 | 165 | * 216 |
| 2 1/2" | 48 | 85 | 120 | 180 | 23 | 30 | | 150 | 101 | | | 130 | 181 | 47 | | | 64 | 191 | * 241 |
| 3" | 67 | 105 | 130 | 190 | 33 | 36 | | 150 | 101 | | | 132 | 181 | 47 | | | 76 | 210 | * 283 |
| 4" | 76 | 120 | 151 | 231 | 40 | 50 | | 150 | 101 | | | 153 | 195 | 65 | | | 102 | 254 | * 305 |
| 5" | 94 | 145 | 173 | 253 | 42 | 55 | | 150 | 101 | | | 156 | 195 | 65 | | | 127 | 279 | * 387 |
| 6" | 120 | 145 | 214 | 294 | 53 | 55 | 163 | 150 | 101 | 195 | 71 | 163 | 195 | 71 | | | 152 | 318 | 403 |
| 8" | 140 | 170 | 252 | 332 | 65 | 65 | 182 | 214 | 101 | 268 | 84 | 243 | 268 | 85 | 40 | 366 | 203 | 381 | 419 |
| 10" | 185 | 210 | 306 | 386 | 73 | 70 | 230 | 300 | 101 | 273 | 120 | 290 | 293 | 100 | 70 | 416 | 254 | 445 | 457 |
| 12" | 205 | 230 | 324 | 404 | 73 | 70 | 248 | 300 | 101 | 273 | 120 | 308 | 293 | 100 | 70 | 434 | 305 | 521 | 502 |
| 14" | 245 | 270 | 402 | 482 | 93 | 100 | 297 | 300 | 101 | 310 | 156 | 397 | 361 | 135 | 69 | 530 | 337 | 584 | 762 |
| 16" | 262 | 295 | 420 | 500 | 93 | 100 | | 300 | 101 | | | 415 | 400 | 160 | 108 | 549 | 387 | 648 | 838 |
| 18" | 305 | 335 | 492 | 572 | 120 | 125 | | 350 | 101 | | | 452 | 423 | 175 | 130 | 585 | 432 | 711 | 914 |
| 20" | 350 | 362 | | | | | | 350 | 101 | | | 492 | 460 | 176 | 168 | 625 | 483 | 775 | 991 |
| 24" | 425 | 460 | | | | | | 450 | 101 | | | 570 | 501 | 200 | 210 | 704 | 584 | 914 | 1143 |
| 30" | 520 | 545 | | | | | | 450 | 101 | | | 645 | 568 | 246 | 279 | 775 | 737 | 1092 | * 1397 |
| 36" | 655 | 700 | | | | | | 550 | 111 | | | 970 | 725 | 311 | 297 | 1135 | * 889 | 1270 | * 1727 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 200 Lbs
REGULAR PATTERN
ROUND PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|--------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 125 | 200 Psi | Shell 300 Psi Seat 220 Psi | Straightway Regular | Flanges F.F. ANSI B 16.1 Face to Face ANSI B 16.10 | Round Full bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

| WRENCH OPERATED 8K | GEAR TYPE A | GEAR TYPE C | GEAR TYPE D |
|--------------------|--------------|---------------|--------------|
| | | | |
| DN 1/2" - 4" | DN 3" - 6" | DN 1/2" - 12" | DN 5" - 12" |
| 1-AR 41114 | 1-AR 41114 A | 1-AR 41114 C | 1-AR 41114 D |

Note: Bolted cover from DN 65 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-------|
| 1/2" | 32 | 48 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | | | * 13 | * 89 | * 127 |
| 3/4" | 34 | 50 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | | | * 19 | * 98 | * 152 |
| 1" | 42 | 60 | 90 | 138 | 20 | 24 | | 150 | 101 | | | 102 | 184 | 47 | | | 25 | 108 | 178 |
| 1 1/4" | 48 | 68 | 100 | 148 | 20 | 24 | | 150 | 101 | | | 110 | 181 | 47 | | | 32 | 118 | * 178 |
| 1 1/2" | 61 | 78 | 105 | 165 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | 38 | 127 | 222 |
| 2" | 76 | 92 | 123 | 183 | 23 | 30 | | 150 | 101 | | | 118 | 195 | 65 | | | 51 | 152 | 267 |
| 2 1/2" | 107 | 95 | 132 | 192 | 33 | 36 | | 150 | 101 | | | 118 | 195 | 65 | | | 64 | 178 | 299 |
| 3" | 120 | 102 | 154 | 234 | 40 | 50 | 127 | 150 | 101 | 195 | 71 | 127 | 195 | 71 | | | 76 | 191 | 343 |
| 4" | 147 | 120 | 182 | 262 | 42 | 55 | 141 | 214 | 101 | 268 | 84 | 201 | 268 | 85 | 40 | 324 | 102 | 229 | 432 |
| 5" | 185 | 150 | 213 | 293 | 56 | 55 | 167 | 300 | 101 | 273 | 120 | 230 | 293 | 100 | 70 | 355 | 127 | 254 | * 483 |
| 6" | 225 | 172 | 282 | 362 | 73 | 70 | 191 | 300 | 101 | 310 | 156 | 293 | 361 | 135 | 69 | 427 | 152 | 279 | 533 |
| 8" | 282 | 212 | 342 | 422 | 93 | 100 | | 300 | 101 | | | 330 | 400 | 160 | 107 | 464 | 203 | 343 | 635 |
| 10" | 350 | 252 | 364 | 444 | 93 | 100 | | 350 | 101 | | | 367 | 460 | 176 | 169 | 501 | 254 | 406 | 787 |
| 12" | 412 | 294 | 430 | 510 | 120 | 125 | | 350 | 101 | | | 395 | 483 | 196 | 192 | 529 | 305 | 483 | 914 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

SEMI STEEL 500 Lbs
REGULAR PATTERN
ROUND PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|--------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 250 | 500 Psi | Shell 750 Psi Seat 550 Psi | Straightway Regular | Flanges R.F. ANSI B 16.1 Face to Face ANSI B 16.10 | Round Full bore | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

| | | |
|---------------------------|--------------------|--------------------|
| <p>WRENCH OPERATED 8K</p> | <p>GEAR TYPE C</p> | <p>GEAR TYPE D</p> |
| DN 1/2" - 3" | DN 1/2" - 12" | DN 4" - 12" |
| 1-AR 41134 | 1-AR 41134 C | 1-AR 41134 D |

Note: Bolted cover from DN 65 mm.

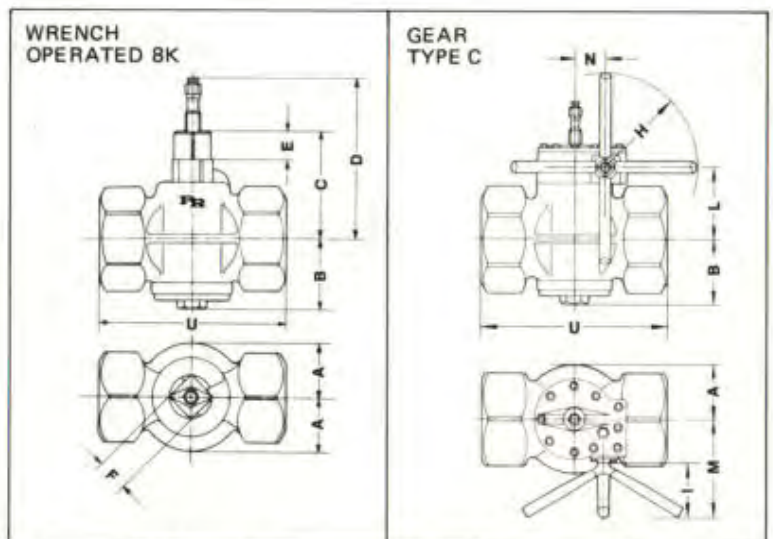
| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | Q | R | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|-------|
| 1/2" | 32 | 48 | 84 | 132 | 20 | 24 | 45 | 16 | 73 | 104 | 35 | | | * 13 | * 95 | * 140 |
| 3/4" | 34 | 50 | 84 | 132 | 20 | 24 | 45 | 16 | 73 | 104 | 35 | | | * 19 | * 118 | * 165 |
| 1" | 42 | 60 | 90 | 138 | 20 | 24 | 150 | 101 | 102 | 184 | 47 | | | 25 | 124 | 191 |
| 1 1/4" | 48 | 68 | 100 | 148 | 20 | 24 | 150 | 101 | 110 | 181 | 47 | | | 32 | 133 | * 216 |
| 1 1/2" | 61 | 78 | 105 | 165 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | | | 38 | 156 | 241 |
| 2" | 76 | 92 | 123 | 183 | 23 | 30 | 150 | 101 | 118 | 195 | 65 | | | 51 | 165 | 283 |
| 2 1/2" | 107 | 95 | 132 | 192 | 33 | 36 | 150 | 101 | 118 | 195 | 65 | | | 64 | 191 | 330 |
| 3" | 120 | 102 | 154 | 234 | 40 | 50 | 150 | 101 | 127 | 195 | 71 | | | 76 | 210 | 387 |
| 4" | 147 | 120 | 182 | 262 | 42 | 55 | 214 | 101 | 201 | 268 | 84 | 40 | 324 | 102 | 254 | 457 |
| 5" | 185 | 150 | 213 | 293 | 56 | 55 | 300 | 101 | 230 | 293 | 100 | 70 | 355 | 127 | 279 | * 508 |
| 6" | 225 | 172 | 282 | 362 | 73 | 70 | 300 | 101 | 293 | 361 | 135 | 69 | 427 | 152 | 318 | 559 |
| 8" | 282 | 212 | 342 | 422 | 93 | 100 | 300 | 101 | 330 | 400 | 160 | 107 | 464 | 203 | 381 | 686 |
| 10" | 350 | 252 | 364 | 444 | 93 | 100 | 350 | 101 | 367 | 460 | 176 | 169 | 501 | 254 | 445 | 826 |
| 12" | 412 | 294 | 430 | 510 | 120 | 125 | 350 | 101 | 395 | 483 | 196 | 192 | 529 | 305 | 521 | 965 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 285 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|-------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi Seat 315 Psi | Straightway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectan- gular Full bore | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Cast Steel | |



| | | |
|------------|--------------|--------------|
| Plug | DN 1/2" - 4" | DN 1/2" - 4" |
| Semi Steel | 1-AR 70024 | 1-AR 70024 C |
| Cast Steel | 1-AR 70027 | 1-AR 70027 C |

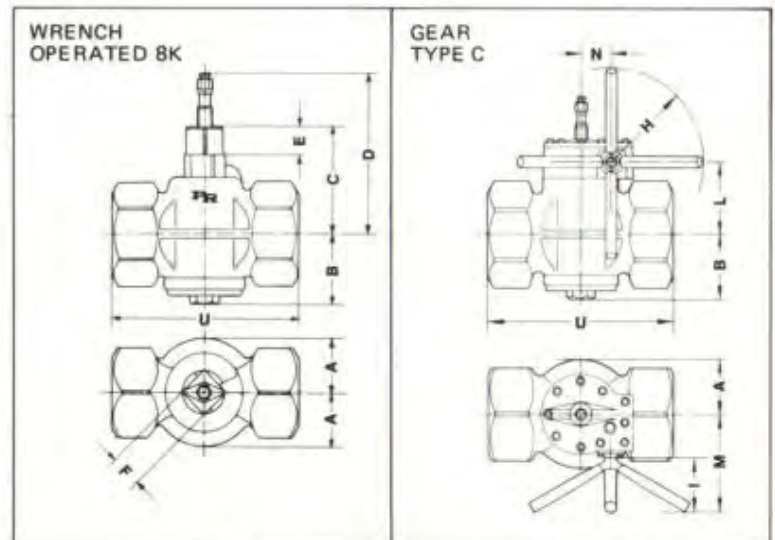
Note: Bolted cover from DN 80 mm.

| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 89 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 95 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | 108 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | 121 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | 140 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | 152 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | 222 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | 238 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | 273 |

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 740 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|--------------------------------------|------------------------|---|-------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 300 | 740 Psi | Shell 1125 Psi Seat 815 Psi | Straightway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectan- gular Full bore | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Cast Steel | |



| | | |
|------------|--------------|--------------|
| Plug | DN 1/2" - 4" | DN 1/2" - 4" |
| Semi Steel | 1-AR 70044 | 1-AR 70044 C |
| Cast Steel | 1-AR 70047 | 1-AR 70047 C |

Note: Bolted cover from DN 80 mm.

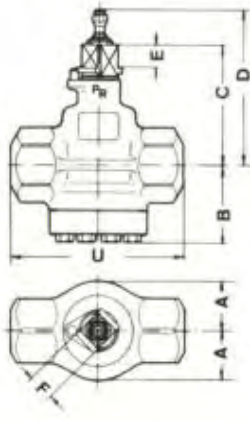
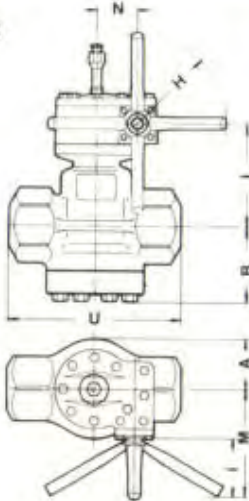
| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 89 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 95 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | 108 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | 121 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | 140 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | 152 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | 222 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | 238 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | 273 |

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 990 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------------|------------------------|---|--------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 400 | 990 Psi | Shell 1500 Psi Seat 1090 Psi | Straightway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectangular Full bore ** | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Steel | |

** 1/2" and 3/4" Round port full bore.

| | WRENCH OPERATED 8L | GEAR TYPE C |
|------------|---|--|
| |  |  |
| Plug | DN 1/2" - 4" | DN 1/2" - 4" |
| Semi Steel | 1-AR 70054 | 1-AR 70054 C |
| Steel | 1-AR 70057 | 1-AR 70057 C |

| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1/2" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | 116 |
| 3/4" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | 116 |
| 1" | 51 | 90 | 127 | 178 | 28 | 30 | 150 | 101 | 119 | 181 | 47 | 149 |
| 1 1/4" | 52 | 97 | 137 | 188 | 28 | 30 | 150 | 101 | 128 | 181 | 47 | 160 |
| 1 1/2" | 58 | 112 | 166 | 217 | 33 | 36 | 150 | 101 | 148 | 181 | 47 | 175 |
| 2" | 69 | 119 | 171 | 231 | 33 | 36 | 150 | 101 | 154 | 195 | 65 | 190 |
| 2 1/2" | 80 | 131 | 195 | 255 | 44 | 50 | 150 | 101 | 165 | 195 | 71 | 210 |
| 3" | 92 | 142 | 220 | 300 | 47 | 55 | 150 | 101 | 190 | 195 | 71 | 284 |
| 4" | 117 | 173 | 263 | 343 | 53 | 65 | 214 | 101 | 287 | 268 | 85 | 326 |

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 1480 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------------|------------------------|---|-------------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 600 | 1480 Psi | Shell 2225 Psi Seat 1630 Psi | Straightway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectan- gular Full bore ** | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Steel | |

** 1/2" and 3/4" Round port full bore.

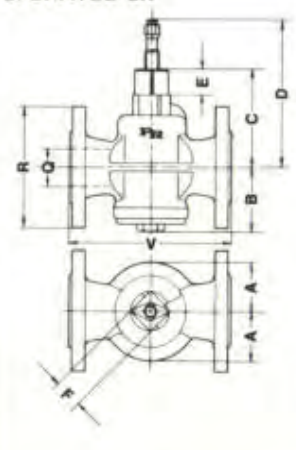
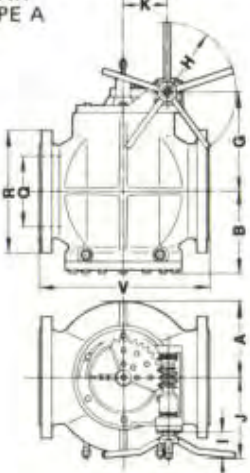
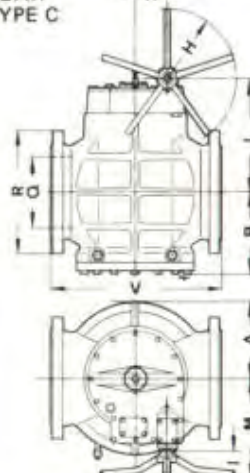
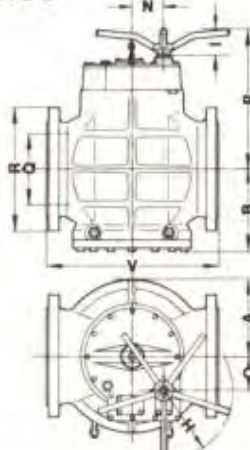
| | WRENCH OPERATED 8L | GEAR TYPE C |
|------------|--------------------|--------------|
| Plug | N 1/2" - 4" | DN 1/2" - 4" |
| Semi Steel | 1-AR 70064 | 1-AR 70064 C |
| Steel | 1-AR 70067 | 1-AR 70067 C |

| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1/2" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | 116 |
| 3/4" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | 116 |
| 1" | 51 | 90 | 127 | 178 | 28 | 30 | 150 | 101 | 119 | 181 | 47 | 149 |
| 1 1/4" | 52 | 97 | 137 | 188 | 28 | 30 | 150 | 101 | 128 | 181 | 47 | 160 |
| 1 1/2" | 58 | 112 | 166 | 217 | 33 | 36 | 150 | 101 | 148 | 181 | 47 | 175 |
| 2" | 69 | 119 | 171 | 231 | 33 | 36 | 150 | 101 | 154 | 195 | 65 | 190 |
| 2 1/2" | 80 | 131 | 195 | 255 | 44 | 50 | 150 | 101 | 165 | 195 | 71 | 210 |
| 3" | 92 | 142 | 220 | 300 | 47 | 55 | 150 | 101 | 190 | 195 | 71 | 284 |
| 4" | 117 | 173 | 263 | 343 | 53 | 65 | 214 | 101 | 287 | 268 | 85 | 326 |

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 285 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|--------------------------|---------------------------------------|---|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi Seat 315 Psi | Straightway Regular | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular Full bore | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B Cast Steel | Manual |

| WRENCH OPERATED 8K | | GEAR TYPE A | | GEAR TYPE C | | GEAR TYPE D | |
|--|--------------|--|--|---|--|--|--|
|  | |  | |  | |  | |
| Plug | DN 1/2" - 6" | DN 5" - 10" | | DN 1/2" - 30" | | DN 6" - 30" | |
| Semi Steel | 1-AR 70124 | 1-AR 70124 A | | 1-AR 70124 C | | 1-AR 70124 D | |
| Cast Steel | 1-AR 70127 | 1-AR 70127 A | | 1-AR 70127 C | | 1-AR 70127 D | |

Note: Bolted cover from DN80 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | Raised Face | Ring Joint |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------------|------------|
| | | | | | | | | | | | | | | | | | | | V | V |
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | * 13 | 89 | * 121 | * 133 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | * 19 | 98 | * 121 | * 133 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | | 45 | 16 | | | 80 | 104 | 32 | | | 25 | 108 | * 140 | * 152 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | | 45 | 16 | | | 95 | 104 | 32 | | | 32 | 117 | * 165 | * 178 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | 38 | 127 | * 165 | * 178 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | | 150 | 101 | | | 130 | 181 | 47 | | | 51 | 152 | * 191 | * 203 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | | 150 | 101 | | | 132 | 181 | 47 | | | 64 | 178 | * 210 | * 222 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | | 150 | 101 | | | 153 | 195 | 65 | | | 76 | 191 | * 229 | * 241 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | | 150 | 101 | | | 156 | 195 | 65 | | | 102 | 229 | 305 | 318 |
| 5" | 120 | 145 | 214 | 294 | 53 | 55 | 163 | 150 | 101 | 195 | 71 | 163 | 195 | 71 | | | 127 | 254 | 381 | 394 |
| 6" | 140 | 170 | 252 | 332 | 65 | 65 | 182 | 214 | 101 | 268 | 84 | 243 | 268 | 85 | 40 | 366 | 152 | 279 | 394 | 406 |
| 8" | 185 | 210 | 306 | 386 | 73 | 70 | 230 | 300 | 101 | 273 | 120 | 290 | 293 | 100 | 70 | 416 | 203 | 343 | 457 | 470 |
| 10" | 225 | 250 | 380 | 460 | 93 | 100 | 275 | 300 | 101 | 310 | 156 | 375 | 361 | 135 | 69 | 508 | 254 | 406 | 533 | 546 |
| 12" | 262 | 295 | 420 | 500 | 93 | 100 | | 300 | 101 | | | 415 | 400 | 160 | 108 | 549 | 305 | 483 | 610 | 622 |
| 14" | 305 | 335 | 492 | 572 | 120 | 125 | | 350 | 101 | | | 452 | 423 | 175 | 130 | 585 | 337 | 535 | 686 | 699 |
| 16" | 350 | 362 | | | | | | 350 | 101 | | | 492 | 460 | 176 | 168 | 625 | 387 | 595 | 762 | 775 |
| 18" | 385 | 419 | | | | | | 350 | 101 | | | 528 | 483 | 196 | 192 | 660 | 438 | 635 | 864 | 876 |
| 20" | 425 | 460 | | | | | | 450 | 101 | | | 570 | 501 | 200 | 210 | 704 | 489 | 700 | 914 | 927 |
| 24" | 520 | 545 | | | | | | 450 | 101 | | | 645 | 568 | 246 | 279 | 775 | 590 | 815 | 1067 | 1080 |
| 30" | 540 | 619 | | | | | | 450 | 111 | | | 835 | 660 | 299 | 270 | 988 | * 743 | * 984 | * 1295 | * 1308 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 285 Lbs
SHORT PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|----------------------|---|-------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi Seat 315 Psi | Straightway Short | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular | Cast Steel ASTM A 216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | St. 52-3 | Cast Steel | |

| | WRENCH OPERATED 8K | GEAR TYPE A | GEAR TYPE C | GEAR TYPE D |
|------------|--------------------|--------------|--------------|--------------|
| | | | | |
| Plug | DN 1" - 8" | DN 6" - 12" | DN 1" - 12" | DN 8" - 12" |
| Semi Steel | 1-AS 70124 | 1-AS 70124 A | 1-AS 70124 C | 1-AS 70124 D |
| Cast Steel | 1-AS 70127 | 1-AS 70127 A | 1-AS 70127 C | 1-AS 70127 D |

Note: Bolted cover from DN 100 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | Ring Face V | Ring Joint V |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-------------|--------------|
| 1" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | 25 | 108 | 140 | 152 |
| 1 1/2" | 34 | 64 | 95 | 143 | 20 | 24 | | 45 | 16 | | | 95 | 104 | 32 | | | 38 | 127 | 165 | 178 |
| 2" | 42 | 74 | 106 | 166 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | 51 | 152 | 178 | 191 |
| 2 1/2" | 48 | 85 | 120 | 180 | 23 | 30 | | 150 | 101 | | | 130 | 181 | 47 | | | 64 | 178 | 191 | 203 |
| 3" | 67 | 105 | 130 | 190 | 33 | 36 | | 150 | 101 | | | 132 | 181 | 47 | | | 76 | 191 | 203 | 216 |
| 4" | 76 | 120 | 151 | 231 | 40 | 50 | | 150 | 101 | | | 153 | 195 | 65 | | | 102 | 229 | 229 | 241 |
| 5" | 94 | 145 | 173 | 253 | 42 | 55 | | 150 | 101 | | | 156 | 195 | 65 | | | 127 | 254 | 254 | 267 |
| 6" | 120 | 145 | 214 | 294 | 53 | 55 | 163 | 150 | 101 | 195 | 71 | 163 | 195 | 71 | | | 152 | 279 | 267 | 279 |
| 8" | 120 | 184 | 252 | 332 | 53 | 55 | 205 | 214 | 101 | 268 | 84 | 267 | 268 | 85 | 46 | 390 | 203 | 343 | 292 | 305 |
| 10" | 140 | 220 | 302 | 382 | 65 | 65 | 251 | 300 | 101 | 273 | 120 | 313 | 293 | 100 | 70 | 437 | 254 | 406 | 330 | 343 |
| 12" | 185 | 258 | 354 | 434 | 73 | 70 | 278 | 300 | 101 | 273 | 120 | 338 | 293 | 100 | 70 | 482 | 305 | 483 | 356 | 368 |

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 285 Lbs
VENTURI PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|-----------------------------|---------------------------------------|---|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi Seat 315 Psi | Straightway Venturi | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular Reduced bore | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B Cast Steel | Manual |

| WRENCH OPERATED BK | GEAR TYPE A | GEAR TYPE C | GEAR TYPE D |
|--------------------|-------------|--------------|--------------|
| | | | |
| Plug | DN 1" - 6" | DN 6" - 12" | DN 6" - 36" |
| Semi Steel | 1-AV 70124 | 1-AV 70124 A | 1-AV 70124 C |
| Cast Steel | 1-AV 70127 | 1-AV 70127 A | 1-AV 70127 C |

Note: Bolted cover from DN 100 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | V | Ring Face Joint |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-------|-------|-----------------|
| 1" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | 25 | 108 | * 140 | * 152 |
| 1 1/4" | 32 | 57 | 82 | 118 | 18 | 19 | | 45 | 16 | | | 80 | 104 | 32 | | | 32 | 117 | * 165 | * 178 |
| 1 1/2" | 34 | 64 | 95 | 143 | 20 | 24 | | 45 | 16 | | | 95 | 104 | 32 | | | 38 | 127 | * 165 | * 178 |
| 2" | 42 | 74 | 106 | 166 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | 51 | 152 | 178 | 191 |
| 2 1/2" | 48 | 85 | 120 | 180 | 23 | 30 | | 150 | 101 | | | 130 | 181 | 47 | | | 64 | 178 | * 210 | * 222 |
| 3" | 67 | 105 | 130 | 190 | 33 | 36 | | 150 | 101 | | | 132 | 181 | 47 | | | 76 | 191 | 203 | 216 |
| 4" | 76 | 120 | 151 | 231 | 40 | 50 | | 150 | 101 | | | 153 | 195 | 65 | | | 102 | 229 | 229 | 241 |
| 5" | 94 | 145 | 173 | 253 | 42 | 55 | | 150 | 101 | | | 156 | 195 | 65 | | | 127 | 254 | * 381 | * 394 |
| 6" | 120 | 145 | 214 | 294 | 53 | 55 | 163 | 150 | 101 | 195 | 71 | 163 | 195 | 71 | | | 152 | 279 | 394 | 406 |
| 8" | 140 | 170 | 252 | 332 | 65 | 65 | 182 | 214 | 101 | 268 | 84 | 243 | 268 | 95 | 40 | 366 | 203 | 343 | 457 | 470 |
| 10" | 185 | 210 | 306 | 386 | 73 | 70 | 230 | 300 | 101 | 273 | 120 | 290 | 293 | 100 | 70 | 416 | 254 | 406 | 533 | 546 |
| 12" | 205 | 230 | 324 | 404 | 73 | 70 | 248 | 300 | 101 | 273 | 120 | 308 | 293 | 100 | 70 | 434 | 305 | 483 | 610 | 622 |
| 14" | 245 | 270 | 402 | 482 | 93 | 100 | 297 | 300 | 101 | 310 | 156 | 397 | 361 | 135 | 69 | 530 | 337 | 535 | 686 | 699 |
| 16" | 262 | 295 | 420 | 500 | 93 | 100 | | 300 | 101 | | | 415 | 400 | 160 | 108 | 549 | 387 | 595 | 762 | 775 |
| 18" | 305 | 335 | 492 | 572 | 120 | 125 | | 350 | 101 | | | 452 | 423 | 175 | 130 | 585 | 438 | 635 | 864 | 876 |
| 20" | 350 | 362 | | | | | | 350 | 101 | | | 492 | 460 | 176 | 168 | 625 | 489 | 700 | 914 | 927 |
| 24" | 425 | 460 | | | | | | 450 | 101 | | | 570 | 501 | 200 | 210 | 704 | 590 | 815 | 1067 | 1080 |
| 30" | 520 | 545 | | | | | | 450 | 101 | | | 645 | 568 | 246 | 279 | 775 | 743 | 984 | *1295 | *1308 |
| 36" | 655 | 700 | | | | | | 550 | 111 | | | 970 | 725 | 311 | 297 | 1135 | *895 | *1168 | *1600 | *1613 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 740 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------|------------------------|---|--------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 300 | 740 Psi | Shell 1125 Psi | Straightway Regular | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular Full bore | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | Seat 815 Psi | | | | | Cast Steel | |

| | WRENCH OPERATED 8K | GEAR TYPE C | GEAR TYPE D |
|------------|--------------------|---------------|--------------|
| | | | |
| Plug | DN 1/2" - 6" | DN 1/2" - 30" | DN 6" - 30" |
| Semi Steel | 1-AR 70144 | 1-AR 70144 C | 1-AR 70144 D |
| Cast Steel | 1-AR 70147 | 1-AR 70147 C | 1-AR 70147 D |

Note: Bolted cover from DN 80 mm.

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | Q | R | V | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|--------|-------|-------|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | * 13 | 95 | * 130 | * 141 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | * 19 | 118 | * 152 | * 165 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | | | 25 | 124 | * 159 | * 172 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | | | 32 | 133 | * 178 | * 191 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | | | 38 | 156 | * 191 | * 203 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | | | 51 | 165 | * 216 | * 232 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | | | 64 | 191 | * 241 | * 257 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | | | 76 | 210 | * 283 | * 299 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | | | 102 | 254 | * 305 | * 321 |
| 5" | 120 | 145 | 214 | 294 | 53 | 55 | 150 | 101 | 163 | 195 | 71 | | | 127 | 279 | * 349 | * 365 |
| 6" | 140 | 170 | 252 | 332 | 65 | 65 | 214 | 101 | 243 | 268 | 85 | 40 | 366 | 152 | 318 | 403 | 419 |
| 8" | 185 | 230 | 306 | 386 | 73 | 70 | 300 | 101 | 310 | 293 | 100 | 70 | 436 | 203 | 381 | 502 | 518 |
| 10" | 225 | 275 | 380 | 460 | 93 | 100 | 300 | 101 | 400 | 361 | 135 | 69 | 533 | 254 | 445 | 568 | 584 |
| 12" | 262 | 325 | 420 | 500 | 93 | 100 | 300 | 101 | 450 | 400 | 160 | 108 | 579 | 305 | 520 | 711 | 727 |
| 14" | 305 | 370 | 492 | 572 | 120 | 125 | 350 | 101 | 487 | 423 | 175 | 130 | 620 | 337 | 585 | 762 | 778 |
| 16" | 350 | 402 | | | | | 350 | 101 | 532 | 460 | 176 | 168 | 665 | 387 | 650 | 838 | 854 |
| 18" | 385 | 464 | | | | | 350 | 101 | 573 | 483 | 196 | 192 | 705 | 432 | 710 | 914 | 930 |
| 20" | 425 | 510 | | | | | 450 | 101 | 620 | 501 | 200 | 210 | 754 | 483 | 775 | 991 | 1010 |
| 24" | 520 | 605 | | | | | 450 | 101 | 705 | 568 | 246 | 279 | 835 | 585 | 915 | 1143 | 1165 |
| 30" | 540 | 689 | | | | | 450 | 101 | 905 | 660 | 299 | 270 | 1058 | * 737 | * 1092 | 1397 | 1422 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 740 Lbs
SHORT PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|--------------------------------------|-------------------|---|-------------|---------------------------------------|---|-----------|
| | | | | | | Body & Cover | Plug | |
| 300 | 740 Psi | Shell 1125 Psi Seat 815 Psi | Straightway Short | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B Cast Steel | Manual |

| | WRENCH OPERATED 8K | GEAR TYPE C | GEAR TYPE D |
|------------|--------------------|--------------|--------------|
| Plug | DN 1" - 8" | DN 1" - 12" | DN 6" - 12" |
| Semi Steel | 1-AS 70144 | 1-AS 70144 C | 1-AS 70144 D |
| Cast Steel | 1-AS 70147 | 1-AS 70147 C | 1-AS 70147 D |

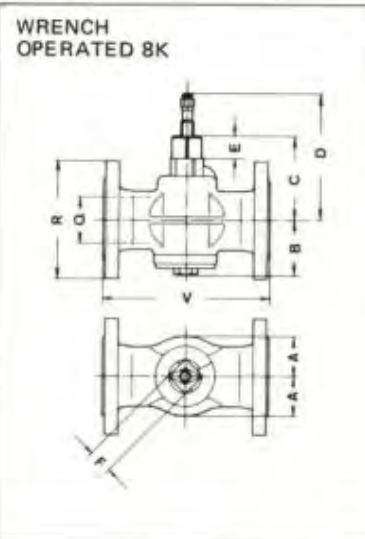
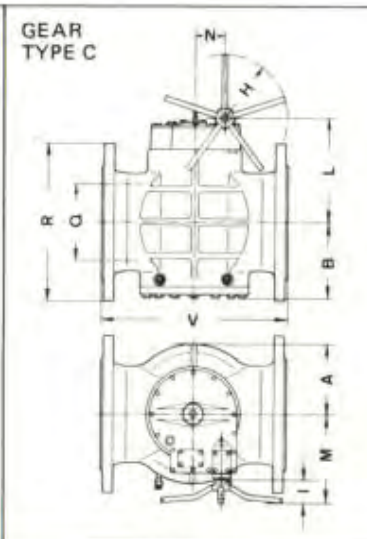
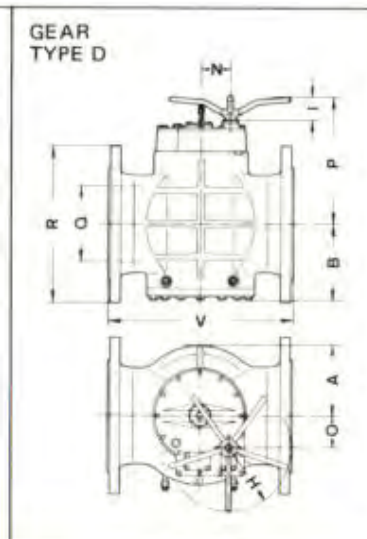
Note: Bolted cover from DN 80 mm.

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | Q | R | Raised Face V | Ring Joint V |
|--------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|---------------|--------------|
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | | | 25 | 124 | 159 | 172 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | | | 38 | 156 | 191 | 203 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | | | 51 | 165 | 216 | 232 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | | | 64 | 191 | 241 | 257 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | | | 76 | 210 | 283 | 299 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | | | 102 | 254 | 305 | 321 |
| 6" | 140 | 170 | 252 | 332 | 65 | 65 | 214 | 101 | 243 | 268 | 85 | 40 | 366 | 152 | 318 | 403 | 419 |
| 8" | 185 | 230 | 306 | 386 | 73 | 70 | 300 | 101 | 310 | 293 | 100 | 70 | 436 | 203 | 381 | 419 | 435 |
| 10" | 205 | 238 | 345 | 422 | 73 | 70 | 300 | 101 | 327 | 293 | 100 | 70 | 451 | 254 | 445 | 457 | 473 |
| 12" | 245 | 292 | 425 | 505 | 93 | 100 | 300 | 101 | 420 | 361 | 135 | 69 | 554 | 305 | 521 | 502 | 518 |

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 740 Lbs
VENTURI PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|--------------------------------------|------------------------|---|--------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 300 | 740 Psi | Shell 1125 Psi Seat 815 Psi | Straightway Venturi | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular Reduced bore | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Cast Steel | |

| | WRENCH OPERATED 8K | GEAR TYPE C | GEAR TYPE D |
|------------|--|---|--|
| |  |  |  |
| Plug | DN 1" - 8" | DN 6" - 30" | DN 8" - 30" |
| Semi Steel | 1-AV 70144 | 1-AV 70144 C | 1-AV 70144 D |
| Cast Steel | 1-AV 70147 | 1-AV 70147 C | 1-AV 70147 D |

Note: Bolted cover from DN 100 mm.

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | Q | R | V | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|--------|-------|-------|
| 1" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | 25 | 124 | 159 | 172 |
| 1 1/4" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | | | 32 | 133 | * 178 | * 191 |
| 1 1/2" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | | | 38 | 156 | 191 | 203 |
| 2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | | | 51 | 165 | 216 | 232 |
| 2 1/2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | | | 64 | 191 | 241 | 257 |
| 3" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | | | 76 | 210 | 283 | 299 |
| 4" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | | | 102 | 254 | 305 | 321 |
| 5" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | | | 127 | 279 | * 349 | * 365 |
| 6" | 120 | 145 | 214 | 294 | 53 | 55 | 150 | 101 | 163 | 195 | 71 | | | 152 | 318 | 403 | 419 |
| 8" | 140 | 170 | 252 | 332 | 65 | 65 | 214 | 101 | 243 | 268 | 85 | 40 | 366 | 203 | 381 | 419 | 435 |
| 10" | 185 | 230 | 306 | 386 | 73 | 70 | 300 | 101 | 310 | 293 | 100 | 70 | 436 | 254 | 445 | 457 | 473 |
| 12" | 205 | 253 | 324 | 404 | 73 | 70 | 300 | 101 | 330 | 293 | 100 | 70 | 457 | 305 | 521 | 502 | 518 |
| 14" | 245 | 298 | 402 | 482 | 93 | 100 | 300 | 101 | 425 | 361 | 135 | 69 | 558 | 337 | 584 | 762 | 778 |
| 16" | 262 | 325 | 420 | 500 | 93 | 100 | 300 | 101 | 450 | 400 | 160 | 108 | 579 | 387 | 648 | 838 | 854 |
| 18" | 305 | 370 | 492 | 572 | 120 | 125 | 350 | 101 | 487 | 423 | 175 | 130 | 620 | 432 | 711 | 914 | 930 |
| 20" | 350 | 402 | | | | | 350 | 101 | 532 | 460 | 176 | 168 | 665 | 483 | 775 | 991 | 1010 |
| 24" | 425 | 510 | | | | | 450 | 101 | 620 | 501 | 200 | 210 | 754 | 584 | 914 | 1143 | 1165 |
| 30" | 520 | 605 | | | | | 450 | 101 | 705 | 568 | 246 | 279 | 835 | * 737 | * 1092 | 1397 | 1422 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 990 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------------|------------------------|---|--------------------------------|---------------------------------------|--|-----------|
| | | | | | | Body & Cover | Plug | |
| 400 | 990 Psi | Shell 1500 Psi Seat 1090 Psi | Straightway Regular | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular Full bore ** | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B Steel | Manual |

** 1/2" and 3/4" Round port full bore.

| | WRENCH OPERATED 8L | GEAR TYPE C | GEAR TYPE D |
|------------|--------------------|---------------|--------------|
| | | | |
| Plug | DN 1/2" - 4" | DN 1/2" - 20" | DN 4" - 20" |
| Semi Steel | 1-AR 70154 | 1-AR 70154 C | 1-AR 70154 D |
| Steel | 1-AR 70157 | 1-AR 70157 C | 1-AR 70157 D |

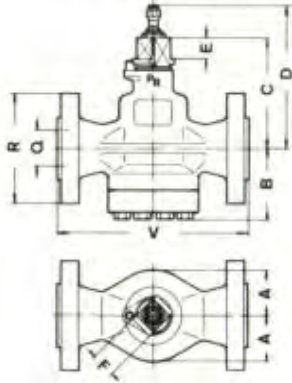
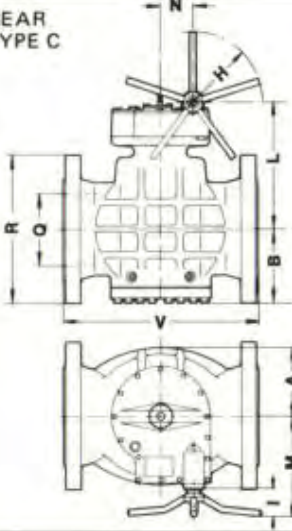
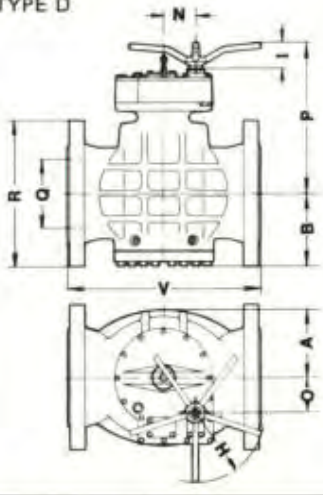
| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | Q | R | V | V |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|------|-----|-----|--------|--------|
| 1/2" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | | | 13 | 95 | * 165 | * 165 |
| 3/4" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | | | 19 | 118 | * 191 | * 191 |
| 1" | 51 | 90 | 127 | 178 | 28 | 30 | 150 | 101 | 119 | 181 | 47 | | | 25 | 124 | 216 | 216 |
| 1 1/4" | 52 | 97 | 137 | 188 | 28 | 30 | 150 | 101 | 128 | 181 | 47 | | | 32 | 133 | 229 | 229 |
| 1 1/2" | 58 | 112 | 166 | 217 | 33 | 36 | 150 | 101 | 148 | 181 | 47 | | | 38 | 156 | 241 | 241 |
| 2" | 69 | 119 | 171 | 231 | 33 | 36 | 150 | 101 | 154 | 195 | 65 | | | 51 | 165 | 292 | 295 |
| 2 1/2" | 80 | 131 | 195 | 255 | 44 | 50 | 150 | 101 | 165 | 195 | 71 | | | 64 | 191 | 330 | 333 |
| 3" | 92 | 142 | 220 | 300 | 47 | 55 | 150 | 101 | 190 | 195 | 71 | | | 76 | 210 | 356 | 359 |
| 4" | 117 | 173 | 263 | 343 | 53 | 65 | 214 | 101 | 287 | 268 | 85 | 40 | 410 | 102 | 254 | 406 | 410 |
| 5" | 150 | 190 | 305 | 385 | 58 | 70 | 214 | 101 | 324 | 268 | 85 | 40 | 447 | 127 | 279 | * 457 | * 460 |
| 6" | 165 | 220 | 363 | 443 | 73 | 85 | 300 | 101 | 376 | 293 | 100 | 70 | 500 | 152 | 318 | 495 | 499 |
| 8" | 218 | 259 | | | | | 300 | 101 | 459 | 361 | 135 | 69 | 593 | 203 | 381 | 597 | 600 |
| 10" | 270 | 295 | | | | | 300 | 101 | 558 | 400 | 160 | 108 | 692 | 254 | 445 | 673 | 676 |
| 12" | 320 | 392 | | | | | 350 | 101 | 630 | 423 | 175 | 130 | 764 | 305 | 521 | 762 | 765 |
| 14" | 340 | 447 | | | | | 350 | 101 | 695 | 460 | 176 | 168 | 829 | 333 | 584 | 826 | 829 |
| 16" | 450 | 507 | | | | | 350 | 101 | 755 | 483 | 196 | 192 | 889 | 381 | 648 | 902 | 905 |
| 18" | 470 | 566 | | | | | 450 | 101 | 802 | 501 | 200 | 210 | 941 | 432 | 711 | * 978 | * 981 |
| 20" | 495 | 646 | | | | | 450 | 101 | 862 | 568 | 246 | 279 | 1001 | 479 | 775 | * 1054 | * 1061 |

Note: * Not included in the standards

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 990 Lbs
VENTURI PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------------|------------------------|---|--------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 400 | 990 Psi | Shell 1500 Psi Seat 1090 Psi | Straightway Venturi | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular Reduced bore | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Steel | |

| | WRENCH OPERATED 8L | GEAR TYPE C | GEAR TYPE D |
|------------|---|---|--|
| |  |  |  |
| Plug | DN 1 1/2" - 6" | DN 1 1/2" - 24" | DN 5" - 24" |
| Semi Steel | 1-AV 70154 | 1-AV 70154 C | 1-AV 70154 D |
| Steel | 1-AV 70157 | 1-AV 70157 C | 1-AV 70157 D |

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | Q | R | V | V |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 1 1/2" | 52 | 97 | 137 | 188 | 28 | 30 | 150 | 101 | 128 | 181 | 47 | | | 38 | 156 | * 241 | * 241 |
| 2" | 58 | 112 | 166 | 217 | 33 | 36 | 150 | 101 | 148 | 181 | 47 | | | 51 | 165 | * 292 | * 295 |
| 2 1/2" | 69 | 119 | 171 | 231 | 33 | 36 | 150 | 101 | 154 | 195 | 65 | | | 64 | 191 | * 330 | * 333 |
| 3" | 80 | 131 | 195 | 255 | 44 | 50 | 150 | 101 | 165 | 195 | 71 | | | 76 | 210 | * 356 | * 359 |
| 4" | 92 | 142 | 220 | 300 | 47 | 55 | 150 | 101 | 190 | 195 | 71 | | | 102 | 254 | * 406 | * 410 |
| 5" | 117 | 173 | 263 | 343 | 53 | 65 | 214 | 101 | 287 | 268 | 85 | 40 | 410 | 127 | 279 | * 457 | * 460 |
| 6" | 150 | 190 | 305 | 385 | 58 | 70 | 214 | 101 | 324 | 268 | 85 | 40 | 447 | 152 | 318 | 495 | 499 |
| 8" | 165 | 220 | | | | | 300 | 101 | 376 | 293 | 100 | 70 | 500 | 203 | 381 | 597 | 600 |
| 10" | 218 | 259 | | | | | 300 | 101 | 459 | 361 | 135 | 69 | 593 | 254 | 445 | 673 | 676 |
| 12" | 270 | 295 | | | | | 300 | 101 | 558 | 400 | 160 | 108 | 692 | 305 | 521 | 762 | 765 |
| 14" | 300 | 340 | | | | | 300 | 101 | 564 | 400 | 160 | 108 | 698 | 333 | 584 | 826 | 829 |
| 16" | 320 | 392 | | | | | 350 | 101 | 630 | 423 | 175 | 130 | 764 | 381 | 648 | 902 | 905 |
| 18" | 340 | 447 | | | | | 350 | 101 | 695 | 460 | 176 | 168 | 829 | 432 | 711 | 978 | 981 |
| 20" | 450 | 507 | | | | | 350 | 101 | 755 | 483 | 196 | 192 | 889 | 479 | 775 | 1054 | 1061 |
| 24" | 470 | 566 | | | | | 450 | 101 | 802 | 501 | 200 | 210 | 941 | 575 | 914 | 1232 | 1241 |

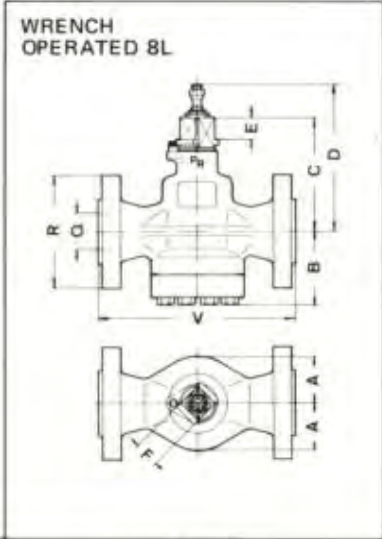
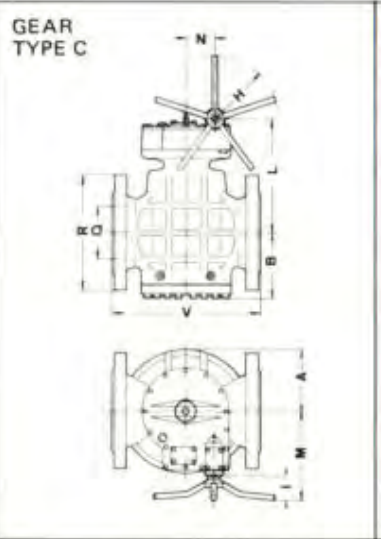
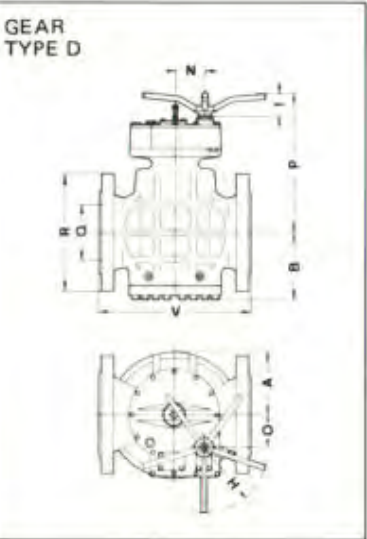
Note: * Not included in the standards

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 1480 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------------|------------------------|--|--------------------------------|---------------------------------------|--|-----------|
| | | | | | | Body & Cover | Plug | |
| 600 | 1480 Psi | Shell 2225 Psi Seat 1630 Psi | Straightway Regular | Flanges R.F. or. R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular Full bore ** | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B Steel | Manual |

** 1/2" and 3/4" Round port full bore.

| | WRENCH OPERATED 8L | GEAR TYPE C | GEAR TYPE D |
|------------|--|---|--|
| |  |  |  |
| Plug | DN 1/2" - 4" | DN 1/2" - 20" | DN 4" - 20" |
| Semi Steel | 1-AR 70164 | 1-AR 70164 C | 1-AR 70164 D |
| Steel | 1-AR 70167 | 1-AR 70167 C | 1-AR 70167 D |

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | Q | R | V | V |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|------|-----|-----|-------|-------|
| 1/2" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | | | 13 | 95 | * 165 | * 165 |
| 3/4" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | | | 19 | 118 | * 191 | * 191 |
| 1" | 51 | 90 | 127 | 178 | 28 | 30 | 150 | 101 | 119 | 181 | 47 | | | 25 | 124 | 216 | 216 |
| 1 1/4" | 52 | 97 | 137 | 188 | 28 | 30 | 150 | 101 | 128 | 181 | 47 | | | 32 | 133 | 229 | 229 |
| 1 1/2" | 58 | 112 | 166 | 217 | 33 | 36 | 150 | 101 | 148 | 181 | 47 | | | 38 | 156 | 241 | 241 |
| 2" | 69 | 119 | 171 | 231 | 33 | 36 | 150 | 101 | 154 | 195 | 65 | | | 51 | 165 | 292 | 295 |
| 2 1/2" | 80 | 131 | 195 | 255 | 44 | 50 | 150 | 101 | 165 | 195 | 71 | | | 64 | 191 | 330 | 333 |
| 3" | 92 | 142 | 220 | 300 | 47 | 55 | 150 | 101 | 190 | 195 | 71 | | | 76 | 210 | 356 | 359 |
| 4" | 117 | 173 | 263 | 343 | 53 | 65 | 214 | 101 | 287 | 268 | 85 | 40 | 410 | 102 | 273 | 432 | 435 |
| 5" | 150 | 190 | 305 | 385 | 58 | 70 | 214 | 101 | 324 | 268 | 85 | 40 | 447 | 127 | 330 | * 508 | * 511 |
| 6" | 165 | 220 | 363 | 443 | 73 | 85 | 300 | 101 | 376 | 293 | 100 | 70 | 500 | 152 | 356 | 559 | 562 |
| 8" | 218 | 259 | | | | | 300 | 101 | 459 | 361 | 135 | 69 | 593 | 200 | 419 | 660 | 664 |
| 10" | 270 | 295 | | | | | 300 | 101 | 558 | 400 | 160 | 108 | 692 | 248 | 508 | 787 | 791 |
| 12" | 320 | 392 | | | | | 350 | 101 | 630 | 423 | 175 | 130 | 764 | 299 | 559 | 838 | 841 |
| 14" | 340 | 447 | | | | | 350 | 101 | 695 | 460 | 176 | 168 | 829 | 327 | 603 | 889 | 892 |
| 16" | 450 | 507 | | | | | 450 | 101 | 755 | 501 | 200 | 210 | 889 | 375 | 686 | 991 | 994 |
| 18" | 470 | 566 | | | | | 450 | 101 | 802 | 568 | 246 | 279 | 941 | 419 | 743 | *1092 | *1095 |
| 20" | 495 | 646 | | | | | 450 | 101 | 957 | 660 | 289 | 270 | 1114 | 464 | 813 | *1194 | *1200 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 1480 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------------|------------------------|---|-----------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 600 | 1480 Psi | Shell 2225 Psi Seat 1630 Psi | Straightway Venturi | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular Reduced bore | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Steel | |

| | WRENCH OPERATED 8L | GEAR TYPE C | GEAR TYPE D |
|------------|--------------------|-----------------|--------------|
| | | | |
| Plug | DN 1 1/2" - 5" | DN 1 1/2" - 24" | DN 6" - 24" |
| Semi Steel | 1-AV 70164 | 1-AV 70164 C | 1-AV 70164 D |
| Steel | 1-AV 70167 | 1-AV 70167 C | 1-AV 70167 D |

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | Q | R | V | V |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 1 1/2" | 52 | 97 | 137 | 188 | 28 | 30 | 150 | 101 | 128 | 181 | 47 | | | 38 | 156 | 241 | 241 |
| 2" | 58 | 112 | 166 | 217 | 33 | 36 | 150 | 101 | 148 | 181 | 47 | | | 51 | 165 | 292 | 295 |
| 2 1/2" | 69 | 119 | 171 | 231 | 33 | 36 | 150 | 101 | 154 | 195 | 65 | | | 64 | 191 | 330 | 333 |
| 3" | 80 | 131 | 195 | 255 | 44 | 50 | 150 | 101 | 165 | 195 | 71 | | | 76 | 210 | 356 | 359 |
| 4" | 92 | 142 | 220 | 300 | 47 | 55 | 150 | 101 | 190 | 195 | 71 | | | 102 | 273 | 432 | 435 |
| 5" | 117 | 173 | 263 | 343 | 53 | 65 | 214 | 101 | 287 | 268 | 85 | 40 | 410 | 127 | 330 | * 508 | * 511 |
| 6" | 150 | 190 | | | | | 214 | 101 | 324 | 268 | 85 | 40 | 447 | 152 | 356 | 559 | 562 |
| 8" | 165 | 220 | | | | | 300 | 101 | 376 | 293 | 100 | 70 | 500 | 200 | 419 | 660 | 664 |
| 10" | 218 | 259 | | | | | 300 | 101 | 459 | 361 | 135 | 69 | 593 | 248 | 508 | 787 | 791 |
| 12" | 270 | 295 | | | | | 300 | 101 | 558 | 400 | 160 | 108 | 692 | 299 | 559 | 838 | 841 |
| 14" | 300 | 340 | | | | | 300 | 101 | 575 | 400 | 160 | 108 | 709 | 327 | 603 | 889 | 892 |
| 16" | 320 | 392 | | | | | 350 | 101 | 630 | 423 | 175 | 130 | 764 | 375 | 686 | 991 | 994 |
| 18" | 340 | 447 | | | | | 350 | 101 | 695 | 460 | 176 | 168 | 829 | 419 | 743 | 1092 | 1095 |
| 20" | 450 | 507 | | | | | 450 | 101 | 755 | 501 | 200 | 210 | 889 | 464 | 813 | 1194 | 1200 |
| 24" | 470 | 566 | | | | | 450 | 101 | 802 | 568 | 246 | 279 | 941 | 559 | 940 | 1397 | 1407 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 285 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|--|--------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi Seat 315 Psi | Straightway Regular | Welding Ends ANSI B 16.25 End to End ANSI B 16.10 | Rectangular Full bore | Cast Steel ASTM A 216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | St. 52-3 | Cast Steel | |

| WRENCH OPERATED BK | | GEAR TYPE A | | GEAR TYPE C | | GEAR TYPE D | |
|--------------------|--------------|--------------|--|---------------|--|--------------|--|
| | | | | | | | |
| Plug | DN 1/2" - 6" | DN 5" - 10" | | DN 1/2" - 30" | | DN 6" - 30" | |
| Semi Steel | 1-AR 70524 | 1-AR 70524 A | | 1-AR 70524 C | | 1-AR 70524 D | |
| Cast Steel | 1-AR 70527 | 1-AR 70527 A | | 1-AR 70527 C | | 1-AR 70527 D | |

Note: Bolted cover from DN 80 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | S | T | X |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|-------|--------|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | | *23,3 | * 140 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | | *28,7 | * 149 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | | 45 | 16 | | | 80 | 104 | 32 | | | | *35,4 | * 172 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | | 45 | 16 | | | 95 | 104 | 32 | | | | *44,2 | * 200 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | | *50,3 | * 241 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | | 150 | 101 | | | 130 | 181 | 47 | | | | *62,3 | 267 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | | 150 | 101 | | | 132 | 181 | 47 | | | | 75 | 305 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | | 150 | 101 | | | 153 | 195 | 65 | | | | 91 | 330 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | | 150 | 101 | | | 156 | 195 | 65 | | | | 117 | 356 |
| 5" | 120 | 145 | 214 | 294 | 53 | 55 | 163 | 150 | 101 | 195 | 71 | 163 | 195 | 71 | | | | 144 | 381 |
| 6" | 140 | 170 | 252 | 332 | 65 | 65 | 182 | 214 | 101 | 268 | 84 | 243 | 268 | 85 | 46 | 366 | | 172 | 457 |
| 8" | 185 | 210 | 306 | 386 | 73 | 70 | 230 | 300 | 101 | 273 | 120 | 290 | 293 | 100 | 70 | 416 | | 223 | 521 |
| 10" | 225 | 250 | 380 | 460 | 93 | 100 | 275 | 300 | 101 | 310 | 156 | 375 | 361 | 135 | 69 | 508 | | 278 | 559 |
| 12" | 262 | 295 | 420 | 500 | 93 | 100 | | 300 | 101 | | | 415 | 400 | 160 | 108 | 549 | | 329 | 636 |
| 14" | 305 | 335 | 492 | 572 | 120 | 125 | | 350 | 101 | | | 452 | 423 | 175 | 130 | 585 | | 362 | * 762 |
| 16" | 350 | 362 | | | | | | 350 | 101 | | | 492 | 460 | 176 | 168 | 625 | | 413 | * 838 |
| 18" | 385 | 419 | | | | | | 350 | 101 | | | 528 | 483 | 196 | 192 | 660 | | 464 | * 914 |
| 20" | 425 | 460 | | | | | | 450 | 101 | | | 570 | 501 | 200 | 210 | 704 | | 516 | * 991 |
| 24" | 520 | 545 | | | | | | 450 | 101 | | | 645 | 568 | 246 | 279 | 775 | | 619 | * 1143 |
| 30" | 540 | 619 | | | | | | 450 | 111 | | | 835 | 660 | 299 | 270 | 988 | | 772 | * 1397 |

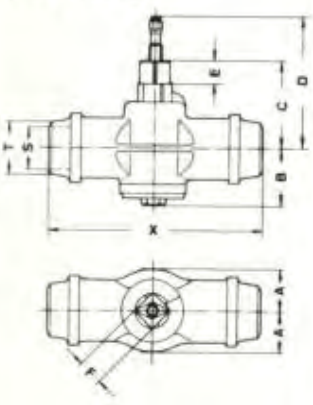
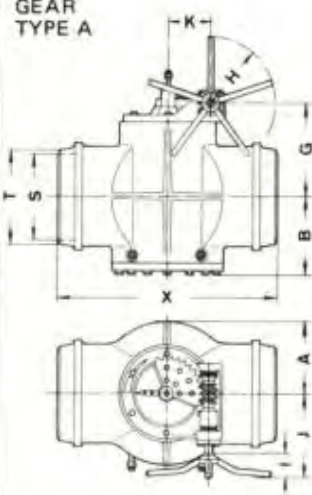
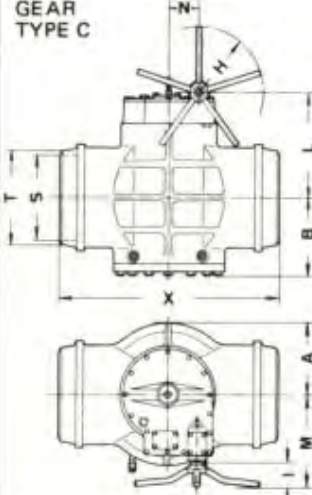
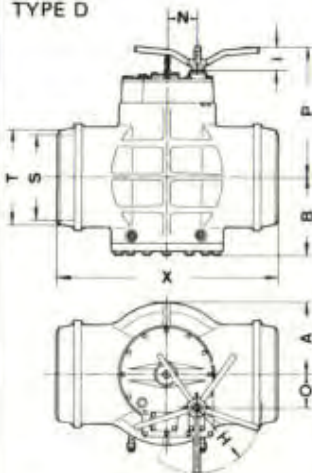
Inside pipe dimension to be specified by purchaser.

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 285 Lbs
VENTURI PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|--|--------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi Seat 315 Psi | Straightway Venturi | Welding Ends ANSI B 16.25 End to End ANSI B 16.10 | Rectangular Reduced bore | Cast Steel ASTM A 216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | St. 52-3 | Steel | |

| | WRENCH OPERATED 8K | GEAR TYPE A | GEAR TYPE C | GEAR TYPE D |
|------------|---|--|---|--|
| |  |  |  |  |
| Plug | DN 1" - 8" | DN 6" - 12" | DN 6" - 36" | DN 8" - 36" |
| Semi Steel | 1-AV 70524 | 1-AV 70524 A | 1-AV 70524 C | 1-AV 70524 D |
| Cast Steel | 1-AV 70527 | 1-AV 70527 A | 1-AV 70527 C | 1-AV 70527 D |

Note: Bolted cover from DN 100 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | S | T | X |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|---|-------|-------|
| 1" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | | *35,4 | * 172 |
| 1 1/4" | 32 | 57 | 82 | 118 | 18 | 19 | | 45 | 16 | | | 80 | 104 | 32 | | | | *44,2 | * 200 |
| 1 1/2" | 34 | 64 | 95 | 143 | 20 | 24 | | 45 | 16 | | | 95 | 104 | 32 | | | | *50,3 | * 241 |
| 2" | 42 | 74 | 106 | 166 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | | *62,3 | * 267 |
| 2 1/2" | 48 | 85 | 120 | 180 | 23 | 30 | | 150 | 101 | | | 130 | 181 | 47 | | | | 75 | * 305 |
| 3" | 67 | 105 | 130 | 190 | 33 | 36 | | 150 | 101 | | | 132 | 181 | 47 | | | | 91 | * 330 |
| 4" | 76 | 120 | 151 | 231 | 40 | 50 | | 150 | 101 | | | 153 | 195 | 65 | | | | 117 | * 356 |
| 5" | 94 | 145 | 173 | 253 | 42 | 55 | | 150 | 101 | | | 156 | 195 | 65 | | | | 144 | * 381 |
| 6" | 120 | 145 | 214 | 294 | 53 | 55 | 163 | 150 | 101 | 195 | 71 | 163 | 195 | 71 | | | | 172 | * 457 |
| 8" | 140 | 170 | 252 | 332 | 65 | 65 | 182 | 214 | 101 | 268 | 84 | 243 | 268 | 85 | 46 | 366 | | 223 | * 521 |
| 10" | 185 | 210 | 306 | 386 | 73 | 70 | 230 | 300 | 101 | 273 | 120 | 290 | 293 | 100 | 70 | 416 | | 278 | * 559 |
| 12" | 205 | 230 | 324 | 404 | 73 | 70 | 248 | 300 | 101 | 273 | 120 | 308 | 293 | 100 | 70 | 434 | | 329 | * 635 |
| 14" | 245 | 270 | 402 | 482 | 93 | 100 | 297 | 300 | 101 | 310 | 156 | 397 | 361 | 135 | 69 | 530 | | 362 | * 762 |
| 16" | 262 | 295 | 420 | 500 | 93 | 100 | | 300 | 101 | | | 415 | 400 | 160 | 108 | 549 | | 413 | * 838 |
| 18" | 305 | 335 | 492 | 572 | 120 | 125 | | 350 | 101 | | | 452 | 423 | 175 | 130 | 585 | | 464 | * 914 |
| 20" | 350 | 362 | | | | | | 350 | 101 | | | 492 | 460 | 176 | 168 | 625 | | 516 | * 991 |
| 24" | 425 | 460 | | | | | | 450 | 101 | | | 570 | 501 | 200 | 210 | 704 | | 619 | *1143 |
| 30" | 520 | 545 | | | | | | 450 | 101 | | | 645 | 568 | 246 | 279 | 775 | | 772 | *1397 |
| 36" | 655 | 700 | | | | | | 550 | 111 | | | 970 | 725 | 311 | 297 | 1135 | | 927 | *1727 |

Inside pipe dimension to be specified by purchaser.

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 740 Lbs
SHORT PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|--------------------------------------|----------------------|--|-------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 300 | 740 Psi | Shell 1125 Psi Seat 815 Psi | Straightway Short | Welding Ends ANSI B 16.25 End to End ANSI B 16.10 | Rectangular | Cast Steel ASTM A 216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | St. 52-3 | Cast Steel | |

| | WRENCH OPERATED 8K | GEAR TYPE C | GEAR TYPE D |
|------------|--------------------|---------------|--------------|
| Plug | DN 1/2" - 8" | DN 1/2" - 30" | DN 6" - 30" |
| Semi Steel | 1-AS 70544 | 1-AS 70544 C | 1-AS 70544 D |
| Cast Steel | 1-AS 70547 | 1-AS 70547 C | 1-AS 70547 D |

Note: Bolted cover from DN 80 mm.

These valve types are identical with AR - Regular Pattern.

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | S | T | X |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|---|--------|--------|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | | * 23,3 | * 140 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | | * 28,7 | * 149 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | | | | * 35,4 | * 172 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | | | | * 44,2 | * 200 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | | | | * 50,3 | * 241 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | | | | * 62,3 | 267 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | | | | 75 | 305 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | | | | 91 | 330 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | | | | 117 | 356 |
| 5" | 120 | 145 | 214 | 294 | 53 | 55 | 150 | 101 | 163 | 195 | 71 | | | | 144 | * 381 |
| 6" | 140 | 170 | 252 | 332 | 65 | 65 | 214 | 157 | 184 | 268 | 85 | 46 | 366 | | 172 | 457 |
| 8" | 185 | 230 | 306 | 386 | 73 | 70 | 300 | 101 | 310 | 293 | 100 | 70 | 436 | | 223 | 521 |
| 10" | 225 | 275 | 380 | 460 | 93 | 100 | 300 | 101 | 400 | 361 | 135 | 69 | 533 | | 278 | 559 |
| 12" | 262 | 325 | 420 | 500 | 93 | 100 | 300 | 101 | 450 | 400 | 160 | 108 | 579 | | 329 | 635 |
| 14" | 305 | 370 | 492 | 572 | 120 | 125 | 350 | 101 | 487 | 423 | 175 | 130 | 620 | | 362 | * 762 |
| 16" | 350 | 402 | | | | | 350 | 101 | 532 | 460 | 176 | 168 | 665 | | 413 | * 838 |
| 18" | 385 | 464 | | | | | 350 | 101 | 573 | 483 | 196 | 192 | 705 | | 464 | * 914 |
| 20" | 425 | 510 | | | | | 450 | 101 | 620 | 501 | 200 | 210 | 754 | | 516 | * 991 |
| 24" | 520 | 605 | | | | | 450 | 101 | 705 | 568 | 246 | 279 | 835 | | 619 | * 1143 |
| 30" | 540 | 689 | | | | | 450 | 101 | 905 | 660 | 299 | 270 | 1058 | | 772 | * 1397 |

Inside pipe dimension to be specified by purchaser.

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 740 Lbs
VENTURI PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|--------------------------------------|------------------------|--|--------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 300 | 740 Psi | Shell 1125 Psi Seat 815 Psi | Straightway Venturi | Welding Ends ANSI B 16.25 End to End ANSI B 16.10 | Rectangular Reduced bore | Cast Steel ASTM A 216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | St. 52-3 | Cast Steel | |

| | WRENCH OPERATED 8K | GEAR TYPE C | GEAR TYPE D |
|------------|--------------------|--------------|--------------|
| | | | |
| Plug | DN 1" - 8" | DN 6" - 36" | DN 8" - 36" |
| Semi Steel | 1-AV 70544 | 1-AV 70544 C | 1-AV 70544 D |
| Cast Steel | 1-AV 70547 | 1-AV 70547 C | 1-AV 70547 D |

Note: Bolted cover from DN 100 mm.

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | S | T | X |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|------|---|--------|-------|
| 1" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | Inside pipe dimension to be specified by purchaser. | * 35,4 | * 172 |
| 1 1/4" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | | | | * 44,2 | * 200 |
| 1 1/2" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | | | | * 50,3 | * 241 |
| 2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | | | | * 62,3 | * 267 |
| 2 1/2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | | | | 75 | * 305 |
| 3" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | | | | 91 | * 330 |
| 4" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | | | | 117 | * 356 |
| 5" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | | | | 144 | * 381 |
| 6" | 120 | 145 | 214 | 294 | 53 | 55 | 150 | 101 | 163 | 195 | 71 | | | | 172 | 457 |
| 8" | 140 | 170 | 252 | 332 | 65 | 65 | 214 | 101 | 243 | 268 | 85 | 46 | 366 | | 223 | 521 |
| 10" | 185 | 230 | 306 | 386 | 73 | 70 | 300 | 101 | 310 | 293 | 100 | 70 | 436 | | 278 | 559 |
| 12" | 205 | 253 | 324 | 404 | 73 | 70 | 300 | 101 | 330 | 293 | 100 | 70 | 457 | | 329 | 635 |
| 14" | 245 | 298 | 402 | 482 | 93 | 100 | 300 | 101 | 425 | 361 | 135 | 69 | 558 | | 362 | 762 |
| 16" | 262 | 325 | 420 | 500 | 93 | 100 | 300 | 101 | 450 | 400 | 160 | 108 | 579 | | 413 | 838 |
| 18" | 305 | 370 | 492 | 572 | 120 | 125 | 350 | 101 | 487 | 423 | 175 | 130 | 620 | | 464 | 914 |
| 20" | 350 | 402 | | | | | 350 | 101 | 532 | 460 | 176 | 168 | 665 | | 516 | 991 |
| 24" | 425 | 510 | | | | | 450 | 101 | 620 | 501 | 200 | 210 | 754 | 619 | 1143 | |
| 30" | 520 | 605 | | | | | 450 | 101 | 705 | 568 | 246 | 279 | 835 | 772 | 1397 | |
| 36" | 655 | 780 | | | | | 550 | 111 | 1050 | 725 | 311 | 297 | 1215 | 927 | 1727 | |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 990 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------------|------------------------|--|--------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 400 | 990 Psi | Shell 1500 Psi Seat 1090 Psi | Straightway Regular | Welding Ends ANSI B 16.25 End to End ANSI B 16.10 | Rectangular Full bore ** | Cast Steel ASTM A 216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | St. 52-3 | Cast Steel | |

** 1/2" and 3/4" Round port full bore.

| | WRENCH OPERATED 8L | GEAR TYPE C | GEAR TYPE D |
|------------|--------------------|---------------|--------------|
| Plug | DN 1/2" - 4" | DN 1/2" - 20" | DN 4" - 20" |
| Semi Steel | 1-AR 70554 | 1-AR 70554 C | 1-AR 70554 D |
| Steel | 1-AR 70557 | 1-AR 70557 C | 1-AR 70557 D |

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | S | T | X |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|------|---|--------|-------|
| 1/2" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | | | | * 23,3 | * 165 |
| 3/4" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | | | | * 28,7 | * 191 |
| 1" | 51 | 90 | 127 | 178 | 28 | 30 | 150 | 101 | 119 | 181 | 47 | | | | * 35,4 | 216 |
| 1 1/4" | 52 | 97 | 137 | 188 | 28 | 30 | 150 | 101 | 128 | 181 | 47 | | | | * 44,2 | 229 |
| 1 1/2" | 58 | 112 | 166 | 217 | 33 | 36 | 150 | 101 | 148 | 181 | 47 | | | | * 50,3 | 241 |
| 2" | 69 | 119 | 171 | 231 | 33 | 36 | 150 | 101 | 154 | 195 | 65 | | | | * 62,3 | 292 |
| 2 1/2" | 80 | 131 | 195 | 255 | 44 | 50 | 150 | 101 | 165 | 195 | 71 | | | | 75 | 330 |
| 3" | 92 | 142 | 220 | 300 | 47 | 55 | 150 | 101 | 190 | 195 | 71 | | | | 91 | 356 |
| 4" | 117 | 173 | 263 | 343 | 53 | 65 | 214 | 101 | 287 | 268 | 85 | 46 | 410 | | 117 | 406 |
| 5" | 150 | 190 | 305 | 385 | 58 | 70 | 214 | 101 | 324 | 268 | 85 | 46 | 447 | | 144* | 457 |
| 6" | 165 | 220 | 363 | 443 | 73 | 85 | 300 | 101 | 376 | 293 | 100 | 70 | 500 | | 172 | 495 |
| 8" | 218 | 259 | | | | | 300 | 101 | 459 | 361 | 135 | 69 | 593 | | 223 | 597 |
| 10" | 270 | 295 | | | | | 300 | 101 | 558 | 400 | 160 | 108 | 692 | | 278 | 673 |
| 12" | 320 | 392 | | | | | 350 | 101 | 630 | 423 | 175 | 130 | 764 | | 329 | 762 |
| 14" | 340 | 447 | | | | | 350 | 101 | 695 | 460 | 176 | 168 | 829 | | 362 | 826 |
| 16" | 450 | 507 | | | | | 350 | 101 | 755 | 483 | 196 | 192 | 889 | | 413 | 902 |
| 18" | 470 | 566 | | | | | 450 | 101 | 802 | 501 | 200 | 210 | 941 | | 464* | 978 |
| 20" | 495 | 646 | | | | | 450 | 101 | 862 | 568 | 246 | 279 | 1001 | | 516* | 1054 |

Inside pipe dimension to be specified by purchaser.

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 990 Lbs
VENTURI PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------------|------------------------|--|-------------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 400 | 990 Psi | Shell 1500 Psi Seat 1090 Psi | Straightway Venturi | Welding Ends ANSI B 16.25 End to End ANSI B 16.10 | Rectan- gular Reduced bore | Cast Steel ASTM A 216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | St. 52-3 | Steel | |

| | WRENCH OPERATED 8L | GEAR TYPE C | GEAR TYPE D |
|------------|--------------------|-----------------|--------------|
| | | | |
| Plug | DN 1 1/2" - 6" | DN 1 1/2" - 24" | DN 5" - 24" |
| Semi Steel | 1-AV 70554 | 1-AV 70554 C | 1-AV 70554 D |
| Steel | 1-AV 70557 | 1-AV 70557 C | 1-AV 70557 D |

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | S | T | X |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|---|--------|-------|
| 1 1/2" | 52 | 97 | 137 | 188 | 28 | 30 | 150 | 101 | 128 | 181 | 47 | | | Inside pipe dimension to be specified by purchaser. | * 50,3 | * 241 |
| 2" | 58 | 112 | 166 | 217 | 33 | 36 | 150 | 101 | 148 | 181 | 47 | | | | * 62,3 | * 292 |
| 2 1/2" | 69 | 119 | 171 | 231 | 33 | 36 | 150 | 101 | 154 | 195 | 65 | | | | 75 | * 330 |
| 3" | 80 | 131 | 195 | 255 | 44 | 50 | 150 | 101 | 165 | 195 | 71 | | | | 91 | * 356 |
| 4" | 92 | 142 | 220 | 300 | 47 | 55 | 150 | 101 | 190 | 195 | 71 | | | | 117 | * 406 |
| 5" | 117 | 173 | 263 | 343 | 53 | 65 | 214 | 101 | 287 | 268 | 85 | 46 | 410 | | 144 | * 457 |
| 6" | 150 | 190 | 305 | 385 | 58 | 70 | 214 | 101 | 324 | 268 | 85 | 46 | 447 | | 172 | 495 |
| 8" | 165 | 220 | | | | | 300 | 101 | 376 | 293 | 100 | 70 | 500 | | 223 | 597 |
| 10" | 218 | 259 | | | | | 300 | 101 | 459 | 361 | 135 | 69 | 593 | | 278 | 673 |
| 12" | 270 | 295 | | | | | 300 | 101 | 558 | 400 | 160 | 108 | 692 | | 329 | 762 |
| 14" | 300 | 340 | | | | | 300 | 101 | 575 | 400 | 160 | 108 | 709 | | 362 | 826 |
| 16" | 320 | 392 | | | | | 350 | 101 | 630 | 423 | 175 | 130 | 764 | | 413 | 902 |
| 18" | 340 | 447 | | | | | 350 | 101 | 695 | 460 | 176 | 168 | 829 | | 464 | 978 |
| 20" | 450 | 507 | | | | | 350 | 101 | 755 | 483 | 196 | 192 | 889 | | 516 | 1054 |
| 24" | 470 | 566 | | | | | 450 | 101 | 802 | 501 | 200 | 210 | 941 | | 619 | 1232 |

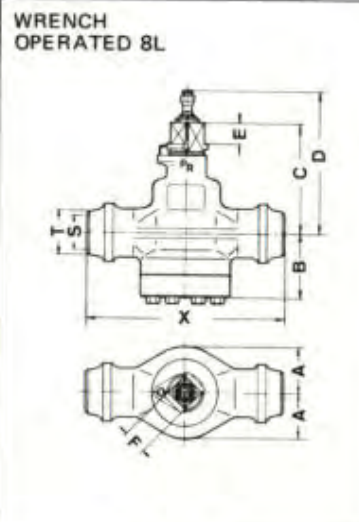
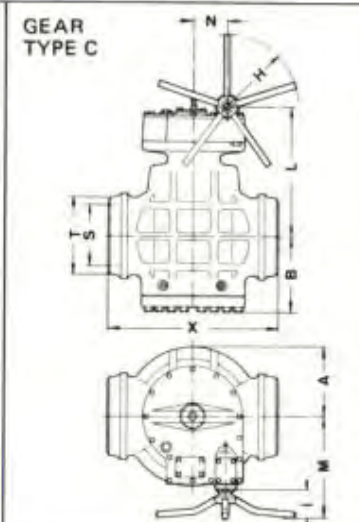
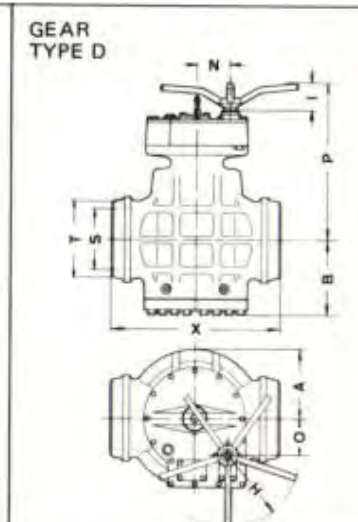
Note: * Not included in the standards

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 1480 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------------|------------------------|--|--------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 600 | 1480 Psi | Shell 2225 Psi Seat 1630 Psi | Straightway Regular | Welding Ends ANSI B 16.25 End to End ANSI B 16.10 | Rectangular Full bore ** | Cast Steel ASTM A 216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | St. 52-3 | Steel | |

** 1/2" and 3/4" Round port full bore.

| | WRENCH OPERATED 8L | GEAR TYPE C | GEAR TYPE D |
|------------|--|---|--|
| |  |  |  |
| Plug | DN 1/2" - 4" | DN 1/2" - 20" | DN 4" - 20" |
| Semi Steel | 1-AR 70564 | 1-AR 70564 C | 1-AR 70564 D |
| Steel | 1-AR 70567 | 1-AR 70567 C | 1-AR 70567 D |

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | S | T | X |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|------|---|--------|--------|
| 1/2" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | | | | * 23,3 | * 165 |
| 3/4" | 48 | 82 | 122 | 173 | 28 | 30 | 150 | 101 | 113 | 181 | 47 | | | | * 28,7 | * 191 |
| 1" | 51 | 90 | 127 | 178 | 28 | 30 | 150 | 101 | 119 | 181 | 47 | | | | * 35,4 | 216 |
| 1 1/4" | 52 | 97 | 137 | 188 | 28 | 30 | 150 | 101 | 128 | 181 | 47 | | | | * 44,2 | 229 |
| 1 1/2" | 58 | 112 | 166 | 217 | 33 | 36 | 150 | 101 | 148 | 181 | 47 | | | | * 50,3 | 241 |
| 2" | 69 | 119 | 171 | 231 | 33 | 36 | 150 | 101 | 154 | 195 | 65 | | | | * 62,3 | 292 |
| 2 1/2" | 80 | 131 | 195 | 255 | 44 | 50 | 150 | 101 | 165 | 195 | 71 | | | | 75 | 330 |
| 3" | 92 | 142 | 220 | 300 | 47 | 55 | 150 | 101 | 190 | 195 | 71 | | | | 91 | 356 |
| 4" | 117 | 173 | 263 | 343 | 53 | 65 | 214 | 101 | 287 | 268 | 85 | 46 | 410 | | 117 | 432 |
| 5" | 150 | 190 | 305 | 385 | 58 | 70 | 214 | 101 | 324 | 268 | 85 | 46 | 447 | | 144 | * 508 |
| 6" | 165 | 220 | 363 | 443 | 73 | 85 | 300 | 101 | 376 | 293 | 100 | 70 | 500 | | 172 | 559 |
| 8" | 218 | 259 | | | | | 300 | 101 | 459 | 361 | 135 | 69 | 593 | | 223 | 660 |
| 10" | 270 | 295 | | | | | 300 | 101 | 558 | 400 | 160 | 108 | 692 | | 278 | 787 |
| 12" | 320 | 392 | | | | | 350 | 101 | 630 | 423 | 175 | 130 | 764 | | 329 | 838 |
| 14" | 340 | 447 | | | | | 350 | 101 | 695 | 460 | 176 | 168 | 829 | | 362 | 889 |
| 16" | 450 | 507 | | | | | 450 | 101 | 755 | 501 | 200 | 210 | 889 | | 413 | 991 |
| 18" | 470 | 566 | | | | | 450 | 101 | 802 | 568 | 246 | 279 | 941 | | 464 | * 1092 |
| 20" | 495 | 646 | | | | | 450 | 101 | 957 | 660 | 289 | 270 | 1114 | | 516 | * 1194 |

Inside pipe dimension to be specified by purchaser.

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 1480 Lbs
VENTURI PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------------|------------------------|--|--------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 600 | 1480 Psi | Shell 2225 Psi Seat 1630 Psi | Straightway Venturi | Welding Ends ANSI B 16.25 End to End ANSI B 16.10 | Rectangular Reduced bore | Cast Steel ASTM A 216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | St. 52-3 | Steel | |

| | WRENCH OPERATED 8L | GEAR TYPE C | GEAR TYPE D |
|------------|--------------------|-----------------|--------------|
| Plug | DN 1 1/2" - 5" | DN 1 1/2" - 24" | DN 5" - 24" |
| Semi Steel | 1-AV 70564 | 1-AV 70564 C | 1-AV 70564 D |
| Steel | 1-AV 70567 | 1-AV 70567 C | 1-AV 70567 D |

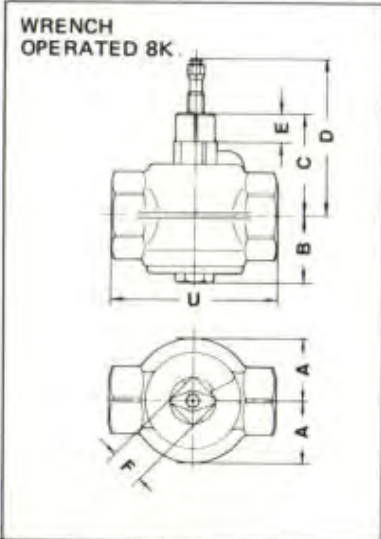
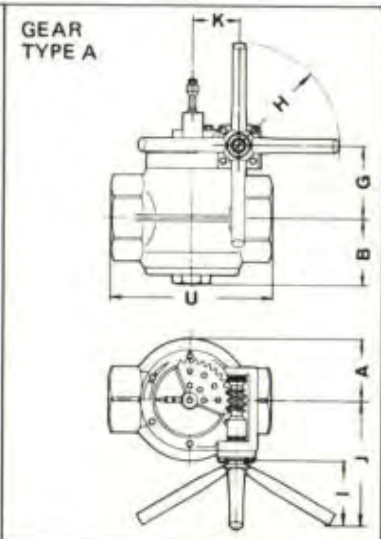
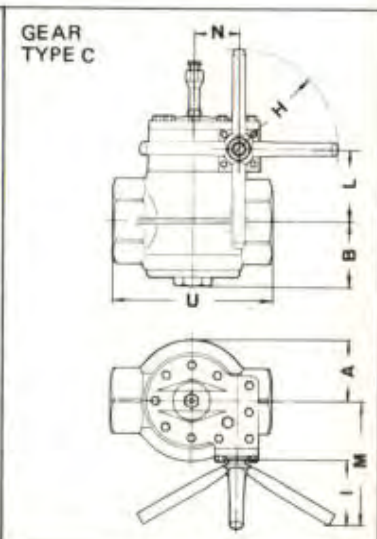
| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | S | T | X | |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|---|-------|-----|-------|
| 1 1/2" | 52 | 97 | 137 | 188 | 28 | 30 | 150 | 101 | 128 | 181 | 47 | | | Inside pipe dimension to be specified by purchaser. | *50,3 | 241 | |
| 2" | 58 | 112 | 166 | 217 | 33 | 36 | 150 | 101 | 148 | 181 | 47 | | | | *62,3 | 292 | |
| 1 1/2" | 69 | 119 | 171 | 231 | 33 | 36 | 150 | 101 | 154 | 195 | 65 | | | | | 75 | 330 |
| 3" | 80 | 131 | 195 | 255 | 44 | 50 | 150 | 101 | 165 | 195 | 71 | | | | | 91 | 356 |
| 4" | 92 | 142 | 220 | 300 | 47 | 55 | 150 | 101 | 190 | 195 | 71 | | | | | 117 | 432 |
| 6" | 117 | 173 | 263 | 343 | 53 | 65 | 214 | 101 | 287 | 268 | 85 | 46 | 410 | | | 144 | * 508 |
| 6" | 150 | 190 | | | | | 214 | 101 | 324 | 268 | 85 | 46 | 447 | | | 172 | 559 |
| 8" | 165 | 220 | | | | | 300 | 101 | 376 | 293 | 100 | 70 | 500 | | | 223 | 660 |
| 10" | 218 | 259 | | | | | 300 | 101 | 459 | 361 | 135 | 69 | 593 | | | 278 | 787 |
| 12" | 270 | 295 | | | | | 300 | 101 | 558 | 400 | 160 | 108 | 692 | | | 329 | 838 |
| 14" | 300 | 340 | | | | | 300 | 101 | 575 | 400 | 160 | 108 | 709 | | | 362 | 889 |
| 16" | 320 | 392 | | | | | 350 | 101 | 630 | 423 | 175 | 130 | 764 | | | 413 | 991 |
| 18" | 340 | 447 | | | | | 350 | 101 | 695 | 460 | 176 | 168 | 829 | | | 464 | 1092 |
| 20" | 450 | 507 | | | | | 450 | 101 | 755 | 501 | 200 | 210 | 889 | | | 516 | 1194 |
| 24" | 470 | 566 | | | | | 450 | 101 | 802 | 568 | 246 | 279 | 941 | | | 619 | 1397 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 285 Lbs
REGULAR PATTERN
ROUND PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|------------------|------------------------|---|--------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi | Straightway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Round Full bore | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | Seat 315 Psi | | | | | Cast Steel | |

| | WRENCH OPERATED 8K | GEAR TYPE A | GEAR TYPE C |
|------------|--|---|--|
| |  |  |  |
| Plug | DN 1/2" - 4" | DN 3" - 4" | DN 1/2" - 4" |
| Semi Steel | 1-AR 71024 | 1-AR 71024 A | 1-AR 71024 C |
| Cast Steel | 1-AR 71027 | 1-AR 71027 A | 1-AR 71027 C |

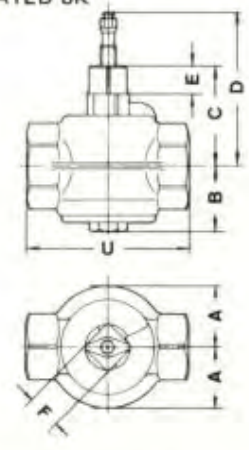
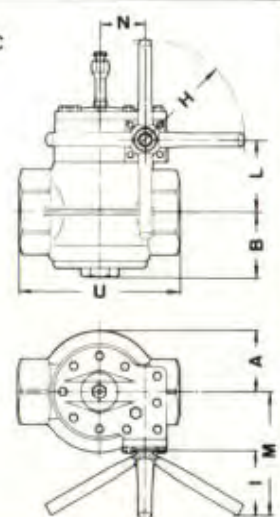
Note: Bolted cover from DN 50 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | U |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|----|-----|
| 1/2" | 32 | 48 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | 102 |
| 3/4" | 34 | 50 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | 102 |
| 1" | 42 | 60 | 90 | 138 | 20 | 24 | | 150 | 101 | | | 102 | 184 | 47 | 118 |
| 1 1/4" | 48 | 68 | 100 | 148 | 20 | 24 | | 150 | 101 | | | 110 | 181 | 47 | 130 |
| 1 1/2" | 61 | 78 | 105 | 165 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | 158 |
| 2" | 76 | 92 | 123 | 183 | 23 | 30 | | 150 | 101 | | | 118 | 195 | 65 | 188 |
| 2 1/2" | 107 | 95 | 132 | 192 | 33 | 36 | | 150 | 101 | | | 118 | 195 | 65 | 260 |
| 3" | 120 | 102 | 154 | 234 | 40 | 50 | 127 | 150 | 101 | 195 | 71 | 127 | 195 | 71 | 270 |
| 4" | 147 | 120 | 182 | 262 | 42 | 55 | 141 | 214 | 157 | 268 | 84 | 143 | 268 | 84 | 330 |

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 740 Lbs
REGULAR PATTERN
ROUND PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------|------------------------|---|--------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 300 | 740 Psi | Shell 1125 Psi | Straightway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Round Full bore | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | Seat 815 Psi | | | | | Cast Steel | |

| | WRENCH OPERATED 8K | GEAR TYPE C |
|------------|---|--|
| |  |  |
| Plug | DN 1/2" - 3" | DN 1/2" - 4" |
| Semi Steel | 1-AR 71044 | 1-AR 71044 C |
| Cast Steel | 1-AR 71047 | 1-AR 71047 C |

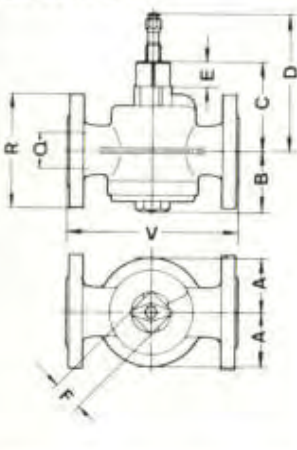
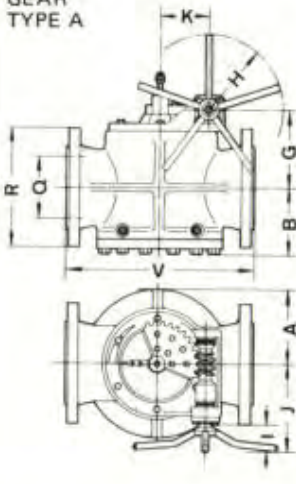
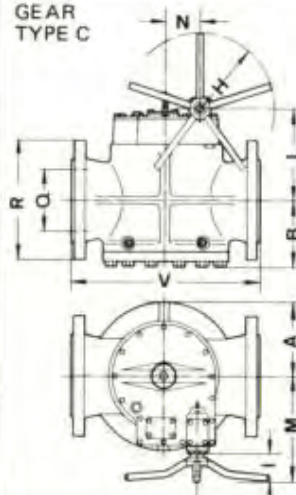
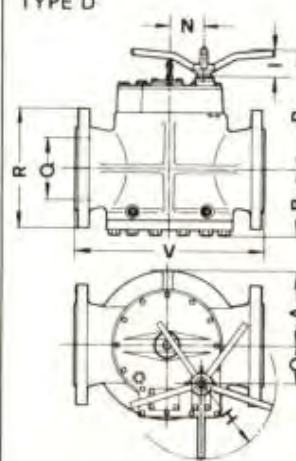
Note: Bolted cover from DN 50 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | U |
|--------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|----|-----|
| 1/2" | 32 | 48 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | 102 |
| 3/4" | 34 | 50 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | 102 |
| 1" | 42 | 60 | 90 | 138 | 20 | 24 | | 150 | 101 | | | 102 | 184 | 47 | 118 |
| 1 1/4" | 48 | 68 | 100 | 148 | 20 | 24 | | 150 | 101 | | | 110 | 181 | 47 | 130 |
| 1 1/2" | 61 | 78 | 105 | 165 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | 155 |
| 2" | 76 | 92 | 123 | 183 | 23 | 30 | | 150 | 101 | | | 118 | 195 | 65 | 185 |
| 2 1/2" | 107 | 95 | 132 | 192 | 33 | 36 | | 150 | 101 | | | 118 | 195 | 65 | 250 |
| 3" | 120 | 102 | 154 | 234 | 40 | 50 | 127 | 150 | 101 | 195 | 71 | 127 | 195 | 71 | 270 |
| 4" | 147 | 120 | 182 | 262 | 42 | 55 | 141 | 214 | 157 | 268 | 84 | 143 | 268 | 84 | 330 |

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 285 Lbs
REGULAR PATTERN
ROUND PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|------------------------|---|--------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi Seat 315 Psi | Straightway Regular | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Round Full bore | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Cast Steel | |

| | WRENCH OPERATED 8K | GEAR TYPE A | GEAR TYPE C | GEAR TYPE D |
|------------|--|--|---|--|
| |  |  |  |  |
| Plug | DN 1/2" - 4" | DN 3" - 6" | DN 1/2" - 12" | DN 4" - 12" |
| Semi Steel | 1-AR 71124 | 1-AR 71124 A | 1-AR 71124 C | 1-AR 71124 D |
| Cast Steel | 1-AR 71127 | 1-AR 71127 A | 1-AR 71127 C | 1-AR 71127 D |

Note: Bolted cover from DN 50 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | V | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-------|-------|
| 1/2" | 32 | 48 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | | | * 13 | * 89 | * 127 | * 138 |
| 3/4" | 34 | 50 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | | | * 19 | * 98 | * 152 | * 165 |
| 1" | 42 | 60 | 90 | 138 | 20 | 24 | | 150 | 101 | | | 102 | 184 | 47 | | | 25 | 108 | 178 | 191 |
| 1 1/4" | 48 | 68 | 100 | 148 | 20 | 24 | | 150 | 101 | | | 110 | 181 | 47 | | | 32 | 117 | * 178 | * 191 |
| 1 1/2" | 61 | 78 | 105 | 165 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | 38 | 127 | 222 | 235 |
| 2" | 76 | 92 | 123 | 183 | 23 | 30 | | 150 | 101 | | | 118 | 195 | 65 | | | 51 | 152 | 267 | 279 |
| 2 1/2" | 107 | 95 | 132 | 192 | 33 | 36 | | 150 | 101 | | | 118 | 195 | 65 | | | 64 | 178 | 299 | 311 |
| 3" | 120 | 102 | 154 | 234 | 40 | 50 | 127 | 150 | 101 | 195 | 71 | 127 | 195 | 71 | | | 76 | 191 | 343 | 356 |
| 4" | 147 | 120 | 182 | 262 | 42 | 55 | 141 | 214 | 101 | 268 | 84 | 201 | 268 | 85 | 40 | 324 | 102 | 229 | 432 | 445 |
| 5" | 185 | 150 | 213 | 293 | 56 | 55 | 167 | 300 | 101 | 273 | 120 | 230 | 293 | 100 | 70 | 355 | 127 | 254 | * 483 | * 496 |
| 6" | 225 | 172 | 282 | 362 | 73 | 70 | 191 | 300 | 101 | 310 | 156 | 293 | 361 | 135 | 69 | 427 | 152 | 279 | 533 | 546 |
| 8" | 282 | 212 | 342 | 422 | 93 | 100 | | 300 | 101 | | | 330 | 400 | 160 | 107 | 464 | 203 | 343 | 635 | 648 |
| 10" | 350 | 252 | 364 | 444 | 93 | 100 | | 350 | 101 | | | 367 | 460 | 176 | 169 | 501 | 254 | 406 | 787 | 800 |
| 12" | 412 | 294 | 430 | 510 | 120 | 125 | | 350 | 101 | | | 395 | 483 | 196 | 192 | 529 | 305 | 453 | 914 | 927 |

Note: * Not included in the standards.

PR LUBRICATED STRAIGHTWAY VALVES

CAST STEEL 285 Lbs
REGULAR PATTERN
ROUND PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------|------------------------|--|--------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi Seat 315 | Straightway Regular | Welding Ends ANSI B 16.25 End to End ANSI B 16.10 | Round Full bore | Cast Steel ASTM A 216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | St. 52-3 | Cast Steel | |

| WRENCH OPERATED 8K | | GEAR TYPE A | | GEAR TYPE C | | GEAR TYPE D | |
|--------------------|--------------|--------------|--|---------------|--|--------------|--|
| | | | | | | | |
| Plug | DN 1/2" - 4" | DN 3" - 6" | | DN 1/2" - 12" | | DN 4" - 12" | |
| Semi Steel | 1-AR 71524 | 1-AR 71524 A | | 1-AR 71524 C | | 1-AR 71524 D | |
| Cast Steel | 1-AR 71527 | 1-AR 71527 A | | 1-AR 71527 C | | 1-AR 71527 D | |

Note: Bolted cover from DN 50 mm.

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | S | T | X |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|--------|-------|
| 1/2" | 32 | 48 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | | | | * 23,3 | * 140 |
| 3/4" | 34 | 50 | 84 | 132 | 20 | 24 | | 45 | 16 | | | 73 | 104 | 35 | | | | * 28,7 | * 160 |
| 1" | 42 | 60 | 90 | 138 | 20 | 24 | | 150 | 101 | | | 102 | 184 | 47 | | | | * 35,4 | 191 |
| 1 1/4" | 48 | 68 | 100 | 148 | 20 | 24 | | 150 | 101 | | | 110 | 181 | 47 | | | | * 44,2 | * 216 |
| 1 1/2" | 61 | 78 | 105 | 165 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | | * 50,3 | 241 |
| 2" | 76 | 92 | 123 | 183 | 23 | 30 | | 150 | 101 | | | 118 | 195 | 65 | | | | * 62,3 | 283 |
| 2 1/2" | 107 | 95 | 132 | 192 | 33 | 36 | | 150 | 101 | | | 118 | 195 | 65 | | | | 75 | 330 |
| 3" | 120 | 102 | 154 | 234 | 40 | 50 | 127 | 150 | 101 | 195 | 71 | 127 | 195 | 71 | | | | 91 | 387 |
| 4" | 147 | 120 | 182 | 262 | 42 | 55 | 141 | 214 | 101 | 268 | 84 | 201 | 268 | 85 | 46 | 324 | | 117 | 467 |
| 5" | 185 | 150 | 213 | 293 | 56 | 55 | 167 | 300 | 101 | 273 | 120 | 230 | 293 | 100 | 70 | 355 | | 144 | * 508 |
| 6" | 225 | 172 | 282 | 362 | 73 | 70 | 191 | 300 | 101 | 310 | 156 | 293 | 361 | 135 | 69 | 427 | | 172 | 569 |
| 8" | 282 | 212 | 342 | 422 | 93 | 100 | | 300 | 101 | | | 330 | 400 | 160 | 107 | 464 | | 223 | 688 |
| 10" | 350 | 252 | 364 | 444 | 93 | 100 | | 350 | 101 | | | 367 | 460 | 176 | 169 | 501 | | 278 | 826 |
| 12" | 412 | 294 | 430 | 510 | 120 | 125 | | 350 | 101 | | | 395 | 483 | 196 | 192 | 529 | | 329 | 966 |

Note: * Not included in the standards.

Inside pipe dimension to be specified by purchaser.

PR LUBRICATED THREWAY VALVES



2" 1-AR 48034



4" 1-AR 77124



16" 1-AR 78124 C



16" 1-AR 78124 D

Threeway – Section C.

| Identification | Page | Identification | Page | Identification | Page | Identification | Page | Identification | Page |
|----------------|------|----------------|------|----------------|------|----------------|------|----------------|------|
| 1-AR 47014 | C1 | 1-AR 48034 | C2 | 1-AR 77044 | C6 | 1-AR 77144 D | C13 | 1-AR 78124 | C12 |
| 1-AR 47014 C | C1 | 1-AR 48034 C | C2 | 1-AR 77044 C | C6 | 1-AR 77147 | C13 | 1-AR 78124 C | C12 |
| 1-AR 47034 | C2 | 1-AR 48114 | C3 | 1-AR 77047 | C6 | 1-AR 77147 C | C13 | 1-AR 78124 D | C12 |
| 1-AR 47034 C | C2 | 1-AR 47134 D | C4 | 1-AR 77047 C | C6 | 1-AR 77147 D | C13 | 1-AR 78127 | C12 |
| 1-AR 47114 | C3 | 1-AR 48014 | C1 | 1-AR 77124 | C12 | 1-AR 78024 | C5 | 1-AR 78127 C | C12 |
| 1-AR 47114 C | C3 | 1-AR 48014 C | C1 | 1-AR 77124 C | C12 | 1-AR 78024 C | C5 | 1-AR 78127 D | C12 |
| 1-AR 47114 D | C3 | 1-AR 48134 C | C4 | 1-AR 77124 D | C12 | 1-AR 78027 | C5 | 1-AR 78144 | C13 |
| 1-AR 47134 | C4 | 1-AR 48134 D | C4 | 1-AR 77127 | C12 | 1-AR 78027 C | C5 | 1-AR 78144 C | C13 |
| 1-AR 47134 C | C4 | 1-AR 77024 | C5 | 1-AR 77127 C | C12 | 1-AR 78044 | C6 | 1-AR 78144 D | C13 |
| 1-AR 48114 C | C3 | 1-AR 77024 C | C5 | 1-AR 77127 D | C12 | 1-AR 78044 C | C6 | 1-AR 78147 | C13 |
| 1-AR 48114 D | C3 | 1-AR 77027 | C5 | 1-AR 77144 | C13 | 1-AR 78047 | C6 | 1-AR 78147 C | C13 |
| 1-AR 48134 | C4 | 1-AR 77027 C | C5 | 1-AR 77144 C | C13 | 1-AR 78047 C | C6 | 1-AR 78147 D | C13 |

PR LUBRICATED THREWAY VALVES

SEMI STEEL 200 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|-------------------------|---|-----------------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 125 | 200 Psi | Shell 300 Psi Seat 220 Psi | Three way Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectan- gular L - T Port | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

Standard Ports



L - Port



T - Port

Other variations, see Section A

Page A7

| WRENCH OPERATED 8K | | GEAR TYPE C | |
|--------------------|--------------|--------------|--------------|
| L - PORT | T - PORT | L - PORT | T - PORT |
| DN 1/2" - 4" | DN 1/2" - 4" | DN 1/2" - 4" | DN 1/2" - 4" |
| 1-AR 47014 | 1-AR 48014 | 1-AR 47014 C | 1-AR 48014 C |

| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 89 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 95 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | 108 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | 121 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | 140 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | 152 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | 222 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | 238 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | 273 |

PR LUBRICATED THREWAY VALVES

SEMI STEEL 500 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-----------------------|-------------------|---------------------------------------|------------------------|-------------------------------|-------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 250 | 500 Psi | Shell 750 Seat 550 | Three-way Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectangular L - T Port | Semi Steel ASTM A,126 Class B | Semi Steel ASTM A,126 Class B | Manual |

Standard Ports



L - Port



T - Port

Other variations, see Section A

Page A7

| WRENCH OPERATED 8K | | GEAR TYPE C | |
|--------------------|--------------|--------------|--------------|
| L - PORT | T - PORT | L - PORT | T - PORT |
| DN 1/2" - 4" | DN 1/2" - 4" | DN 1/2" - 4" | DN 1/2" - 4" |
| 1-AR 47034 | 1-AR 48034 | 1-AR 47034 C | 1-AR 48034 C |

| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 80 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 96 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | 108 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | 121 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | 140 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | 162 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | 222 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | 238 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | 273 |

PR LUBRICATED THREWAY VALVES

SEMI STEEL 200 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|----------------------|---|-----------------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 125 | 200 Psi | Shell 300 Psi Seat 220 Psi | Three-way Regular | Flanges F.F. ANSI B 16.1 Face to Face ANSI B 16.10 | Rectan- gular L - T Port | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

| WRENCH OPERATED 8K | | GEAR TYPE C | | GEAR TYPE D | |
|--------------------|--------------|---------------|---------------|--------------|--------------|
| | | | | | |
| L - PORT | T - PORT | L - PORT | T - PORT | L - PORT | T - PORT |
| DN 1/2" - 6" | DN 1/2" - 6" | DN 1/2" - 30" | DN 1/2" - 30" | DN 6" - 30" | DN 6" - 30" |
| 1-AR 47114 | 1-AR 48114 | 1-AR 47114 C | 1-AR 48114 C | 1-AR 47114 D | 1-AR 48114 D |

Note: Bolted cover from DN 125 mm.

Standard Ports



L - Port

T - Port

Other variations, see Section A Page A7

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | Q | R | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|--------|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | * 13 | * 89 | * 130 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | * 19 | * 98 | * 150 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | | | 25 | 108 | * 160 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | | | 32 | 118 | * 180 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | | | 38 | 127 | * 200 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | | | 51 | 152 | * 230 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | | | 64 | 178 | * 290 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | | | 76 | 191 | * 310 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | | | 102 | 229 | * 350 |
| 5" | 120 | 145 | 214 | 294 | 53 | 55 | 150 | 101 | 163 | 195 | 71 | | | 127 | 254 | 356 |
| 6" | 140 | 170 | 252 | 332 | 65 | 65 | 214 | 101 | 243 | 268 | 85 | 40 | 366 | 152 | 279 | 394 |
| 8" | 185 | 210 | 306 | 386 | 73 | 70 | 300 | 101 | 290 | 293 | 100 | 70 | 416 | 203 | 343 | 457 |
| 10" | 225 | 250 | 380 | 460 | 93 | 100 | 300 | 101 | 375 | 361 | 135 | 69 | 508 | 254 | 406 | 533 |
| 12" | 262 | 295 | 420 | 500 | 93 | 100 | 300 | 101 | 415 | 400 | 160 | 108 | 549 | 305 | 483 | 610 |
| 14" | 305 | 335 | 492 | 572 | 120 | 125 | 350 | 101 | 452 | 423 | 175 | 130 | 585 | 356 | 533 | 686 |
| 16" | 350 | 362 | | | | | 350 | 101 | 492 | 460 | 176 | 168 | 625 | 406 | 597 | 762 |
| 18" | 385 | 419 | | | | | 350 | 101 | 528 | 483 | 196 | 192 | 660 | 457 | 635 | 864 |
| 20" | 425 | 460 | | | | | 450 | 101 | 570 | 501 | 200 | 210 | 704 | 508 | 699 | 914 |
| 24" | 520 | 545 | | | | | 450 | 101 | 645 | 568 | 246 | 279 | 775 | 610 | 813 | * 1067 |
| 30" | 540 | 619 | | | | | 450 | 111 | 835 | 660 | 299 | 270 | 988 | 762 | 984 | * 1295 |

Note: * Not included in the standards.

PR LUBRICATED THREWAY VALVES

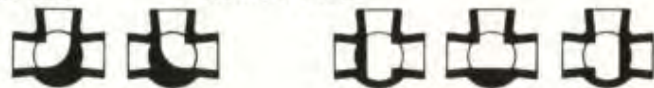
SEMI STEEL 500 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|----------------------|--|------------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 250 | 500 Psi | Shell 750 Psi Seat 550 Psi | Three-way Regular | Flanges R.F. ANSI B 16.1 Face to Face ANSI B 16.10 Class 300 | Rectangular L - T Port | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

| WRENCH OPERATED 8K | | GEAR TYPE C | | GEAR TYPE D | |
|--------------------|--------------|---------------|---------------|--------------|--------------|
| | | | | | |
| L - PORT | T - PORT | L - PORT | T - PORT | L - PORT | T - PORT |
| DN 1/2" - 6" | DN 1/2" - 6" | DN 1/2" - 30" | DN 1/2" - 30" | DN 6" - 30" | DN 6" - 30" |
| 1-AR 47134 | 1-AR 48134 | 1-AR 47134 C | 1-AR 48134 C | 1-AR 47134 D | 1-AR 48134 D |

Note: Bolted cover from DN 125 mm.

Standard Ports



L - Port

T - Port

Other variations, see Section A Page A7

| DN | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|-------|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | * 13 | * 95 | * 130 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | | 45 | 16 | | | 73 | 104 | 32 | | | * 19 | * 118 | * 160 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | | 45 | 16 | | | 80 | 104 | 32 | | | 25 | 124 | * 160 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | | 45 | 16 | | | 95 | 104 | 32 | | | 32 | 133 | * 180 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | | 150 | 101 | | | 115 | 181 | 47 | | | 38 | 156 | * 200 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | | 150 | 101 | | | 130 | 181 | 47 | | | 51 | 165 | * 230 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | | 150 | 101 | | | 132 | 181 | 47 | | | 64 | 191 | * 290 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | | 150 | 101 | | | 153 | 195 | 65 | | | 76 | 210 | * 310 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | | 150 | 101 | | | 156 | 195 | 65 | | | 102 | 254 | * 360 |
| 5" | 120 | 145 | 214 | 294 | 53 | 55 | 163 | 150 | 101 | 195 | 71 | 163 | 195 | 71 | | | 127 | 279 | * 390 |
| 6" | 140 | 170 | 252 | 332 | 65 | 65 | 182 | 214 | 101 | 268 | 84 | 243 | 268 | 76 | 40 | 366 | 152 | 318 | 403 |
| 8" | 185 | 210 | 306 | 386 | 73 | 70 | 230 | 300 | 101 | 273 | 120 | 290 | 293 | 100 | 70 | 416 | 203 | 381 | 502 |
| 10" | 225 | 250 | 380 | 460 | 93 | 100 | 275 | 300 | 101 | 310 | 156 | 375 | 361 | 135 | 69 | 508 | 254 | 445 | 600 |
| 12" | 262 | 295 | 420 | 500 | 93 | 100 | | 300 | 101 | | | 415 | 400 | 160 | 108 | 549 | 305 | 521 | 711 |
| 14" | 305 | 335 | 492 | 572 | 120 | 125 | | 350 | 101 | | | 452 | 423 | 175 | 130 | 585 | 337 | 584 | 762 |
| 16" | 350 | 362 | | | | | | 350 | 101 | | | 492 | 460 | 176 | 168 | 625 | 387 | 648 | 838 |
| 18" | 385 | 419 | | | | | | 350 | 101 | | | 528 | 483 | 196 | 192 | 660 | 432 | 711 | 914 |
| 20" | 425 | 460 | | | | | | 450 | 101 | | | 570 | 501 | 200 | 210 | 704 | 483 | 775 | 991 |
| 24" | 520 | 545 | | | | | | 450 | 101 | | | 645 | 568 | 246 | 279 | 775 | 584 | 914 | 1141 |
| 30" | 540 | 619 | | | | | | 450 | 111 | | | 835 | 660 | 299 | 270 | 988 | 737 | 1092 | 1397 |

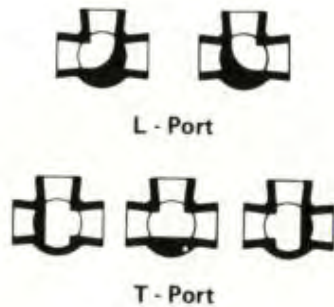
Note: * Not included in the standards.

PR LUBRICATED THREWAY VALVES

CAST STEEL 285 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|----------------------|---|------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi Seat 315 Psi | Three-way Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectangular L - T Port | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Cast Steel | |

Standard Ports



Other variations, see Section A

Page A7

| | WRENCH OPERATED 8K | | GEAR TYPE C | |
|------------|--------------------|--------------|--------------|--------------|
| | L - PORT | T - PORT | L - PORT | T - PORT |
| Plug | DN 1/2" - 4" | DN 1/2" - 4" | DN 1/2" - 4" | DN 1/2" - 4" |
| Semi Steel | 1-AR 77024 | 1-AR 78024 | 1-AR 77024 C | 1-AR 78024 C |
| Cast Steel | 1-AR 77027 | 1-AR 78027 | 1-AR 77027 C | 1-AR 78027 C |

Note: Bolted cover from DN 80 mm.

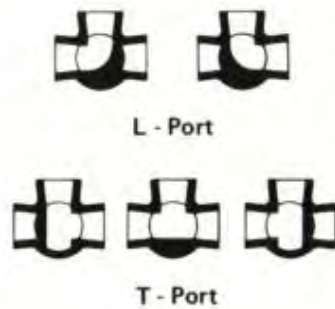
| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 89 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 95 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | 108 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | 121 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | 140 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | 152 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | 222 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | 238 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | 273 |

PR LUBRICATED THREWAY VALVES

CAST STEEL 740 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|--------------------------------------|----------------------|---|------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 300 | 740 Psi | Shell 1125 Psi Seat 815 Psi | Three-way Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectangular L - T Port | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Cast Steel | |

Standard Ports



Other variations, see Section A
Page A7

| | WRENCH OPERATED 8K | | GEAR TYPE C | |
|------------|--------------------|--------------|--------------|--------------|
| | L - PORT | T - PORT | L - PORT | T - PORT |
| Plug | DN 1/2" - 4" | DN 1/2" - 4" | DN 1/2" - 4" | DN 1/2" - 4" |
| Semi Steel | 1-AR 77044 | 1-AR 78044 | 1-AR 77044 C | 1-AR 78044 C |
| Cast Steel | 1-AR 77047 | 1-AR 78047 | 1-AR 77047 C | 1-AR 78047 C |

Note: Bolted cover from DN 80 mm.

| DN | A | B | C | D | E | F | H | I | L | M | N | U |
|--------|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 89 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | 95 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | 108 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | 121 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | 140 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | 152 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | 222 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | 238 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | 273 |

PR LUBRICATED THREWAY VALVES

CAST STEEL 285 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------|-------------------|---|------------------------------|---------------------------------------|---|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Seat 315 Psi | Three-way Regular | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular L - T Port | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B Cast Steel | Manual |

| | WRENCH OPERATED 8K | | GEAR TYPE C | | GEAR TYPE D | |
|------------|--------------------|--------------|---------------|---------------|--------------|--------------|
| | L - PORT | T - PORT | L - PORT | T - PORT | L - PORT | T - PORT |
| Plug | DN 1/2" - 6" | DN 1/2" - 6" | DN 1/2" - 30" | DN 1/2" - 30" | DN 6" - 30" | DN 6" - 30" |
| Semi Steel | 1-AR 77124 | 1-AR 78124 | 1-AR 77124 C | 1-AR 78124 C | 1-AR 77124 D | 1-AR 78124 D |
| Cast Steel | 1-AR 77127 | 1-AR 78127 | 1-AR 77127 C | 1-AR 78127 C | 1-AR 77127 D | 1-AR 78127 D |

Note: Bolted cover from DN 80 mm.

Standard Ports



L - Port

T - Port

Other variations, see Section A Page A7

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | Q | R | Ring Face V | Ring Joint V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------------|--------------|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | * 13 | 89 | * 130 | * 143 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | * 19 | 98 | * 150 | * 163 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | | | 25 | 108 | * 160 | * 173 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | | | 32 | 117 | * 180 | * 193 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | | | 38 | 127 | * 200 | * 213 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | | | 51 | 152 | * 230 | * 243 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | | | 64 | 178 | * 290 | * 303 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | | | 76 | 191 | * 310 | * 323 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | | | 102 | 229 | * 350 | * 363 |
| 5" | 120 | 145 | 214 | 294 | 53 | 55 | 150 | 101 | 163 | 195 | 71 | | | 127 | 254 | * 356 | * 369 |
| 6" | 140 | 170 | 252 | 332 | 65 | 65 | 214 | 101 | 243 | 268 | 85 | 40 | 366 | 152 | 279 | 394 | 406 |
| 8" | 185 | 210 | 306 | 386 | 73 | 70 | 300 | 101 | 290 | 293 | 100 | 70 | 416 | 203 | 343 | 457 | 470 |
| 10" | 225 | 250 | 380 | 460 | 93 | 100 | 300 | 101 | 375 | 361 | 135 | 69 | 508 | 254 | 406 | 533 | 546 |
| 12" | 262 | 295 | 420 | 500 | 93 | 100 | 300 | 101 | 415 | 400 | 160 | 108 | 549 | 305 | 453 | 610 | 623 |
| 14" | 305 | 335 | 492 | 572 | 120 | 125 | 350 | 101 | 452 | 423 | 175 | 130 | 585 | 337 | 535 | 686 | 699 |
| 16" | 350 | 362 | | | | | 350 | 101 | 492 | 460 | 176 | 168 | 625 | 387 | 595 | 762 | 775 |
| 18" | 385 | 419 | | | | | 350 | 101 | 528 | 483 | 196 | 192 | 660 | 438 | 635 | 864 | 877 |
| 20" | 425 | 460 | | | | | 450 | 101 | 570 | 501 | 200 | 210 | 704 | 489 | 700 | 914 | 927 |
| 24" | 520 | 545 | | | | | 450 | 101 | 645 | 568 | 246 | 279 | 775 | 590 | 815 | 1067 | 1080 |
| 30" | 540 | 619 | | | | | 450 | 111 | 835 | 660 | 299 | 270 | 988 | * 743 | * 984 | * 1295 | * 1308 |

Note: * Not included in the standards.

PR LUBRICATED THREWAY VALVES

CAST STEEL 740 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|--------------------------------------|----------------------|---|------------------------------|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 300 | 740 Psi | Shell 1125 Psi Seat 815 Psi | Three-way Regular | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectangular L - T Port | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Cast Steel | |

| | WRENCH OPERATED 8K | | GEAR TYPE C | | GEAR TYPE D | |
|------------|--------------------|--------------|---------------|---------------|--------------|--------------|
| | L - PORT | T - PORT | L - PORT | T - PORT | L - PORT | T - PORT |
| Plug | DN 1/2" - 6" | DN 1/2" - 6" | DN 1/2" - 30" | DN 1/2" - 30" | DN 6" - 30" | DN 6" - 30" |
| Semi Steel | 1-AR 77144 | 1-AR 78144 | 1-AR 77144 C | 1-AR 78144 C | 1-AR 77144 D | 1-AR 78144 D |
| Cast Steel | 1-AR 77147 | 1-AR 78147 | 1-AR 77147 C | 1-AR 78147 C | 1-AR 77147 D | 1-AR 78147 D |

Note: Bolted cover from DN 80 mm.

Standard Ports



L - Port

T - Port

Other variations, see Section A Page A7

| DN | A | B | C | D | E | F | H | I | L | M | N | O | P | Q | R | Raised Face V | Ring Joint V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|--------|---------------|--------------|
| 1/2" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | * 13 | 95 | * 130 | * 143 |
| 3/4" | 25 | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 73 | 104 | 32 | | | * 19 | 118 | * 150 | * 163 |
| 1" | 32 | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 80 | 104 | 32 | | | 25 | 124 | * 160 | * 173 |
| 1 1/4" | 34 | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 95 | 104 | 32 | | | 32 | 133 | * 180 | * 193 |
| 1 1/2" | 42 | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 115 | 181 | 47 | | | 38 | 156 | * 200 | * 213 |
| 2" | 48 | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 130 | 181 | 47 | | | 51 | 165 | * 230 | * 243 |
| 2 1/2" | 67 | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 132 | 181 | 47 | | | 64 | 191 | * 290 | * 313 |
| 3" | 76 | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 153 | 195 | 65 | | | 76 | 210 | * 310 | * 323 |
| 4" | 94 | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 156 | 195 | 65 | | | 102 | 254 | * 350 | * 363 |
| 5" | 120 | 145 | 214 | 294 | 53 | 55 | 150 | 101 | 163 | 195 | 71 | | | 127 | 279 | * 356 | * 369 |
| 6" | 140 | 170 | 252 | 332 | 65 | 65 | 214 | 101 | 243 | 268 | 85 | 40 | 366 | 152 | 318 | 403 | 419 |
| 8" | 185 | 230 | 306 | 386 | 73 | 70 | 300 | 101 | 310 | 293 | 100 | 70 | 436 | 203 | 381 | 502 | 518 |
| 10" | 225 | 275 | 380 | 460 | 93 | 100 | 300 | 101 | 400 | 361 | 135 | 69 | 533 | 254 | 445 | 568 | 584 |
| 12" | 262 | 325 | 420 | 500 | 93 | 100 | 300 | 101 | 450 | 400 | 160 | 108 | 579 | 305 | 520 | 711 | 727 |
| 14" | 305 | 370 | 492 | 572 | 120 | 125 | 350 | 101 | 487 | 423 | 175 | 130 | 620 | 337 | 585 | 762 | 778 |
| 16" | 350 | 402 | | | | | 350 | 101 | 532 | 460 | 176 | 168 | 665 | 387 | 650 | 838 | 854 |
| 18" | 385 | 464 | | | | | 350 | 101 | 573 | 483 | 196 | 192 | 705 | 432 | 710 | 914 | 930 |
| 20" | 425 | 510 | | | | | 450 | 101 | 620 | 501 | 200 | 210 | 754 | 483 | 775 | 991 | 1010 |
| 24" | 520 | 605 | | | | | 450 | 101 | 705 | 568 | 246 | 279 | 835 | 585 | 915 | 1143 | 1165 |
| 30" | 540 | 689 | | | | | 450 | 101 | 905 | 660 | 299 | 270 | 1058 | * 737 | * 1092 | 1397 | 1422 |

Note: * Not included in the standards.

PR LUBRICATED
FOURWAY VALVES



1" 1-AR 49014



4" 1-AR 49114



16" 1-AR 79124 D

Fourway—Section D

| Identification | Page |
|----------------|------|
| 1-AR 49014 | D1 |
| 1-AR 49034 | D2 |
| 1-AR 49114 | D3 |
| 1-AR 49114 D | D3 |
| 1-AR 49134 | D4 |
| 1-AR 49134 D | D4 |
| 1-AR 79024 | D5 |
| 1-AR 79027 | D5 |
| 1-AR 79044 | D6 |
| 1-AR 79047 | D6 |
| 1-AR 79124 | D12 |
| 1-AR 79124 D | D12 |
| 1-AR 79127 | D12 |
| 1-AR 79127 D | D12 |
| 1-AR 79144 | D13 |
| 1-AR 79144 D | D13 |
| 1-AR 79147 | D13 |
| 1-AR 79147 D | D13 |

PR LUBRICATED FOURWAY VALVES

SEMI STEEL 200 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|--------------------|---|--|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 125 | 200 Psi | Shell 300 Psi Seat 220 Psi | Fourway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectan- gular Double L - Port | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

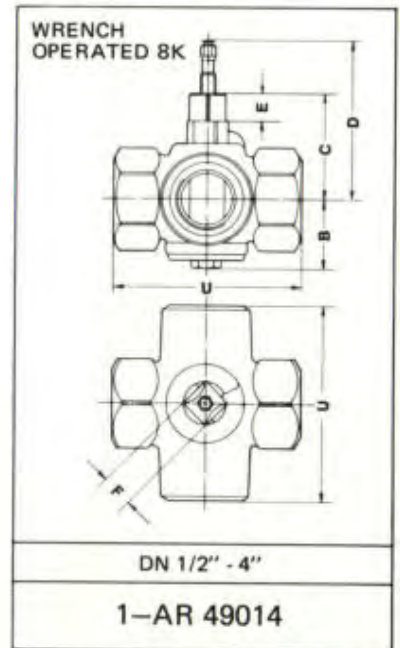
Standard Ports



Double L - Port

Other variations, see Section A

Page A7



| DN | B | C | D | E | F | U |
|--------|-----|-----|-----|----|----|-----|
| 1/2" | 51 | 75 | 106 | 17 | 17 | 89 |
| 3/4" | 51 | 75 | 106 | 17 | 17 | 95 |
| 1" | 57 | 82 | 118 | 18 | 19 | 108 |
| 1 1/4" | 64 | 95 | 143 | 20 | 24 | 121 |
| 1 1/2" | 74 | 106 | 166 | 21 | 27 | 140 |
| 2" | 85 | 120 | 180 | 23 | 30 | 152 |
| 2 1/2" | 105 | 130 | 190 | 33 | 36 | 222 |
| 3" | 120 | 151 | 231 | 40 | 50 | 238 |
| 4" | 145 | 173 | 253 | 42 | 55 | 273 |

PR LUBRICATED FOURWAY VALVES

SEMI STEEL 500 Lbs
REGULAR PATTERN
RECTANGULAR PORT

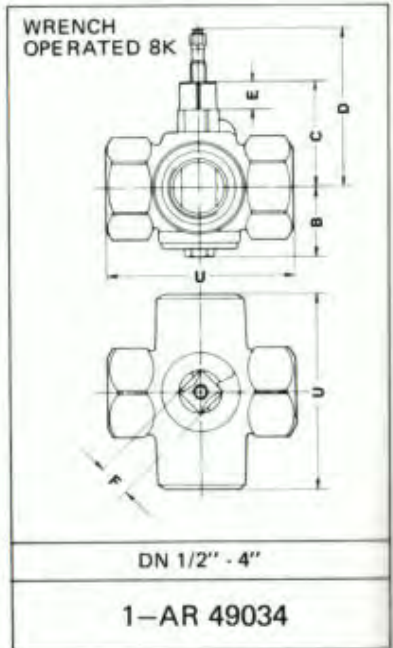
| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|--------------------|---|--|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 250 | 500 Psi | Shell 750 Psi Seat 550 Psi | Fourway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectan- gular Double L - Port | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

Standard Ports



Double L - Port

Other variations, see Section A
Page A7



1-AR 49034

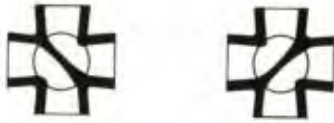
| DN | B | C | D | E | F | U |
|--------|-----|-----|-----|----|----|-----|
| 1/2" | 51 | 75 | 106 | 17 | 17 | 89 |
| 3/4" | 51 | 75 | 106 | 17 | 17 | 95 |
| 1" | 57 | 82 | 118 | 18 | 19 | 108 |
| 1 1/4" | 64 | 95 | 143 | 20 | 24 | 121 |
| 1 1/2" | 74 | 106 | 166 | 21 | 27 | 140 |
| 2" | 85 | 120 | 180 | 23 | 30 | 152 |
| 2 1/2" | 105 | 130 | 190 | 33 | 36 | 222 |
| 3" | 120 | 151 | 231 | 40 | 50 | 238 |
| 4" | 145 | 173 | 253 | 42 | 55 | 273 |

PR LUBRICATED FOURWAY VALVES

SEMI STEEL 200 Lbs
REGULAR PATTERN
RECTANGULAR PORT

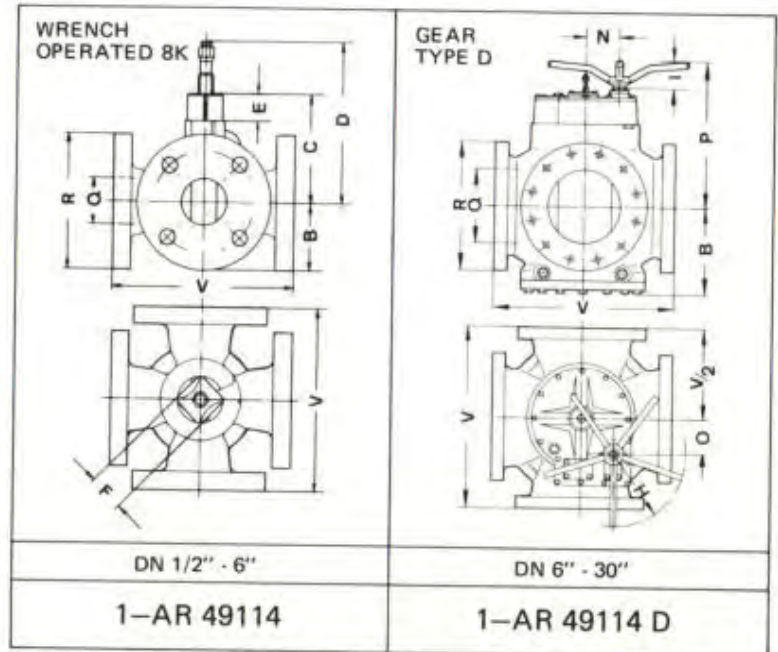
| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-----------------------|-----------------|---|-----------------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 125 | 200 Psi | Shell 300 Seat 220 | Fourway Regular | Flanges F.F. ANSI B 16.1 Face to Face ANSI B 16.10 | Rectangular Double L - Port | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

Standard Ports



Double L - Port

Other variations, see Section A
Page A7



Note: Bolted cover from DN 125 mm.

| DN | B | C | D | E | F | H | I | N | O | P | Q | R | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|--------|
| 1/2" | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 32 | | | * 13 | * 89 | * 130 |
| 3/4" | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 32 | | | * 19 | * 98 | * 150 |
| 1" | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 32 | | | 25 | 108 | * 160 |
| 1 1/4" | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 32 | | | 32 | 118 | * 180 |
| 1 1/2" | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 47 | | | 38 | 127 | * 200 |
| 2" | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 47 | | | 51 | 152 | * 230 |
| 2 1/2" | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 47 | | | 64 | 178 | * 290 |
| 3" | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 65 | | | 76 | 191 | * 310 |
| 4" | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 65 | | | 102 | 229 | * 350 |
| 5" | 145 | 214 | 294 | 53 | 55 | 150 | 101 | 71 | | | 127 | 254 | 356 |
| 6" | 170 | 252 | 332 | 65 | 65 | 214 | 101 | 85 | 40 | 366 | 152 | 279 | 394 |
| 8" | 210 | 306 | 386 | 73 | 70 | 300 | 101 | 100 | 70 | 416 | 203 | 343 | 457 |
| 10" | 250 | 380 | 460 | 93 | 100 | 300 | 101 | 135 | 69 | 508 | 254 | 406 | 533 |
| 12" | 295 | 420 | 500 | 93 | 100 | 300 | 101 | 160 | 108 | 549 | 305 | 483 | 610 |
| 14" | 335 | 492 | 572 | 120 | 125 | 350 | 101 | 175 | 130 | 585 | 356 | 533 | 686 |
| 16" | 362 | | | | | 350 | 101 | 176 | 168 | 625 | 406 | 597 | 762 |
| 18" | 419 | | | | | 350 | 101 | 196 | 192 | 660 | 457 | 635 | 864 |
| 20" | 460 | | | | | 450 | 101 | 200 | 210 | 704 | 508 | 699 | 914 |
| 24" | 545 | | | | | 450 | 101 | 246 | 279 | 775 | 610 | 813 | * 1067 |
| 30" | 619 | | | | | 450 | 111 | 299 | 270 | 988 | 762 | 984 | * 1295 |

Note: * Not included in the standards.

PR LUBRICATED FOURWAY VALVES

SEMI STEEL 500 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|--------------------|---|-----------------------------------|-------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 250 | 500 Psi | Shell 750 Psi Seat 550 Psi | Fourway Regular | Flanges R.F. ANSI B 16.1 Face to Face ANSI B 16.10 | Rectangular Double L - Port | Semi Steel ASTM A.126 Class B | Semi Steel ASTM A.126 Class B | Manual |

Standard Ports



Double L - Port

Other variations, see Section A

Page A7

| WRENCH OPERATED 8K | GEAR TYPE D |
|--------------------|--------------|
| | |
| DN 1/2" - 4" | DN 6" - 30" |
| 1-AR 49134 | 1-AR 49134 D |

Note: Bolted cover from DN 125 mm.

| DN | B | C | D | E | F | H | I | N | O | P | Q | R | V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|-------|
| 1/2" | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 32 | | | * 13 | * 95 | * 130 |
| 3/4" | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 32 | | | * 19 | * 118 | * 150 |
| 1" | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 32 | | | 25 | 124 | * 160 |
| 1 1/4" | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 32 | | | 32 | 133 | * 180 |
| 1 1/2" | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 47 | | | 38 | 156 | * 200 |
| 2" | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 47 | | | 51 | 165 | * 230 |
| 2 1/2" | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 47 | | | 64 | 191 | * 290 |
| 3" | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 65 | | | 76 | 210 | * 310 |
| 4" | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 65 | | | 102 | 254 | * 360 |
| 5" | 145 | 214 | 294 | 53 | 55 | 150 | 101 | 71 | | | 127 | 279 | * 360 |
| 6" | 170 | 252 | 332 | 65 | 65 | 214 | 101 | 85 | 40 | 366 | 152 | 318 | 403 |
| 8" | 210 | 306 | 386 | 73 | 70 | 300 | 101 | 100 | 70 | 416 | 203 | 381 | 507 |
| 10" | 250 | 380 | 460 | 93 | 100 | 300 | 101 | 135 | 69 | 508 | 254 | 445 | 568 |
| 12" | 295 | 420 | 500 | 93 | 100 | 300 | 101 | 160 | 108 | 549 | 305 | 521 | 711 |
| 14" | 335 | 492 | 572 | 120 | 125 | 350 | 101 | 175 | 130 | 585 | 337 | 584 | 767 |
| 16" | 362 | | | | | 350 | 101 | 176 | 168 | 625 | 387 | 648 | 838 |
| 18" | 419 | | | | | 350 | 101 | 196 | 192 | 660 | 432 | 711 | 914 |
| 20" | 460 | | | | | 450 | 101 | 200 | 210 | 704 | 483 | 775 | 991 |
| 24" | 545 | | | | | 450 | 101 | 246 | 279 | 775 | 584 | 914 | 1141 |
| 30" | 619 | | | | | 450 | 111 | 299 | 270 | 988 | 737 | 1092 | 1397 |

Note: * Not included in the standards.

PR LUBRICATED FOURWAY VALVES

CAST STEEL 285 Lbs
REGULAR PATTERN
RECTANGULAR PORT

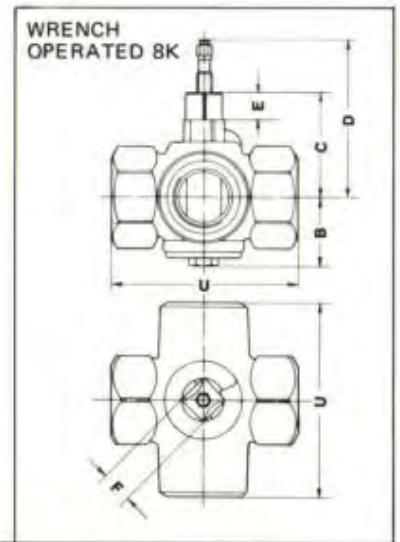
| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|---------------------------------|--------------------|---|--|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi Seat 315 | Fourway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectan- gular Double L - Port | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Cast Steel | |

Standard Ports



Double L - Port

Other variations, see Section A
Page A7



| | |
|------------|--------------|
| Plug | DN 1/2" - 4" |
| Semi Steel | 1-AR 79024 |
| Cast Steel | 1-AR 79027 |

Note: Bolted cover from DN 80 mm.

| DN | B | C | D | E | F | U |
|--------|-----|-----|-----|----|----|-----|
| 1/2" | 51 | 75 | 106 | 17 | 17 | 89 |
| 3/4" | 51 | 75 | 106 | 17 | 17 | 95 |
| 1" | 57 | 82 | 118 | 18 | 19 | 108 |
| 1 1/4" | 64 | 95 | 143 | 20 | 24 | 121 |
| 1 1/2" | 74 | 106 | 166 | 21 | 27 | 140 |
| 2" | 85 | 120 | 180 | 23 | 30 | 152 |
| 2 1/2" | 105 | 130 | 190 | 33 | 36 | 222 |
| 3" | 120 | 151 | 231 | 40 | 50 | 238 |
| 4" | 145 | 173 | 253 | 42 | 55 | 273 |

PR LUBRICATED FOURWAY VALVES

CAST STEEL 740 Lbs
REGULAR PATTERN
RECTANGULAR PORT

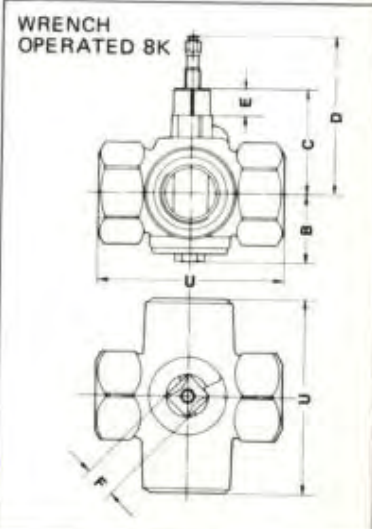
| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|----------------------------------|--------------------|---|--|---------------------------------------|---|-----------|
| | | | | | | Body & Cover | Plug | |
| 300 | 740 Psi | Shell 1125 Psi Seat 815 | Fourway Regular | Screwed API 5B Table 2.1 or ANSI B2.1 | Rectan- gular Double L - Port | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B Cast Steel | Manual |

Standard Ports



Double L - Port

Other variations, see Section A
Page A7



| | |
|------------|--------------|
| Plug | DN 1/2" - 4" |
| Semi Steel | 1-AR 79044 |
| Cast Steel | 1-AR 79047 |

Note: Bolted cover from DN 80 mm.

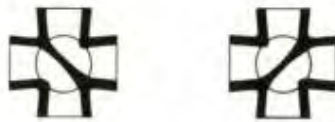
| DN | B | C | D | E | F | U |
|--------|-----|-----|-----|----|----|-----|
| 1/2" | 51 | 75 | 106 | 17 | 17 | 89 |
| 3/4" | 51 | 75 | 106 | 17 | 17 | 95 |
| 1" | 57 | 82 | 118 | 18 | 19 | 108 |
| 1 1/4" | 64 | 95 | 143 | 20 | 24 | 121 |
| 1 1/2" | 74 | 106 | 166 | 21 | 27 | 140 |
| 2" | 85 | 120 | 180 | 23 | 30 | 152 |
| 2 1/2" | 105 | 130 | 190 | 33 | 36 | 222 |
| 3" | 120 | 151 | 231 | 40 | 50 | 238 |
| 4" | 145 | 173 | 253 | 42 | 55 | 273 |

PR LUBRICATED FOURWAY VALVES

CAST STEEL 285 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|-------------------------------------|--------------------|---|--|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 150 | 285 Psi | Shell 450 Psi Seat 315 Psi | Fourway Regular | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectan- gular Double L - Port | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Cast Steel | |

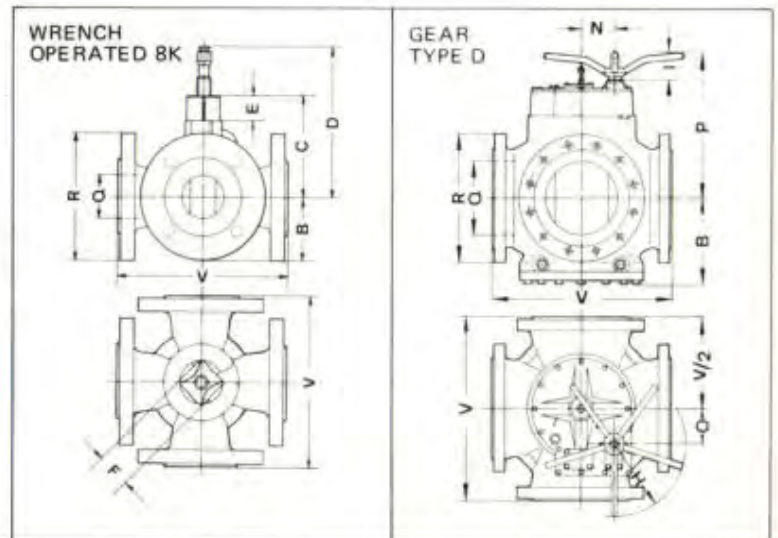
Standard Ports



Double L - Port

Other variations, see Section A

Page A7



| | | |
|------------|--------------|--------------|
| Plug | DN 1/2" - 6" | DN 6" - 30" |
| Semi Steel | 1-AR 79124 | 1-AR 79124 D |
| Cast Steel | 1-AR 79127 | 1-AR 79127 D |

Note: Bolted cover from DN 80 mm.

| DN | B | C | D | E | F | H | I | N | O | P | Q | R | Raised Face V | Ring Joint V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|---------------|--------------|
| 1/2" | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 32 | | | * 13 | 89 | * 130 | * 143 |
| 3/4" | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 32 | | | * 19 | 98 | * 150 | * 163 |
| 1" | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 32 | | | 25 | 108 | * 160 | * 173 |
| 1 1/4" | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 32 | | | 32 | 117 | * 180 | * 193 |
| 1 1/2" | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 47 | | | 38 | 127 | * 200 | * 213 |
| 2" | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 47 | | | 51 | 152 | * 230 | * 243 |
| 2 1/2" | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 47 | | | 64 | 178 | * 290 | * 303 |
| 3" | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 65 | | | 76 | 191 | * 310 | * 323 |
| 4" | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 65 | | | 102 | 229 | * 350 | * 363 |
| 5" | 145 | 214 | 294 | 53 | 55 | 150 | 101 | 71 | | | 127 | 254 | * 356 | * 369 |
| 6" | 170 | 252 | 332 | 65 | 65 | 214 | 101 | 76 | 40 | 366 | 152 | 279 | 394 | 406 |
| 8" | 210 | 306 | 386 | 73 | 70 | 300 | 101 | 100 | 70 | 416 | 203 | 343 | 457 | 470 |
| 10" | 250 | 380 | 460 | 93 | 100 | 300 | 101 | 135 | 69 | 508 | 254 | 406 | 533 | 546 |
| 12" | 295 | 420 | 500 | 93 | 100 | 300 | 101 | 160 | 108 | 549 | 305 | 453 | 610 | 622 |
| 14" | 335 | 492 | 572 | 120 | 125 | 350 | 101 | 175 | 130 | 585 | 337 | 535 | 686 | 699 |
| 16" | 362 | | | | | 350 | 101 | 176 | 168 | 625 | 387 | 595 | 762 | 775 |
| 18" | 419 | | | | | 350 | 101 | 196 | 192 | 660 | 438 | 635 | 864 | 876 |
| 20" | 460 | | | | | 450 | 101 | 200 | 210 | 704 | 489 | 700 | 914 | 927 |
| 24" | 545 | | | | | 450 | 101 | 246 | 279 | 775 | 590 | 815 | 1067 | 1080 |
| 30" | 619 | | | | | 450 | 111 | 299 | 270 | 988 | * 743 | * 984 | * 1295 | * 1308 |

Note: * Not included in the standards.

PR LUBRICATED FOURWAY VALVES

CAST STEEL 740 Lbs
REGULAR PATTERN
RECTANGULAR PORT

| Class | Max. CWP | Test Pressure | Pattern | Connections | Port | Materials | | Operation |
|-------|----------|----------------------------------|--------------------|---|--|---------------------------------------|-------------------------------------|-----------|
| | | | | | | Body & Cover | Plug | |
| 300 | 740 Psi | Shell 1125 Psi Seat 815 | Fourway Regular | Flanges R.F. or R.J. ANSI B 16.5 Face to Face ANSI B 16.10 | Rectan- gular Double L - Port | Cast Steel ASTM A.216 Grade WCB | Semi Steel ASTM A.126 Class B | Manual |
| | | | | | | | Cast Steel | |

Standard Ports



Double L - Port

Other variations, see Section A

Page A7

| | WRENCH OPERATED 8K | GEAR TYPE D |
|------------|--------------------|--------------|
| Plug | DN 1/2" - 5" | DN 6" - 30" |
| Semi Steel | 1-AR 79144 | 1-AR 79144 D |
| Cast Steel | 1-AR 79147 | 1-AR 79147 D |

Note: Bolted cover from DN 80 mm.

| DN | B | C | D | E | F | H | I | N | O | P | Q | R | Raised Face V | Ring Joint V |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|--------|---------------|--------------|
| 1/2" | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 32 | | | * 13 | 95 | * 130 | * 143 |
| 3/4" | 51 | 75 | 110 | 17 | 17 | 45 | 16 | 32 | | | * 19 | 118 | * 150 | * 163 |
| 1" | 57 | 82 | 118 | 18 | 19 | 45 | 16 | 32 | | | 25 | 124 | * 160 | * 173 |
| 1 1/4" | 64 | 95 | 143 | 20 | 24 | 45 | 16 | 32 | | | 32 | 133 | * 180 | * 193 |
| 1 1/2" | 74 | 106 | 166 | 21 | 27 | 150 | 101 | 47 | | | 38 | 156 | * 200 | * 213 |
| 2" | 85 | 120 | 180 | 23 | 30 | 150 | 101 | 47 | | | 51 | 165 | * 230 | * 243 |
| 2 1/2" | 105 | 130 | 190 | 33 | 36 | 150 | 101 | 47 | | | 64 | 191 | * 290 | * 313 |
| 3" | 120 | 151 | 231 | 40 | 50 | 150 | 101 | 65 | | | 76 | 210 | * 310 | * 323 |
| 4" | 145 | 173 | 253 | 42 | 55 | 150 | 101 | 65 | | | 102 | 254 | * 350 | * 363 |
| 6" | 145 | 214 | 294 | 53 | 55 | 150 | 101 | 71 | | | 127 | 279 | * 356 | * 369 |
| 8" | 170 | 252 | 332 | 65 | 65 | 214 | 101 | 76 | 40 | 366 | 152 | 318 | 403 | 419 |
| 10" | 230 | 306 | 386 | 73 | 70 | 300 | 101 | 100 | 70 | 436 | 203 | 381 | 502 | 518 |
| 12" | 275 | 380 | 460 | 93 | 100 | 300 | 101 | 135 | 69 | 533 | 254 | 445 | 568 | 584 |
| 14" | 325 | 420 | 500 | 93 | 100 | 300 | 101 | 160 | 108 | 579 | 305 | 520 | 711 | 727 |
| 16" | 370 | 492 | 572 | 120 | 125 | 350 | 101 | 175 | 130 | 620 | 337 | 585 | 762 | 778 |
| 18" | 402 | | | | | 350 | 101 | 176 | 168 | 665 | 387 | 650 | 838 | 854 |
| 20" | 464 | | | | | 350 | 101 | 196 | 192 | 705 | 432 | 710 | 914 | 930 |
| 24" | 510 | | | | | 450 | 101 | 200 | 210 | 754 | 483 | 775 | 991 | 1010 |
| 28" | 605 | | | | | 450 | 101 | 246 | 279 | 835 | 585 | 915 | 1143 | 1165 |
| 36" | 689 | | | | | 450 | 101 | 299 | 270 | 1058 | * 737 | * 1092 | 1397 | 1422 |

Note: * Not included in the standards.

| | Page |
|---|------|
| Lubricant gun | E1 |
| Cartridge for lubricant gun | E1 |
| Lubricant sticks | E1 |
| Grease gun for gear lubrication | E1 |
| Operating by Chain Wheel | E2 |
| Operating by Chain Wrench | E2 |
| Locking device — Padlock | E2 |
| Extension spindels | E3 |
| Floorstands | E4 |
| Floorstand examples | E5 |
| Limit switches | E7 |
| Portable Electric Operator | E8 |

Manual Lubricant Gun type BC-1.



Cartridge for Lubricant Gun 300 ccm.



Pneumatic Lubricant Gun type BC-2
Working Pressures: Max. 8 Bar (115 PSI).



Cartridge for Lubricant Gun 1250 ccm.



Lubricant Sticks

- No. 6 20 pcs. for valves size 1/2" - 3/4" and 1"
- No. 10 14 pcs. for valves size 1 1/4"
- No. 13 10 pcs. for valves size 1 1/2" - 2" and 2 1/2"
- No. 18 7 pcs. for valves size 3" and upwards

Grease Gun for Gear Lubrication type 315-2.



Grease for bearings:
CASTROL
SPEHEROL BM3

Grease for worms and gear wheel:
CASTROL IMPERVIA AS.





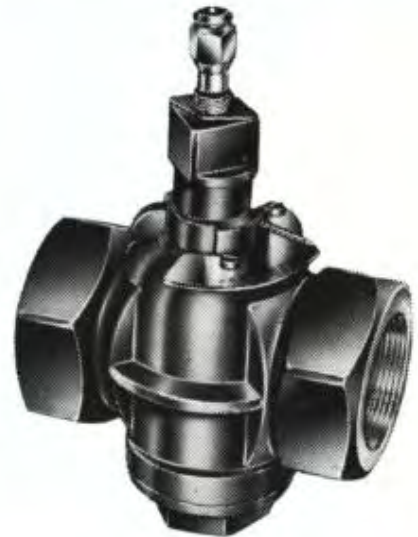
Chain Wheel
on gear operated valve



Chain Wrench
on wrench operated valve



Locking Device—Padlock
opened or closed position



Indicator
on wrench operated valve

Extended operating—spindle mounted on a wrenchoperated PR Valve.
The lubricant is feded to the valve through the inside tube.

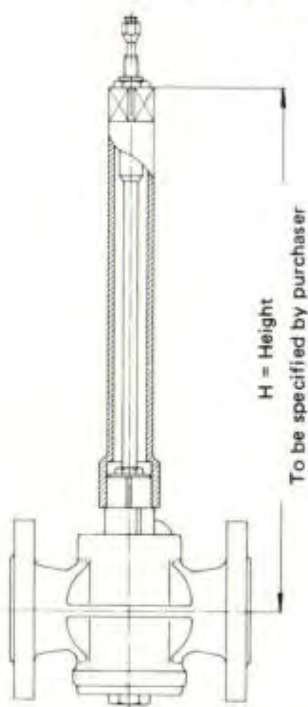


Fig. 1 Wrench—operated valve with extended spindle. Type SN.

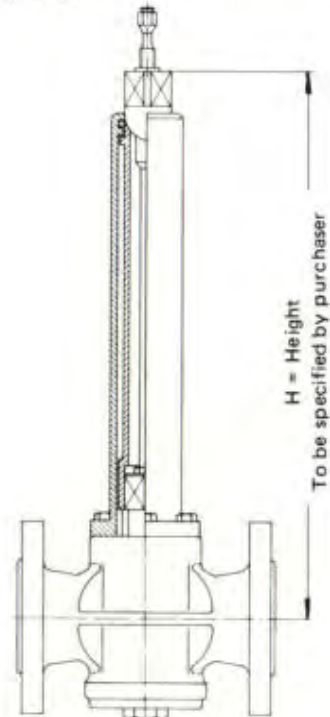


Fig. 2 Wrench—operated valve with waterproof extended spindle and indicator. Type SONI.

PR Valves with gear type C or D can be supplied with extended hand-wheel—spindle with or without pointet for position.

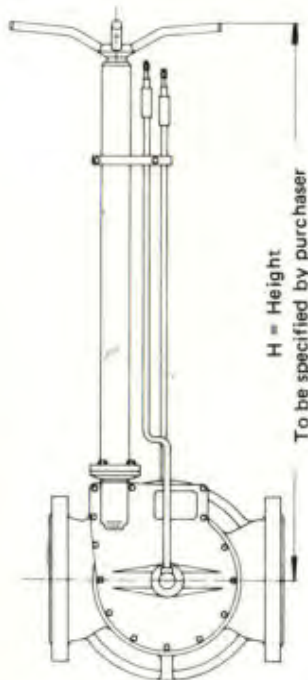


Fig. 3 Gear—operated valve with waterproof extended spindle. Type SOG.

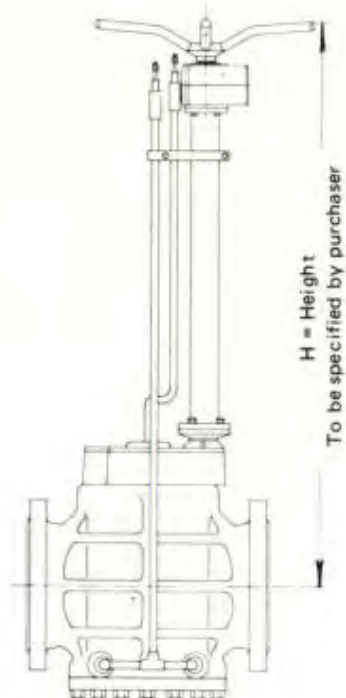


Fig. 4 Gear—operated valve with waterproof extended spindle and indicator. Type SOGI.

Fig. 1 Floorstand type GNI with indicator for wrench-operated PR valves.

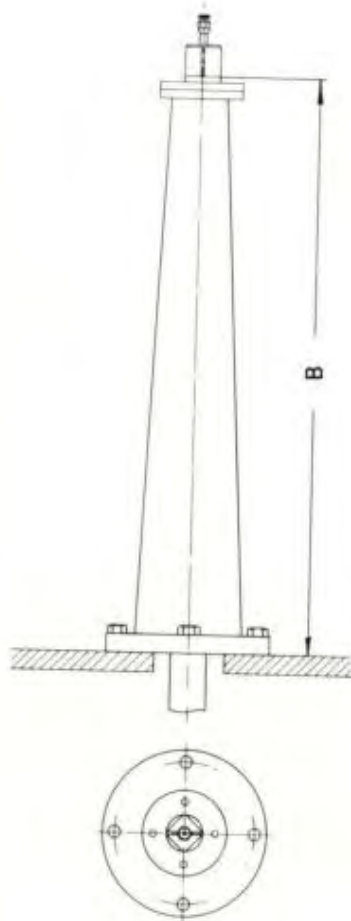


Fig. 2 Floorstand type GG for gear-operated PR valves.

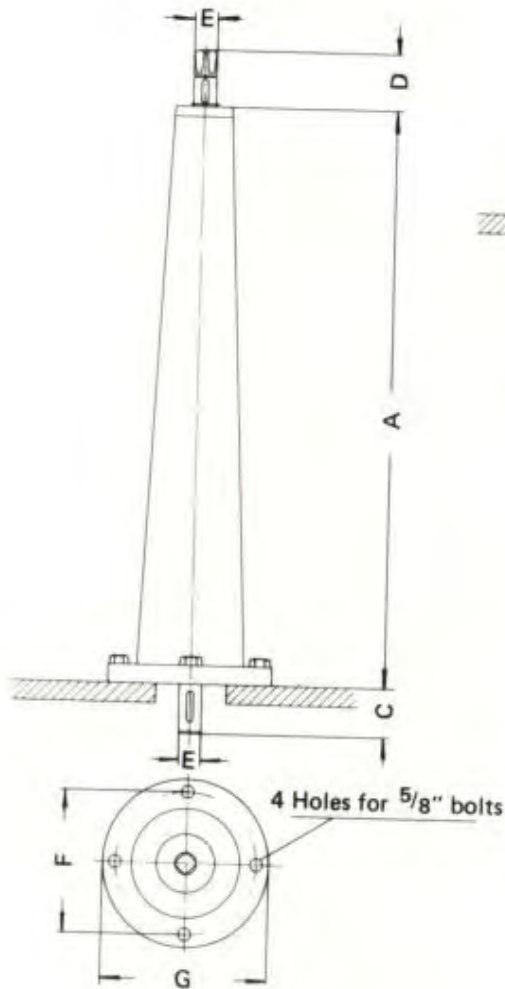
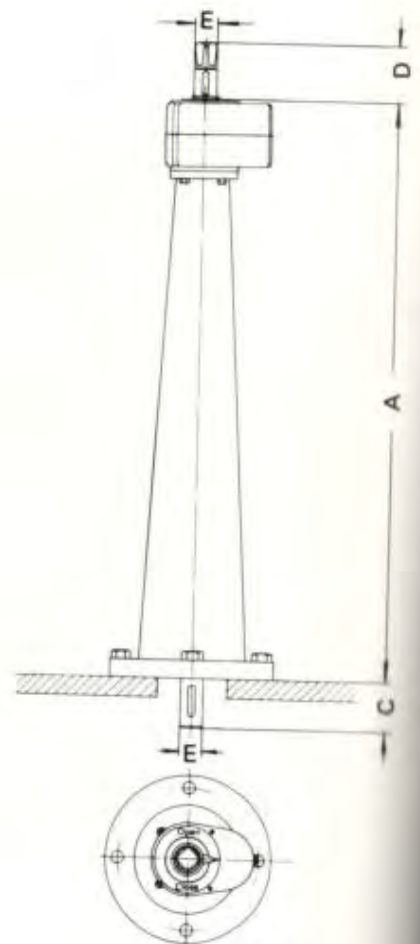
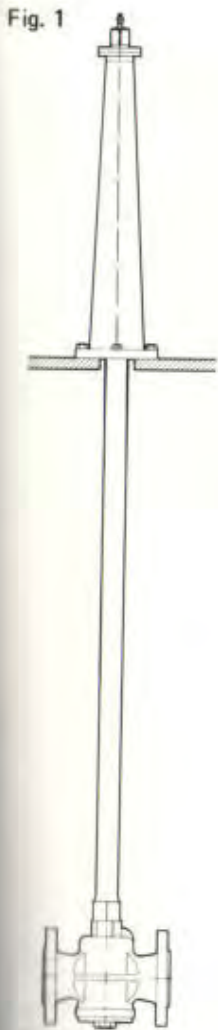


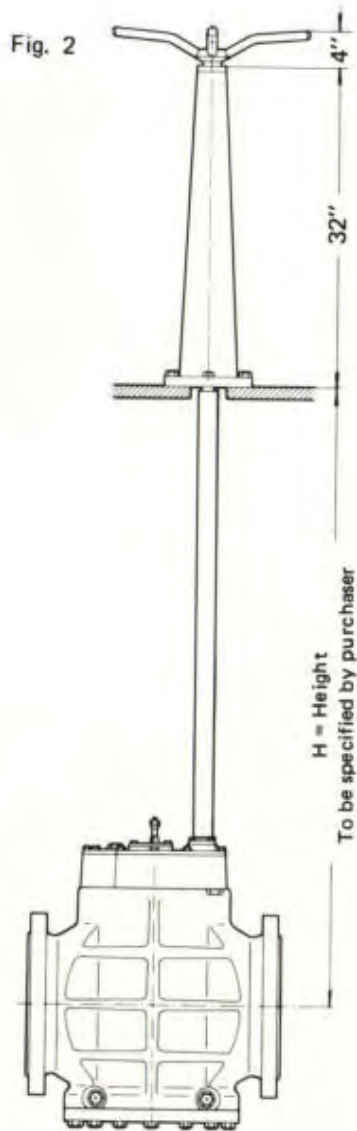
Fig. 3 Floorstand type GGI with indicator for gear-operated PR valves.



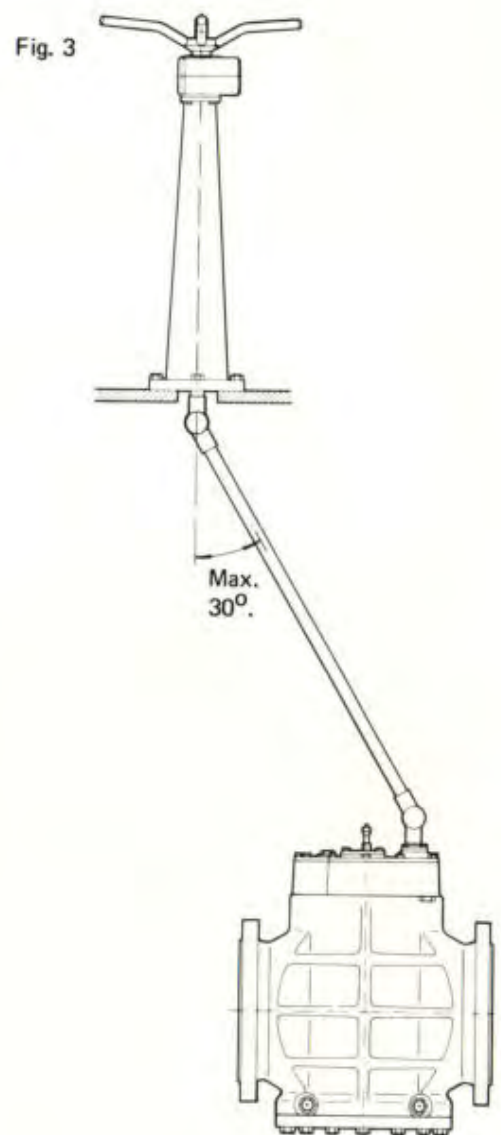
| | A | B | C | D | E | F | G |
|-------------|-----|-----|--------|----|-------|-----|-----|
| Inches | 32" | 30" | 2 3/8" | 3" | 30 mm | 9" | 11" |
| Millimetres | 812 | 762 | 60 | 76 | 30 | 228 | 280 |



Floorstand type GN with direct spindle coupling for wrench-operated PR valves.



Floorstand type GG with direct spindle coupling for gear-operated PR valves.



Floorstand type GGI with staggered spindle coupling for gear-operated PR valves.



The PR Valves are available with limit switches mounted in a waterproof cast iron switch box.

Screwed connection 1/2" to 4"

Flanged connection 1 1/2" \cong

Welding ends connection 1 1/2" \cong

The limit switches are mounted to facilitate a signal in either of the two extreme positions.

Limit switches:

Burges type V13MR

10A 125–250 V.A.C.

5A 480 V.A.C.

CSA approved.

The following switch combinations are available:

1 switch in the closed valve–position.

1 switch in the open valve–position.

1 switch in the closed valve–position and 1 switch in the open valve–position.

2 switches in the closed valve–position.

2 switches in the open valve–position.

2 switches in the closed valve–position and 2 switches in the open valve–position.



PR LUBRICATED VALVES

Portable drive for gear operated valves

The portable drive for gear operated valves is used with great success for opening and closing of large size valves.

The drive is simple and easy to use, since it fits directly onto the handwheel spindle of the regular gear operator. It is available with electric motor.

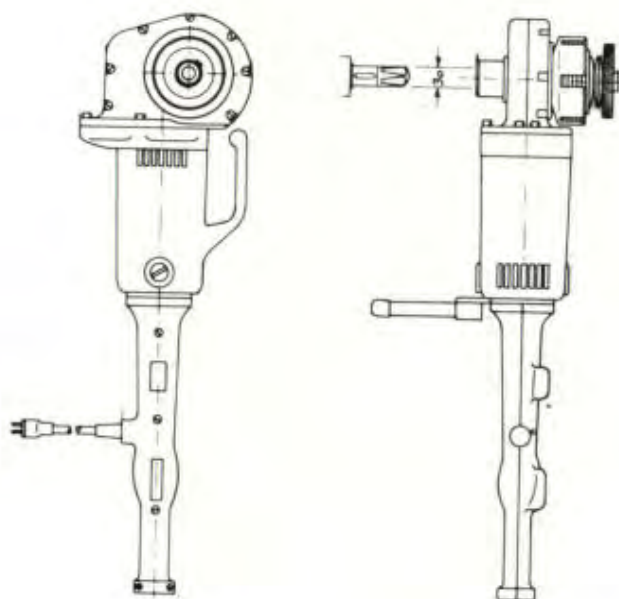
The drive is equipped with an adjustable friction safety clutch so that the applied torque is not greater than necessary.

This clutch protects the end stops of the gear operator and provides safety for the operating personnel.

Besides a switch for left and right rotation, the drive is equipped with a starter which switches off automatically when not depressed.

The electrical drive has been tested by proper authorities and conforms to relevant standards in the following countries:

Belgium, Denmark, Great Britain, France, Finland, Netherlands, Austria, Sweden, West Germany, Canada and USA.



Specifications:

Electric Drive

Motor: 1800 Kw, single phase, double insulation
220 V ~ 50 Hz 6,1 A
Maximum output torque 450 Nm at 30 rpm

Weight: 11 Kg

| | Page |
|--|------|
| Inch to millimetre | F1 |
| Decimal and millimetre equivalents | F2 |
| Decimal equivalents | F3 |
| Kilogram in pounds | F3 |
| Pounds in kilogram | F3 |
| Temperature conversion | F4 |
| Pressure conversion | F5 |
| Pressure/Temperature ratings for carbon steel valves | F6 |
| Flange dimensions class 125 and class 150 | F9 |
| Flange dimensions class 250 and class 300 | F10 |
| Flange dimensions class 400 and class 600 | F11 |
| Flange dimensions class 900 and class 1500 | F12 |
| Flange dimensions class 2500 | F13 |
| Flange dimensions class 150 Ring Joint | F14 |
| Flange dimensions class 300 Ring Joint | F15 |
| Flange dimensions class 400 Ring Joint | F16 |
| Flange dimensions class 600 Ring Joint | F17 |
| Flange dimensions class 900 Ring Joint | F18 |
| Flange dimensions class 1500 Ring Joint | F19 |
| Flange dimensions class 2500 Ring Joint | F20 |

Inch to millimeter (1 inch = 25,4 mm)

| Inch | 0 | 1/16 | 1/8 | 3/16 | 1/4 | 5/16 | 3/8 | 7/16 | 1/2 | 9/16 | 5/8 | 11/16 | 3/4 | 13/16 | 7/8 | 15/16 |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0 | 0,0 | 1,6 | 3,2 | 4,8 | 6,4 | 7,9 | 9,5 | 11,1 | 12,7 | 14,3 | 15,9 | 17,5 | 19,1 | 20,6 | 22,2 | 23,8 |
| 1 | 25,4 | 27,0 | 28,6 | 30,2 | 31,8 | 33,3 | 34,9 | 36,5 | 38,1 | 39,7 | 41,3 | 42,9 | 44,5 | 46,0 | 47,6 | 49,2 |
| 2 | 50,8 | 52,4 | 54,0 | 55,6 | 57,2 | 58,7 | 60,3 | 61,9 | 63,5 | 65,1 | 66,7 | 68,3 | 69,9 | 71,4 | 73,0 | 74,6 |
| 3 | 76,2 | 77,8 | 79,4 | 81,0 | 82,6 | 84,1 | 85,7 | 87,3 | 88,9 | 90,5 | 92,1 | 93,7 | 95,3 | 96,8 | 98,4 | 100,0 |
| 4 | 101,6 | 103,2 | 104,8 | 106,4 | 108,0 | 109,5 | 111,1 | 112,7 | 114,3 | 115,9 | 117,5 | 119,1 | 120,7 | 122,2 | 123,8 | 125,4 |
| 5 | 127,0 | 128,6 | 130,2 | 131,8 | 133,4 | 134,9 | 136,5 | 138,1 | 139,7 | 141,3 | 142,9 | 144,5 | 146,1 | 147,6 | 149,2 | 150,8 |
| 6 | 152,4 | 154,0 | 155,6 | 157,2 | 158,8 | 160,3 | 161,9 | 163,5 | 165,1 | 166,7 | 168,3 | 169,9 | 171,5 | 173,0 | 174,6 | 176,2 |
| 7 | 177,8 | 179,4 | 181,0 | 182,6 | 184,2 | 185,7 | 187,3 | 188,9 | 190,5 | 192,1 | 193,7 | 195,3 | 196,9 | 198,4 | 200,0 | 201,6 |
| 8 | 203,2 | 204,8 | 206,4 | 208,0 | 209,6 | 211,1 | 212,7 | 214,3 | 215,9 | 217,5 | 219,1 | 220,7 | 222,3 | 223,8 | 225,4 | 227,0 |
| 9 | 228,6 | 230,2 | 231,8 | 233,4 | 235,0 | 236,5 | 238,1 | 239,7 | 241,3 | 242,9 | 244,5 | 246,1 | 247,7 | 249,2 | 250,8 | 252,4 |
| 10 | 254,0 | 255,6 | 257,2 | 258,8 | 260,4 | 261,9 | 263,5 | 265,1 | 266,7 | 268,3 | 269,9 | 271,5 | 273,1 | 274,6 | 276,2 | 277,8 |
| 11 | 279,4 | 281,0 | 282,6 | 284,2 | 285,8 | 287,3 | 288,9 | 290,5 | 292,1 | 293,7 | 295,3 | 296,9 | 298,5 | 300,0 | 301,6 | 303,2 |
| 12 | 304,8 | 306,4 | 308,0 | 309,6 | 311,2 | 312,7 | 314,3 | 315,9 | 317,5 | 319,1 | 320,7 | 322,3 | 323,9 | 325,4 | 327,0 | 328,6 |
| 13 | 330,2 | 331,8 | 333,4 | 335,0 | 336,6 | 338,1 | 339,7 | 341,3 | 342,9 | 344,5 | 346,1 | 347,7 | 349,3 | 350,8 | 352,4 | 354,0 |
| 14 | 355,6 | 357,2 | 358,8 | 360,4 | 362,0 | 363,5 | 365,1 | 366,7 | 368,3 | 369,9 | 371,5 | 373,1 | 374,7 | 376,2 | 377,8 | 379,4 |
| 15 | 381,0 | 382,6 | 384,2 | 385,8 | 387,4 | 388,9 | 390,5 | 392,1 | 393,7 | 395,3 | 396,9 | 398,5 | 400,1 | 401,6 | 403,2 | 404,8 |
| 16 | 406,4 | 408,0 | 409,6 | 411,2 | 412,8 | 414,3 | 415,9 | 417,5 | 419,1 | 420,7 | 422,3 | 423,9 | 425,5 | 427,0 | 428,6 | 430,2 |
| 17 | 431,8 | 433,4 | 435,0 | 436,6 | 438,2 | 439,7 | 441,3 | 442,9 | 444,5 | 446,1 | 447,7 | 449,3 | 450,9 | 452,4 | 454,0 | 455,6 |
| 18 | 457,2 | 458,8 | 460,4 | 462,0 | 463,6 | 465,1 | 466,7 | 468,3 | 469,9 | 471,5 | 473,1 | 474,7 | 476,3 | 477,8 | 479,4 | 481,0 |
| 19 | 482,6 | 484,2 | 485,8 | 487,4 | 489,0 | 490,5 | 492,1 | 493,7 | 495,3 | 496,9 | 498,5 | 500,1 | 501,7 | 503,2 | 504,8 | 506,4 |
| 20 | 508,0 | 509,6 | 511,2 | 512,8 | 514,4 | 515,9 | 517,5 | 519,1 | 520,7 | 522,3 | 523,9 | 525,5 | 527,1 | 528,6 | 530,2 | 531,8 |
| 21 | 533,4 | 535,0 | 536,6 | 538,2 | 539,8 | 541,3 | 542,9 | 544,5 | 546,1 | 547,7 | 549,3 | 550,9 | 552,5 | 554,0 | 555,6 | 557,2 |
| 22 | 558,8 | 560,4 | 562,0 | 563,6 | 565,2 | 566,7 | 568,3 | 569,9 | 571,5 | 573,1 | 574,7 | 576,3 | 577,9 | 579,4 | 581,0 | 582,6 |
| 23 | 584,2 | 585,8 | 587,4 | 589,0 | 590,6 | 592,1 | 593,7 | 595,3 | 596,9 | 598,5 | 600,1 | 601,7 | 603,3 | 604,8 | 606,4 | 608,0 |
| 24 | 609,6 | 611,2 | 612,8 | 614,4 | 616,0 | 617,5 | 619,1 | 620,7 | 622,3 | 623,9 | 625,5 | 627,1 | 628,7 | 630,2 | 631,8 | 633,4 |
| 25 | 635,0 | 636,6 | 638,2 | 639,8 | 641,4 | 642,9 | 644,5 | 646,1 | 647,7 | 649,3 | 650,9 | 652,5 | 654,1 | 655,6 | 657,2 | 658,8 |
| 26 | 660,4 | 662,0 | 663,6 | 665,2 | 666,8 | 668,3 | 669,9 | 671,5 | 673,1 | 674,7 | 676,3 | 677,9 | 679,5 | 681,0 | 682,6 | 684,2 |
| 27 | 685,8 | 687,4 | 689,0 | 690,6 | 692,2 | 693,7 | 695,3 | 696,9 | 698,5 | 700,1 | 701,7 | 703,3 | 704,9 | 706,4 | 708,0 | 709,6 |
| 28 | 711,2 | 712,8 | 714,4 | 716,0 | 717,6 | 719,1 | 720,7 | 722,3 | 723,9 | 725,5 | 727,1 | 728,7 | 730,3 | 731,8 | 733,4 | 735,0 |
| 29 | 736,6 | 738,2 | 739,8 | 741,4 | 743,0 | 744,5 | 746,1 | 747,7 | 749,3 | 750,9 | 752,5 | 754,1 | 755,7 | 757,2 | 758,8 | 760,4 |
| 30 | 762,0 | 763,6 | 765,2 | 766,8 | 768,4 | 769,9 | 771,5 | 773,1 | 774,7 | 776,3 | 777,9 | 779,5 | 781,1 | 782,6 | 784,2 | 785,8 |
| 31 | 787,4 | 789,0 | 790,6 | 792,2 | 793,8 | 795,3 | 796,9 | 798,5 | 800,1 | 801,7 | 803,3 | 804,9 | 806,5 | 808,0 | 809,6 | 811,2 |
| 32 | 812,8 | 814,4 | 816,0 | 817,6 | 819,2 | 820,7 | 822,3 | 823,9 | 825,5 | 827,1 | 828,7 | 830,3 | 831,9 | 833,4 | 835,0 | 836,6 |
| 33 | 838,2 | 839,8 | 841,4 | 843,0 | 844,6 | 846,1 | 847,7 | 849,3 | 850,9 | 852,5 | 854,1 | 855,7 | 857,3 | 858,8 | 860,4 | 862,0 |
| 34 | 863,6 | 865,2 | 866,8 | 868,4 | 870,0 | 871,5 | 873,1 | 874,7 | 876,3 | 877,9 | 879,5 | 881,1 | 882,7 | 884,2 | 885,8 | 887,4 |
| 35 | 889,0 | 890,6 | 892,2 | 893,8 | 895,4 | 896,9 | 898,5 | 900,1 | 901,7 | 903,3 | 904,9 | 906,5 | 908,1 | 909,6 | 911,2 | 912,8 |
| 36 | 914,4 | 916,0 | 917,6 | 919,2 | 920,8 | 922,3 | 923,9 | 925,5 | 927,1 | 928,7 | 930,3 | 931,9 | 933,5 | 935,0 | 936,6 | 938,2 |
| 37 | 939,8 | 941,4 | 943,0 | 944,6 | 946,2 | 947,7 | 949,3 | 950,9 | 952,5 | 954,1 | 955,7 | 957,3 | 958,9 | 960,4 | 962,0 | 963,6 |
| 38 | 965,2 | 966,8 | 968,4 | 970,0 | 971,6 | 973,1 | 974,7 | 976,3 | 977,9 | 979,5 | 981,1 | 982,7 | 984,3 | 985,8 | 987,4 | 989,0 |
| 39 | 990,6 | 992,2 | 993,8 | 995,4 | 997,0 | 998,5 | 1000,1 | 1001,7 | 1003,3 | 1004,9 | 1006,5 | 1008,1 | 1009,7 | 1011,2 | 1012,8 | 1014,4 |
| 40 | 1016,0 | 1017,6 | 1019,2 | 1020,8 | 1022,4 | 1023,9 | 1025,5 | 1027,1 | 1028,7 | 1030,3 | 1031,9 | 1033,5 | 1035,1 | 1036,6 | 1038,2 | 1039,8 |
| 41 | 1041,4 | 1043,0 | 1044,6 | 1046,2 | 1047,8 | 1049,3 | 1050,9 | 1052,5 | 1054,1 | 1055,7 | 1057,3 | 1058,9 | 1060,5 | 1062,0 | 1063,6 | 1065,2 |
| 42 | 1066,8 | 1068,4 | 1070,0 | 1071,6 | 1073,2 | 1074,7 | 1076,3 | 1077,9 | 1079,5 | 1081,1 | 1082,7 | 1084,3 | 1085,9 | 1087,4 | 1089,0 | 1090,6 |
| 43 | 1092,2 | 1093,8 | 1095,4 | 1097,0 | 1098,6 | 1100,1 | 1101,7 | 1103,3 | 1104,9 | 1106,5 | 1108,1 | 1109,7 | 1111,3 | 1112,8 | 1114,4 | 1116,0 |
| 44 | 1117,6 | 1119,2 | 1120,8 | 1122,4 | 1124,0 | 1125,5 | 1127,1 | 1128,7 | 1130,3 | 1131,9 | 1133,5 | 1135,1 | 1136,7 | 1138,2 | 1139,8 | 1141,4 |
| 45 | 1143,0 | 1144,6 | 1146,2 | 1147,8 | 1149,4 | 1150,9 | 1152,5 | 1154,1 | 1155,7 | 1157,3 | 1158,9 | 1160,5 | 1162,1 | 1163,6 | 1165,2 | 1166,8 |
| 46 | 1168,4 | 1170,0 | 1171,6 | 1173,2 | 1174,8 | 1176,3 | 1177,9 | 1179,5 | 1181,1 | 1182,7 | 1184,3 | 1185,9 | 1187,5 | 1189,0 | 1190,6 | 1192,2 |
| 47 | 1193,8 | 1195,4 | 1197,0 | 1198,6 | 1200,2 | 1201,7 | 1203,3 | 1204,9 | 1206,5 | 1208,1 | 1209,7 | 1211,3 | 1212,9 | 1214,4 | 1216,0 | 1217,6 |
| 48 | 1219,2 | 1220,8 | 1222,4 | 1224,0 | 1225,6 | 1227,1 | 1228,7 | 1230,3 | 1231,9 | 1233,5 | 1235,1 | 1236,7 | 1238,3 | 1239,8 | 1241,4 | 1243,0 |
| 49 | 1244,6 | 1246,2 | 1247,8 | 1249,4 | 1251,0 | 1252,5 | 1254,1 | 1255,7 | 1257,3 | 1258,9 | 1260,5 | 1262,1 | 1263,7 | 1265,2 | 1266,8 | 1268,4 |
| 50 | 1270,0 | 1271,6 | 1273,2 | 1274,8 | 1276,4 | 1277,9 | 1279,5 | 1281,1 | 1282,7 | 1284,3 | 1285,9 | 1287,5 | 1289,1 | 1290,6 | 1292,2 | 1293,8 |

Decimal and millimeter equivalents

| Fraction | Decimal | Millimeter | Fraction | Decimal | Millimeter |
|-----------------|---------|------------|-----------------|---------|------------|
| $\frac{1}{64}$ | .015625 | 0.39688 | $\frac{23}{64}$ | .515625 | 13.09690 |
| $\frac{1}{32}$ | .03125 | 0.79375 | $\frac{17}{32}$ | .53125 | 13.49378 |
| $\frac{3}{64}$ | .046875 | 1.19063 | $\frac{25}{64}$ | .546875 | 13.89065 |
| $\frac{1}{16}$ | .0625 | 1.58750 | $\frac{9}{16}$ | .5625 | 14.28753 |
| $\frac{5}{64}$ | .078125 | 1.98438 | $\frac{27}{64}$ | .578125 | 14.68440 |
| $\frac{3}{32}$ | .09375 | 2.38125 | $\frac{19}{32}$ | .59375 | 15.08128 |
| $\frac{7}{64}$ | .109375 | 2.77813 | $\frac{29}{64}$ | .609375 | 15.47816 |
| $\frac{1}{8}$ | .125 | 3.17501 | $\frac{5}{8}$ | .625 | 15.87503 |
| $\frac{9}{64}$ | .140625 | 3.57188 | $\frac{41}{64}$ | .640625 | 16.27191 |
| $\frac{5}{32}$ | .15625 | 3.96876 | $\frac{23}{32}$ | .65625 | 16.66878 |
| $\frac{11}{64}$ | .171875 | 4.36563 | $\frac{43}{64}$ | .671875 | 17.06566 |
| $\frac{3}{16}$ | .1875 | 4.76251 | $\frac{11}{16}$ | .6875 | 17.46253 |
| $\frac{13}{64}$ | .203125 | 5.15939 | $\frac{45}{64}$ | .703125 | 17.85941 |
| $\frac{7}{32}$ | .21875 | 5.55626 | $\frac{27}{32}$ | .71875 | 18.25629 |
| $\frac{15}{64}$ | .234375 | 5.95314 | $\frac{47}{64}$ | .734375 | 18.65316 |
| $\frac{1}{4}$ | .25 | 6.35001 | $\frac{11}{4}$ | .75 | 19.05004 |
| $\frac{17}{64}$ | .265625 | 6.74689 | $\frac{49}{64}$ | .765625 | 19.44691 |
| $\frac{9}{32}$ | .28125 | 7.14376 | $\frac{25}{32}$ | .78125 | 19.84379 |
| $\frac{19}{64}$ | .296875 | 7.54064 | $\frac{51}{64}$ | .796875 | 20.24067 |
| $\frac{5}{16}$ | .3125 | 7.93752 | $\frac{13}{16}$ | .8125 | 20.63754 |
| $\frac{21}{64}$ | .328125 | 8.33439 | $\frac{53}{64}$ | .828125 | 21.03442 |
| $\frac{11}{32}$ | .34375 | 8.73127 | $\frac{27}{32}$ | .84375 | 21.43129 |
| $\frac{23}{64}$ | .359375 | 9.12814 | $\frac{55}{64}$ | .859375 | 21.82817 |
| $\frac{3}{8}$ | .375 | 9.52502 | $\frac{7}{8}$ | .875 | 22.22504 |
| $\frac{25}{64}$ | .390625 | 9.92189 | $\frac{57}{64}$ | .890625 | 22.62192 |
| $\frac{13}{32}$ | .40625 | 10.31877 | $\frac{29}{32}$ | .90625 | 23.01880 |
| $\frac{27}{64}$ | .421875 | 10.71565 | $\frac{59}{64}$ | .921875 | 23.41567 |
| $\frac{7}{16}$ | .4375 | 11.11252 | $\frac{15}{16}$ | .9375 | 23.81255 |
| $\frac{29}{64}$ | .453125 | 11.50940 | $\frac{61}{64}$ | .953125 | 24.20942 |
| $\frac{15}{32}$ | .46875 | 11.90627 | $\frac{31}{32}$ | .96875 | 24.60630 |
| $\frac{31}{64}$ | .484375 | 12.30315 | $\frac{43}{64}$ | .984375 | 25.00318 |
| $\frac{1}{2}$ | .5 | 12.70003 | 1 | 1.0 | 25.40005 |

Decimal equivalents
(0,10 inch = 2,54 millimeter)

| Inch | 0.00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 | Inch |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| 0.00 | 0.00 | 0.25 | 0.51 | 0.76 | 1.02 | 1.27 | 1.52 | 1.78 | 2.03 | 2.29 | 0.00 |
| .10 | 2.54 | 2.79 | 3.05 | 3.30 | 3.56 | 3.81 | 4.06 | 4.32 | 4.57 | 4.83 | .10 |
| .20 | 5.08 | 5.33 | 5.59 | 5.84 | 6.10 | 6.35 | 6.60 | 6.86 | 7.11 | 7.37 | .20 |
| .30 | 7.62 | 7.87 | 8.13 | 8.38 | 8.64 | 8.89 | 9.14 | 9.40 | 9.65 | 9.91 | .30 |
| .40 | 10.60 | 10.41 | 10.67 | 10.92 | 11.18 | 11.43 | 11.68 | 11.94 | 12.19 | 12.45 | .40 |
| .50 | 12.70 | 12.95 | 13.21 | 13.46 | 13.72 | 13.97 | 14.22 | 14.48 | 14.73 | 14.99 | .50 |
| .60 | 15.24 | 15.49 | 15.75 | 16.00 | 16.26 | 16.51 | 16.76 | 17.02 | 17.27 | 17.53 | .60 |
| .70 | 17.78 | 18.03 | 18.29 | 18.54 | 18.80 | 19.05 | 19.30 | 19.56 | 19.81 | 20.07 | .70 |
| .80 | 20.32 | 20.57 | 20.83 | 21.08 | 21.34 | 21.59 | 21.84 | 22.10 | 22.35 | 22.61 | .80 |
| .90 | 22.66 | 23.11 | 23.37 | 23.62 | 23.88 | 24.13 | 24.38 | 24.64 | 24.89 | 25.15 | .90 |

Kilogram in pounds
(1 kilogram = 2,2046 pounds)

| Kilo-gram | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0 | 0.00 | 2.20 | 4.41 | 6.61 | 8.82 | 11.02 | 13.23 | 15.43 | 17.64 | 19.84 |
| 10 | 22.05 | 24.25 | 26.46 | 28.66 | 30.86 | 33.07 | 35.27 | 37.48 | 39.68 | 41.89 |
| 20 | 44.09 | 46.30 | 48.50 | 50.71 | 52.91 | 55.12 | 57.32 | 59.52 | 61.73 | 63.93 |
| 30 | 66.14 | 68.34 | 70.55 | 72.75 | 74.96 | 77.16 | 79.37 | 81.57 | 83.77 | 85.98 |
| 40 | 88.18 | 90.39 | 92.59 | 94.80 | 97.00 | 99.21 | 101.41 | 103.62 | 105.82 | 108.03 |
| 50 | 110.23 | 112.43 | 114.64 | 116.84 | 119.05 | 121.25 | 123.46 | 125.66 | 127.87 | 130.07 |
| 60 | 132.28 | 134.48 | 136.69 | 138.89 | 141.09 | 143.30 | 145.50 | 147.71 | 149.91 | 152.12 |
| 70 | 154.32 | 156.53 | 158.73 | 160.94 | 163.14 | 165.35 | 167.35 | 169.75 | 171.96 | 174.16 |
| 80 | 176.37 | 178.57 | 180.78 | 182.98 | 185.19 | 187.39 | 189.60 | 191.80 | 194.00 | 196.21 |
| 90 | 198.41 | 200.62 | 202.82 | 205.03 | 207.23 | 209.44 | 211.64 | 213.85 | 216.05 | 218.26 |

Pounds in kilogram
(1 pound = 0,4536 kilogram)

| Pounds | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0 | 0.00 | 0.45 | 0.91 | 1.36 | 1.81 | 2.27 | 2.72 | 3.18 | 3.63 | 4.08 |
| 10 | 4.54 | 4.99 | 5.44 | 5.90 | 6.35 | 6.80 | 7.26 | 7.71 | 8.16 | 8.62 |
| 20 | 9.07 | 9.53 | 9.98 | 10.43 | 10.89 | 11.34 | 11.79 | 12.25 | 12.70 | 13.15 |
| 30 | 13.61 | 14.06 | 14.52 | 14.97 | 15.42 | 15.88 | 16.33 | 16.78 | 17.24 | 17.69 |
| 40 | 18.14 | 18.60 | 19.05 | 19.50 | 19.96 | 20.41 | 20.87 | 21.32 | 21.77 | 22.23 |
| 50 | 22.68 | 23.13 | 23.59 | 24.04 | 24.49 | 24.95 | 25.40 | 25.86 | 26.31 | 26.76 |
| 60 | 27.22 | 27.67 | 28.12 | 28.58 | 29.03 | 29.48 | 29.94 | 30.39 | 30.84 | 31.30 |
| 70 | 31.75 | 32.21 | 32.66 | 33.11 | 33.57 | 34.02 | 34.47 | 34.93 | 35.38 | 35.83 |
| 80 | 36.29 | 36.74 | 37.20 | 37.65 | 38.10 | 38.56 | 39.01 | 39.46 | 39.92 | 40.37 |
| 90 | 40.82 | 41.28 | 41.73 | 42.18 | 42.64 | 43.09 | 43.55 | 44.00 | 44.45 | 44.91 |

| -495.4-0 | | | | 1-60 | | | | 61-290 | | | | 300-890 | | | | 900-3000 | | | |
|----------|--------|--------|-----|-------|----|-------|-----|--------|-----|-------|-----|---------|-----|------|------|----------|------|---|-----|
| C | F | C | = F | C | F | C | = F | C | F | C | = F | C | F | C | = F | C | F | C | = F |
| -273 | -459.4 | | | -17.2 | 1 | 33.8 | | 16.1 | 61 | 141.8 | | 149 | 300 | 572 | 482 | 900 | 1652 | | |
| -268 | -450 | | | -16.7 | 2 | 35.6 | | 16.7 | 62 | 143.6 | | 154 | 310 | 590 | 488 | 910 | 1670 | | |
| -262 | -440 | | | -16.1 | 3 | 37.4 | | 17.2 | 63 | 145.4 | | 160 | 320 | 608 | 493 | 920 | 1688 | | |
| -257 | -430 | | | -15.6 | 4 | 39.2 | | 17.8 | 64 | 147.2 | | 166 | 330 | 626 | 499 | 930 | 1706 | | |
| -251 | -420 | | | -15.0 | 5 | 41.0 | | 18.3 | 65 | 149.0 | | 171 | 340 | 644 | 504 | 940 | 1724 | | |
| -246 | -410 | | | -14.4 | 6 | 42.8 | | 18.9 | 66 | 150.8 | | 177 | 350 | 662 | 510 | 950 | 1742 | | |
| -240 | -400 | | | -13.9 | 7 | 44.6 | | 19.4 | 67 | 152.6 | | 182 | 360 | 680 | 516 | 960 | 1760 | | |
| -234 | -390 | | | -13.3 | 8 | 46.4 | | 20.0 | 68 | 154.4 | | 188 | 370 | 698 | 521 | 970 | 1778 | | |
| -229 | -380 | | | -12.8 | 9 | 48.2 | | 20.6 | 69 | 156.2 | | 193 | 380 | 716 | 527 | 980 | 1796 | | |
| -223 | -370 | | | -12.2 | 10 | 50.0 | | 21.1 | 70 | 158.0 | | 199 | 390 | 734 | 532 | 990 | 1814 | | |
| -218 | -360 | | | -11.7 | 11 | 51.8 | | 21.7 | 71 | 159.8 | | 204 | 400 | 752 | 538 | 1000 | 1832 | | |
| -212 | -350 | | | -11.1 | 12 | 53.6 | | 22.2 | 72 | 161.6 | | 210 | 410 | 770 | 549 | 1020 | 1868 | | |
| -207 | -340 | | | -10.6 | 13 | 55.4 | | 22.8 | 73 | 163.4 | | 216 | 420 | 788 | 560 | 1040 | 1904 | | |
| -201 | -330 | | | -10.0 | 14 | 57.2 | | 23.3 | 74 | 165.2 | | 221 | 430 | 806 | 571 | 1060 | 1940 | | |
| -196 | -320 | | | -9.4 | 15 | 59.0 | | 23.9 | 75 | 167.0 | | 227 | 440 | 824 | 582 | 1080 | 1976 | | |
| -190 | -310 | | | -8.9 | 16 | 60.8 | | 24.4 | 76 | 168.8 | | 232 | 450 | 842 | 593 | 1100 | 2012 | | |
| -184 | -300 | | | -8.3 | 17 | 62.6 | | 25.0 | 77 | 170.6 | | 238 | 460 | 860 | 604 | 1120 | 2048 | | |
| -179 | -290 | | | -7.8 | 18 | 64.4 | | 25.6 | 78 | 172.4 | | 243 | 470 | 878 | 616 | 1140 | 2084 | | |
| -173 | -280 | | | -7.2 | 19 | 66.2 | | 26.1 | 79 | 174.2 | | 249 | 480 | 896 | 627 | 1160 | 2120 | | |
| -169 | -273 | -459.4 | | -6.7 | 20 | 68.0 | | 26.7 | 80 | 176.0 | | 254 | 490 | 914 | 638 | 1180 | 2156 | | |
| -168 | -270 | -454 | | -6.1 | 21 | 69.8 | | 27.2 | 81 | 177.8 | | 260 | 500 | 932 | 649 | 1200 | 2192 | | |
| -162 | -260 | -436 | | -5.6 | 22 | 71.6 | | 27.8 | 82 | 179.6 | | 266 | 510 | 950 | 660 | 1220 | 2228 | | |
| -157 | -250 | -418 | | -5.0 | 23 | 73.4 | | 28.3 | 83 | 181.4 | | 271 | 520 | 968 | 671 | 1240 | 2264 | | |
| -151 | -240 | -400 | | -4.4 | 24 | 75.2 | | 28.9 | 84 | 183.2 | | 277 | 530 | 986 | 682 | 1260 | 2300 | | |
| -146 | -230 | -382 | | -3.9 | 25 | 77.0 | | 29.4 | 85 | 185.0 | | 282 | 540 | 1004 | 693 | 1280 | 2336 | | |
| -140 | -220 | -364 | | -3.3 | 26 | 78.8 | | 30.0 | 86 | 186.8 | | 288 | 550 | 1022 | 704 | 1300 | 2372 | | |
| -134 | -210 | -346 | | -2.8 | 27 | 80.6 | | 30.6 | 87 | 188.6 | | 293 | 560 | 1040 | 732 | 1350 | 2462 | | |
| -129 | -200 | -328 | | -2.2 | 28 | 82.4 | | 31.1 | 88 | 190.4 | | 299 | 570 | 1058 | 760 | 1400 | 2552 | | |
| -125 | -190 | -310 | | -1.7 | 29 | 84.2 | | 31.7 | 89 | 192.2 | | 304 | 580 | 1076 | 788 | 1450 | 2642 | | |
| -118 | -180 | -292 | | -1.1 | 30 | 86.0 | | 32.2 | 90 | 194.0 | | 310 | 590 | 1094 | 816 | 1500 | 2732 | | |
| -112 | -170 | -274 | | 6 | 31 | 87.8 | | 32.8 | 91 | 195.8 | | 316 | 600 | 1112 | 843 | 1550 | 2822 | | |
| -107 | -160 | -256 | | 0 | 32 | 89.6 | | 33.3 | 92 | 197.6 | | 321 | 610 | 1130 | 871 | 1600 | 2912 | | |
| -101 | -150 | -238 | | 6 | 33 | 91.4 | | 33.9 | 93 | 199.4 | | 327 | 620 | 1148 | 899 | 1650 | 3002 | | |
| -96 | -140 | -220 | | 1.1 | 34 | 93.2 | | 34.4 | 94 | 201.2 | | 332 | 630 | 1166 | 927 | 1700 | 3092 | | |
| -90 | -130 | -202 | | 1.7 | 35 | 95.0 | | 35.0 | 95 | 203.0 | | 338 | 640 | 1184 | 954 | 1750 | 3182 | | |
| -84 | -120 | -184 | | 2.2 | 36 | 96.8 | | 35.6 | 96 | 204.8 | | 343 | 650 | 1202 | 882 | 1800 | 3272 | | |
| -79 | -110 | -166 | | 2.8 | 37 | 98.6 | | 36.1 | 97 | 206.6 | | 349 | 660 | 1220 | 1010 | 1850 | 3362 | | |
| -73 | -100 | -148 | | 3.3 | 38 | 100.4 | | 36.7 | 98 | 208.4 | | 354 | 670 | 1238 | 1038 | 1900 | 3452 | | |
| -68 | -90 | -130 | | 3.9 | 39 | 102.2 | | 37.2 | 99 | 210.2 | | 360 | 680 | 1256 | 1066 | 1950 | 3542 | | |
| -62 | -80 | -112 | | 4.4 | 40 | 104.0 | | 37.8 | 100 | 212.0 | | 366 | 690 | 1274 | 1093 | 2000 | 3632 | | |
| -57 | -70 | -90 | | 5.0 | 41 | 105.8 | | 43 | 110 | 230 | | 371 | 700 | 1292 | 1121 | 2050 | 3722 | | |
| -51 | -60 | -76 | | 5.6 | 42 | 107.6 | | 49 | 120 | 248 | | 377 | 710 | 1310 | 1149 | 2100 | 3812 | | |
| -46 | -50 | -58 | | 6.1 | 43 | 109.4 | | 54 | 130 | 266 | | 382 | 720 | 1328 | 1177 | 2150 | 3902 | | |
| -40 | -40 | -40 | | 6.7 | 44 | 111.2 | | 60 | 140 | 284 | | 388 | 730 | 1346 | 1204 | 2200 | 3992 | | |
| -34 | -30 | -22 | | 7.2 | 45 | 113.0 | | 66 | 150 | 302 | | 393 | 740 | 1364 | 1232 | 2250 | 4082 | | |
| -29 | -20 | -4 | | 7.8 | 46 | 114.8 | | 71 | 160 | 320 | | 399 | 750 | 1382 | 1260 | 2300 | 4172 | | |
| -23 | -10 | 14 | | 8.3 | 47 | 116.6 | | 77 | 170 | 338 | | 404 | 760 | 1400 | 1288 | 2350 | 4262 | | |
| -17.8 | 0 | 32 | | 8.9 | 48 | 118.4 | | 82 | 180 | 356 | | 410 | 770 | 1418 | 1316 | 2400 | 4352 | | |
| | | | | 9.4 | 49 | 120.2 | | 88 | 190 | 374 | | 416 | 780 | 1436 | 1343 | 2450 | 4442 | | |
| | | | | 10.0 | 50 | 122.0 | | 93 | 200 | 392 | | 421 | 790 | 1454 | 1371 | 2500 | 4532 | | |
| | | | | 10.6 | 51 | 123.8 | | 99 | 210 | 410 | | 427 | 800 | 1472 | 1399 | 2550 | 4622 | | |
| | | | | 11.1 | 52 | 125.6 | | 100 | 212 | 413.6 | | 442 | 810 | 1490 | 1427 | 2600 | 4712 | | |
| | | | | 11.7 | 53 | 127.4 | | 104 | 220 | 428 | | 438 | 820 | 1508 | 1454 | 2650 | 4802 | | |
| | | | | 12.2 | 54 | 129.2 | | 110 | 230 | 446 | | 443 | 830 | 1526 | 1482 | 2700 | 4892 | | |
| | | | | 12.8 | 55 | 131.0 | | 116 | 240 | 464 | | 449 | 840 | 1544 | 1510 | 2750 | 4982 | | |
| | | | | 13.3 | 56 | 132.8 | | 121 | 250 | 482 | | 454 | 850 | 1562 | 1538 | 2800 | 5072 | | |
| | | | | 13.9 | 57 | 134.6 | | 127 | 260 | 500 | | 460 | 860 | 1580 | 1566 | 2850 | 5162 | | |
| | | | | 14.4 | 58 | 136.4 | | 132 | 270 | 518 | | 466 | 870 | 1598 | 1593 | 2900 | 5252 | | |
| | | | | 15.0 | 59 | 138.2 | | 138 | 280 | 536 | | 471 | 880 | 1616 | 1621 | 2950 | 5342 | | |
| | | | | 15.6 | 60 | 140.0 | | 143 | 290 | 554 | | 477 | 890 | 1634 | 1649 | 3000 | 5432 | | |

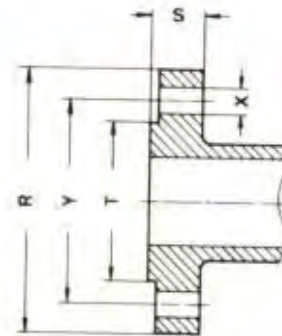
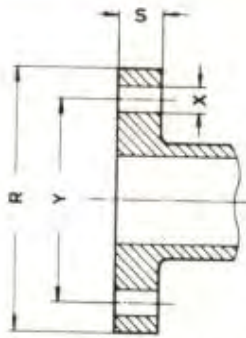
Pounds/square inch (psi) to kg/cm²

| 1-40 | | 41-80 | | 81-200 | | 205-500 | | 510-900 | | 910-1500 | |
|------|--------------------|-------|--------------------|--------|--------------------|---------|--------------------|---------|--------------------|----------|--------------------|
| psi | kg/cm ² | psi | kg/cm ² | psi | kg/cm ² | psi | kg/cm ² | psi | kg/cm ² | psi | kg/cm ² |
| 1 | .07 | 41 | 2.88 | 81 | 5.69 | 205 | 14.41 | 510 | 35.86 | 910 | 63.98 |
| 2 | .14 | 42 | 2.95 | 82 | 5.77 | 210 | 14.76 | 520 | 36.56 | 920 | 64.68 |
| 3 | .21 | 43 | 3.02 | 83 | 5.84 | 215 | 15.12 | 530 | 37.26 | 930 | 65.39 |
| 4 | .28 | 44 | 3.09 | 84 | 5.91 | 220 | 15.47 | 540 | 37.97 | 940 | 66.09 |
| 5 | .35 | 45 | 3.16 | 85 | 5.98 | 225 | 15.82 | 550 | 38.67 | 950 | 66.79 |
| 6 | .42 | 46 | 3.23 | 86 | 6.05 | 230 | 16.17 | 560 | 39.37 | 960 | 67.49 |
| 7 | .49 | 47 | 3.30 | 87 | 6.12 | 235 | 16.52 | 570 | 40.07 | 970 | 68.20 |
| 8 | .56 | 48 | 3.37 | 88 | 6.19 | 240 | 16.87 | 580 | 40.78 | 980 | 68.90 |
| 9 | .63 | 49 | 3.45 | 89 | 6.26 | 245 | 17.23 | 590 | 41.48 | 990 | 69.60 |
| 10 | .70 | 50 | 3.52 | 90 | 6.33 | 250 | 17.58 | 600 | 42.18 | 1000 | 70.31 |
| 11 | .77 | 51 | 3.59 | 91 | 6.40 | 255 | 17.93 | 610 | 42.89 | 1010 | 71.01 |
| 12 | .84 | 52 | 3.66 | 92 | 6.47 | 260 | 18.28 | 620 | 43.59 | 1020 | 71.71 |
| 13 | .91 | 53 | 3.73 | 93 | 6.54 | 265 | 18.63 | 630 | 44.29 | 1030 | 72.42 |
| 14 | .98 | 54 | 3.80 | 94 | 6.61 | 270 | 18.98 | 640 | 45.00 | 1040 | 73.12 |
| 15 | 1.05 | 55 | 3.87 | 95 | 6.68 | 275 | 19.33 | 650 | 45.70 | 1050 | 73.82 |
| 16 | 1.12 | 56 | 3.94 | 96 | 6.75 | 280 | 19.69 | 660 | 46.40 | 1060 | 74.52 |
| 17 | 1.20 | 57 | 4.01 | 97 | 6.82 | 285 | 20.04 | 670 | 47.11 | 1070 | 75.23 |
| 18 | 1.27 | 58 | 4.08 | 98 | 6.89 | 290 | 20.39 | 680 | 47.81 | 1080 | 75.93 |
| 19 | 1.34 | 59 | 4.15 | 99 | 6.96 | 295 | 20.74 | 690 | 48.51 | 1090 | 76.63 |
| 20 | 1.41 | 60 | 4.22 | 100 | 7.03 | 300 | 21.09 | 700 | 49.21 | 1100 | 77.34 |
| 21 | 1.48 | 61 | 4.29 | 105 | 7.38 | 310 | 21.80 | 710 | 49.92 | 1120 | 78.74 |
| 22 | 1.55 | 62 | 4.36 | 110 | 7.73 | 320 | 22.50 | 720 | 50.62 | 1140 | 80.15 |
| 23 | 1.62 | 63 | 4.43 | 115 | 8.09 | 330 | 23.20 | 730 | 51.33 | 1160 | 81.56 |
| 24 | 1.69 | 64 | 4.50 | 120 | 8.44 | 340 | 23.90 | 740 | 52.03 | 1180 | 82.96 |
| 25 | 1.76 | 65 | 4.57 | 125 | 8.79 | 350 | 24.61 | 750 | 52.73 | 1200 | 84.37 |
| 26 | 1.83 | 66 | 4.64 | 130 | 9.14 | 360 | 25.31 | 760 | 53.43 | 1220 | 85.77 |
| 27 | 1.90 | 67 | 4.71 | 135 | 9.49 | 370 | 26.01 | 770 | 54.14 | 1240 | 87.18 |
| 28 | 1.97 | 68 | 4.78 | 140 | 9.84 | 380 | 26.72 | 780 | 54.84 | 1260 | 88.59 |
| 29 | 2.04 | 69 | 4.85 | 145 | 10.19 | 390 | 27.42 | 790 | 55.54 | 1280 | 89.99 |
| 30 | 2.11 | 70 | 4.92 | 150 | 10.55 | 400 | 28.12 | 800 | 56.25 | 1300 | 91.40 |
| 31 | 2.18 | 71 | 4.99 | 155 | 10.90 | 410 | 28.83 | 810 | 56.95 | 1320 | 92.80 |
| 32 | 2.25 | 72 | 5.06 | 160 | 11.25 | 420 | 29.53 | 820 | 57.65 | 1340 | 94.21 |
| 33 | 2.32 | 73 | 5.13 | 165 | 11.60 | 430 | 30.23 | 830 | 58.35 | 1360 | 95.62 |
| 34 | 2.39 | 74 | 5.20 | 170 | 11.95 | 440 | 30.93 | 840 | 59.06 | 1380 | 97.02 |
| 35 | 2.46 | 75 | 5.27 | 175 | 12.30 | 450 | 31.64 | 850 | 59.76 | 1400 | 98.43 |
| 36 | 2.53 | 76 | 5.34 | 180 | 12.66 | 460 | 32.34 | 860 | 60.46 | 1420 | 99.84 |
| 37 | 2.60 | 77 | 5.41 | 185 | 13.01 | 470 | 33.04 | 870 | 61.17 | 1440 | 101.24 |
| 38 | 2.67 | 78 | 5.48 | 190 | 13.36 | 480 | 33.75 | 880 | 61.87 | 1460 | 102.65 |
| 39 | 2.74 | 79 | 5.55 | 195 | 13.71 | 490 | 34.45 | 890 | 62.57 | 1480 | 104.05 |
| 40 | 2.81 | 80 | 5.62 | 200 | 14.06 | 500 | 35.15 | 900 | 63.28 | 1500 | 105.46 |

Note: 1 atmosphere pressure = 14,7 psi = 1,033 Kg. per sq. cm.
 1 psi = 2,31 feet head of water = 0,0703066 Kg. per sq. cm.

| TEMPERATURE IN °F | WORKING PRESSURE IN psi BY CLASSES | | | | | | |
|----------------------|------------------------------------|-----|-----|------|------|------|------|
| | 150 | 300 | 400 | 600 | 900 | 1500 | 2500 |
| -20 TO 100 | 285 | 740 | 990 | 1480 | 2220 | 3705 | 6170 |
| 200 | 260 | 675 | 900 | 1350 | 2025 | 3375 | 5625 |
| 300 | 230 | 655 | 875 | 1315 | 1970 | 3280 | 5470 |
| 400 | 200 | 635 | 845 | 1270 | 1900 | 3170 | 5280 |
| 500 | 170 | 600 | 800 | 1200 | 1795 | 2995 | 4990 |
| 600 | 140 | 550 | 730 | 1095 | 1640 | 2735 | 4560 |
| 650 | 125 | 535 | 715 | 1075 | 1610 | 2685 | 4475 |
| 700 | 110 | 535 | 710 | 1065 | 1600 | 2665 | 4440 |
| 750 | 95 | 505 | 670 | 1010 | 1510 | 2520 | 4200 |
| 800 | 80 | 410 | 550 | 825 | 1235 | 2060 | 3430 |
| 850 | 65 | 270 | 355 | 535 | 805 | 1340 | 2230 |
| 900 | 50 | 170 | 230 | 345 | 515 | 860 | 1430 |
| 950 | 35 | 105 | 140 | 205 | 310 | 515 | 860 |
| 1000 | 20 | 50 | 70 | 105 | 155 | 260 | 430 |

| TEMPERATURE IN °C | WORKING PRESSURE IN bar BY CLASSES | | | | | | |
|----------------------|------------------------------------|------|------|-------|-------|-------|-------|
| | 150 | 300 | 400 | 600 | 900 | 1500 | 2500 |
| -29 TO 38 | 19.6 | 51.1 | 68.1 | 102.1 | 153.2 | 255.3 | 425.5 |
| 50 | 19.2 | 50.1 | 66.8 | 100.2 | 150.2 | 250.4 | 417.3 |
| 100 | 17.7 | 46.4 | 61.8 | 92.8 | 139.1 | 231.9 | 386.5 |
| 150 | 15.8 | 45.2 | 60.3 | 90.5 | 135.7 | 226.1 | 376.9 |
| 200 | 14.0 | 43.8 | 58.4 | 87.6 | 131.5 | 219.1 | 365.2 |
| 250 | 12.1 | 41.7 | 55.6 | 83.4 | 125.2 | 208.6 | 347.7 |
| 300 | 10.2 | 38.7 | 51.6 | 77.5 | 116.2 | 193.7 | 322.8 |
| 350 | 8.4 | 37.0 | 49.3 | 73.9 | 110.9 | 184.8 | 308.0 |
| 375 | 7.4 | 36.5 | 48.6 | 72.9 | 109.4 | 182.3 | 303.9 |
| 400 | 6.5 | 34.5 | 46.0 | 69.0 | 103.5 | 172.5 | 287.5 |
| 425 | 5.6 | 28.8 | 38.3 | 57.5 | 86.3 | 143.8 | 239.6 |
| 450 | 4.7 | 20.0 | 26.7 | 40.1 | 60.1 | 100.2 | 166.9 |
| 475 | 3.7 | 13.5 | 18.1 | 27.1 | 40.6 | 67.7 | 112.9 |
| 500 | 2.8 | 8.8 | 11.7 | 17.6 | 26.4 | 44.0 | 73.3 |
| 525 | 1.9 | 5.2 | 6.9 | 10.4 | 15.5 | 25.9 | 43.2 |
| 540 | 1.3 | 3.3 | 4.3 | 6.5 | 9.8 | 16.3 | 27.2 |



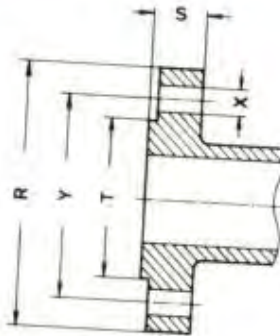
CLASS 125 SEMI STEEL FLAT FACE FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | U No. of Bolts | V Size of Bolts in | X Size of Holes | Y Bolt Circle Diameter |
|------------|----------------------|-----------------------|-------------------|-----------------------|--------------------|---------------------------|
| * 1/2" | * 88,9 | * 11,1 | * 4 | * 1/2" | * 15,9 | * 60,3 |
| * 3/4" | * 98,4 | * 11,1 | * 4 | * 1/2" | * 15,9 | * 69,9 |
| 1" | 108,0 | 11,1 | 4 | 1/2" | 15,9 | 79,4 |
| 1 1/4" | 117,5 | 12,7 | 4 | 1/2" | 15,9 | 88,9 |
| 1 1/2" | 127,0 | 14,3 | 4 | 1/2" | 15,9 | 98,4 |
| 2" | 152,4 | 15,9 | 4 | 5/8" | 19,1 | 120,7 |
| 2 1/2" | 177,8 | 17,5 | 4 | 5/8" | 19,1 | 139,7 |
| 3" | 190,5 | 19,1 | 4 | 5/8" | 19,1 | 152,4 |
| 4" | 228,6 | 23,8 | 8 | 5/8" | 19,1 | 190,5 |
| 5" | 254,0 | 23,8 | 8 | 3/4" | 22,2 | 215,9 |
| 6" | 279,4 | 25,4 | 8 | 3/4" | 22,2 | 241,3 |
| 8" | 342,9 | 28,6 | 8 | 3/4" | 22,2 | 298,5 |
| 10" | 406,4 | 30,2 | 12 | 7/8" | 25,4 | 362,0 |
| 12" | 482,6 | 31,8 | 12 | 7/8" | 25,4 | 431,8 |
| 14" | 533,4 | 34,9 | 12 | 1" | 28,6 | 476,3 |
| 16" | 596,9 | 36,5 | 16 | 1" | 28,6 | 539,8 |
| 18" | 635,0 | 39,7 | 16 | 1 1/8" | 31,8 | 577,9 |
| 20" | 698,5 | 42,9 | 20 | 1 1/8" | 31,8 | 635,0 |
| 24" | 812,8 | 47,6 | 20 | 1 1/4" | 34,9 | 749,3 |
| 30" | 984,3 | 54,0 | 28 | 1 1/4" | 34,9 | 914,4 |

CLASS 150 CAST STEEL RAISED FACE FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T 1/16" Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes | Y Bolt Circle Diameter |
|------------|----------------------|-----------------------|------------------------------------|-------------------|-----------------------|--------------------|---------------------------|
| 1/2" | 88,9 | 11,1 | 34,9 | 4 | 1/2" | 15,9 | 60,3 |
| 3/4" | 98,4 | 11,1 | 42,9 | 4 | 1/2" | 15,9 | 69,9 |
| 1" | 108,0 | 11,1 | 50,8 | 4 | 1/2" | 15,9 | 79,4 |
| 1 1/4" | 117,5 | 12,7 | 63,5 | 4 | 1/2" | 15,9 | 88,9 |
| 1 1/2" | 127,0 | 14,3 | 73,0 | 4 | 1/2" | 15,9 | 98,4 |
| 2" | 152,4 | 15,9 | 92,1 | 4 | 5/8" | 19,1 | 120,7 |
| 2 1/2" | 177,8 | 17,5 | 104,8 | 4 | 5/8" | 19,1 | 139,7 |
| 3" | 190,5 | 19,1 | 127,0 | 4 | 5/8" | 19,1 | 152,4 |
| 4" | 228,6 | 23,8 | 157,2 | 8 | 5/8" | 19,1 | 190,5 |
| 5" | 254,0 | 23,8 | 185,7 | 8 | 3/4" | 22,2 | 215,9 |
| 6" | 279,4 | 25,4 | 215,9 | 8 | 3/4" | 22,2 | 241,3 |
| 8" | 342,9 | 28,6 | 269,9 | 8 | 3/4" | 22,2 | 298,5 |
| 10" | 406,4 | 30,2 | 323,9 | 12 | 7/8" | 25,4 | 362,0 |
| 12" | 482,6 | 31,8 | 381,0 | 12 | 7/8" | 25,4 | 431,8 |
| 14" | 533,4 | 34,9 | 412,8 | 12 | 1" | 28,6 | 476,3 |
| 16" | 596,9 | 36,5 | 469,9 | 16 | 1" | 28,6 | 539,8 |
| 18" | 635,0 | 39,7 | 533,4 | 16 | 1 1/8" | 31,8 | 577,9 |
| 20" | 698,5 | 42,9 | 584,2 | 20 | 1 1/8" | 31,8 | 635,0 |
| 24" | 812,8 | 47,6 | 692,2 | 20 | 1 1/4" | 34,9 | 749,3 |
| * 30" | * 984,3 | * 54,0 | * 857,3 | * 28 | * 1 1/4" | * 34,9 | * 914,4 |

Note: * Not included in the standards.



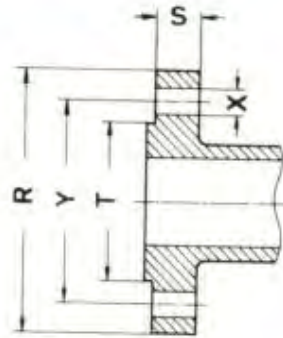
CLASS 250 SEMI STEEL RAISED FACE FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T 1/16" Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes | Y Bolt Circle Diameter |
|------------|-------------------|--------------------|------------------------------|----------------|--------------------|-----------------|------------------------|
| * 1/2" | * 95,3 | * 14,3 | * 50,8 | * 4 | * 1/2" | * 15,9 | * 66,7 |
| * 3/4" | * 117,5 | * 15,9 | * 61,9 | * 4 | * 5/8" | * 19,1 | * 82,6 |
| 1" | 123,8 | 17,5 | 68,0 | 4 | 5/8" | 19,1 | 88,9 |
| 1 1/4" | 133,4 | 19,1 | 77,8 | 4 | 5/8" | 19,1 | 98,4 |
| 1 1/2" | 155,6 | 20,6 | 90,5 | 4 | 3/4" | 22,2 | 114,3 |
| 2" | 165,1 | 22,2 | 106,4 | 8 | 5/8" | 19,1 | 127,0 |
| 2 1/2" | 190,5 | 25,4 | 125,4 | 8 | 3/4" | 22,2 | 149,2 |
| 3" | 209,6 | 28,6 | 144,5 | 8 | 3/4" | 22,2 | 168,3 |
| 4" | 254,0 | 31,8 | 176,2 | 8 | 3/4" | 22,2 | 200,0 |
| 5" | 279,4 | 34,9 | 211,1 | 8 | 3/4" | 22,2 | 235,0 |
| 6" | 317,5 | 36,5 | 246,1 | 12 | 3/4" | 22,2 | 269,9 |
| 8" | 381,0 | 41,5 | 303,2 | 12 | 7/8" | 25,4 | 330,2 |
| 10" | 444,5 | 47,6 | 357,2 | 16 | 1" | 28,6 | 387,4 |
| 12" | 520,7 | 50,8 | 417,5 | 16 | 1 1/8" | 31,8 | 450,9 |
| 14" | 584,2 | 54,0 | 481,0 | 20 | 1 1/8" | 31,8 | 514,4 |
| 16" | 647,7 | 57,2 | 535,0 | 20 | 1 1/4" | 34,9 | 571,5 |
| 18" | 711,2 | 60,3 | 592,1 | 24 | 1 1/4" | 34,9 | 628,7 |
| 20" | 774,7 | 63,5 | 649,3 | 24 | 1 1/4" | 34,9 | 685,8 |
| 24" | 914,4 | 69,9 | 768,4 | 24 | 1 1/2" | 41,3 | 812,8 |
| 30" | 1092,2 | 76,2 | 944,6 | 28 | 1 3/4" | 50,8 | 997,0 |

CLASS 300 CAST STEEL RAISED FACE FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T 1/16" Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes | Y Bolt Circle Diameter |
|------------|-------------------|--------------------|------------------------------|----------------|--------------------|-----------------|------------------------|
| 1/2" | 95,3 | 14,3 | 34,9 | 4 | 1/2" | 15,9 | 66,7 |
| 3/4" | 117,5 | 15,9 | 42,9 | 4 | 5/8" | 19,1 | 82,6 |
| 1" | 123,8 | 17,5 | 50,8 | 4 | 5/8" | 19,1 | 88,9 |
| 1 1/4" | 133,4 | 19,1 | 63,5 | 4 | 5/8" | 19,1 | 98,4 |
| 1 1/2" | 155,6 | 20,6 | 73,0 | 4 | 3/4" | 22,2 | 114,3 |
| 2" | 165,1 | 22,2 | 92,1 | 8 | 5/8" | 19,1 | 127,0 |
| 2 1/2" | 190,5 | 25,4 | 104,8 | 8 | 3/4" | 22,2 | 149,2 |
| 3" | 209,6 | 28,6 | 127,0 | 8 | 3/4" | 22,2 | 168,3 |
| 4" | 254,0 | 31,8 | 157,2 | 8 | 3/4" | 22,2 | 200,0 |
| 5" | 279,4 | 34,9 | 185,7 | 8 | 3/4" | 22,2 | 235,0 |
| 6" | 317,5 | 36,5 | 215,9 | 12 | 3/4" | 22,2 | 269,9 |
| 8" | 381,0 | 41,3 | 269,9 | 12 | 7/8" | 25,4 | 330,2 |
| 10" | 444,5 | 47,6 | 323,9 | 16 | 1" | 28,6 | 387,4 |
| 12" | 520,7 | 50,8 | 381,0 | 16 | 1 1/8" | 31,8 | 450,9 |
| 14" | 584,2 | 54,0 | 412,8 | 20 | 1 1/8" | 31,8 | 514,4 |
| 16" | 647,7 | 57,2 | 469,9 | 20 | 1 1/4" | 34,9 | 571,5 |
| 18" | 711,2 | 60,3 | 533,4 | 24 | 1 1/4" | 34,9 | 628,7 |
| 20" | 774,7 | 63,5 | 584,2 | 24 | 1 1/4" | 34,9 | 685,8 |
| 24" | 914,4 | 69,9 | 692,2 | 24 | 1 1/2" | 41,3 | 812,8 |
| 30" | * 1092,2 | * 76,2 | * 857,3 | * 28 | * 1 3/4" | * 50,8 | * 997,0 |

Note: * Not included in the standards.

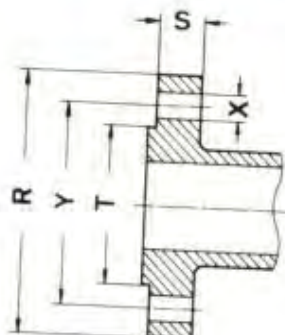


CLASS 400 CAST STEEL RAISED FACE FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T 1/4" Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes | Y Bolt Circle Diameter |
|------------|-------------------|--------------------|-----------------------------|----------------|--------------------|-----------------|------------------------|
| 1/2" | 95,3 | 14,3 | 34,9 | 4 | 1/2" | 15,9 | 66,7 |
| 3/4" | 117,5 | 15,9 | 42,9 | 4 | 5/8" | 19,1 | 82,6 |
| 1" | 123,8 | 17,5 | 50,8 | 4 | 5/8" | 19,1 | 88,9 |
| 1 1/4" | 133,4 | 20,6 | 63,5 | 4 | 5/8" | 19,1 | 98,4 |
| 1 1/2" | 155,6 | 22,2 | 73,0 | 4 | 3/4" | 22,2 | 114,3 |
| 2" | 165,1 | 25,4 | 92,1 | 8 | 5/8" | 19,1 | 127,0 |
| 2 1/2" | 190,5 | 28,6 | 104,8 | 8 | 3/4" | 22,2 | 149,2 |
| 3" | 209,5 | 31,8 | 127,0 | 8 | 3/4" | 22,2 | 168,3 |
| 4" | 254,0 | 34,9 | 157,2 | 8 | 7/8" | 25,4 | 200,0 |
| 5" | 279,4 | 38,1 | 185,7 | 8 | 7/8" | 25,4 | 235,0 |
| 6" | 317,5 | 41,3 | 215,9 | 12 | 7/8" | 25,4 | 269,9 |
| 8" | 381,0 | 47,6 | 269,9 | 12 | 1" | 28,6 | 330,2 |
| 10" | 444,5 | 54,0 | 323,9 | 16 | 1 1/8" | 31,8 | 387,4 |
| 12" | 520,7 | 57,2 | 381,0 | 16 | 1 1/4" | 34,9 | 450,9 |
| 14" | 584,2 | 60,3 | 412,8 | 20 | 1 1/4" | 34,9 | 514,4 |
| 16" | 647,7 | 63,5 | 469,9 | 20 | 1 3/8" | 38,1 | 571,5 |
| 18" | 711,2 | 66,7 | 533,4 | 24 | 1 3/8" | 38,1 | 628,7 |
| 20" | 774,7 | 69,9 | 584,2 | 24 | 1 1/2" | 41,3 | 685,8 |
| 24" | 914,4 | 76,2 | 692,2 | 24 | 1 3/4" | 47,6 | 812,8 |

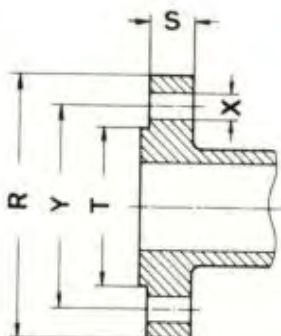
CLASS 600 CAST STEEL RAISED FACE FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T 1/4" Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes | Y Bolt Circle Diameter |
|------------|-------------------|--------------------|-----------------------------|----------------|--------------------|-----------------|------------------------|
| 1/2" | 95,3 | 14,3 | 34,9 | 4 | 1/2" | 15,9 | 66,7 |
| 3/4" | 117,5 | 15,9 | 42,9 | 4 | 5/8" | 19,1 | 82,6 |
| 1" | 123,8 | 17,5 | 50,8 | 4 | 5/8" | 19,1 | 88,9 |
| 1 1/4" | 133,4 | 20,6 | 63,5 | 4 | 5/8" | 19,1 | 98,4 |
| 1 1/2" | 155,6 | 22,2 | 73,0 | 4 | 3/4" | 22,2 | 114,3 |
| 2" | 165,1 | 25,4 | 92,1 | 8 | 5/8" | 19,1 | 127,0 |
| 2 1/2" | 190,5 | 28,6 | 104,8 | 8 | 3/4" | 22,2 | 149,2 |
| 3" | 209,5 | 31,8 | 127,0 | 8 | 3/4" | 22,2 | 168,3 |
| 4" | 273,1 | 38,1 | 157,2 | 8 | 7/8" | 25,4 | 215,9 |
| 5" | 330,2 | 44,5 | 185,7 | 8 | 1" | 28,6 | 266,7 |
| 6" | 355,6 | 47,6 | 215,9 | 12 | 1" | 28,6 | 292,1 |
| 8" | 419,1 | 55,6 | 269,9 | 12 | 1 1/8" | 31,8 | 349,3 |
| 10" | 508,0 | 63,5 | 323,9 | 16 | 1 1/4" | 34,9 | 431,8 |
| 12" | 558,8 | 66,7 | 381,0 | 20 | 1 1/4" | 34,9 | 489,0 |
| 14" | 603,3 | 69,9 | 412,8 | 20 | 1 3/8" | 38,1 | 527,1 |
| 16" | 685,8 | 76,2 | 469,9 | 20 | 1 1/2" | 41,3 | 603,3 |
| 18" | 743,0 | 82,6 | 533,4 | 20 | 1 5/8" | 44,5 | 654,1 |
| 20" | 812,8 | 88,9 | 584,2 | 24 | 1 5/8" | 44,5 | 723,9 |
| 24" | 939,8 | 101,6 | 692,2 | 24 | 1 7/8" | 50,8 | 838,2 |



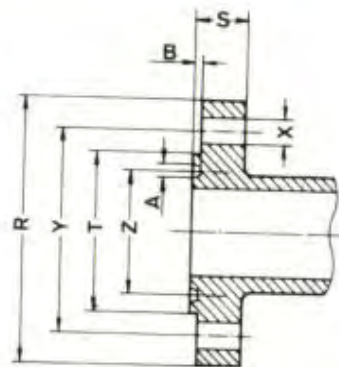
| CLASS 900 CAST STEEL RAISED FACE FLANGES | | | | | | | |
|--|-------------------|--------------------|-----------------------------|----------------|--------------------|-----------------|------------------------|
| Valve Size | R Flange Diameter | S Flange Thickness | T 1/4" Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes | Y Bolt Circle Diameter |
| 1/2" | 120,7 | 22,2 | 34,9 | 4 | 3/4" | 22,2 | 82,6 |
| 3/4" | 130,2 | 25,4 | 42,9 | 4 | 3/4" | 22,2 | 88,9 |
| 1" | 149,2 | 28,6 | 50,8 | 4 | 7/8" | 25,4 | 101,6 |
| 1 1/4" | 158,8 | 28,6 | 63,5 | 4 | 7/8" | 25,4 | 111,1 |
| 1 1/2" | 177,8 | 31,8 | 73,0 | 4 | 1" | 28,6 | 123,8 |
| 2" | 215,9 | 38,1 | 92,1 | 8 | 7/8" | 25,4 | 165,1 |
| 2 1/2" | 244,5 | 41,3 | 104,8 | 8 | 1" | 28,6 | 190,5 |
| 3" | 241,3 | 38,1 | 127,0 | 8 | 7/8" | 25,4 | 190,5 |
| 4" | 292,1 | 44,5 | 157,2 | 8 | 1 1/8" | 31,8 | 235,0 |
| 5" | 349,3 | 50,8 | 185,7 | 8 | 1 1/4" | 34,9 | 279,4 |
| 6" | 381,0 | 55,6 | 215,9 | 12 | 1 1/8" | 31,8 | 317,5 |
| 8" | 469,9 | 63,5 | 269,9 | 12 | 1 3/8" | 38,1 | 393,7 |
| 10" | 546,1 | 69,9 | 323,9 | 16 | 1 3/8" | 38,1 | 469,9 |
| 12" | 609,6 | 79,4 | 381,0 | 20 | 1 3/8" | 38,1 | 533,4 |
| 14" | 641,4 | 85,7 | 412,8 | 20 | 1 1/2" | 41,3 | 558,8 |
| 16" | 704,9 | 88,9 | 469,9 | 20 | 1 5/8" | 44,5 | 616,0 |
| 18" | 787,4 | 101,6 | 533,4 | 20 | 1 7/8" | 50,8 | 685,8 |
| 20" | 857,3 | 108,0 | 584,2 | 20 | 2" | 54,0 | 749,3 |
| 24" | 1041,4 | 139,7 | 692,2 | 20 | 2 1/2" | 66,7 | 901,7 |

| CLASS 1500 CAST STEEL RAISED FACE FLANGES | | | | | | | |
|---|-------------------|--------------------|-----------------------------|----------------|--------------------|-----------------|------------------------|
| Valve Size | R Flange Diameter | S Flange Thickness | T 1/4" Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes | Y Bolt Circle Diameter |
| 1/2" | 120,7 | 22,2 | 34,9 | 4 | 3/4" | 22,2 | 82,6 |
| 3/4" | 130,2 | 25,4 | 42,9 | 4 | 3/4" | 22,2 | 88,9 |
| 1" | 149,2 | 28,6 | 50,8 | 4 | 7/8" | 25,4 | 101,6 |
| 1 1/4" | 158,8 | 28,6 | 63,5 | 4 | 7/8" | 25,4 | 111,1 |
| 1 1/2" | 177,8 | 31,8 | 73,0 | 4 | 1" | 28,6 | 123,8 |
| 2" | 215,9 | 38,1 | 92,1 | 8 | 7/8" | 25,4 | 165,1 |
| 2 1/2" | 244,5 | 41,3 | 104,8 | 8 | 1" | 28,6 | 190,5 |
| 3" | 266,7 | 47,6 | 127,0 | 8 | 1 1/8" | 31,8 | 203,2 |
| 4" | 311,2 | 54,0 | 157,2 | 8 | 1 1/4" | 34,9 | 241,3 |
| 5" | 374,7 | 73,0 | 185,7 | 8 | 1 1/2" | 41,3 | 292,1 |
| 6" | 393,7 | 82,6 | 215,9 | 12 | 1 3/8" | 38,1 | 317,5 |
| 8" | 482,6 | 92,1 | 269,9 | 12 | 1 5/8" | 44,5 | 393,7 |
| 10" | 584,2 | 108,0 | 323,9 | 12 | 1 7/8" | 50,8 | 482,6 |
| 12" | 673,1 | 123,8 | 381,0 | 16 | 2" | 54,0 | 571,5 |
| 14" | 749,3 | 133,4 | 412,8 | 16 | 2 1/4" | 60,3 | 635,0 |
| 16" | 825,5 | 146,1 | 469,9 | 16 | 2 1/2" | 66,7 | 704,9 |
| 18" | 914,4 | 161,9 | 533,4 | 16 | 2 3/4" | 73,0 | 774,7 |
| 20" | 984,3 | 177,8 | 584,2 | 16 | 3" | 79,4 | 831,9 |
| 24" | 1168,4 | 203,2 | 692,2 | 16 | 3 1/2" | 92,1 | 990,6 |



CLASS 2500 CAST STEEL RAISED FACE FLANGES

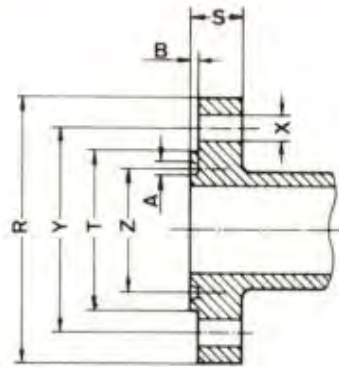
| Valve Size | R Flange Diameter | S Flange Thickness | T 1/4" Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes | Y Bolt Circle Diameter |
|------------|-------------------|--------------------|-----------------------------|----------------|--------------------|-----------------|------------------------|
| 1/2" | 133,4 | 30,2 | 34,9 | 4 | 3/4" | 22,2 | 88,9 |
| 3/4" | 139,7 | 31,8 | 42,9 | 4 | 3/4" | 22,2 | 95,3 |
| 1" | 158,8 | 34,9 | 50,8 | 4 | 7/8" | 25,4 | 108,0 |
| 1 1/4" | 184,2 | 38,1 | 63,5 | 4 | 1" | 28,6 | 130,2 |
| 1 1/2" | 203,2 | 44,5 | 73,0 | 4 | 1 1/8" | 31,8 | 146,1 |
| 2" | 235,0 | 50,8 | 92,1 | 8 | 1" | 28,6 | 171,5 |
| 2 1/2" | 266,7 | 57,2 | 104,8 | 8 | 1 1/8" | 31,8 | 196,9 |
| 3" | 304,8 | 66,7 | 127,0 | 8 | 1 1/4" | 34,9 | 228,6 |
| 4" | 355,6 | 76,2 | 157,2 | 8 | 1 1/2" | 41,3 | 273,1 |
| 5" | 419,1 | 92,1 | 185,7 | 8 | 1 3/4" | 47,6 | 323,9 |
| 6" | 482,6 | 108,0 | 215,9 | 8 | 2" | 54,0 | 368,3 |
| 8" | 552,5 | 127,0 | 269,9 | 12 | 2" | 54,0 | 438,2 |
| 10" | 673,1 | 165,1 | 323,9 | 12 | 2 1/2" | 66,7 | 539,8 |
| 12" | 762,0 | 184,2 | 381,0 | 12 | 2 3/4" | 73,0 | 619,1 |



CLASS 150 CAST STEEL RING JOINT FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes |
|------------|-------------------|--------------------|------------------------|----------------|--------------------|-----------------|
| 1" | 108,0 | 15,9 | 63,5 | 4 | 1/2" | 15,9 |
| 1 1/4" | 117,5 | 17,5 | 73,0 | 4 | 1/2" | 15,9 |
| 1 1/2" | 127,0 | 19,1 | 82,6 | 4 | 1/2" | 15,9 |
| 2" | 152,4 | 20,6 | 101,6 | 4 | 5/8" | 19,1 |
| 2 1/2" | 177,8 | 22,2 | 120,7 | 4 | 5/8" | 19,1 |
| 3" | 190,5 | 23,8 | 133,4 | 4 | 5/8" | 19,1 |
| 4" | 228,6 | 28,6 | 171,5 | 8 | 5/8" | 19,1 |
| 5" | 254,0 | 28,6 | 193,7 | 8 | 3/4" | 22,2 |
| 6" | 279,4 | 30,1 | 219,1 | 8 | 3/4" | 22,2 |
| 8" | 342,9 | 33,3 | 273,1 | 8 | 3/4" | 22,2 |
| 10" | 406,4 | 35,0 | 330,2 | 12 | 7/8" | 25,4 |
| 12" | 482,6 | 36,5 | 406,4 | 12 | 7/8" | 25,4 |
| 14" | 533,4 | 40,0 | 425,5 | 12 | 1" | 28,6 |
| 16" | 596,9 | 41,3 | 482,6 | 16 | 1" | 28,6 |
| 18" | 635,0 | 44,5 | 546,1 | 16 | 1 1/8" | 31,8 |
| 20" | 698,5 | 47,6 | 596,9 | 20 | 1 1/8" | 31,8 |
| 24" | 812,8 | 52,5 | 711,2 | 20 | 1 1/4" | 34,9 |

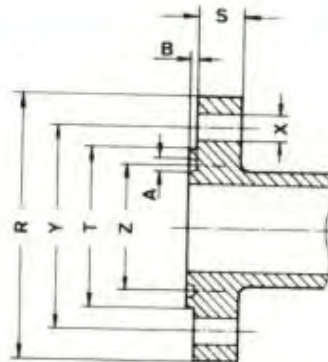
| Valve Size | Y Bolt Circle Diameter | Z Pitch Diameter | A Width | B Depth | C Groove Number |
|------------|------------------------|------------------|---------|---------|-----------------|
| 1" | 79,4 | 47,6 | 8,7 | 6,4 | R 15 |
| 1 1/4" | 88,9 | 57,2 | 8,7 | 6,4 | R 17 |
| 1 1/2" | 98,4 | 65,1 | 8,7 | 6,4 | R 19 |
| 2" | 120,7 | 82,6 | 8,7 | 6,4 | R 22 |
| 2 1/2" | 139,7 | 101,6 | 8,7 | 6,4 | R 25 |
| 3" | 152,4 | 114,3 | 8,7 | 6,4 | R 29 |
| 4" | 190,5 | 149,2 | 8,7 | 6,4 | R 36 |
| 5" | 215,9 | 171,5 | 8,7 | 6,4 | R 40 |
| 6" | 241,3 | 193,7 | 8,7 | 6,4 | R 43 |
| 8" | 298,5 | 247,7 | 8,7 | 6,4 | R 48 |
| 10" | 362,0 | 304,8 | 8,7 | 6,4 | R 52 |
| 12" | 431,8 | 381,0 | 8,7 | 6,4 | R 56 |
| 14" | 476,3 | 396,9 | 8,7 | 6,4 | R 59 |
| 16" | 539,8 | 454,0 | 8,7 | 6,4 | R 64 |
| 18" | 577,9 | 517,5 | 8,7 | 6,4 | R 68 |
| 20" | 635,0 | 558,8 | 8,7 | 6,4 | R 72 |
| 24" | 749,3 | 673,1 | 8,7 | 6,4 | R 76 |



CLASS 300 CAST STEEL RING JOINT FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes |
|------------|-------------------|--------------------|------------------------|----------------|--------------------|-----------------|
| 1/2" | 95,3 | 18,3 | 50,8 | 4 | 1/2" | 15,9 |
| 3/4" | 117,5 | 20,6 | 63,5 | 4 | 5/8" | 19,1 |
| 1" | 123,8 | 22,2 | 69,9 | 4 | 5/8" | 19,1 |
| 1 1/4" | 133,4 | 23,8 | 79,4 | 4 | 5/8" | 19,1 |
| 1 1/2" | 155,6 | 25,4 | 90,5 | 4 | 3/4" | 22,2 |
| 2" | 165,1 | 28,6 | 108,0 | 8 | 5/8" | 19,1 |
| 2 1/2" | 190,5 | 31,8 | 127,0 | 8 | 3/4" | 22,2 |
| 3" | 209,6 | 34,9 | 146,1 | 8 | 3/4" | 22,2 |
| 4" | 254,0 | 38,1 | 174,6 | 8 | 3/4" | 22,2 |
| 5" | 279,4 | 41,3 | 209,6 | 8 | 3/4" | 22,2 |
| 6" | 317,5 | 42,9 | 241,3 | 12 | 3/4" | 22,2 |
| 8" | 381,0 | 47,4 | 301,6 | 12 | 7/8" | 25,4 |
| 10" | 444,5 | 54,0 | 355,6 | 16 | 1" | 28,6 |
| 12" | 520,7 | 57,2 | 412,8 | 16 | 1 1/8" | 31,8 |
| 14" | 584,2 | 60,1 | 457,2 | 20 | 1 1/8" | 31,8 |
| 16" | 647,7 | 63,5 | 508,0 | 20 | 1 1/4" | 34,9 |
| 18" | 711,2 | 66,7 | 574,7 | 24 | 1 1/4" | 34,9 |
| 20" | 774,7 | 71,5 | 635,0 | 24 | 1 1/4" | 34,9 |
| 24" | 914,4 | 79,4 | 749,3 | 24 | 1 1/2" | 41,3 |

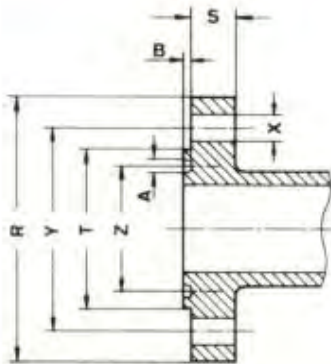
| Valve Size | Y Bolt Circle Diameter | Z Pitch Diameter | A Width | B Depth | C Groove Number |
|------------|------------------------|------------------|---------|---------|-----------------|
| 1/2" | 66,7 | 34,1 | 7,1 | 5,6 | R 11 |
| 3/4" | 82,6 | 42,9 | 8,7 | 6,4 | R 13 |
| 1" | 88,9 | 50,8 | 8,7 | 6,4 | R 16 |
| 1 1/4" | 98,4 | 60,3 | 8,7 | 6,4 | R 18 |
| 1 1/2" | 114,3 | 68,3 | 8,7 | 6,4 | R 20 |
| 2" | 127,0 | 82,6 | 11,9 | 7,9 | R 23 |
| 2 1/2" | 149,2 | 101,6 | 11,9 | 7,9 | R 26 |
| 3" | 168,3 | 123,8 | 11,9 | 7,9 | R 31 |
| 4" | 200,0 | 149,2 | 11,9 | 7,9 | R 37 |
| 5" | 235,0 | 181,0 | 11,9 | 7,9 | R 41 |
| 6" | 269,9 | 211,1 | 11,9 | 7,9 | R 45 |
| 8" | 330,2 | 269,9 | 11,9 | 7,9 | R 49 |
| 10" | 387,4 | 323,9 | 11,9 | 7,9 | R 53 |
| 12" | 450,9 | 381,0 | 11,9 | 7,9 | R 57 |
| 14" | 514,4 | 419,1 | 11,9 | 7,9 | R 61 |
| 16" | 571,5 | 469,9 | 11,9 | 7,9 | R 65 |
| 18" | 628,7 | 533,4 | 11,9 | 7,9 | R 69 |
| 20" | 685,8 | 584,2 | 13,5 | 9,5 | R 73 |
| 24" | 812,8 | 692,2 | 16,7 | 11,1 | R 77 |



CLASS 400 CAST STEEL RING JOINT FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes |
|------------|-------------------|--------------------|------------------------|----------------|--------------------|-----------------|
| 1/2" | 95,3 | 14,3 | 50,8 | 4 | 1/2" | 15,9 |
| 3/4" | 117,5 | 15,9 | 63,5 | 4 | 5/8" | 19,1 |
| 1" | 123,8 | 17,5 | 69,9 | 4 | 5/8" | 19,1 |
| 1 1/4" | 133,4 | 20,6 | 79,4 | 4 | 5/8" | 19,1 |
| 1 1/2" | 155,6 | 22,2 | 90,5 | 4 | 3/4" | 22,2 |
| 2" | 165,1 | 25,4 | 108,0 | 8 | 5/8" | 19,1 |
| 2 1/2" | 190,5 | 28,6 | 127,0 | 8 | 3/4" | 22,2 |
| 3" | 209,5 | 31,8 | 146,1 | 8 | 3/4" | 22,2 |
| 4" | 254,0 | 34,9 | 174,6 | 8 | 7/8" | 25,4 |
| 5" | 279,4 | 38,1 | 209,6 | 8 | 7/8" | 25,4 |
| 6" | 317,5 | 41,3 | 241,3 | 12 | 7/8" | 25,4 |
| 8" | 381,0 | 47,6 | 301,6 | 12 | 1" | 28,6 |
| 10" | 444,5 | 54,0 | 355,6 | 16 | 1 1/8" | 31,8 |
| 12" | 520,7 | 57,2 | 412,8 | 16 | 1 1/4" | 34,9 |
| 14" | 584,2 | 60,3 | 457,2 | 20 | 1 1/4" | 34,9 |
| 16" | 647,7 | 63,5 | 508,0 | 20 | 1 3/8" | 38,1 |
| 18" | 711,2 | 66,7 | 574,7 | 24 | 1 3/8" | 38,1 |
| 20" | 774,7 | 69,9 | 635,0 | 24 | 1 1/2" | 41,3 |
| 24" | 914,4 | 76,2 | 749,3 | 24 | 1 3/4" | 47,6 |

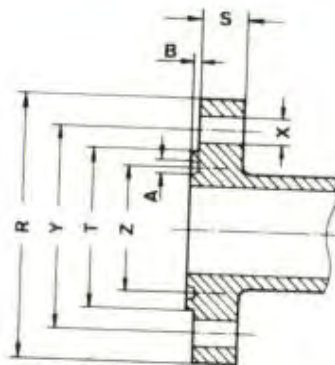
| Valve Size | Y Bolt Circle Diameter | Z Pitch Diameter | A Width | B Depth | C Groove Number |
|------------|------------------------|------------------|---------|---------|-----------------|
| 1/2" | 66,7 | 34,1 | 7,1 | 5,6 | R 11 |
| 3/4" | 82,6 | 42,9 | 8,7 | 6,4 | R 13 |
| 1" | 88,9 | 50,8 | 8,7 | 6,4 | R 16 |
| 1 1/4" | 98,4 | 60,3 | 8,7 | 6,4 | R 18 |
| 1 1/2" | 114,3 | 68,3 | 8,7 | 6,4 | R 20 |
| 2" | 127,0 | 82,6 | 11,9 | 7,9 | R 23 |
| 2 1/2" | 149,2 | 101,6 | 11,9 | 7,9 | R 26 |
| 3" | 168,3 | 123,8 | 11,9 | 7,9 | R 31 |
| 4" | 200,0 | 149,2 | 11,9 | 7,9 | R 37 |
| 5" | 235,0 | 181,0 | 11,9 | 7,9 | R 41 |
| 6" | 269,9 | 211,1 | 11,9 | 7,9 | R 45 |
| 8" | 330,2 | 269,9 | 11,9 | 7,9 | R 49 |
| 10" | 387,4 | 323,9 | 11,9 | 7,9 | R 53 |
| 12" | 450,9 | 381,0 | 11,9 | 7,9 | R 57 |
| 14" | 514,4 | 419,1 | 11,9 | 7,9 | R 61 |
| 16" | 571,5 | 469,9 | 11,9 | 7,9 | R 65 |
| 18" | 628,7 | 533,4 | 11,9 | 7,9 | R 69 |
| 20" | 685,8 | 584,2 | 13,5 | 9,5 | R 73 |
| 24" | 812,8 | 692,2 | 16,7 | 11,1 | R 77 |



CLASS 600 CAST STEEL RING JOINT FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes |
|------------|-------------------|--------------------|------------------------|----------------|--------------------|-----------------|
| 1/2" | 95,3 | 14,3 | 50,8 | 4 | 1/2" | 15,9 |
| 3/4" | 117,5 | 15,9 | 63,5 | 4 | 5/8" | 19,1 |
| 1" | 123,8 | 17,5 | 69,9 | 4 | 5/8" | 19,1 |
| 1 1/4" | 133,4 | 20,6 | 79,4 | 4 | 5/8" | 19,1 |
| 1 1/2" | 155,6 | 22,2 | 90,5 | 4 | 3/4" | 22,2 |
| 2" | 165,1 | 25,4 | 108,0 | 8 | 5/8" | 19,1 |
| 2 1/2" | 190,5 | 28,6 | 127,0 | 8 | 3/4" | 22,2 |
| 3" | 209,5 | 31,8 | 146,1 | 8 | 3/4" | 22,2 |
| 4" | 273,1 | 38,1 | 174,6 | 8 | 7/8" | 25,4 |
| 5" | 330,2 | 44,5 | 209,6 | 8 | 1" | 28,6 |
| 6" | 355,6 | 47,6 | 241,3 | 12 | 1" | 28,6 |
| 8" | 419,1 | 55,6 | 301,6 | 12 | 1 1/8" | 31,8 |
| 10" | 508,0 | 63,5 | 355,6 | 16 | 1 1/4" | 34,9 |
| 12" | 558,8 | 66,7 | 412,8 | 20 | 1 1/4" | 34,9 |
| 14" | 603,3 | 69,9 | 457,2 | 20 | 1 3/8" | 38,1 |
| 16" | 685,8 | 76,2 | 508,0 | 20 | 1 1/2" | 41,3 |
| 18" | 743,0 | 82,6 | 574,7 | 20 | 1 5/8" | 44,5 |
| 20" | 812,8 | 88,9 | 635,0 | 24 | 1 5/8" | 44,5 |
| 24" | 939,8 | 101,6 | 749,3 | 24 | 1 7/8" | 50,8 |

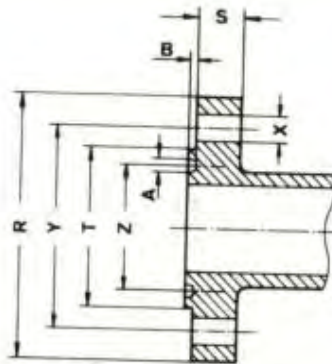
| Valve Size | Y Bolt Circle Diameter | Z Pitch Diameter | A Width | B Depth | C Groove Number |
|------------|------------------------|------------------|---------|---------|-----------------|
| 1/2" | 66,7 | 34,1 | 7,1 | 5,6 | R11 |
| 3/4" | 82,6 | 42,9 | 8,7 | 6,4 | R13 |
| 1" | 88,9 | 50,8 | 8,7 | 6,4 | R16 |
| 1 1/4" | 98,4 | 60,3 | 8,7 | 6,4 | R18 |
| 1 1/2" | 114,3 | 68,3 | 8,7 | 6,4 | R20 |
| 2" | 127,0 | 82,6 | 11,9 | 7,9 | R23 |
| 2 1/2" | 149,2 | 101,6 | 11,9 | 7,9 | R26 |
| 3" | 168,3 | 123,8 | 11,9 | 7,9 | R31 |
| 4" | 215,9 | 149,2 | 11,9 | 7,9 | R37 |
| 5" | 266,7 | 181,0 | 11,9 | 7,9 | R41 |
| 6" | 292,1 | 211,1 | 11,9 | 7,9 | R45 |
| 8" | 349,3 | 269,9 | 11,9 | 7,9 | R49 |
| 10" | 431,8 | 323,9 | 11,9 | 7,9 | R53 |
| 12" | 489,0 | 381,0 | 11,9 | 7,9 | R57 |
| 14" | 527,1 | 419,1 | 11,9 | 7,9 | R61 |
| 16" | 603,3 | 469,9 | 11,9 | 7,9 | R65 |
| 18" | 654,1 | 533,4 | 11,9 | 7,9 | R69 |
| 20" | 723,9 | 584,2 | 13,5 | 9,5 | R73 |
| 24" | 838,2 | 692,2 | 16,7 | 11,1 | R77 |



CLASS 900 CAST STEEL RING JOINT FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes |
|------------|-------------------------|--------------------------|------------------------------|----------------------|-----------------------------|-----------------------|
| 1/2" | 120,7 | 22,2 | 60,3 | 4 | 3/4" | 22,7 |
| 3/4" | 130,2 | 25,4 | 66,7 | 4 | 3/4" | 22,2 |
| 1" | 149,2 | 28,6 | 71,4 | 4 | 7/8" | 25,4 |
| 1 1/4" | 158,8 | 28,6 | 81,0 | 4 | 7/8" | 25,4 |
| 1 1/2" | 177,8 | 31,6 | 92,1 | 4 | 1" | 28,6 |
| 2" | 215,9 | 38,1 | 123,8 | 8 | 7/8" | 25,4 |
| 2 1/2" | 244,5 | 41,3 | 136,5 | 8 | 1" | 28,6 |
| 3" | 241,0 | 38,1 | 155,6 | 8 | 7/8" | 25,4 |
| 4" | 292,1 | 44,5 | 181,0 | 8 | 1 1/8" | 31,8 |
| 5" | 349,3 | 50,8 | 215,9 | 8 | 1 1/4" | 34,9 |
| 6" | 381,0 | 55,6 | 241,3 | 12 | 1 1/8" | 31,8 |
| 8" | 469,9 | 63,5 | 308,0 | 12 | 1 3/8" | 38,1 |
| 10" | 546,1 | 69,9 | 362,0 | 16 | 1 3/8" | 38,1 |
| 12" | 609,6 | 79,4 | 419,1 | 20 | 1 3/8" | 38,1 |
| 14" | 641,4 | 85,7 | 466,7 | 20 | 1 1/2" | 41,3 |
| 16" | 704,9 | 88,9 | 523,9 | 20 | 1 5/8" | 44,5 |
| 18" | 787,4 | 101,6 | 593,7 | 20 | 1 7/8" | 50,8 |
| 20" | 857,3 | 108,0 | 647,7 | 20 | 2" | 54,0 |
| 24" | 1041,4 | 139,7 | 771,5 | 20 | 2 1/2" | 66,7 |

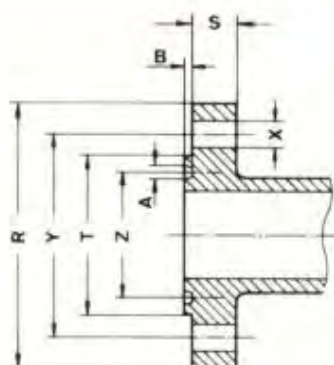
| Valve Size | Y Bolt Circle Diameter | Z Pitch Diameter | A Width | B Depth | C Groove Number |
|------------|------------------------------|------------------------|------------|------------|-----------------------|
| 1/2" | 82,6 | 39,7 | 8,7 | 6,4 | R12 |
| 3/4" | 88,6 | 44,5 | 8,7 | 6,4 | R14 |
| 1" | 101,6 | 50,8 | 8,7 | 6,4 | R16 |
| 1 1/4" | 111,1 | 60,3 | 8,7 | 6,4 | R18 |
| 1 1/2" | 123,8 | 68,3 | 8,7 | 6,4 | R20 |
| 2" | 165,1 | 95,3 | 11,9 | 7,9 | R24 |
| 2 1/2" | 190,5 | 108,0 | 11,9 | 7,9 | R27 |
| 3" | 190,5 | 123,8 | 11,9 | 7,9 | R31 |
| 4" | 235,0 | 149,2 | 11,9 | 7,9 | R37 |
| 5" | 279,4 | 181,0 | 11,9 | 7,9 | R41 |
| 6" | 317,5 | 211,1 | 11,9 | 7,9 | R45 |
| 8" | 393,7 | 269,9 | 11,9 | 7,9 | R49 |
| 10" | 469,9 | 323,9 | 11,9 | 7,9 | R53 |
| 12" | 533,4 | 381,0 | 11,9 | 7,9 | R57 |
| 14" | 558,8 | 419,1 | 16,7 | 11,1 | R62 |
| 16" | 616,0 | 469,9 | 16,7 | 11,1 | R66 |
| 18" | 685,8 | 533,4 | 19,8 | 12,7 | R70 |
| 20" | 749,3 | 584,2 | 19,8 | 12,7 | R74 |
| 24" | 901,7 | 692,2 | 27,0 | 15,9 | R78 |



CLASS 2500 CAST STEEL RING JOINT FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes |
|------------|-------------------|--------------------|------------------------|----------------|--------------------|-----------------|
| 1/2" | 133,4 | 30,2 | 65,1 | 4 | 3/4" | 22,2 |
| 3/4" | 139,7 | 31,8 | 73,0 | 4 | 3/4" | 22,2 |
| 1" | 158,8 | 34,9 | 82,6 | 4 | 7/8" | 25,4 |
| 1 1/4" | 184,2 | 38,1 | 101,6 | 4 | 1" | 28,6 |
| 1 1/2" | 203,2 | 44,5 | 114,3 | 4 | 1 1/8" | 31,8 |
| 2" | 235,0 | 50,8 | 133,4 | 8 | 1" | 28,6 |
| 2 1/2" | 266,7 | 57,2 | 149,2 | 8 | 1 1/8" | 31,8 |
| 3" | 304,8 | 66,7 | 168,3 | 8 | 1 1/4" | 34,9 |
| 4" | 355,6 | 76,2 | 203,2 | 8 | 1 1/2" | 41,3 |
| 5" | 419,1 | 92,1 | 241,3 | 8 | 1 3/4" | 47,6 |
| 6" | 482,6 | 108,0 | 279,4 | 8 | 2" | 54,0 |
| 8" | 552,5 | 127,0 | 339,7 | 12 | 2" | 54,0 |
| 10" | 673,1 | 165,1 | 425,5 | 12 | 2 1/2" | 66,7 |
| 12" | 762,0 | 184,2 | 495,3 | 12 | 2 3/4" | 73,0 |

| Valve Size | Y Bolt Circle Diameter | Z Pitch Diameter | A Width | B Depth | C Groove Number |
|------------|------------------------|------------------|---------|---------|-----------------|
| 1/2" | 88,9 | 42,9 | 8,7 | 6,4 | R13 |
| 3/4" | 95,3 | 50,8 | 8,7 | 6,4 | R16 |
| 1" | 108,0 | 60,3 | 8,7 | 6,4 | R18 |
| 1 1/4" | 130,2 | 72,2 | 11,9 | 7,9 | R21 |
| 1 1/2" | 146,1 | 82,6 | 11,9 | 7,9 | R23 |
| 2" | 171,5 | 101,6 | 11,9 | 7,9 | R26 |
| 2 1/2" | 196,9 | 111,1 | 13,5 | 9,5 | R28 |
| 3" | 228,6 | 127,0 | 13,5 | 9,5 | R32 |
| 4" | 273,1 | 157,2 | 16,7 | 11,1 | R38 |
| 5" | 323,9 | 190,5 | 19,8 | 12,7 | R42 |
| 6" | 368,3 | 228,6 | 19,8 | 12,7 | R47 |
| 8" | 438,2 | 279,4 | 23,0 | 14,3 | R51 |
| 10" | 539,8 | 342,9 | 30,2 | 17,5 | R55 |
| 12" | 619,1 | 406,4 | 33,3 | 17,5 | R60 |



CLASS 1500 CAST STEEL RING JOINT FLANGES

| Valve Size | R Flange Diameter | S Flange Thickness | T Raised Face Diameter | U No. of Bolts | V Size of Bolts in | X Size of Holes |
|------------|----------------------|-----------------------|---------------------------|-------------------|-----------------------|--------------------|
| 1/2" | 120,7 | 22,2 | 60,3 | 4 | 3/4" | 22,2 |
| 3/4" | 130,2 | 25,4 | 66,7 | 4 | 3/4" | 22,2 |
| 1" | 149,2 | 28,6 | 71,4 | 4 | 7/8" | 25,4 |
| 1 1/4" | 158,8 | 28,6 | 81,0 | 4 | 7/8" | 25,4 |
| 1 1/2" | 177,8 | 31,6 | 92,1 | 4 | 1" | 28,6 |
| 2" | 215,9 | 38,1 | 123,8 | 8 | 7/8" | 25,4 |
| 2 1/2" | 244,5 | 41,3 | 136,5 | 8 | 1" | 28,6 |
| 3" | 266,7 | 47,6 | 168,3 | 8 | 1 1/8" | 31,8 |
| 4" | 311,2 | 54,0 | 193,7 | 8 | 1 1/4" | 34,9 |
| 5" | 374,7 | 73,0 | 228,6 | 8 | 1 1/2" | 41,3 |
| 6" | 393,7 | 82,6 | 247,7 | 12 | 1 3/8" | 38,1 |
| 8" | 482,6 | 92,1 | 317,5 | 12 | 1 5/8" | 44,5 |
| 10" | 584,2 | 108,0 | 371,5 | 12 | 1 7/8" | 50,8 |
| 12" | 673,1 | 123,8 | 438,2 | 16 | 2" | 54,0 |
| 14" | 749,3 | 133,4 | 489,0 | 16 | 2 1/4" | 60,3 |
| 16" | 825,5 | 146,1 | 546,1 | 16 | 2 1/2" | 66,7 |
| 18" | 914,4 | 161,9 | 612,8 | 16 | 2 3/4" | 73,0 |
| 20" | 984,3 | 177,8 | 673,1 | 16 | 3" | 79,4 |
| 24" | 1168,4 | 203,2 | 793,8 | 16 | 3 1/2" | 92,1 |

| Valve Size | Y Bolt Circle Diameter | Z Pitch Diameter | A Width | B Depth | C Groove Number |
|------------|---------------------------|---------------------|------------|------------|--------------------|
| 1/2" | 82,6 | 39,7 | 8,7 | 6,4 | R12 |
| 3/4" | 88,6 | 44,5 | 8,7 | 6,4 | R14 |
| 1" | 101,6 | 50,8 | 8,7 | 6,4 | R16 |
| 1 1/4" | 111,1 | 60,3 | 8,7 | 6,4 | R18 |
| 1 1/2" | 123,8 | 68,3 | 8,7 | 6,4 | R20 |
| 2" | 165,1 | 95,3 | 11,9 | 7,9 | R24 |
| 2 1/2" | 190,5 | 108,0 | 11,9 | 7,9 | R27 |
| 3" | 203,2 | 136,5 | 11,9 | 7,9 | R35 |
| 4" | 241,3 | 161,9 | 11,9 | 7,9 | R39 |
| 5" | 292,1 | 193,7 | 11,9 | 7,9 | R44 |
| 6" | 317,5 | 211,1 | 13,5 | 9,5 | R46 |
| 8" | 393,7 | 269,9 | 16,7 | 11,1 | R50 |
| 10" | 482,6 | 323,9 | 16,7 | 11,1 | R54 |
| 12" | 571,5 | 381,0 | 23,0 | 14,3 | R58 |
| 14" | 635,0 | 419,1 | 27,0 | 15,9 | R63 |
| 16" | 704,9 | 469,9 | 30,2 | 17,5 | R67 |
| 18" | 774,7 | 533,4 | 30,2 | 17,5 | R71 |
| 20" | 831,9 | 584,2 | 33,3 | 17,5 | R75 |
| 24" | 990,6 | 692,2 | 36,5 | 20,6 | R79 |

BRDR. CHRISTENSENS ApS
Broksøvej 79, Skuderløse 4690 Haslev Denmark
www.brdrchristensens.com
Tel : +45 56 36 36 00 | email:bch@brdrchristensens.com