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## “SAV” SERIES KNIFE GATE VALVES

SAV series valves are uni-directional, full lug design knife gate valves manufactured as per MSS SP-81 standard and TAPPI TIS 405-8 for Industrial service applications. The SAV series design assures non-clogging shutoff of suspended solids.



These valves can be installed in vertical / horizontal as well as in inclined position. The SAV series Knife gate valve can be used for liquid, solid-liquid mixes / slurries, dry bulk solids. These valves are provided with 100 % bore opening which does not restrict the flow in pipeline.

These are leak tight in case of resilient seated valves. Metal seated valves offer leakage within permissible limits as per MSS SP-81 standard and TAPPI TIS 405-8.

### Important features of SAV series knife gate valves:

- A full lug type design available in ANSI B16.5 (class 150) / DIN PN 10 / PN 16 flange drilling.
- Investment casted body up to 12” size to ensure superior surface finish .
- Varied sealing configurations viz integral metal seated / resilient seat locked in place by a stainless steel retainer band.
- Sealing achieved by means of welded jams pushing the gate on to the seat for full face contact between gate and seat.
- Gate having beveled knife-edge at its front to cut through solid particles settled at bottom of body and achieve full closure.
- Self lubricated packing gland for closure of rear opening in the housing.
- Packing glands provided with pushing arrangement to tighten on the gate and stop the leakage taking place from the rear opening in the housing due to frequent gate operation.
- Rising stem as standard / Non rising stem is available on request.
- Varied operating options viz Manual hand wheel / hand lever operated / Bevel gear / Pneumatic cylinder / Electric actuator & Hydraulic cylinder.



### The SAV series valves are available in following sealing configurations:

- **SAV-M:** Integral metal seated
- **SAV-S:** Resilient seat retained by stainless steel retainer strip / band.

### Standard technical specifications:

|                           |   |
|---------------------------|---|
| Manufacturer Standard     | As per MSS-SP 81 Standard / TAPPI TIS 405-8   |
| Lug / flange provision    | Full Lugged upto 24" & full flanged for higher sizes  |
| Bore opening              | Full bore (100%)  |
| Flange drilling           | Suitable for ANSI B16.5 150lb / DIN PN 10 / PN 16   |
| Flange to flange distance | As per MSS SP-81  |
| Sealing configuration     | Integral metal seated in "SAV-M" variant<br>Resilient Seat retained by stainless steel retainer strip / band in "SAV-S" variant |
| Pressure rating (Body)    | 150 PSI rated from 02" to 24", 100 PSI rated from 26" to 30", 75 PSI rated from 32" to 36"                                      |
| Nominal Size              | 2" to 36", higher sizes up to 120" on request   |

### Materials of construction of major components:

|                                  |   |
|----------------------------------|---|
| Housing                          | Cast Stainless Steel ASTM A 351 Gr. CF:8 / CF:8M<br>/ CF:3M / CH:20 / CK:20 (other material on request) |
| Gate                             | Stainless Steel ASTM A 240 Gr. 304 / 316 / 310 (other material on request)                              |
| Seat for SAV-M variant           | Same as body material   |
| Resilient seat for SAV-S variant | EPDM / Viton / Neoprene / White silicon / NBR / PTFE  |
| Stem                             | Stainless Steel ASTM A 276 Gr. 304 / 316 Synthetic yarn with  |
| Packing                          | PTFE impregnation, Graphited yarn, Ceramic rope   |

### Painting:

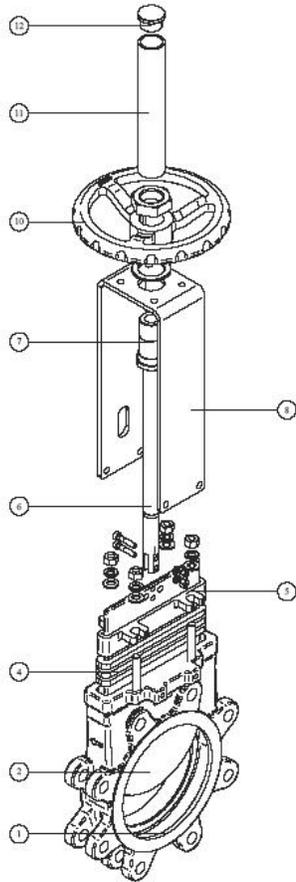
|                               |   |
|-------------------------------|---|
| For non-stainless steel parts | Epoxy painted shade Black RAL 2004, min DFT 250 microns / as per custom requirement |
|-------------------------------|---|

### Testing:

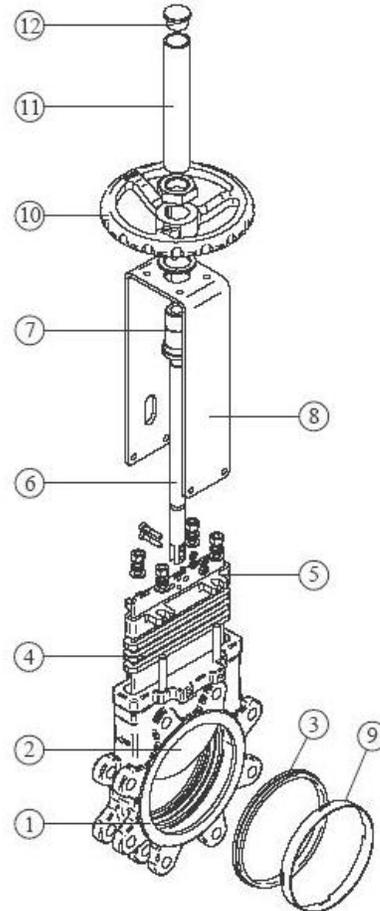
|   |  |
|---|--|
| Body test pressure  | 1.5 times of rated pressure                  |
| Seat leakage criterion for SAV-M variant                    | 40 cc / min / inch at 2.8 bar (40PSI) as per |
| MSS SP-81 standard Seat leakage criterion for SAV-S variant | Zero leakage at 2.8 bar(40PSI)               |

## EXPLODED VIEW

Knife gate valve type SAV-M



Knife gate valve type SAV-S



| SAV-M    |                |                       | SAV-S    |                    |                       |
|----------|----------------|-----------------------|----------|--------------------|-----------------------|
| Part no. | Part           | Standard construction | Part no. | Part               | Standard construction |
| 1        | Housing        | CF:8 / CF:8M          | 1        | Housing            | CF:8 / CF:8M          |
| 2        | Gate           | SS:304 / SS:316       | 2        | Gate               | SS:304 / SS:316       |
| 3        | Seat           | Metal                 | 3        | Seat               | Resilient             |
| 4        | Packing        | PTFE                  | 4        | Packing            | PTFE                  |
| 5        | Gland          | CF:8 / CF:8M          | 5        | Gland              | CF:8 / CF:8M          |
| 6        | Stem           | SS:304 / SS:316       | 6        | Stem               | SS:304 / SS:316       |
| 7        | Stem nut       | Brass                 | 7        | Stem nut           | Brass                 |
| 8        | Yoke           | SS:304                | 8        | Yoke               | SS:304                |
| 9        |                |                       | 9        | Seat retainer band | SS:304 / SS:316       |
| 10       | Hand wheel     | Ductile iron          | 10       | Hand wheel         | Ductile iron          |
| 11       | Stem protector | Mild steel            | 11       | Stem protector     | Mild steel            |
| 12       | Cap            | PVC                   | 12       | Cap                | PVC                   |

## OPTIONAL FEATURES

Popular optional features requested generally are explained below. Other special features specific to client's application & requirement can be offered on request.

### 1. Bidirectional Seating :

Depending upon application some valves are subjected to full applicable pressure from both directions. Such valves are provided with sealing arrangement on either side of gate to achieve bi-directional shut-off.

### 2. Deflection Cone

Deflection cone is put in the material flow area to prevent erosion of valve housing in abrasive application. When a deflection cone is not used, the valve housing will get eroded and it is very expensive to replace valve housing in comparison to replacement of deflection cone. Deflection cones are available in Ni-Hard/Alloy Cast Iron construction.

### 3. Flush / Purging Ports:

Purging / flush ports are provided for cleaning of material trapped in the body cavity. Purge ports are typically placed on the valve chest and bottom of the valve or as required.

### 4. V-Port Design

V-port design valves are used to control the flow. This design is offered for Throttling applications and incorporates a V notch welded in the material flow area.

### 5. Hardening on Seat & Gate

Depending upon application and service conditions, valve components can go through additional processes to increase their life. Processes like hard stellite facing on flow bore area and gate edge is done to prevent surface erosion from abrasive media. Similarly nitriding, galvanizing, hard chrome plating, nylon coating etc can be provided on gate plate to prolong its life.

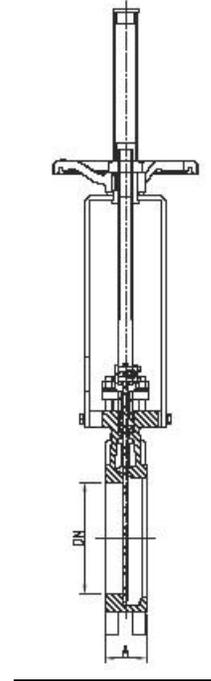
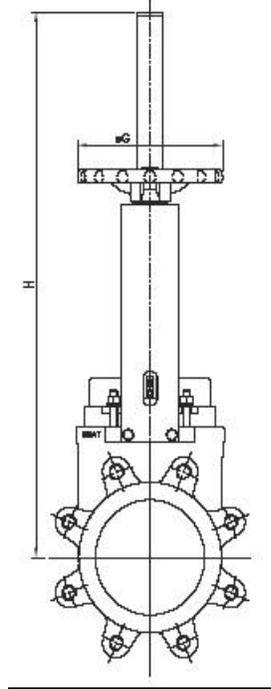
### 6. Bolt on Bonnet:

Non bonneted valves can be provided with provision of bolt on casted or fabricated bonnet to ensure tight sealing to atmosphere.

### 8. Extended Spindle Arrangement:

Extended spindle allows the operator to open or close the valve from a distance. Extended spindle arrangement includes couplings, stem guide bracket, pillars and necessary fasteners.

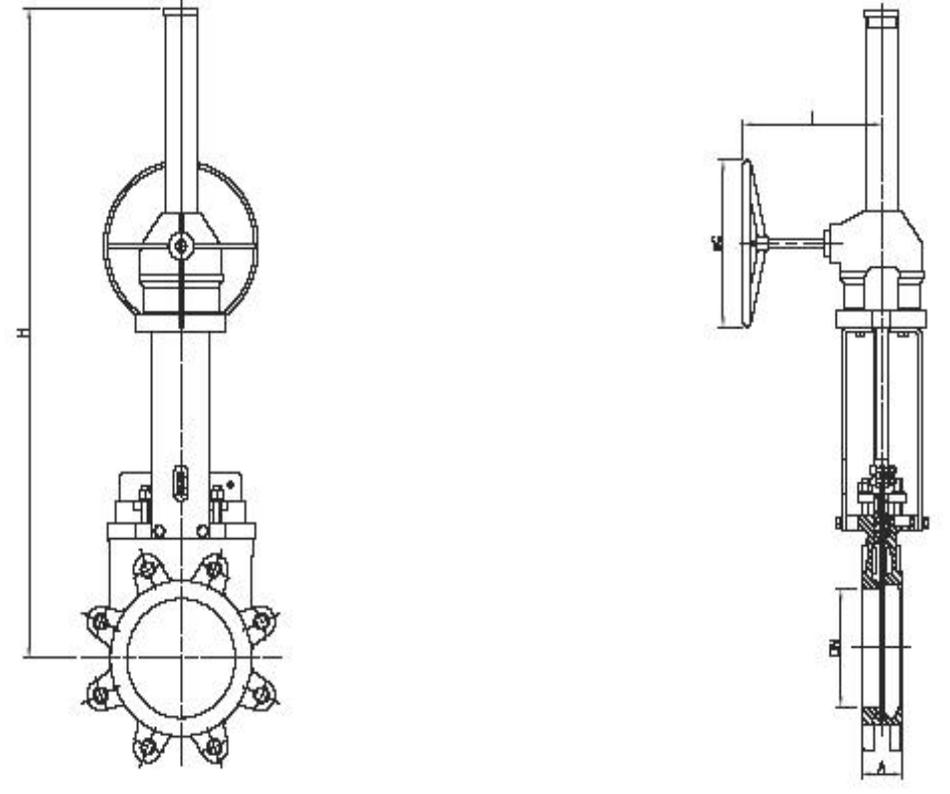
## HAND WHEEL OPERATED (RISING STEM) – DIMENSIONAL DETAILS



| Valve size | A    | H     | ØG    | Weight (lbs) |
|------------|------|-------|-------|--------------|
| 2"         | 1.9" | 18.5" | 8.1"  | 20           |
| 2.5"       | 2.0" | 19.5" | 8.1"  | 22           |
| 3"         | 2.0" | 20.7" | 8.1"  | 24           |
| 4"         | 2.0" | 23.2" | 8.1"  | 29           |
| 5"         | 2.2" | 26.2" | 8.1"  | 37           |
| 6"         | 2.2" | 28.1" | 8.1"  | 46           |
| 8"         | 2.8" | 35.4" | 12.4" | 71           |
| 10"        | 2.8" | 40.7" | 12.4" | 99           |
| 12"        | 3.0" | 46.3" | 12.4" | 143          |
| 14"        | 3.0" | 51.6" | 15.7" | 216          |
| 16"        | 3.5" | 54.5" | 15.7" | 276          |
| 18"        | 3.5" | 61.6" | 21.7" | 353          |
| 20"        | 4.5" | 65.9" | 21.7" | 452          |
| 24"        | 4.5" | 77.2" | 21.7" | 639          |

Hand wheel operated valves can be provided with options of chain wheel, non-rising stem and stem extension.

## GEAR OPERATED (RISING STEM) – DIMENSIONAL DETAILS



| Valve size | A    | H       | I      | ØG     |
|------------|------|---------|--------|--------|
| 8"         | 2.8" | 42.00"  | 8.00"  | 14.00" |
| 10"        | 2.8" | 47.00"  | 8.00"  | 14.00" |
| 12"        | 3.0" | 52.00"  | 8.00"  | 14.00" |
| 14"        | 3.0" | 57.00"  | 12.00" | 14.00" |
| 16"        | 3.5" | 60.00"  | 12.00" | 14.00" |
| 18"        | 3.5" | 69.00"  | 12.00" | 14.00" |
| 20"        | 4.5" | 74.00"  | 12.00" | 16.00" |
| 24"        | 4.5" | 85.00"  | 12.00" | 16.00" |
| 30"        | 4.7" | 110.00" | 16.00" | 16.00" |
| 36"        | 4.7" | 129.00" | 16.00" | 16.00" |

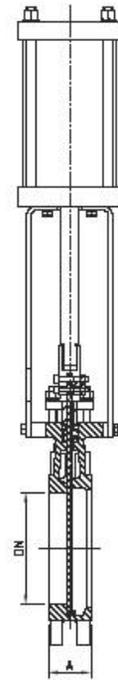
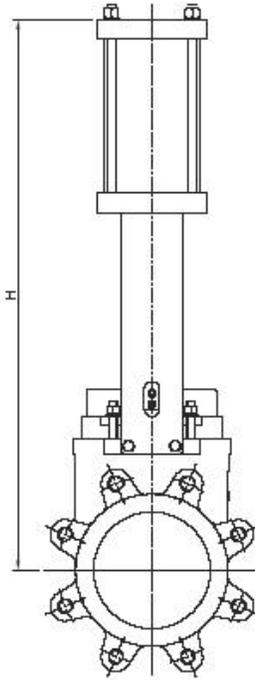
Gear box shall have 4:1 gear ratio.

Gear wheel operated valves can be provided with options of chain wheel, non-rising stem and stem extension.

## PNEUMATIC CYLINDER OPERATED

### Standard technical specifications & material of construction:

|                      |                      |
|----------------------|----------------------|
| Type                 | Linear double acting |
| Suitable application | On-off duty          |
| Body material        | Aluminum / CS        |
| Piston rod           | SS 304               |
| Piston               | Mild steel           |
| Supply air pressure  | 50 PSI to 150 PSI    |



| Valve size | A    | H      | Cylinder bore | Cylinder stroke | Suitable differential pressure |
|------------|------|--------|---------------|-----------------|--------------------------------|
| 2"         | 1.9" | 19.1"  | 4"            | 2.6"            | 225 PSI                        |
| 2.5"       | 2.0" | 21.5"  | 4"            | 3.1"            | 225 PSI                        |
| 3"         | 2.0" | 22.2"  | 4"            | 3.7"            | 225 PSI                        |
| 4"         | 2.0" | 24.4"  | 4"            | 4.5"            | 150 PSI                        |
| 5"         | 2.2" | 27.6"  | 5"            | 5.5"            | 150 PSI                        |
| 6"         | 2.2" | 28.7"  | 5"            | 6.5"            | 150 PSI                        |
| 8"         | 2.8" | 36.0"  | 7"            | 8.5"            | 150 PSI                        |
| 10"        | 2.8" | 41.3"  | 7"            | 10.4"           | 80 PSI                         |
| 12"        | 3.0" | 47.2"  | 8"            | 12.4"           | 80 PSI                         |
| 14"        | 3.0" | 51.6"  | 8"            | 12.8"           | 80 PSI                         |
| 16"        | 3.5" | 57.1"  | 10"           | 16.7"           | 80 PSI                         |
| 18"        | 3.5" | 65.9"  | 12"           | 18.7"           | 80 PSI                         |
| 20"        | 4.5" | 71.3"  | 12"           | 20.7"           | 60 PSI                         |
| 24"        | 4.5" | 80.7"  | 12"           | 24.6"           | 60 PSI                         |
| 30"        | 4.7" | 102.4" | 14"           | 30.5"           | 40 PSI                         |
| 36"        | 4.7" | 126.0" | 16"           | 36.4"           | 40 PSI                         |

### Note:

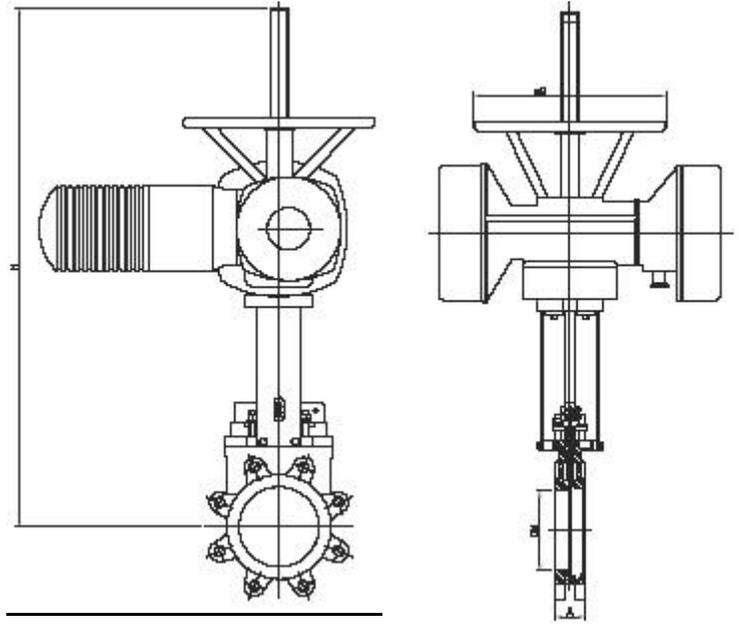
- (1). Cylinder bore sizes mentioned in above table are calculated considering 80 PSI supply pressure.
- (2). Upon request cylinders can be offered with positioners, manual override facility etc.
- (3). Upon request accessories like solenoid valve, air filter regulators, limit switches or proximity switches can be offered.

## ELECTRIC ACTUATOR OPERATED

Standard electric actuators are provided with below features:

Manual override provision in case of power failure

Limit switches for open & close position

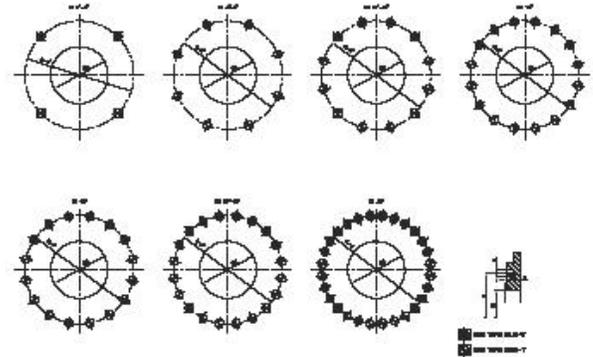


| Valve size | A    | H      | ØG    | Torque (N-m) | Stem thread details |
|------------|------|--------|-------|--------------|---------------------|
| 2"         | 1.9" | 22.6"  | 5.9"  | 10           | 20 x 4              |
| 2.5"       | 2.0" | 23.8"  | 5.9"  | 10           | 20 x 4              |
| 3"         | 2.0" | 24.4"  | 5.9"  | 10           | 20 x 4              |
| 4"         | 2.0" | 26.2"  | 5.9"  | 10           | 20 x 4              |
| 5"         | 2.2" | 27.8"  | 5.9"  | 15           | 20 x 4              |
| 6"         | 2.2" | 29.1"  | 5.9"  | 20           | 20 x 4              |
| 8"         | 2.8" | 33.5"  | 7.9"  | 30           | 25 x 5              |
| 10"        | 2.8" | 37.2"  | 7.9"  | 45           | 25 x 5              |
| 12"        | 3.0" | 40.7"  | 7.9"  | 70           | 25 x 5              |
| 14"        | 3.0" | 47.2"  | 7.9"  | 110          | 25 x 5              |
| 16"        | 3.5" | 50.0"  | 7.9"  | 160          | 35 x 6              |
| 18"        | 3.5" | 53.9"  | 12.4" | 190          | 35 x 6              |
| 20"        | 4.5" | 61.4"  | 12.4" | 270          | 35 x 6              |
| 24"        | 4.5" | 70.1"  | 12.4" | 450          | 35 x 6              |
| 30"        | 4.7" | 102.4" | 15.7" | 510          | 50 x 8              |
| 36"        | 4.7" | 129.9" | 15.7" | 535          | 50 x 8              |

# FLANGE DRILLING DETAILS

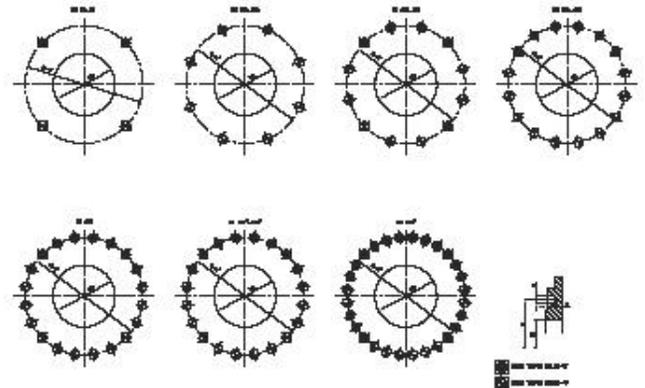
## ANSI B16.5 150lb

| DN   | K       | n° | M          | D     | B - T   |
|------|---------|----|------------|-------|---------|
| 2"   | 4 3/4"  | 4  | 5/8" UNC   | 0.48" | 2 - 2   |
| 2.5" | 5 1/2"  | 4  | 5/8" UNC   | 0.48" | 2 - 2   |
| 3"   | 6"      | 4  | 5/8" UNC   | 0.48" | 2 - 2   |
| 4"   | 7 1/2"  | 8  | 5/8" UNC   | 0.48" | 2 - 6   |
| 5"   | 8 1/2"  | 8  | 3/4" UNC   | 0.60" | 2 - 6   |
| 6"   | 9 1/2"  | 8  | 3/4" UNC   | 0.60" | 2 - 6   |
| 8"   | 11 3/4" | 10 | 3/4" UNC   | 0.60" | 4 - 6   |
| 10"  | 14 1/4" | 12 | 7/8" UNC   | 0.60" | 4 - 8   |
| 12"  | 17"     | 12 | 7/8" UNC   | 0.60" | 4 - 8   |
| 14"  | 18 3/4" | 12 | 1" UNC     | 0.78" | 4 - 8   |
| 16"  | 21 1/4" | 16 | 1" UNC     | 0.78" | 4 - 12  |
| 18"  | 22 3/4" | 16 | 1 1/8" UNC | 0.86" | 6 - 10  |
| 20"  | 25"     | 20 | 1 1/8" UNC | 0.86" | 6 - 14  |
| 24"  | 29 1/2" | 20 | 1 1/4" UNC | 1.00" | 6 - 14  |
| 30"  | 36"     | 28 | 1 1/4" UNC | 1.00" | 10 - 18 |
| 36"  | 42 1/2" | 32 | 1 1/2" UNC | 1.00" | 14 - 18 |



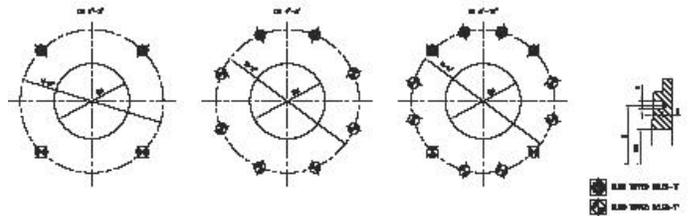
## DIN PN 10

| DN  | K     | n° | M    | D  | B - T   |
|-----|-------|----|------|----|---------|
| 50  | 125   | 4  | M-16 | 12 | 2 - 2   |
| 65  | 145   | 4  | M-16 | 12 | 2 - 2   |
| 80  | 160   | 4  | M-16 | 12 | 2 - 2   |
| 100 | 180   | 8  | M-16 | 12 | 2 - 6   |
| 125 | 210   | 8  | M-16 | 15 | 2 - 6   |
| 150 | 240   | 8  | M-20 | 15 | 2 - 6   |
| 200 | 295   | 10 | M-20 | 15 | 4 - 6   |
| 250 | 350   | 12 | M-20 | 15 | 4 - 8   |
| 300 | 400   | 12 | M-20 | 15 | 4 - 8   |
| 350 | 460   | 16 | M-20 | 20 | 6 - 10  |
| 400 | 515   | 16 | M-12 | 20 | 6 - 10  |
| 450 | 565   | 20 | M-24 | 22 | 6 - 10  |
| 500 | 620   | 20 | M-24 | 22 | 6 - 14  |
| 600 | 725   | 20 | M-27 | 25 | 6 - 14  |
| 750 | 914.5 | 28 | M-27 | 25 | 10 - 18 |
| 900 | 1050  | 28 | M-30 | 25 | 14 - 18 |

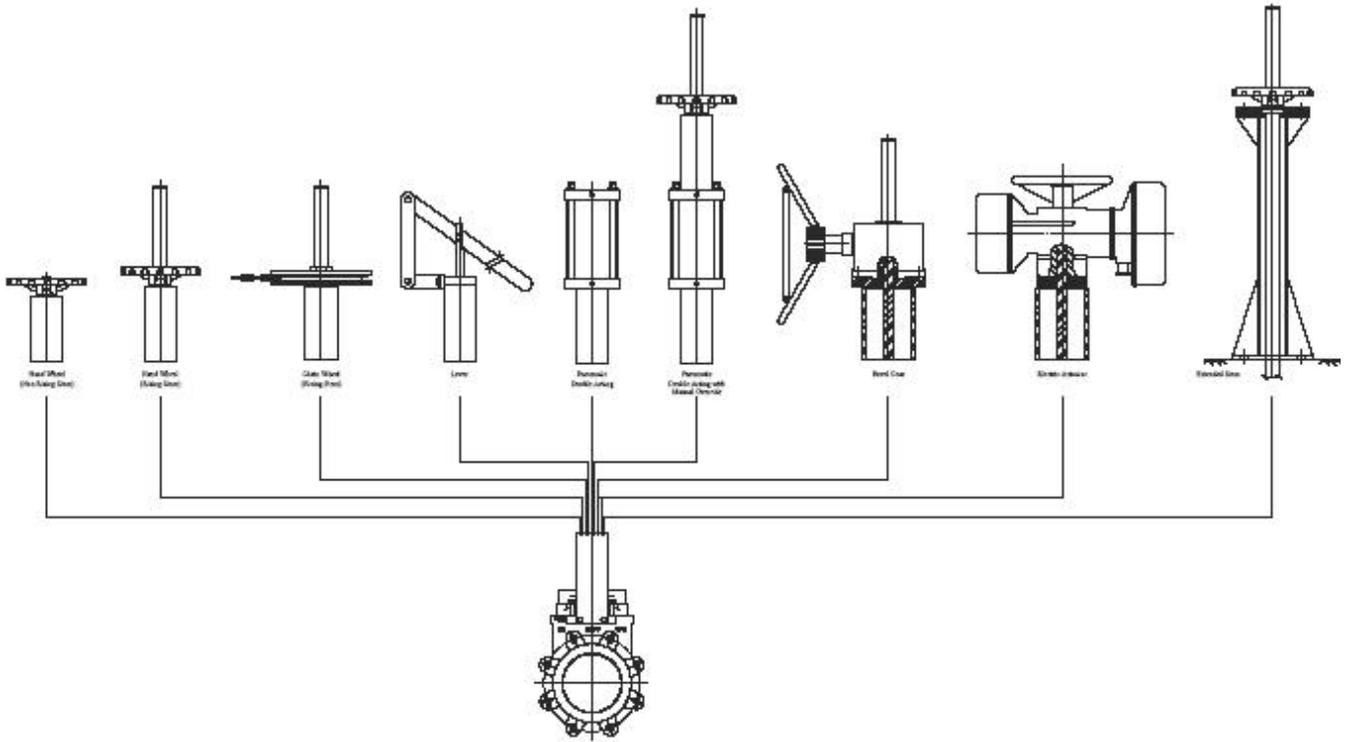


## PN 16

| DN  | K   | n° | M    | D  | B - T |
|-----|-----|----|------|----|-------|
| 50  | 125 | 4  | M-16 | 12 | 2 - 2 |
| 65  | 145 | 4  | M-16 | 12 | 2 - 2 |
| 80  | 160 | 4  | M-16 | 12 | 2 - 2 |
| 100 | 180 | 8  | M-16 | 12 | 2 - 6 |
| 125 | 210 | 8  | M-16 | 15 | 2 - 6 |
| 150 | 240 | 8  | M-20 | 15 | 2 - 6 |
| 200 | 295 | 12 | M-24 | 15 | 4 - 8 |
| 250 | 355 | 12 | M-24 | 15 | 4 - 8 |
| 300 | 410 | 12 | M-24 | 15 | 4 - 8 |



## MODES OF OPERATION



### Note:

(1). Other special modes of operation specific to clients application and requirement can be offered on request.

## TEMPERATURE SUITABILITY CHART

| Resilient seat |                |                          |  |
|----------------|----------------|--------------------------|--|
| Sr. no.        | Material       | Temperature rating (max) | Application                            |
| 1              | EPDM           | 120 °C                   | Acids & non-mineral oils               |
| 2              | Viton          | 200 °C                   | Different chemicals (High temperature) |
| 3              | Nitrile        | 120 °C                   | Petroleum products                     |
| 4              | White neoprene | 80 °C                    | Food products                          |

| Gland packing |                          |                          |      |
|---------------|--------------------------|--------------------------|------|
| Sr. no.       | Material                 | Temperature rating (max) | pH   |
| 1             | Synthetic yarn with PTFE | 250 °C                   | 2-13 |
| 2             | Graphite yarn            | 650 °C                   | 0-14 |
| 3             | Ceramic rope             | 1000 °C                  |      |



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