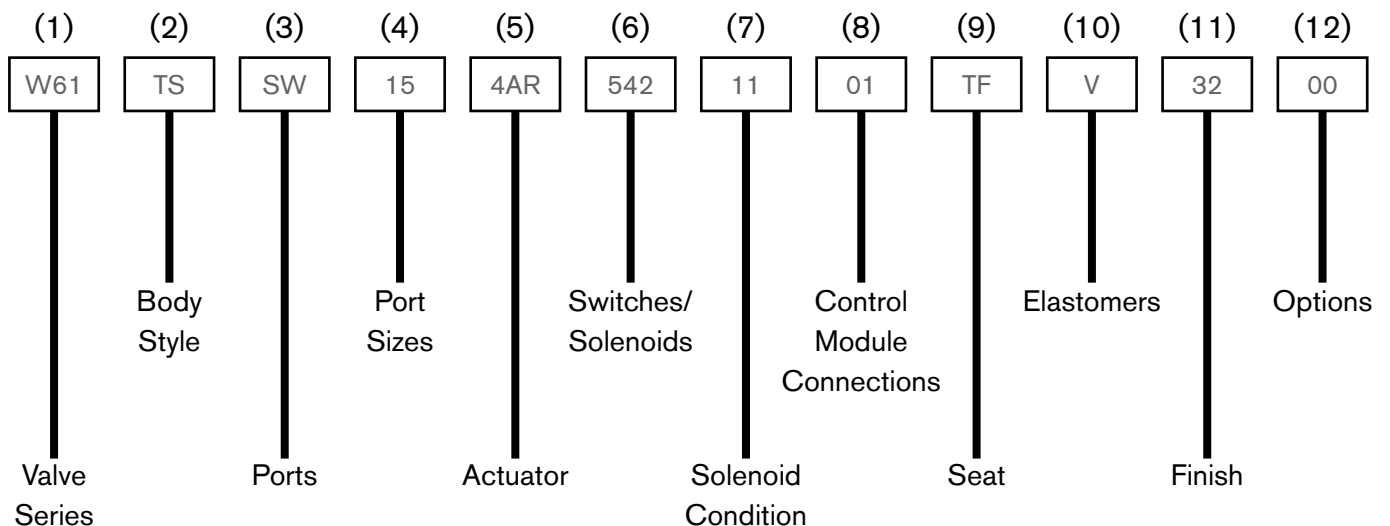




W Series Single Seat Valve Key

The Valve Key is designed to provide our customers with a clear and concise description of the valve required. The key number will always be a 12-digit number defining all areas of the valve's specification.

Example: W61 shut off valve with a TS body configuration, clamp by buttweld ports, 1.5" size, 4" Air to Raise Actuator, 2 Proximity switches, 1 solenoid, Standard S/O Cord connector, Tef Flow seat, Fluoroelastomer, 32Ra finish, and no special options.



THE WILLIAMS - CARVER COMPANY, INC.

4001 MISSION RD P.O. BOX #3140

KANSAS CITY, KS 66103-0140

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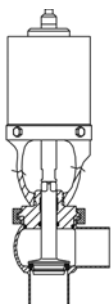
www.williamscarver.com



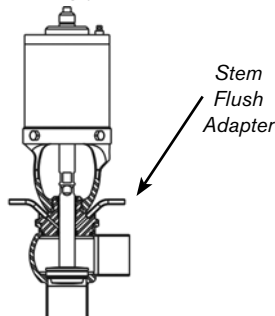
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| W61 | TS | W | 15 | 4AR | 542 | 11 | 01 | TF | V | 32 | 00 |

(1) Valve Series

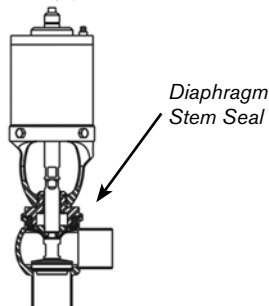
W60



W80



W90



| | |
|-------------|--|
| W61 | Shut-off |
| W62 | Divert |
| W63 | Reverse Acting Shut-off |
| W64 | Tank Outlet Valve (Seat raises into tank) |
| W64R | Tank Outlet Valve (Seat lowers into valve body) |
| W65 | Non Slamming Divert Valve |
| W68 | Throttling Valve |
| W68R | Reverse Acting Throttling Valve |
| W685 | Non-Slamming Divert Throttling Valve |
| W682 | Conversion Throttling Valve |
| W265 | HTST Non Slam Flow Diversion Valve |
| W262 | HTST Flow Diversion Valve |
| W81 | Shut-off with stem flush adapter |
| W82 | Divert with stem flush adapter |
| W83 | Reverse Acting Shut-off with stem flush adapter |
| W84 | Tank Outlet Valve (Seat raises into tank) with stem flush adapter |
| W84R | Tank Outlet Valve (Seat lowers into valve body) with stem flush adapter |
| W85 | Non Slamming Divert Valve with stem flush adapter |
| W88 | Throttling Valve with stem flush adapter |
| W88R | Reverse Acting Throttling Valve with stem flush adapter |
| W885 | Non-Slamming Divert Throttling Valve with stem flush |
| W882 | Conversion Throttling Valve with stem flush adapter |
| W285 | HTST Non Slam Flow Diversion Valve with stem flush adapter |
| W282 | HTST Flow Diversion Valve |
| W91 | Shut-off with diaphragm stem seal |
| W92 | Divert with diaphragm stem seal |
| W93 | Reverse Acting Shut-off with diaphragm stem seal |
| W94 | Tank Outlet Valve (Seat raises into tank) with diaphragm stem seal |
| W94R | Tank Outlet Valve (Seat lowers into valve body) with diaphragm stem seal |
| W95 | Non Slamming Divert Valve with diaphragm stem seal |
| W98 | Throttling Valve with diaphragm stem seal |

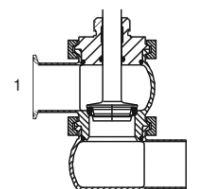
NOTE: Over pressure valves are denoted by an "R" in the model (i.e. WR61) and use a W60 or W80 series valve with an adjustable-spring actuator.

(2) Body Configuration *(See page 3)*

(3) Port(s)

| | |
|------------|--------------------------------|
| W | Buttweld |
| S | S Line |
| I | I Line (female - 15I) |
| 14I | I Line (male - 14I) |
| B | Bevel Seat (male threaded end) |
| F | Flange |
| Q | Q Line |
| D | DIN 11851 405 Thread |
| A | Aseptic I-Line (15NI) |

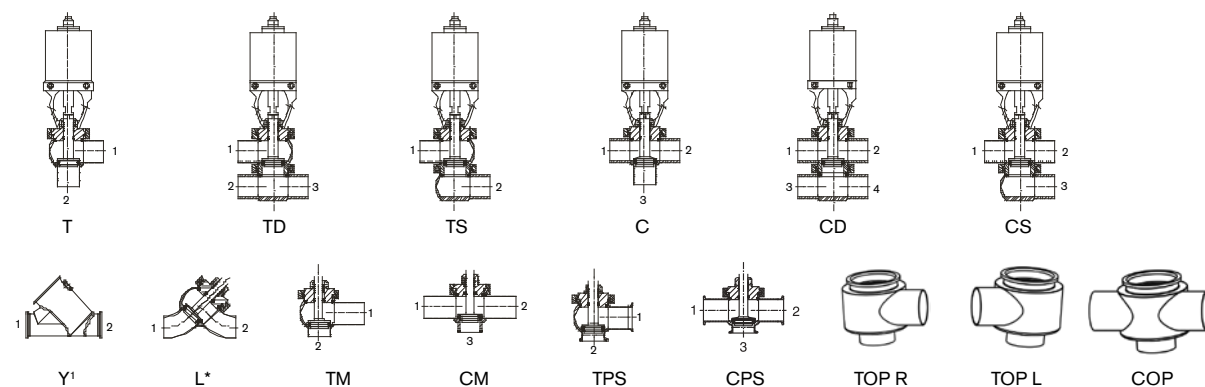
For mixed connection types, specify in order of port #.



Example:
W61-TS-SW

Body Configurations

W61/W81/W91 Shut-off (W68/W88/W98 Throttling)



Also Available

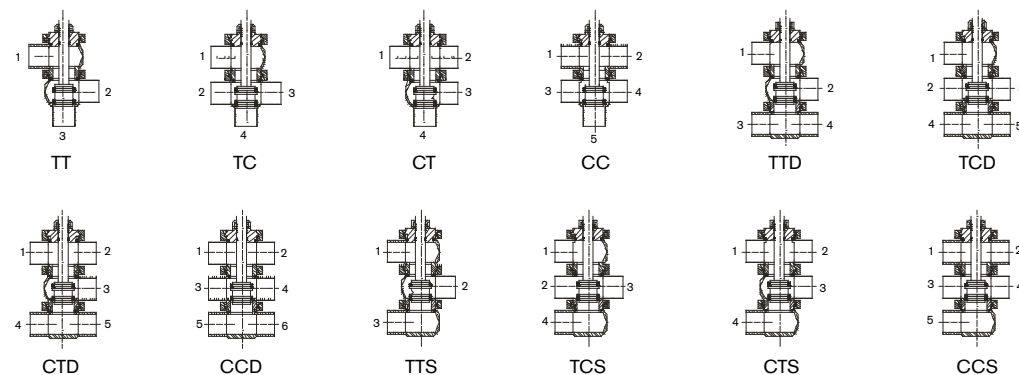


Throttling Plug

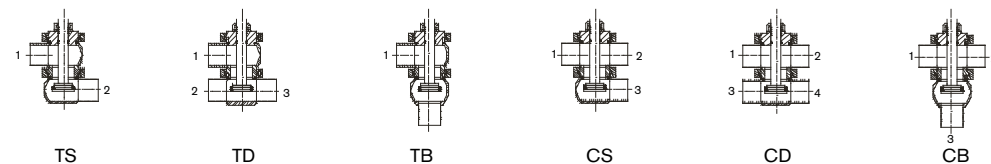
*L body only available w/ high flow CV on throttling valves

¹Not available with 90-Series

W62/W82/W92 Divert



W63/W83/W93 Shut-off (W68R/W88R Throttling)

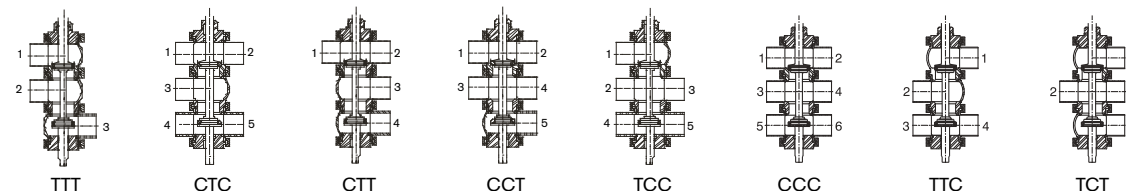


Also Available



Throttling Plug

W65/W85/W95 Divert (W685/W885 Throttling)



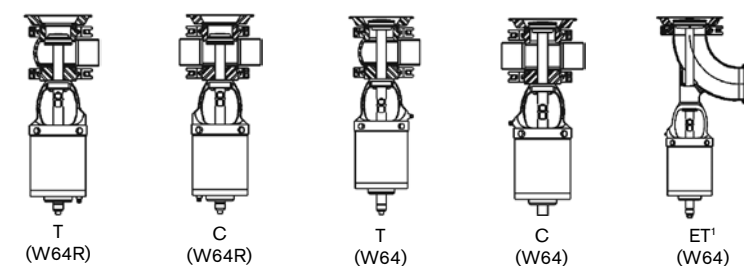
Also Available



Throttling Plug

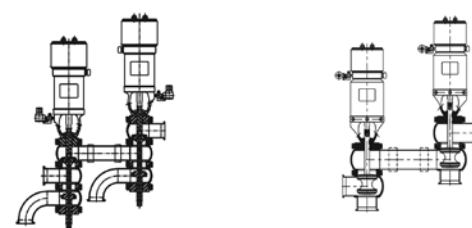
W64/W84/W94 Tank Outlet

(NOTE: Tank Flanges sold separately)



W265/W285 FDV¹

W262/W282 FDV¹



| | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| W61 | TS | W | 15 | 4AR | 542 | 11 | 01 | TF | V | 32 | 00 |

(4) Port Sizes (s)

Standard Valves:

| | |
|----|-------------|
| 10 | 1" (25mm) |
| 15 | 1.5" (38mm) |
| 20 | 2" (51mm) |
| 25 | 2.5" (64mm) |
| 30 | 3" (76mm) |
| 40 | 4" (102mm) |
| 60 | 6" (152mm) |

For mixed sized bodies indicate upper ports first.

Example: 1.5" Upper by 2" Lower is 1520.

For reduced-seat bodies, indicate port size first, then plug size.

Example: 40/25 is 4" Body/2.5" plug size

Contact Factory to verify availability of mixed body and reduced-seat body sizes prior to placing an order.

W64 ET - 2", 2.5" & 3" sizes only.

90 Series available in 1.5" - 4" sizes

Throttling Valves:

(see Figure 2 below)

| | |
|-----------|--|
| 10(1.75)* | 1" (Cv 1.75, 2.5, 5, 7.5) |
| 15(10) | 1.5" (Cv 1.75, 2.5, 5, 7.5, 10 or Cv 35) |
| 20(30) | 2" (Cv 30 or Cv 70) |
| 25(60) | 2.5" (Cv 60 or Cv 120) |
| 30(90) | 3" (Cv 90 or Cv 150) |
| 40(110) | 4" (Cv 110 or Cv 210) |

*Note: Cv rating follows port size.

Cv Factor Chart

| % of valve stroke | Valve Stem Size | | | | | | | | | | | | | |
|-------------------|--------------------------|--------|--------|--------|--------|-------|-------|-------|--------|--------|-------|--------|--------|--------|
| | 1.0–1.5" Reduced Orifice | | | | 1-1/2" | | 2" | | 2-1/2" | | 3" | | 4" | |
| | Cv 1.75 | Cv 2.5 | Cv 5.0 | Cv 7.5 | Cv 10 | Cv 35 | Cv 30 | Cv 70 | Cv 60 | Cv 120 | Cv 90 | Cv 150 | Cv 110 | Cv 210 |
| 10 | .175 | .25 | .50 | .75 | 1 | 3.5 | 3 | 7 | 6 | 12 | 9 | 15 | 11 | 21 |
| 20 | .35 | .50 | 1 | 1.5 | 2 | 7 | 6 | 14 | 12 | 24 | 18 | 30 | 22 | 42 |
| 30 | .525 | .75 | 1.5 | 2.25 | 3 | 10.5 | 9 | 21 | 18 | 36 | 27 | 45 | 33 | 63 |
| 40 | .70 | 1 | 2 | 3.0 | 4 | 14 | 12 | 28 | 24 | 48 | 36 | 60 | 44 | 84 |
| 50* | .875 | 1.25 | 2.5 | 3.75 | 5 | 17.5 | 15 | 35 | 30 | 60 | 45 | 75 | 55 | 105 |
| 60 | 1.05 | 1.5 | 3 | 4.5 | 6 | 21 | 18 | 42 | 36 | 72 | 54 | 90 | 66 | 126 |
| 70 | 1.225 | 1.75 | 3.5 | 5.25 | 7 | 24.5 | 21 | 49 | 42 | 84 | 63 | 105 | 77 | 147 |
| 80 | 1.4 | 2 | 4 | 6.0 | 8 | 28 | 24 | 56 | 48 | 96 | 72 | 120 | 88 | 168 |
| 90 | 1.575 | 2.25 | 4.5 | 6.75 | 9 | 31.5 | 27 | 63 | 54 | 108 | 81 | 135 | 99 | 189 |
| 100 | 1.75 | 2.5 | 5 | 7.5 | 10 | 35 | 30 | 70 | 60 | 120 | 90 | 150 | 110 | 210 |

*Optimum operating point. Data is based on water at 70°F, specific gravity 1.

The Cv Factor is the flow coefficient in the full open position (100% stroke).

To calculate process Cv: $C_v = \frac{\text{GPM}}{\sqrt{\Delta P (\text{PSI})/\text{SG}}}$ $K_v = \frac{\text{m}^3/\text{hr}}{\sqrt{\Delta P (\text{Bar})/\text{SG}}}$

1 bar = 14.5 PSI $\text{m}^3/\text{hr} = \frac{\text{GPM}}{4.4}$

| | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| W61 | TS | W | 15 | 4AR | 542 | 11 | 01 | TF | V | 32 | 00 |

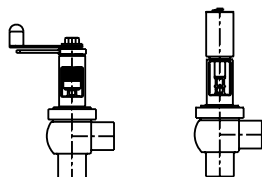
(5) Actuator*

4AR 4" (101mm) Air to Raise
4HAR³ 4" (101mm) Heavy Duty Spring, Air to Raise
4AL 4" (101mm) Air to Lower
4HAL³ 4" (101mm) Heavy Duty Spring, Air to Lower
4AA 4" (101mm) Air to Air
4ALLG 4" (101mm) Air to Lower, long stroke
4ARLG 4" (101mm) Air to Raise, long stroke

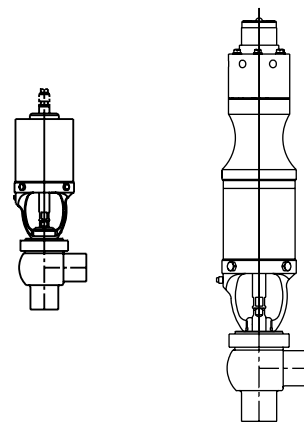
5AR 5" (127mm) Air to Raise
5HAR³ 5" (127mm) Heavy Duty Spring, Air to Raise
5AL 5" (127mm) Air to Lower
5HAL³ 5" (127mm) Heavy Duty Spring, Air to Lower
5AA 5" (127mm) Air to Air
5ALD* 5" (127mm) Air to Lower, diaphragm

6HAR³ 6" (152mm) Heavy Spring, Air to Raise
6HAL³ 6" (152mm) Heavy Spring, Air to Lower
6AR 6" (152mm) Light Spring, Air to Raise
6AL 6" (152mm) Light Spring, Air to Lower
6AA 6" (152mm) Air to Air
6ALLG 6" (152mm) Air to Lower, long stroke
6ARLG 6" (152mm) Air to Raise, long stroke
6AALG 6" (152mm) Air to Air, long stroke
6ARY² 6" (152mm) Air to Raise, Extra long stroke
6ALY² 6" (152mm) Air to Lower, Extra long stroke
6AAY² 6" (152mm) Air to Air, Extra Long Stroke

4RHAR⁴ 4" (101mm) Adjustable-Spring, Air to Raise
5RHAR⁴ 5" (127mm) Adjustable-Spring, Air to Raise
6RHAR⁴ 6" (152mm) Adjustable-Spring, Air to Raise
4RHAL⁴ 4" (101mm) Adjustable-Spring, Air to Lower
5RHAL⁴ 5" (127mm) Adjustable-Spring, Air to Lower
6RHAL⁴ 6" (152mm) Adjustable-Spring, Air to Lower

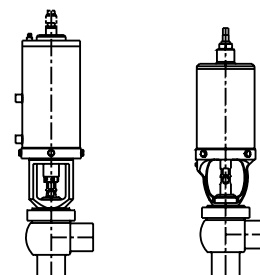


H Hand Lock
HLG Hand Lock, long stroke
M Micrometer
HY Hand Lock, Extra Long Stroke



4ARP 4" (101mm) Air to Raise w/positioner
4ALP 4" (101mm) Air to Lower w/positioner
5ARP 5" (127mm) Air to Raise w/positioner
5ALP 5" (127mm) Air to Lower w/positioner
5ALDP* 5" (127mm) Air to Lower, diaphragm w/positioner

6ARP 6" (152mm) Air to Raise w/positioner
6ALP 6" (152mm) Air to Lower w/positioner



4AR3 4" (101mm) Air to Raise, 3 position
4AL3 4" (101mm) Air to Lower, 3 position

² Used with Y-Body valves. Consult with application engineering for use with 6" OD size valves.

*5ALD & 5ALDP - Only available on throttling valves.

³ Use TFP metal or TR seats for heavy spring actuators.

⁴ Used with over-pressure valves, use TFP or metal seats.

| | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| W61 | TS | W | 15 | 4AR | 542 | 11 | 01 | TF | V | 32 | 00 |

(6) Switches/Solenoids

| Description | No Control Module | Control Module no solenoids | Control Module with(1) 110V AC sol | Control Module with(2) 110V AC sol | Control Module with(1) 24V DC sol | Control Module with(2) 24V DC sol |
|--|-------------------|-----------------------------|------------------------------------|------------------------------------|-----------------------------------|-----------------------------------|
| No Switches | 000 | 501 | 502 | 503 | 505 | 506 |
| No Switches, Control top stem | 001 | - | - | - | - | - |
| Set & Forget | - | 511 | - | - | 515 | 516 |
| 24 VDC Only | | | | | | |
| Prox Switch (1) lower | 520 | 521 | 522 | 523 | 525 | 526 |
| Prox Switch (1) upper | 530 | 531 | 532 | 533 | 535 | 536 |
| Prox Switch (2) | 540 | 541 | 542 | 543 | 545 | 546 |
| 24VDC/110 VAC | | | | | | |
| Microswitch (1) lower | 550 | 551 | 552 | 553 | 555 | 556 |
| Microswitch (1) upper | 560 | 561 | 562 | 563 | 565 | 566 |
| Microswitch (2) | 570 | 571 | 572 | 573 | 575 | 576 |
| 24VDC/110 VAC | | | | | | |
| Prox Switch (1) lower ² | 580 | 581 | - | - | - | - |
| Prox Switch (1) upper ² | 590 | 591 | - | - | - | - |
| Prox Switch (2) ² | 600 | 601 | - | - | - | - |
| Intrinsically Safe | | | | | | |
| 5-25VDC | | | | | | |
| AS-i Card & Set & Forget | - | 611 | - | - | 615 | 616 |
| AS-i Card & Prox Switch (1) lower | - | 621 | - | - | 625 | 626 |
| AS-i Card & Prox Switch (1) upper | - | 631 | - | - | 635 | 636 |
| AS-i Card & Prox Switch (2) | - | 641 | - | - | 645 | 646 |
| 24 VDC Only | | | | | | |
| DeviceNet Card & Set & Forget | - | 711 | - | - | 715 | 716 |
| DeviceNet Card & Prox Switch (1) lower | - | 721 | - | - | 725 | 726 |
| DeviceNet Card & Prox Switch (1) upper | - | 731 | - | - | 735 | 736 |
| DeviceNet Card & Prox Switch (2) | - | 741 | - | - | 745 | 746 |
| 24 VDC (requires PNP switches) | | | | | | |

¹Where proximity switches are indicated, these are externally mounted on top of actuator. (No Control Module)

²Requires barrier (not included, provided by others)

When one proximity or microswitch is supplied, Default is as follows: W61, W62, W64R, W65 – lower position W63, W64 – Upper position
Consult factory for special control module requirements.

(7) Solenoid Condition

| Description | Condition No. |
|---|---------------|
| No Control Module | 00 |
| Single Seat - No Solenoid - AR | 10 |
| Single Seat - No Solenoid - AL & Air to Air | 10a |
| Single Seat - 1 Solenoid - AR | 11 |
| Single Seat - 1 Solenoid - AL | 11a |
| Single Seat - 2 Solenoid - Air Boost & Air to Air | 12 |

Note: For Single Seat Valves AR = Air to Raise Actuator, AL = Air to Lower Actuator

(8) Control Module Connections

| Description* | Option Number |
|--|---------------|
| No Control Module | 00 |
| S/O Cord, Strain Relief (Std) | 01 |
| 4 Pin Turck Eurofast (1 or 2 Switches only, no solenoid; Std for Asi; AC/DC) | 24 |
| 5 Pin Turck Eurofast (Std for Device Net only; AC/DC) | 25 |
| 6 Pin Turck Eurofast (1 or 2 Switches and 1 solenoid; DC only) | 26 |
| 8 Pin Turck Eurofast (1 or 2 Switches and up to 2 solenoids; DC only) | 28 |
| 6 Pin Turck Minifast (1 or 2 Switches and up to 2 solenoids; AC/DC) | 46 |
| 5 Pin Turck Minifast (1 or 2 Switches, no solenoid; AC/DC) | 45 |
| 7 Pin Turck Minifast (1 or 2 Switches and up to 2 solenoids; AC/DC) | 47 |

Includes connector on control module only. Mating connector and cable sold separately, by others.

*Turck is WCB Standard for pin connectors.

| | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| W61 | TS | SW | 15 | 4AR | 542 | 11 | 01 | TF | V | 32 | 00 |

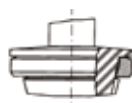
(9) Seat

| | |
|------------|----------------|
| TF | Tef-Flow |
| TFP | Tef-Flow P** |
| TR | Tri-Ring*, *** |
| M | Metal |
| B | Bonded |

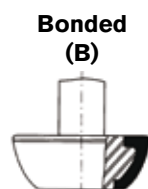
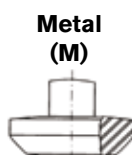
**Tef-Flow™
(TF)**



**Tef-Flow™ "P"
(TFP)**



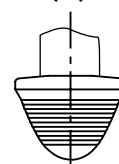
**Tri-Ring
(TR)**



**Throttling Stem
Tri-Ring Seat
(TR)***



**Throttling Stem
Metal Seat
(M)**



*TR seat not available on CV 1.75, 2.5, 5.0 & 7.5 and 5ALD & 5ALDP actuated throttling valves.

**TFP used on all over-pressure, Y-body, W262 and W265 valves. Heavy spring actuators are required.

***6 inch valves only available with TR seats.

(10) Elastomer

(Specifies materials for all gaskets, O-rings, Tri Ring seals, and bonded stems)

| | |
|----------|------------------------------|
| E | EPDM |
| V | Fluoroelastomer |
| X | Optional Elastomer (specify) |

Contact Factory for special requirements.

(11) Finish

| | |
|-------------|---|
| 32 | Standard Finish Machined <32Ra ID (.8µm) |
| 15 | 15Ra Mechanical Polish ID (.2µm) |
| 32EP | 32Ra Machined Finish and Electropolish ID |
| 15EP | 15Ra Mechanical Polish and Electropolish ID |

Electropolish (EP) is in addition to the mechanical polish finish.

(12) Options

| Description | Option Number |
|---|---------------|
| No Options | 00 |
| High Pressure Stem Adapter & Body Clamp | 04 |
| Mill Test Reports | 06 |
| Stainless Steel Tags | 08 |
| Quick dump valve | 09 |
| Wiping stem seal(s) | 10 |

For multiple options: Example: High Pressure Stem Adapter & Mill Test-04,06.

Website

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