

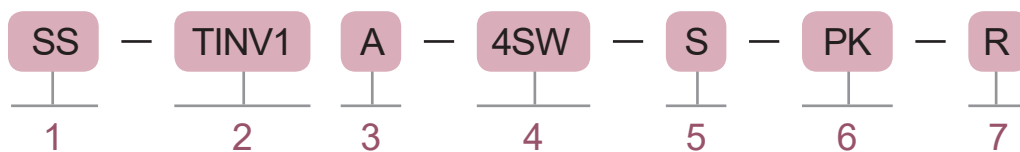
Integral Bonnet Needle Valves



TINV SERIES

- Maximum Working Pressure : 5,000 psig (344 bar) @ 100°F (37°C)
- Working Temperature Range : -65°F(-54°C) to 600°F (315°C)

ORDERING INFORMATION



1. BODY MATERIAL

Material	Designator
316 SS	SS

2. VALVE SERIES

Orifice Size	Designator
2.0mm	TINV1
4.4mm	TINV2
6.4mm	TINV3
9.5mm	TINV4

* The Orifice Size is determined using valves with TKF tube fitting end connections.

* For more details, See the Dimensions Table.

3. BODY PATTERN

Body Pattern	Designator
2-Way Straight (Standard)	Blank
2-Way Angle	A

4. INLET/OUTLET CONNECTION SIZE & TYPE

Inlet/Outlet Connection Size	Designator
1/8"	2
1/4"	4
3/8"	6
1/2"	8
3/4"	12
3mm	3M
6mm	6M
8mm	8M
10mm	10M
12mm	12M

Inlet/Outlet Connection Type	Designator
Lok	SW
Male NPT	NM
Female NPT	NF
Male ISO® Tapered	PTM
Female ISO® Tapered	PTF

① Refer to specifications ISO 7/1, BS EN 1022 6-1, DIN-2999, and JIS B0203.

5. HANDLE TYPE

Handle Type	Designator
Anodized Black Aluminum Bar Handle (Standard)	Blank
Black Phenolic Round Handle	BKR
316 Stainless Steel Bar Handle	S

6. PACKING MATERIAL

Packing Material	Designator
PTFE (Standard)	Blank
PFA	PF
PEEK	PK
UHMWPE	UH

7. STEM TYPE

Stem Type	Designator
Vee Stem (Standard)	Blank
Regulating Stem	R
Soft-Seat Stem + PCTFE	SPC

FEATURES

- Panel mountable
- Metal seat or soft seat
- Variety of end connection
- Straight or Angle pattern

TECHNICAL DATA

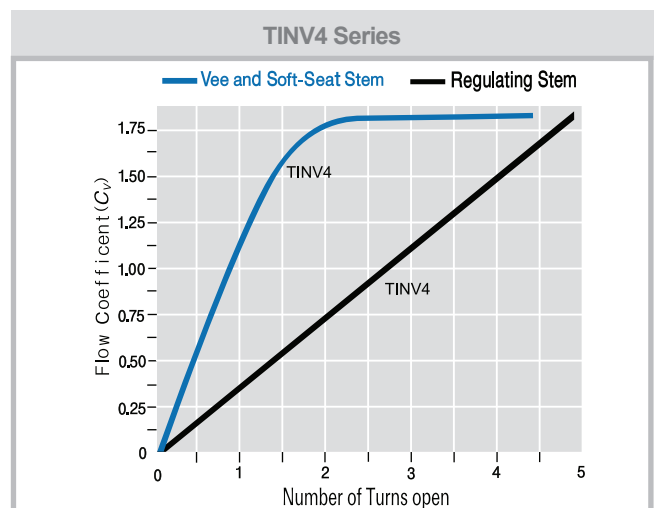
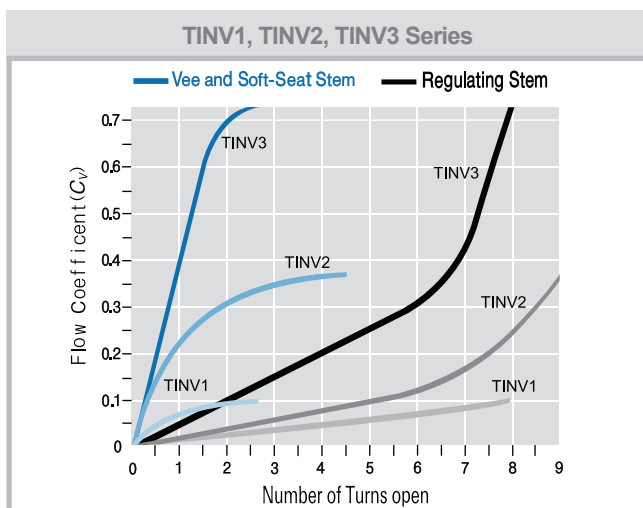
TEMPERATURE - WORKING PRESSURE RATING

Material	316 SS
Temperature Rating, °F (°C)	Working pressure, psig (bar)
-65 (-53) to -20 (-28)	5000 (344)
-20 (-28) to 100 (37)	5000 (344)
200 (93)	4,295 (295)
250 (121)	4,085 (281)
300 (148)	3,875 (266)
350 (176)	3,715 (255)
400 (204)	3,560 (245)
450 (232)	3,435 (236)
500 (260)	3,310 (228)
600 (315)	3,130 (215)

TEMPERATURE - PRESSURE RATING ACCORDING TO PACKING MATERIALS

Packing Material	Temperature Rating, °F (°C)	pressure Rating @ Max. Temperature
PTFE	-65 ~ 450 (-53 ~ 232)	3,435psig (236bar)
UHMWPE	-65 ~ 250 (-53 ~ 121)	4,085psig (281bar)
PEEK	-65 ~ 600 (-53 ~ 315)	3,130psig (215bar)
PFA	-65 ~ 450 (-53 ~ 232)	3,435psig (236bar)

FLOW DATA AT 100°F (37°C)

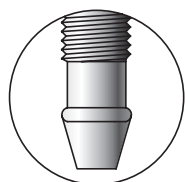
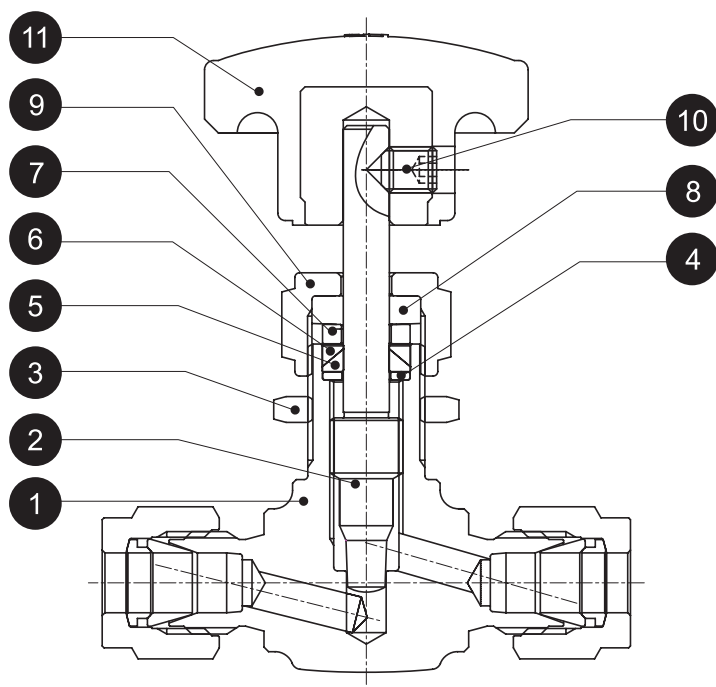


- For leakage, Each valve is tested with nitrogen at 1000psig (69bar)
The leakage shall not exceed 0.1 std cc/min (Max. 0.1 std cc/min)

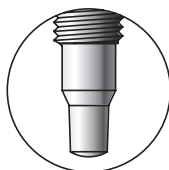
CLEANING AND PACKAGING

- Every valve is cleaned and packaged in accordance with the standard specification of cleaning and packaging.

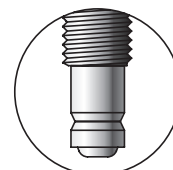
MATERIALS OF CONSTRUCTION



Vee Stem



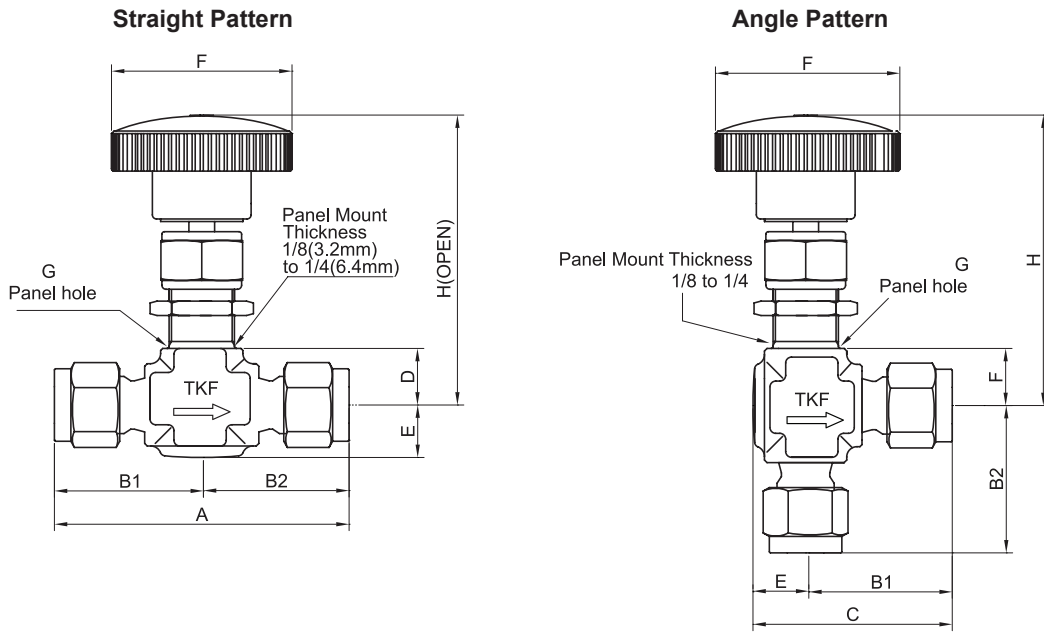
Regulating Stem



Soft-Seat Stem

No.	Description		Material
			Material Grade / ASTM Specification
1	Body		316 SS / A182
2	STEM	Vee Tip	316 SS / A276
		Regulating Tip	
		Soft-Seat Tip	
3	Panel Nut		316 SS
4	Lower Gland		316 SS
5	Lower Packing		PTFE
6	Upper Packing		PTFE
7	Packing Gland		316 SS
8	Gland		304 SS
9	Packing Nut		316 SS / A276
10	Set Screw		316 SS
11	Handle		Phenolic with brass insert

DIMENSIONS



Ordering Number		Orifice in. (mm)	Cv	End Connections		Dimensions in. (mm)							
Series	Part No.			Inlet	Outlet	A	B1	B2	C	D	E	F	G
TINV1	2SW	0.079 (2.0)	0.09	1/8" Lok		1.94(49.3)	0.98 (24.9)	1.29 (32.8)	0.47(11.9) 0.48(12.2) 0.47 (11.9)	0.31 (7.9)	1.0 (25.4)	2.28 (57.9)	
	3MSW			3mm Lok		2.27(57.6)							
	2NF			1/8" Female NPT		1.88(47.8)	0.94(23.9)	1.25(31.8)					
	2NM			1/8" Male NPT		1.50(38.1)	0.75(19.1)	1.06(26.9)					
	2NM 2SW			1/8" Male NPT	1/8" Lok	1.73(43.9)	0.98(24.9)	0.75(19.1)					1.29(32.8)
TINV2	4SW	0.173 (4.4)	0.37	1/4" Lok		2.27 (57.6)	1.13 (28.7)	1.51 (38.4)	0.44 (11.2)	0.38 (9.7)	1.38 (35.1)	0.53 (13.5)	2.5 (63.5)
	6MSW			6mm Lok		2.34(59.4)	1.17(29.7)	1.54(39.1)					
	8MSW			8mm Lok		2.34(59.4)	1.17(29.7)	1.54(39.1)					
	2NF			1/8" Female NPT		1.62 (41.1)	0.81 (20.6)	1.19(30.2)					
	2NM			1/8" Male NPT		1.62 (41.1)	0.81 (20.6)	1.19(30.2)					
	4NM			1/4" Male NPT		1.97(50.0)	0.98(24.9)	1.36(34.5)					
	4NM 4SW			1/4" Male NPT	1/4" Lok	1.95(49.5)	1.13(28.7)	0.98(24.9)					
TINV3	6SW	0.252 (6.4)	0.73	3/8" Lok		2.58(65.5)	1.29(32.8)	1.79 (45.5)	0.55 (14.0)	0.50 (12.7)	1.88 (47.8)	0.78 (19.8)	2.97 (75.4)
	8SW			1/2" Lok		2.80(71.1)	1.40(35.6)	1.90(48.3)					
	10MSW			10mm Lok		2.60(66.0)	1.30(33.0)	1.80(45.7)					
	12MSW			12mm Lok		2.80(71.1)	1.40(35.6)	1.90(48.3)					
	4NF			1/4" Female NPT		2.12(53.8)	1.06(26.9)	1.56(39.6)					
	6NM			3/8" Male NPT		2.25(62.5)	1.12(28.4)	1.62(41.1)					
	4NM 6SW			1/4" Male NPT	3/8" Lok	2.42 (61.5)	1.29 (32.8)	1.79 (45.5)					
	6NM 6SW			3/8" Male NPT	3/8" Lok	2.42 (61.5)	1.29 (32.8)	1.79 (45.5)					
	6NM 8SW			3/8" Male NPT	1/2" Lok	2.52(64.0)	1.40(35.6)	1.90(48.3)					
	4NM 4NF			1/4" Male NPT	1/4" Female NPT	2.18(55.3)	1.06 (26.9)	1.56 (39.6)					
	4PTF			1/4" Female ISO ³ Tapered		2.12(53.8)	1.06(26.9)	1.56(39.6)					
TINV4	8SW	0.374 (9.5)	1.8	1/2" Lok		3.80 (96.5)	1.90(48.3)	2.65 (67.3)	0.75 (19.1)	3.0 (76.2)	1.03 (26.2)	3.91 (99.3)	
	12SW			3/4" Lok									
	12MSW			12mm Lok									
	18MSW			18mm Lok									
	6NF			3/8" Female NPT		3.0 (76.2)	1.50(38.1)	2.25 (57.2)				3.88 (98.6)	
	8NF			1/2" Female NPT									
	8NM			1/2" Male NPT									
	8NM 8NF			1/2" Male NPT	1/2" Female NPT								
	6PTF			3/8" Female ISO ³ Tapered									
	8PTF			1/2" Female ISO ³ Tapered									