tekno valves

50 YEARS OF EXCELLENCE

Wheel Operated Stainless Steel Diaphragm Gland Seal Cylinder Valves for Speciality Gases

Detailed Series Catalogue

SSWN-32/V

BAM
TPED Certification by BAM as notified body: ID-0589

Your safety is valued

ISO 9001 & TPED certified valve manufacturer

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Series SSWN-32/V

Identifying features

SSWN-32/V is wheel operated design using a two-piece spindle separated by non-perforated diaphragms. The five diaphragms in series act as gland packing and prevent leakage around the valve spindle when the valve is in open condition. The replacement of elastomeric seals (as in O-ring seal design valves) with metal diaphragms gives the valve superior leak integrity to the atmosphere. There are no threads or lubricants in the gas stream to generate particles or contaminate the gas. The design prevents diaphragm inversion, and all this makes the design ideal for use with applications involving toxic, high purity, rare, pyrophoric, and even corrosive gases.

NOTE When working with SSWN-32/V, it is essential to use cylinder change-out procedures involving adequate purge and evacuation times to ensure the valve interior is properly cleaned.

The lower spindle is non-threaded, fitted with a soft seat and encased in a spring that forces it away from the seat when the valve is opened. The upper spindle is threaded into the diaphragm retaining gland nut. When the handwheel is rotated to the closed position, the upper spindle pushes on the diaphragms, which deflect downward, forcing the lower spindle against the valve seat. Opening the valve moves the upper spindle away from the diaphragms allowing the spring to push the lower spindle away from the seat and gas to flow.

It is essential to select suitable soft seat material for the intended application; otherwise, corrosion products can be produced. Corrosion products formed by these reactions can prevent normal valve operation and can embed in the elastomeric tip, preventing the valve from making a complete seal.

Recommended opening procedure

The handwheel rotates about two turns from fully open to close. When opening a diaphragm valve, the user will feel resistance for approximately one turn, at which point most resistance on the handwheel will disappear. At this point, the upper spindle would have lost contact with the diaphragms. The valve should be opened to this point and not back seated. When the handwheel is free from resistance, the valve will provide maximum flow but will not be mistaken for a closed valve as the free moving handwheel will also cause the upper spindle to rise.

Recommended closing procedure

When the valve is open, full cylinder pressure is exerted on the diaphragms. The diaphragms have a surface area of about one square inch. The pressure on this large surface area makes it difficult to push the diaphragms down. When closing the valve against pressure, about 60% of the closing force goes toward overcoming the gas pressure, and the balance is transmitted to the seat. Therefore, when a pressurised diaphragm valve is closed to the recommended 7 Nm, and the valve outlet is depressurised, the closing force on the seat is only about 3 Nm. The valve may be either "weeping" through at this point or are just barely closed. Because of this effect, it is necessary to use a "double-close procedure" on these valves. So, we recommend the operator close the valve by hand to vent the pressure in the valve outlet and then retighten the valve immediately, commonly referred to as double-closing. Double closing ensures that the valve is not prone to accidental opening when exposed to vibration and shock.

Valve installation

Valving procedure & torque guidelines should be as per EN ISO 13341.

For NGT threads, we recommend hand tight + 3 turns wrench tight to install the valve in the cylinders.

(Refer https://teknovalves.com/Information_Center)

Recommended filling procedure

The cylinder valve must be fully opened before commencing filling considering valve will NOT OPEN if it is already pressurised from outlet connection.

⚠ CAUTION

1. NEVER use wrenches or other persuaders to operate the valve.
2. Valving tools (e.g. sockets or jaws) used to screw the valve into the cylinder must only make contact with the flats provided in the valve body & not touching any part of the PRD, if provided. The tools should fit the valve properly without causing damage.
3. Valves should not be over-torqued into the cylinder as it causes high stresses in the cylinder neck, leading to overload failures, especially in parallel thread valves.
4. Proper connectors should be used for filling & discharge, ensuring contact only at the intended sealing surface.
5. It is advised not to carry out repair and maintenance on the valves.

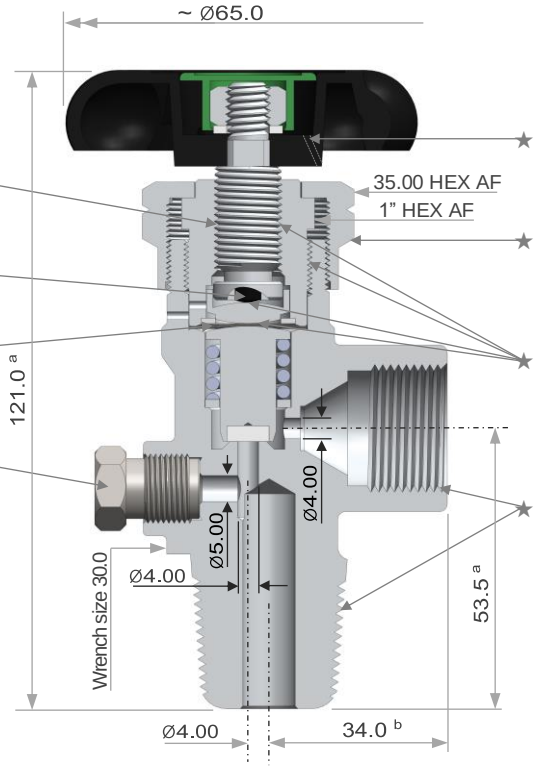
Series SSWN-32/V with Taper Inlet Connection

Fine pitch of the upper spindle provides gradual opening

Moly filled nylon reduces friction between rotating upper spindle & thrust metallic pad

Lower Inconel diaphragm for corrosion resistance. Diaphragm sealing provides higher leak integrity

Pressure relief device (PRD)* uses corrosion resistant Nickel disc. Internal plug capsule design using SS gasket provides secure sealing with valve body & protects the PRD from loosening or damage in service



Drain hole in handwheel prevents water trapping

Lock nut* prevents loosening of gland nut & unscrewing of operating mechanism

Lubrication ensures smooth movement & reduces friction

Refer valve selection guide for inlet & outlet connections & soft seat options

Dimensions are in mm

Dimensions shown are for 25E inlet & BS-3 outlet

a Depends upon inlet connection

b Depends upon outlet connection

* Optional

MAX Pressure Rating & Lubricant Detail		
	Metric	**English**
Working#/Service pressure	200 bar	3000 psig
Test pressure (used for type & production testing)	250 bar	3600 psig
Proof pressure test	415 bar	6000 psig
Hydraulic burst pressure test	675 bar	9790 psig
Lubricant (only used in non-wetted parts)	Klubertemp GR M30	

 # As per ISO 10297, the term working pressure is only applicable for compressed gases

Design Specifications		
	Metric	**English**
Minimum life	2000 cycles	
Operating temperature range	–20 °C to +65 °C	-4 °F to +149 °F
Storage temperature range	-40 °C to +65 °C	-40 °F to +149 °F
Pressure relief device (PRD)	CG-1 / CG-4 / CG-5	
Minimum closing torque	7 Nm	5.2 ft.lb
Gland nut installation torque	95 Nm	70 ft.lb
PRD installation torque	35-40 Nm	26-30 ft.lb
Flow coefficient (C_v)	0.30	

Testing & Certification

- Valves meet EN ISO 10297:2017 & CGA V-9:2019
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with ⚱ mark
- PRD complies with CGA S-1.1

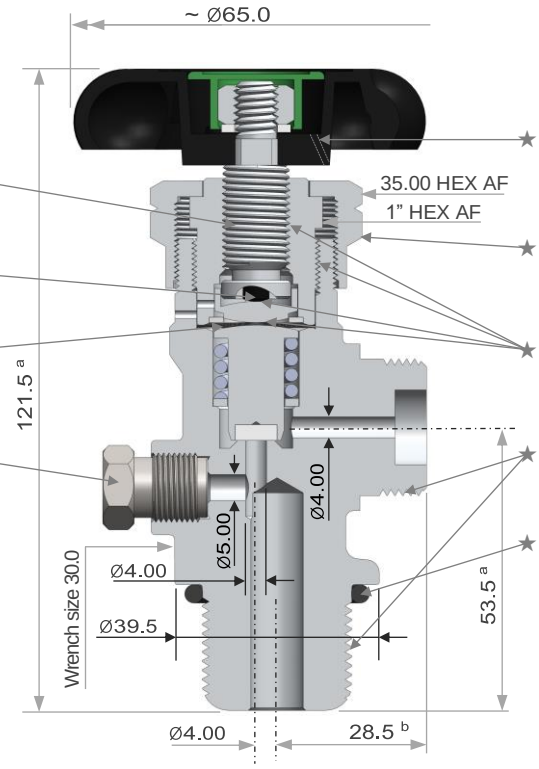
Series SSWN-32/V with Parallel Inlet Connection

Fine pitch of the top spindle provides gradual opening

Moly filled nylon reduces friction between rotating top spindle & thrust metallic pad

Lower Inconel diaphragm for corrosion resistance. Diaphragm sealing provides higher leak integrity

Pressure relief device (PRD)* uses corrosion resistant Nickel disc. Internal plug capsule design using SS gasket provides secure sealing with valve body & protects the PRD from loosening or damage in service



Drain hole in handwheel prevents water trapping

Lock nut* prevents loosening of gland nut & unscrewing of operating mechanism

Lubrication ensures smooth movement & reduces friction

Refer valve selection guide for inlet & outlet connections & soft seat options

PTFE / NBR O-ring facilitates leak proof connection with cylinder neck

Dimensions are in mm

Dimensions shown are for 1.125"-12UNF-2A inlet & CGA 660 outlet

a Depends upon inlet connection

b Depends upon outlet connection

* Optional

MAX Pressure Rating & Lubricant Detail		
	Metric	**English**
Working#/Service pressure	200 bar	3000 psig
Test pressure (used for type & production testing)	250 bar	3600 psig
Proof pressure test	415 bar	6000 psig
Hydraulic burst pressure test	675 bar	9790 psig
Lubricant (only used in non-wetted parts)	Klubertemp GR M30	

 # As per ISO 10297, the term working pressure is only applicable for compressed gases

Design Specifications		
	Metric	**English**
Minimum life	2000 cycles	
Operating temperature range	–20 °C to +65 °C	-4 °F to +149 °F
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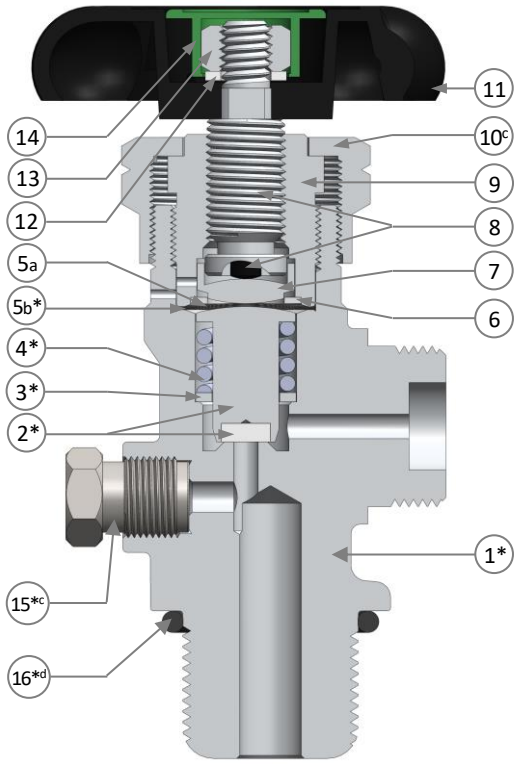
Series SSWN-32/V



Part List			
Part No.	**Description**	**No. off**	**Material**
1*	Valve body	1	SS 303
2*	Lower spindle assembly	1	SS 303 with PVDF/PCTFE seat insert
3*	Washer	1	SS 303
4*	Spring	1	SS 302
5a	Upper diaphragm	4	SS 301
5b*	Lower diaphragm	1	Inconel® 625
6	Washer	1	PA 66
7	Thrust metallic pad	1	SS 303
8	Upper spindle assembly	1	SS 303 with moly filled nylon tip
9	Gland nut	1	SS 303
10[c]	Lock nut	1	SS 303
11	Handwheel	1	Aluminium (CED coated)
12	Plain washer	1	SS 303
13	Handwheel retaining nut	1	SS 303
14	Handwheel cover	1	PA 6
15*[c]	PRD assembly	1	SS 303 retainer plug with nickel bursting disc & SS alloy sealing gasket
16*[d]	Inlet O-ring	1	PTFE/NBR

** Gas wetted parts*

[c] Optional

[d] For parallel inlet connection only

Series SSWN-32/V

Valve Series	
S32	SSWN-32/V

Body	
S3	SS 303

Inlet [A]	
1BS	1" to BS 341-1:1962
25E	25E to ISO 11363-1
12N	3/4-14 NGT to CGA V-1
U18	1.125-12 UNF

Dip Tube	
I	1/4-18 NPT
X	Not required

Gas Service	
SW	Gas annex W

Specification	
C	EN ISO 10297:2017 & CGA V-9:2019

Inspection	
P	"Pi" mark (In-house inspection service)
L	"Pi" mark & Lloyds

Pressure Rating (in bar)	
200	200 bar

Pressure Rating (in psig)	
139	2015 psig
156	2265 psig
166	2400 psig

S32 **S3** **12N** **X** **330** **SW** **1** **32** **C** **P** **E** **WP** **139**

(For example only)

Outlet [A]	
330	CGA 330
350	CGA 350
510	CGA 510
580	CGA 580
590	CGA 590
626	CGA 626
660	CGA 660
678	CGA 678
705	CGA 705
D01	DIN-1
D05	DIN-5
D06	DIN-6
D07	DIN-7
D08	DIN-8
D10	DIN-10
D14	DIN-14
S02	IS-2/BS-2/BS-4
S03	IS-3/BS-3
B14	BS-14

PRD Type	
1	CG-1/Ni
4	CG-4/Ni
8	CG-5/Ni
X	Not required

PRD Rating	In bar	In psig
28	207	3000
32	232	3360
36	250	3775
38	276	4000
XX	Not required	

Seat Insert	
E	PCTFE
F	PVDF

Test Pressure	
TP	Valve test pressure (TP)
WP	Valve working pressure (WP)

Options – Inlet O-ring
PTFE
NBR

Options - Others
Seal nut and sealing gasket
Chain & keeper ring
Lock nut

A - Other inlet, outlet & dip tube connections are available as per customer requirement

Gas Annex – W

Sl. No.	UN No.	Name of gas [a]	Chemical formula	Condition	Soft seat options		Inlet O-ring options	
					PVDF	PCTFE	PTFE	NBR
1	1001	Acetylene	C_2H_2	-	✓	✓	✓	X
2	1005	Ammonia	NH_3	A	X	✓	✓	X
3	1006	Argon	Ar	-	✓	✓	✓	✓
4	2188	Arsine [c]	AsH_3	-	✓	✓	✓	✓
5	1741	Boron trichloride	BCl_3	A	✓	✓	✓	X
6	1008	Boron trifluoride	BF_3	A	✓	✓	✓	X
7	1974	Bromochlorodifluoromethane	$CBrClF_2$	A	✓	✓	✓	X
8	2419	Bromotrifluoroethylene	C_2BrF_3	A	✓	✓	✓	X
9	1009	Bromotrifluoromethane	$CBrF_3$	A	✓	✓	✓	✓
10	1011	Butane	C_4H_{10}	A	✓	✓	✓	✓
11	1016	Carbon monoxide [b]	CO	AA	✓	✓	✓	✓
12	2204	Carbonyl sulfide	COS	AA	✓	✓	✓	X
13	1018	Chlorodifluoromethane	$CHClF_2$	A	✓	✓	✓	X
14	1020	Chloropentafluoroethane	C_2ClF_5	A	✓	✓	✓	✓
15	1022	Chlorotrifluoromethane	$CClF_3$	A	✓	✓	✓	✓
16	1026	Cyanogen	C_2N_2	A	✓	✓	✓	X
17	1027	Cyclopropane	C_3H_6	-	✓	✓	✓	✓
18	1957	Deuterium [c]	D	-	✓	✓	✓	✓
19	1941	Dibromodifluoromethane	CBr_2F_2	A	✓	✓	✓	X
20	1028	Dichlorodifluoromethane	$CClF_2$	A	✓	✓	✓	✓
21	1029	Dichlorofluoromethane	$CHCl_2F$	A	✓	✓	✓	X
22	2189	Dichlorosilane	SiH_2Cl_2	A	✓	✓	✓	X
23	1032	Dimethylamine	C_2H_7N	A	X	✓	✓	X
24	1033	Dimethylether	C_2H_6O	-	✓	✓	✓	X
25	1035	Ethane	C_2H_6	A	✓	✓	✓	✓
26	1962	Ethylene	C_2H_4	A	✓	✓	✓	✓
27	1040	Ethylene Oxide	C_2H_4O	A	✓	✓	✓	X
28	1037	Ethyl chloride	C_2H_5Cl	A	✓	✓	✓	✓
29	2192	Germane [c]	GeH_4	-	✓	✓	✓	✓
30	1046	Helium	He	-	✓	✓	✓	✓
31	2193	Hexafluoroethane	C_2F_6	A	✓	✓	✓	X
32	1049	Hydrogen [b]	H_2	A	✓	✓	✓	✓
33	1051	Hydrogen cyanide	HCN	A	✓	✓	✓	X
34	1969	Isobutane	C_4H_{10}	A	✓	✓	✓	✓
35	1055	Isobutylene	C_4H_8	A	✓	✓	✓	✓
36	1056	Krypton	Kr	-	✓	✓	✓	✓
37	1971	Methane	CH_4	A	✓	✓	✓	✓
38	1062	Methyl bromide	CH_3Br	A	✓	✓	✓	X
39	1064	Methyl mercaptan [c]	CH_4S	A	✓	✓	✓	X
40	1061	Methylamine	CH_5N	A	X	✓	✓	X
41	1063	Methyl chloride	CH_3Cl	A	✓	✓	✓	X
42	1036	Monoethylamine	C_2H_7N	A	✓	✓	✓	X
43	1065	Neon	Ne	-	✓	✓	✓	✓
44	1660	Nitric Oxide	NO	A	X	✓	✓	X
45	1066	Nitrogen	N_2	-	✓	✓	✓	✓
46	1067	Nitrogen dioxide	NO_2	A	X	✓	✓	X
47	2451	Nitrogen trifluoride [c]	NF_3	A	✓	✓	✓	X

Gas Annex - W

Sl. No.	UN No.	Name of gas [a]	Chemical formula	Condition	Soft seat options		Inlet O-ring options	
					PVDF	PCTFE	PTFE	NBR
48	1976	Octafluorocyclobutane	C_4F_8	A	✓	✓	✓	✓
49	2424	Octafluoropropane	C_3F_8	A	✓	✓	✓	✓
50	1072	Oxygen	O_2	A	X	✓	✓	X
51	1076	Phosgene	$COCl_2$	A	X	✓	✓	✓
52	2199	Phosphine [c]	PH_3	-	✓	✓	✓	✓
53	2200	Propadiene	C_3H_4	A	✓	✓	✓	X
54	1978	Propane	C_3H_8	A	✓	✓	✓	✓
55	1077	Propylene	C_3H_6	A	✓	✓	✓	X
56	1280	Propylene oxide	C_3H_6O	A	X	✓	✓	X
57	2203	Silane [c]	SiH_4	A	✓	✓	✓	-
58	1859	Silicon tetrafluoride	SiF_4	A	✓	✓	✓	X
59	2418	Sulphur tetrafluoride	SF_4	A	✓	✓	✓	✓
60	1079	Sulphur dioxide	SO_2	A	✓	✓	✓	X
61	1080	Sulphur hexafluoride	SF_6	-	✓	✓	✓	✓
62	1081	Tetrafluoroethylene	C_2F_4	-	✓	✓	✓	✓
63	1982	Tetrafluoromethane	CF_4	A	✓	✓	✓	X
64	1295	Trichlorosilane [c]	$SiHCl_3$	A	✓	✓	✓	X
65	1082	Trifluorochloroethylene	C_2ClF_3	A	✓	✓	✓	-
66	1984	Trifluoromethane	CHF_3	A	✓	✓	✓	X
67	1085	Vinyl bromide	C_2H_3Br	A	✓	✓	✓	X
68	1086	Vinyl chloride	C_2H_3Cl	A	✓	✓	✓	X
69	1860	Vinyl fluoride	C_2H_3F	A	✓	✓	✓	X
70	2036	Xenon	Xe	-	✓	✓	✓	✓
71	2035	1, 1, 1-trifluoroethane	$C_2H_3F_3$	A	✓	✓	✓	X
72	1030	1, 1-difluoroethane	$C_2H_4F_2$	A	✓	✓	✓	✓
73	1959	1, 1-difluoroethylene	$C_2H_2F_2$	A	✓	✓	✓	✓
74	1010	1,2-butadiene	C_4H_6	A	✓	✓	✓	X
75		1, 3-butadiene						
76	3082	1,1,1-trichlorotrifluoroethane	$C_2Cl_3F_3$	A	✓	✓	✓	✓
77		1,1,2-trichlorotrifluoroethane						
78	-	1,2-dibromotetrafluoroethane	$C_2Br_2F_4$	A	✓	✓	✓	X
79	1958	1,1-dichlorotetrafluoroethane	$C_2Cl_2F_4$	A	✓	✓	✓	✓
80		1,2-dichlorotetrafluoroethane						
81	3161	1-chloro-1, 1-difluoroethane	$C_2H_3ClF_2$	A	✓	✓	✓	✓

a - Valve may also be used for mixtures of the listed gases.
b - Valves for carbon monoxide & hydrogen service / their gas mixture shall not be equipped with PRD.
c – Refer BAM approved gas Annex for specific risks.

A - Anhydrous (water content <100 ppm)
AA - Anhydrous (water content <5 ppm)

Stainless steel valves are often used in corrosive environment for high purity application. The surface finish of valve body after forging and solution annealing thus becomes a critical design element to ensure corrosion resistance and aesthetics. The desired finish is achieved by subjecting valve body to the following surface treatments.

Sand Blasting

Sand blasting is carried out to clean the surface and remove heavy build-up of oxide scaling by forcing sand across the surface at high-speed using compressed air.

Electropolishing

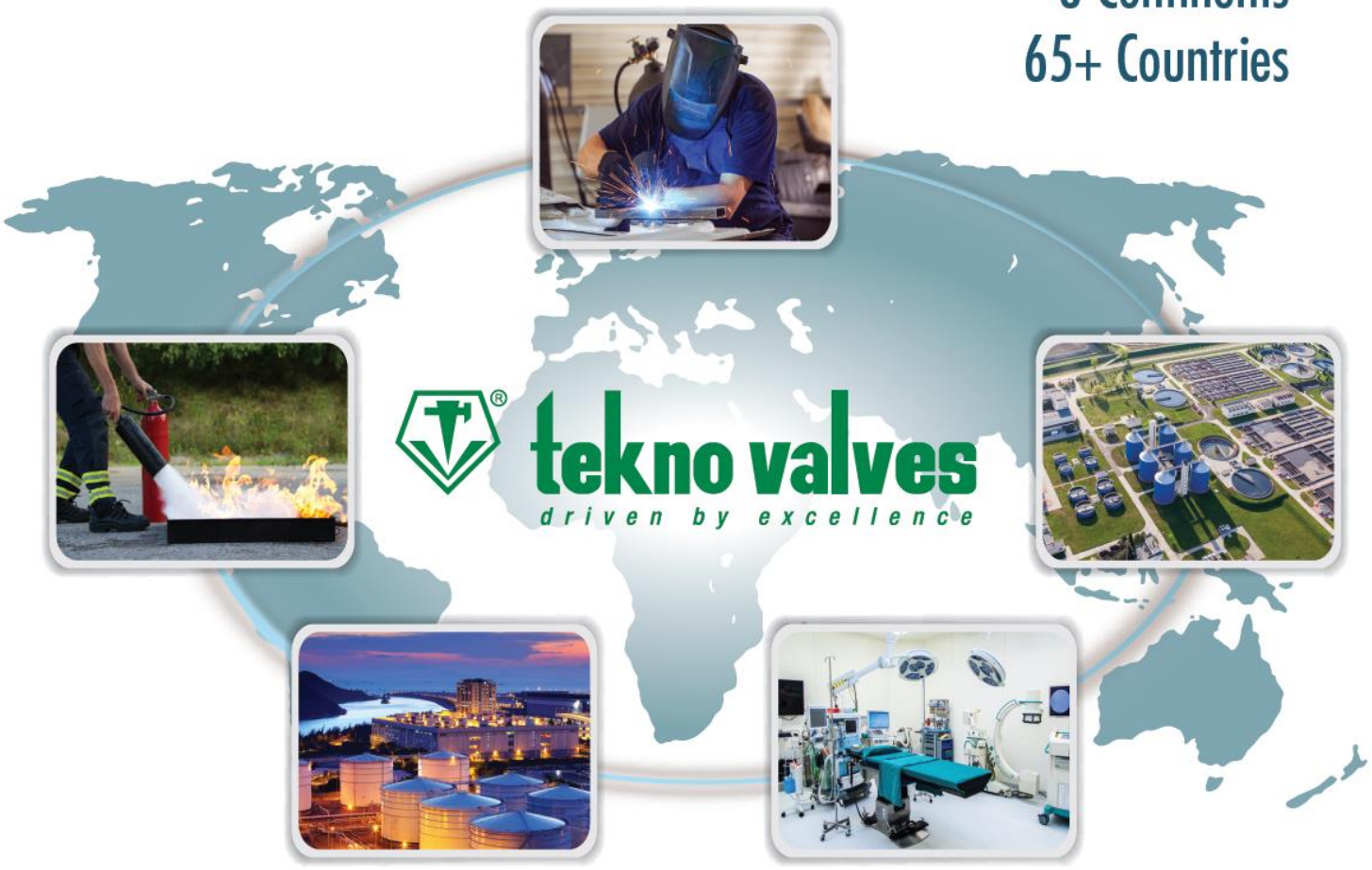
Electropolishing, (considered as the reverse of electroplating), is carried out to remove free iron and contamination from the surface by passing an electric current by submerging the valve body forging in an electrolyte. Electropolishing reduces roughness by levelling micro-peaks and valleys and brightens the surface.

Further the preferential removal of free iron from the surface enhances chrome /nickel content and makes it resistant to atmospheric corrosion and surface degradation.

Degreasing

After machining the valve body is washed and vapour degreased using chlorinated hydrocarbon to remove oil, grease and particulate matter.

6 Continents
65+ Countries



Your safety is valued

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