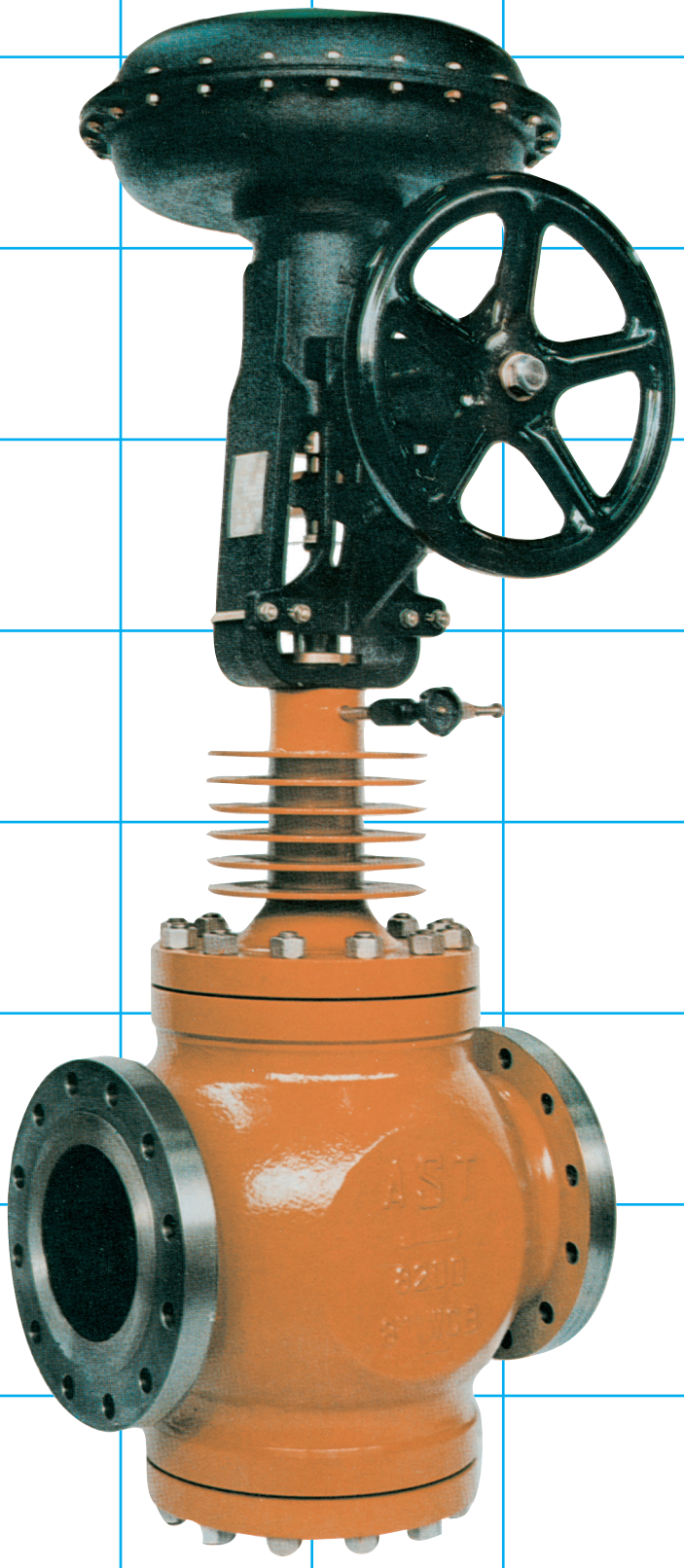
CONTROL VALVES



PRODUCE ED ESPORTA IN TUTTO IL MONDO DAL 1951

- Valvole di Sicurezza a Molla
- Valvole di Regolazione a Comando Pneumatico
- Raccordi ad “Y” con Valvola Deviatrice (per coppie valvole di sicurezza)
- Valvole Rompivuoto
- Banchi di Taratura Valvole di Sicurezza

MANUFACTURES AND EXPORTS ALL OVER THE WORLD SINCE 1951

- *Spring Loaded Safety-Relief Valves*
- *Pneumatic Control Valves*
- *Change-Over Valves (for Couple of Safety Valves)*
- *Vacuum Release Valves*
- *Safety-Relief Valves Test Benches*

POLITICA DELLA QUALITÀ

, attraverso il proprio Sistema di Qualità certificato **UNI EN ISO 9001**, si prefigge i seguenti obiettivi:

- Rafforzare la propria posizione nella progettazione e costruzione di valvole ed apparecchiature in genere destinate al mercato nazionale ed internazionale.
- Garantire la soddisfazione delle aspettative dei propri Clienti.
- Ottenere un costante miglioramento qualitativo dei propri prodotti.
- Conservare la posizione di fornitore preferito dei propri Clienti.
- Diffondere la propria immagine di azienda fornitrice di prodotti qualitativi di alto livello.

Questi obiettivi sono perseguiti attraverso:

- Alti livelli di controllo delle attività aziendali.
- Una continua ricerca per lo sviluppo tecnologico delle attività produttive e gestionali.
- La sensibilizzazione di ogni settore aziendale e delle persone che in esso lavorano alla politica della qualità e agli obiettivi prefissati.

QUALITY POLICY

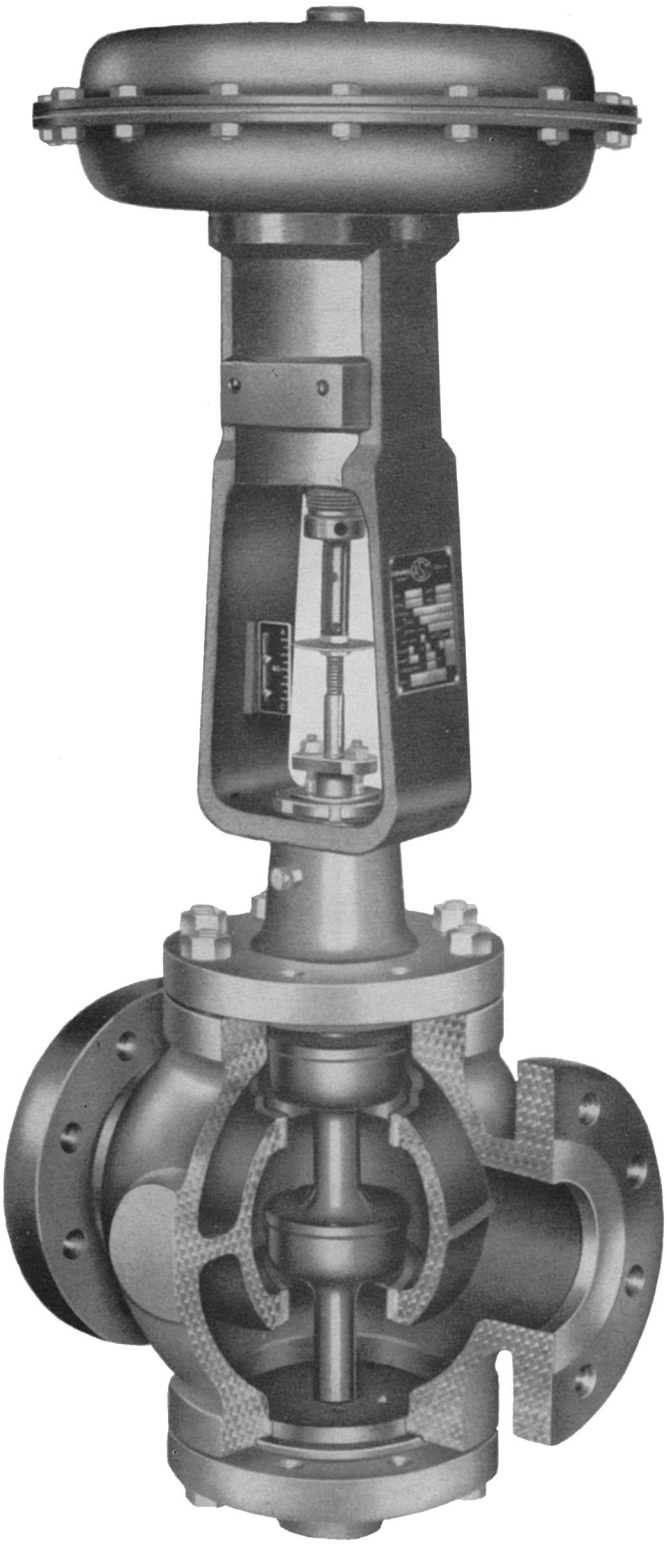
*By the application of its **UNI EN ISO 9001** certified Quality System, pursues the following aims:*

- *To enforce its position in designing and manufacturing of valves and equipment for the domestic and intenational market.*
- *To grant the fulfilment of its Customers expectations.*
- *To obtain a constant quality improvement of its products.*
- *To preserve its position of preferred supplier of its Customers.*
- *To diffuse its image of high quality products supplier.*

These aims are pursued through:

- *High control of the company activities.*
- *A constant research for the technological development of the managing and production activities.*
- *The sensitisation of every company department and of the people working in it to the quality policy and to the established targets.*

BASIC FEATURES



- High quality cast bodies tested under hydrostatic pressure.
- Body thicknesses and joints according to ASME/ANSI B16.34.
- Valve face to face according to IEC 534.3.
- Valve flanges according to ASME/ANSI B 16.5 ISO 2084 (DIN - UNI).
- Spherical bodies with special internal shaping maintain low fluid velocities for minimizing erosion.
- Appropriate plug profile guaranties the correct flow caracteristic.
- Packing box construction bolted flange type.
- Yoke made of carbonsteel for maximum strength and rigidity.
- Diaphragm case steel construction guaranties lightness with high mechanical strength.
- Diaphrams are neoprene or silicone rubber or viton nylon reinforced.
- Springs are Silicon Chromium Nickel Steel.
- Advanced conception design gives maximum part interchangeability degree.
- Inspection and routine testing according to IEC 534-4.

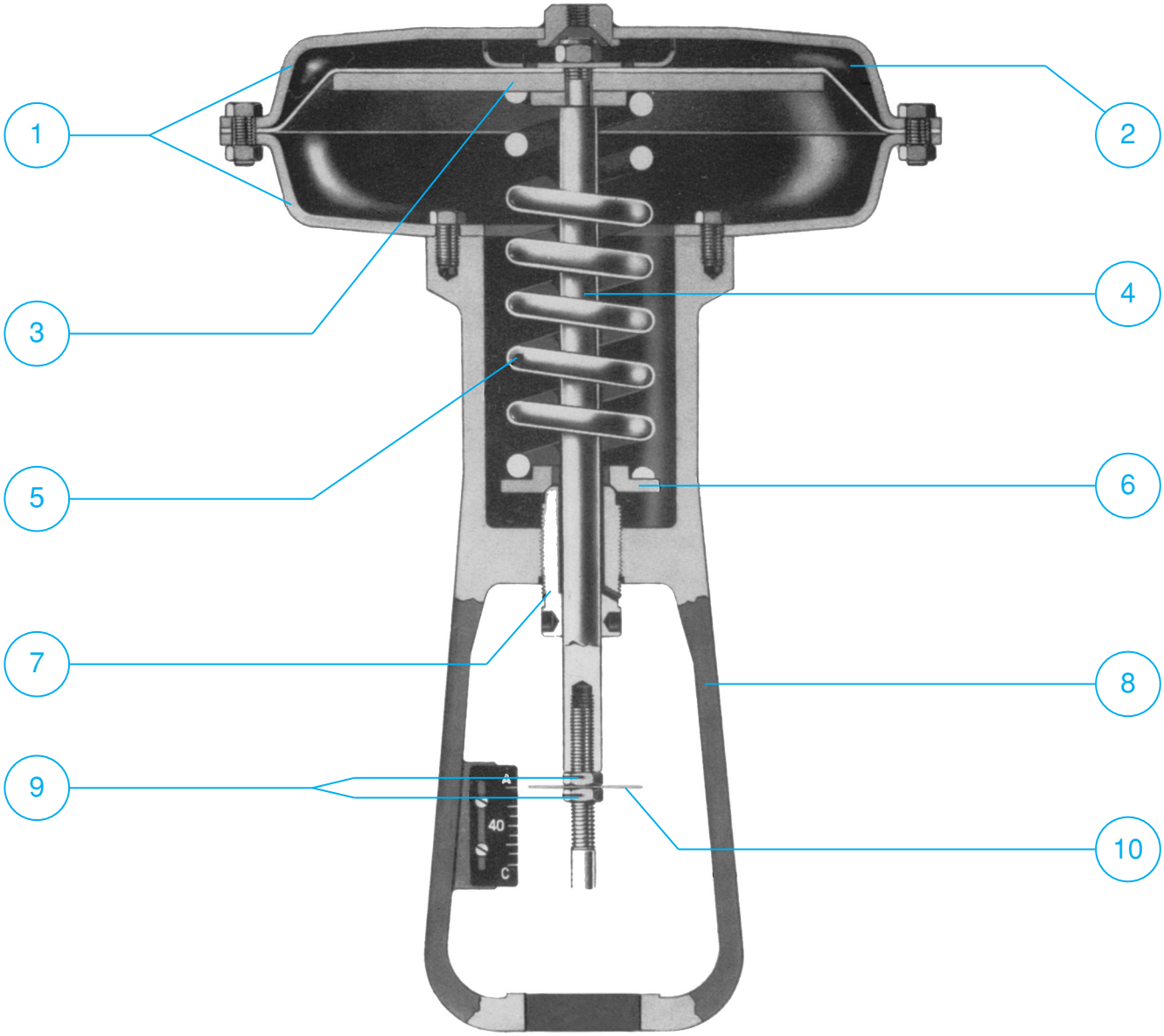


Figure 2-1. Direct actuator

1	Diaphragm Case	2	Diaphragm
3	Diaphragm Plate	4	Actuator Stem
5	Actuator Spring	6	Spring Seat
7	Adjusting Screw	8	Yoke
9	Stem Connection	10	Travel Indicator

DIAPHRAGM ACTUATORS

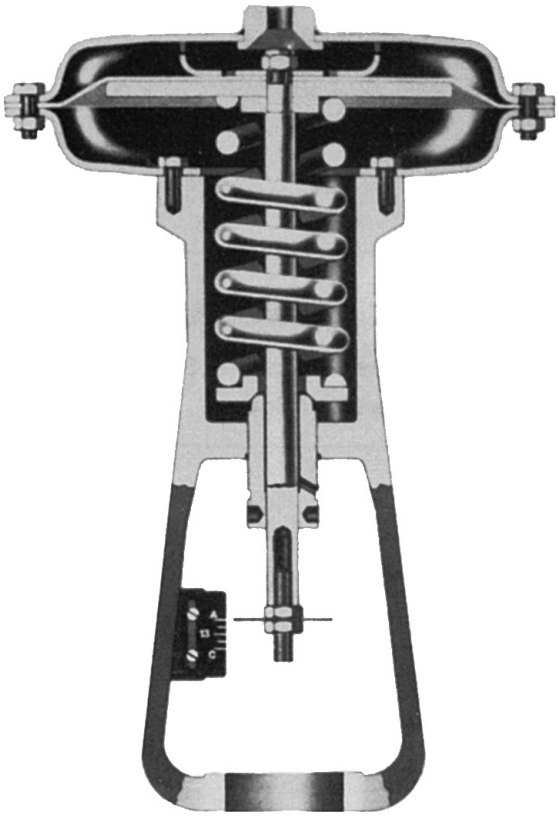


Fig. 3-1. Direct actuator

Fig. 3-2. Reverse actuator

		ACTUATOR TYPE (1)						
		9 - 9R	9L - 9LR	11 - 11R	13 - 13R	15 - 15R	18 - 18R	18L - 18LR
Effective Area	cm2	275	275	415	600	800	1290	1290
	sq.in.	42.6	42.6	64.3	93	124	200	200
Max travel	mm	13	20	25	40	50	60	80
	inches	0.51	0.79	0.98	1.57	1.97	2.36	3.15
Diameter	mm	280	280	330	380	450	530	530
	inches	11	11	13	15	17.7	20.9	20.9
Height	mm	400 direct 455 reverse	400 direct 455 reverse	475 direct 545 reverse	530 direct 630 reverse	680 direct 796 reverse	715 direct 870 reverse	715 direct 870 reverse
	inches	17.3 direct 17.9 reverse	17.3 direct 17.9 reverse	18.7 direct 21.5 reverse	20.9 direct 24.8 reverse	26.8 direct 31.3 reverse	28.1 direct 34.2 reverse	28.1 direct 34.2 reverse
Weight	kg	19 direct 22 reverse	19 direct 22 reverse	25 direct 31 reverse	41 direct 47 reverse	67 direct 76 reverse	83 direct 96 reverse	83 direct 96 reverse
	pounds	41.9 direct 48.5 reverse	41.9 direct 48.5 reverse	55.1 direct 68.3 reverse	90.4 direct 104 reverse	147.7 direct 168 reverse	183 direct 212 reverse	183 direct 212 reverse
Valve size (2)	Type 8100 8300	3/4" 1"	1 1/2"	2" 2 1/2"	3" 4"	6"	8" 10"	-
	Type 8200	3/4" 1"	1 1/2"	2" 2 1/2"	3" 4"	6"	8" 10"	12"
	Type 8400	1/2" 3/4" 1"	1 1/2"	2"	3" 4"	6"	8"	-
	Type 8700	-	3/4" 1"	1 1/2"	2" 2 1/2"	3" 4"	6"	-

(1) also available is actuator type 24 - 24R with a travel of 100 mm (3.94").

(2) valve - actuator standard coupling, larger actuators can be mounted.

AST manufactures a complete range of spring-diaphragm actuators designed for all the valves of its production. These actuators are also suitable for application to a wide range of sliding-stem valves.

A range of five direct-acting actuators and five reverse-acting actuators is available.

Direct-acting actuators in which the extended position of the stem is held by the air pressure. The spring pushes the stem in the retracted position. Fail-open action is assured for push-down-to-close valves while fail-close position is assured for push-down-to-open valves.

Reverse-acting actuators in which the extended position of the stem is held by the spring. Air pressure pushes the stem in the retracted position. Fail-open action is assured for push-down-to-open valves while fail-closed position is assured for push-down-to-close valves.

Design pressure of the casing is 6 bar (hydraulic test at 9 bar) while **max. operating pressure** is 4,5 bar (65 psi); higher pressure can cause damages to the diaphragm and shorten actuator's life.

Direct-Acting Actuators
Maximum allowable thrust to Keep the stem in position(1)

		SPRING RANGE (psi)											
		3 - 15		6 - 30		12 - 30		15 - 30		18 - 30		3 - 9	
Actuator Type	Supply (psi)	Retracted Stem (N)	Extended Stem (N)	Retracted Stem (N)	Extended Stem (N)	Retracted Stem (N)	Extended Stem (N)	Retracted Stem (N)	Extended Stem (N)	Retracted Stem (N)	Extended Stem (N)	Retracted Stem (N)	Extended Stem (N)
9 9L	20	569	569	-	-	-	-	-	-	-	-	569	1707
	40	569	3984	1138	1138	2277	1138	2846	1138	3415	1138	569	5122
	60	569	7399	1138	4553	2277	4553	2846	4553	3415	4553	569	8537
11	20	859	859	-	-	-	-	-	-	-	-	859	2577
	40	859	6012	1718	1718	3436	1718	4294	1718	5153	1718	859	7730
	60	859	11166	1718	6871	3436	6871	4294	6871	5153	6871	859	12883
13	20	1242	1242	-	-	-	-	-	-	-	-	1242	3725
	40	1242	8692	2484	2484	4967	2484	6209	2484	7451	2484	1242	11176
	60	1242	16143	2484	9934	4967	9934	6209	9934	7451	9934	1242	18627
15	20	1656	1656	-	-	-	-	-	-	-	-	1656	4967
	40	1656	11590	3311	3311	6623	3311	8278	3311	9934	3311	1656	14901
	60	1656	21524	3311	13246	6623	13246	8278	13246	9934	13246	1656	24835
18 18L	20	2670	2670	-	-	-	-	-	-	-	-	2670	8009
	40	2670	18689	5340	5340	10679	5340	13349	5340	16019	5340	2670	24028
	60	2670	34708	5340	21358	10679	21358	13349	21358	16019	21358	2670	40047
24	20	3901	3901	-	-	-	-	-	-	-	-	3901	11704
	40	3901	27309	7802	7802	15605	7802	19506	7802	23407	7802	3901	35111
	60	3901	50716	7802	31210	15605	31210	19506	31210	23407	31210	3901	58519

(1) Thrust values are calculated taking into account the following factors: effective area of actuator, spring range and air supply. When actuator is coupled with the valve other factors must be considered (i.e. thrusts due to the fluid, friction of the packing, etc.)

Connection to valve stem is assured without clearance thus assuring accurate valve positioning.

Response time and air consumption are minimised since case volume is reduced to a minimum for actuator's operation.

A variety of accessories is available for a any applications (handwheels top and side mounted, solenoid valves, limit stop, boosters, lock-up valves, etc.).

Positioners of any type can be mounted on the actuator upon request (pneumatic, electro-pneumatic, digital, digital with Hart protocol).

Air connections are 1/4" NPT-F as a standard size, upon request 3/8" and 1/2".

Tubing is AISI 316 as standard.

Spring ranges available in psi are: 3-15 6-30 12-30 15-30 18-30 3-9

Reverse-Acting Actuators
Maximum allowable thrust to keep the stem in position(1)

		SPRING RANGE (psi)											
		3 - 15		6 - 30		12 - 30		15 - 30		18 - 30		3 - 9	
Actuator Type	Supply (psi)	Extended Stem (N)	Retracted Stem (N)	Extended Stem (N)	Retracted Stem (N)	Extended Stem (N)	Retracted Stem (N)	Extended Stem (N)	Retracted Stem (N)	Extended Stem (N)	Retracted Stem (N)	Extended Stem (N)	Retracted Stem (N)
9R 9LR	20	569	569	-	-	-	-	-	-	-	-	569	1707
	40	569	3984	1138	1138	2277	1138	2846	1138	3415	1138	569	5122
	60	569	7399	1138	4553	2277	4553	2846	4553	3415	4553	569	8537
11R	20	859	859	-	-	-	-	-	-	-	-	859	2577
	40	859	6012	1718	1718	3436	1718	4294	1718	5153	1718	859	7730
	60	859	11166	1718	6871	3436	6871	4294	6871	5153	6871	859	12883
13R	20	1242	1242	-	-	-	-	-	-	-	-	1242	3725
	40	1242	8692	2484	2484	4967	2484	6209	2484	7451	2484	1242	11176
	60	1242	16143	2484	9934	4967	9934	6209	9934	7451	9934	1242	18627
15R	20	1656	1656	-	-	-	-	-	-	-	-	1656	4967
	40	1656	11590	3311	3311	6623	3311	8278	3311	9934	3311	1656	14901
	60	1656	21524	3311	13246	6623	13246	8278	13246	9934	13246	1656	24835
18R 18LR	20	2670	2670	-	-	-	-	-	-	-	-	2670	8009
	40	2670	18689	5340	5340	10679	5340	13349	5340	16019	5340	2670	24028
	60	2670	34708	5340	21358	10679	21358	13349	21358	16019	21358	2670	40047
24R	20	3901	3901	-	-	-	-	-	-	-	-	3901	11704
	40	3901	27309	7802	7802	15605	7802	19506	7802	23407	7802	3901	35111
	60	3901	50716	7802	31210	15605	31210	19506	31210	23407	31210	3901	58519

(1) Thrust values are calculated taking into account the following factors: effective area of actuator, spring range and air supply. When actuator is coupled with the valve other factors must be considered (i.e. thrusts due to the fluid, friction of the packing, etc.)

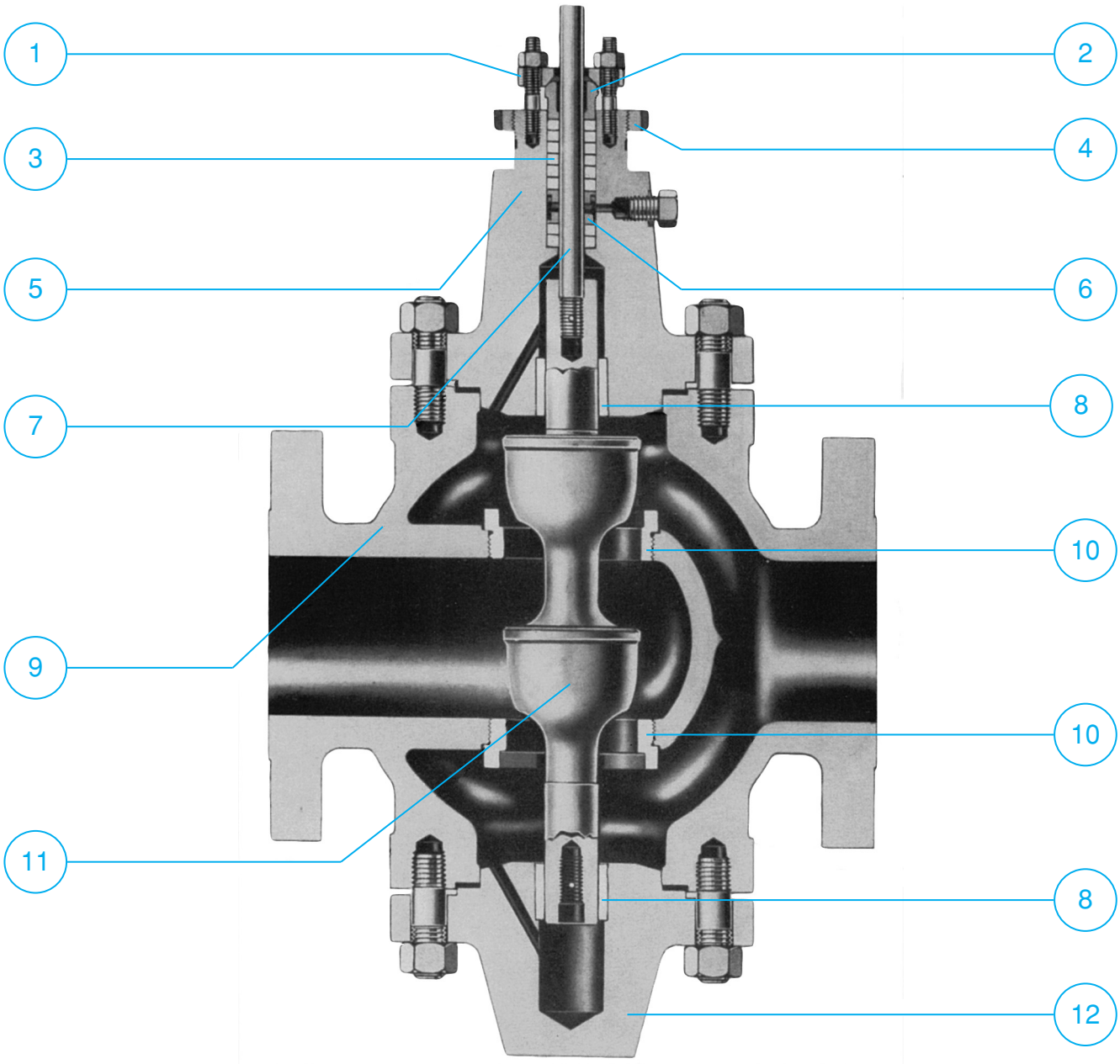
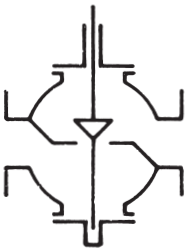


Figure 5-1. Type 8200 - double seated

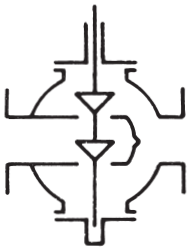
1	Packing Flange	2	Packing Follower
3	Packing	4	Yoke Locknut
5	Bonnet	6	Lantern Ring
7	Plug Stem	8	Guide Bushing
9	Valve Body	10	Seat Ring
11	Valve Plug	12	Bottom Flange

VALVE BODIES



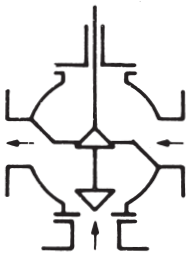
Type 8100

Globe - Single Seated
Invertible Body



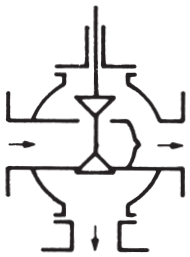
Type 8200

Globe - Double Seated
Invertible Body



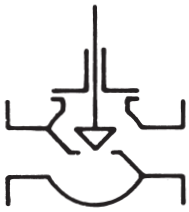
Type 8300 C

Three-Way - Combining



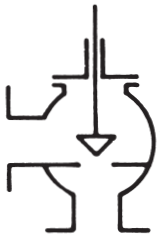
Type 8300 D

Three-Way - Diverting



Type 8400

Globe - Single Seated
Non-invertible Body



Type 8700

Angle

The Following table shows the standard materials of construction used by AST. Other materials than shown on the table can be used by AST depending on customer's needs.

		STANDARD MATERIALS OF CONSTRUCTION						
		VALVE MATERIAL CODE						
Pos.	Component	A1	N1	L1	D1	F1	G1	P1
9 Fig. 5-1	Body	ASTM A216 WCB	ASTM A217 WC6	ASTM A352 LCB	ASTM A351 CF8	ASTM A351 CF8M	ASTM A351 CF3M	A494-M35 (Monel)
5,12 Fig. 5-1	Bonnet & Bottom Flange	ASTM A105	ASTM A182 F11	ASTM A350 LF2	AISI 304	AISI 316	AISI 316L	Monel K500
	Body Studs	ASTM A193 Gr. B7		ASTM A320 Gr. B8				A193 Gr. B7
	Body Nuts	ASTM A194 Gr. 2H		ASTM A194 Gr. 8				A194 Gr. 2H
1 Fig. 5-1	Packing Flange	ASTM A105		AISI 316				A105
	Packing Flange Studs	ASTM A193 Gr. B7		ASTM A320 Gr. B8				A193 Gr. B7
	Packing Flange Nuts	ASTM A194 Gr. 2H		ASTM A194 Gr. 8				A194 Gr. 2H
8 Fig. 5-1	Guide Bushing	AISI 410 AISI 630 H900 (17-4 PH)		AISI 316			AISI 316L	Monel K500
10, 11 Fig. 5-1	Plug & Seat Ring	AISI 316 (1) (2)					AISI 316L	Monel K500
7 Fig. 5-1	Plug Stem	AISI 316					AISI 316L	Monel K500
2 Fig. 5-1	Packing Follower	AISI 316					AISI 316L	Monel 400
	Body Gasket	AISI 316 + GRAPHOIL						
8 Fig. 2-1	Yoke	ASTM A352 LCB						
7 Fig. 2-1	Adjusting Screw	ASTM A105 (direct actuators) AISI 410 (reverse actuators)						
5 Fig. 2-1	Actuator Spring	Carbon Steel (52SiCrNi5 or 50CrV4) with protective coating						
4 Fig. 2-1	Actuator Stem	ASTM A 105 (direct actuators) AISI 304 (reverse actuators)						
3 Fig. 2-1	Diaphragm Plate	ASTM A 105						
2 Fig. 2-1	Diaphragm	Neoprene + nylon (from -30°C to +100°C) VitonA + nylon (from +5°C to +170°C) Silicon + nylon (from -60°C to +100°C)						
1 Fig. 2-1	Diaphragm Case	ASTM A 105						

(1) Plug can be manufactured with Teflon insert (max Temp. 200°C), other elastomer upon request.

(2) AST suggests that plug and seat must be stellited or made of 17-4PH in any of the following conditions:

- fluid has solid suspensions or there is cavitation or flashing;
- ΔP>25 bar for Liquid and Gas;
- ΔP>10 bar for Steam.

MATERIALS

The Following tables shows the suggested temperature limits for some of the most common materials. Temperature ranges shown on the tables are representative of the uses established by AST and refer to this catalogue.
Every material may be used for a wider range of temperatures and moreover specific experience leads to fit these limits for every industrial process.

The ASME/ANSI B16.34 standard establishes pressure/temperature limits for the valves flanges depending on the materials of construction.

BODY	MIN	MAX
A216WCB	-29°C	426°C
A217WC6	-29°C	590°C
A352 LCB	-46°C	343°C
A 352 LC3	-101°C	343°C
A 217 WC9	-29°C	590°C
A 351 CF8M	-267°C	816°C
A 315 CF8	-254°C	816°C
A 494 M-35-1 (Monel)	-200°C	482°C
TRIM	**MIN**	**MAX**
AISI 316/AISI 304	-267°C	550°C (*)
AISI 316 L	-267°C	426°C (*)
AISI 630 (17-4 PH)	-100°C	315°C
AISI 410	-100°C	416°C
Hastelloy C276	-200°C	538°C
Monel	-240°C	480°C
Inconel 625	-240°C	650°C
Stellite No. 6	-267°C	650°C

(*) If stellited; without stellite max 315°C.

To analyse the use of other materials than shown on the tables please contact AST technical department.

Fig. 6-1. Standard Bonnet

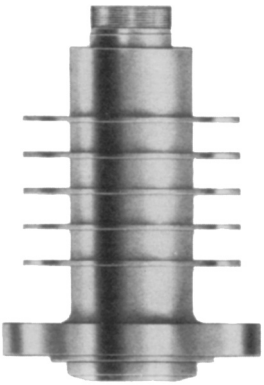


Fig. 6-2. Finned Bonnet

Fig. 6-3. Extension Bonnet

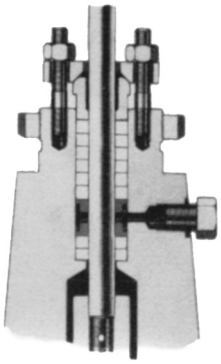


Fig. 6-4. Teflon packing
Graphoil Packing

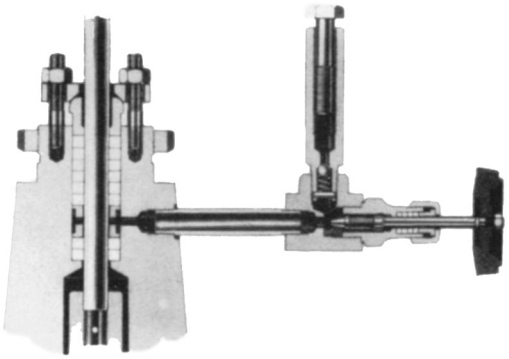


Fig. 6-5. Packing with Lubricator

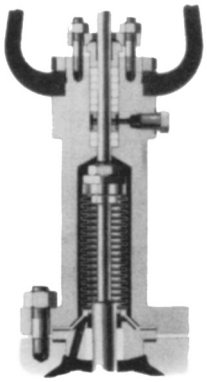


Fig. 6-6. Bellows Seal Bonnet
For hazardous mediums
up to 35 Kg/cm² and 200°C
Bellows materias is 316L or Monel

BONNET AND STEM PACKING

Bonnets are manufactured from forging or bars and may be supplied of the standard, extended or finned type.

The choice is done by AST depending from working temperature:

- **standard**: from -30°C to +250°C.
- **extended**: from -70°C to -30°C and from +250°C to 350°C.
- **finned**: over 350°C.
- **customized extension**: below -70°C.

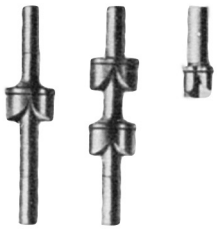
Stem packing is done with teflon rings (up to 200°C) or graphite rings (above 200°C). Different solution for packing can be provided including vacuum service and “Leak-off”.

The standard choice can be resumed in the following table.

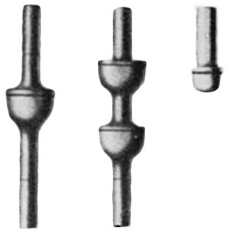
	From -70°C to -30°C	From -30°C to +200°C	From +200°C to +250°C	From +250°C to +350°C	Over +350°C
Bonnet	Extended (fig. 6-3)	Standard (fig. 6-1)		Extended (fig. 6-3)	Finned (fig. 6-2)
Stem Packing	Teflon		Graphite		

Below -70°C bonnet extension will be designed according to operating temperatures and insulation needs.

PLUG TYPES



V-Port

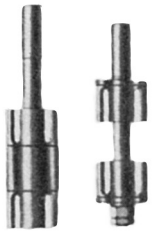


Contoured

Fig. 7-1. Percentage

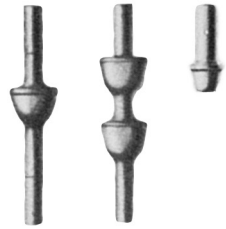
FLOW CHARACTERISTICS

"Rangeability"
V-Port 50:1
Contoured 30:1



V-Port

Micro-Flute



Contoured

Fig. 7-2. Linear

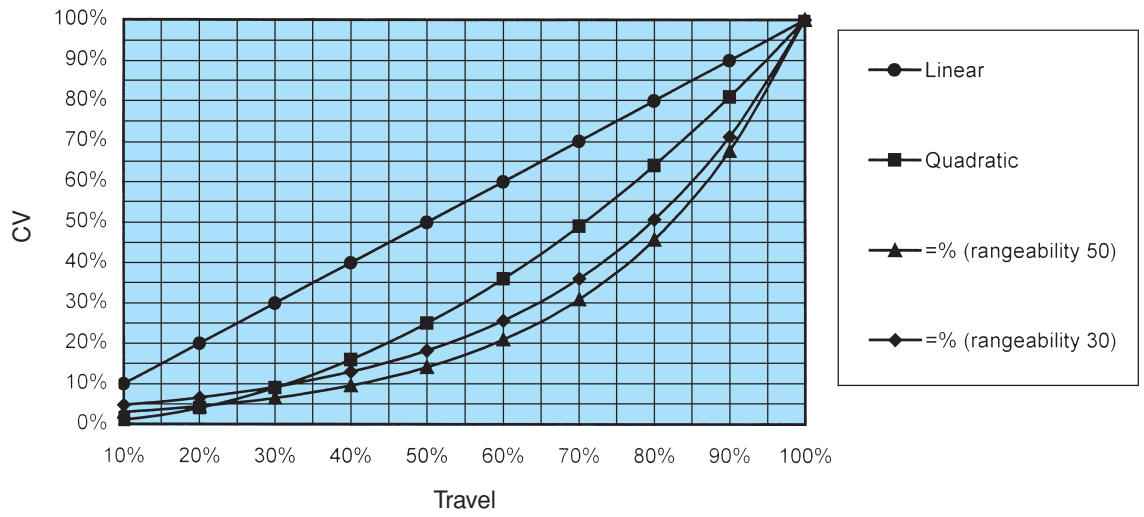
"Rangeability"
Contoured 30:1

Seat nominal diameter [inches]	Seat actual diameter [mm]
3/4	21
1	29
1-1/4	33
1-1/2	41
2	51
2-1/2	61
3	71
4	95
5	112
6	140
7	155
8	171
9	195
10	219

Disk

Fig. 7-3. Quick Opening

Fig. 7-4. Tipical flow curves



HANDWHEELS

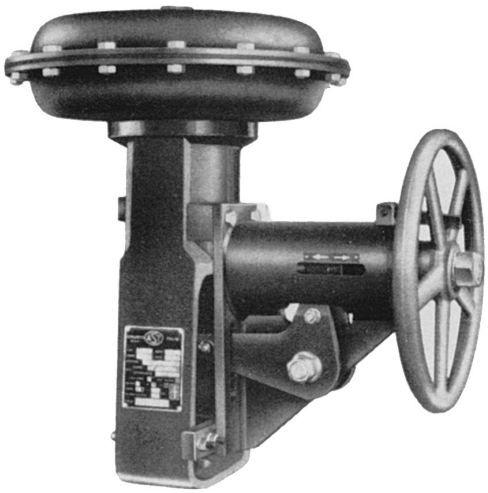


Fig. 18-1. Side Mounted

Available side mounted continuosly connected handwheels:

Type 300 for actuator sizes 11 and 13.
Type 450 for actuator sizes 15 and 18.
These handwheel tipes may be fitted on direct or reverse actuators and may also be used as limit stop.
Continuosly connected worm gear drive handwheel are available for valve size 12” and lager.

Fig. 18-2. Top Mounted

Available top mounted continuosly connected handwheed:
Type 160 T for actuator sizes up to 13
This handwheel type may be fitted on direct or reverse actuators and may also be used as limit stop.

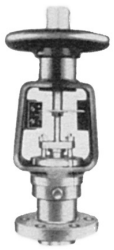
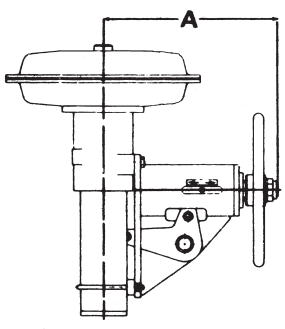


Fig. 18-3. Hand Operated

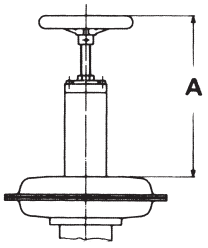
Available operated handwheel:
Type 160 H for valve sizes up to 2”.

MOUNTING DIMENSIONS (mm) & WEIGHTS (Kg)



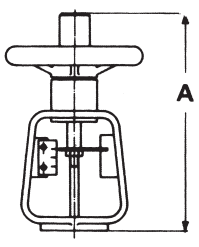
Type	A	Weight
225	245	12
300	340	18
450	395	28

Type 160 T



A = 275 ÷ 375
Weight = 7 ÷ 10

Type 160 H



A = 255
Weight = 5

SHIPPING WEIGHTS

APPROXIMATE SHIPPING WEIGHTS (Kg)										
Valve Size (inches)	VALVE TYPE									Extra for Finned Bonnet
	8100		8200		8300		8400		8700	
	ANSI		ANSI		ANSI		ANSI		ANSI	
	150-300	600	150-300	600	150-300	600	150-300	600	150-300-600	
1/2	-	-	-	-	-	-	25	27	-	2
3/4	29	31	29	31	31	35	27	29	41	2
1	30	32	30	32	33	37	28	30	43	2
1 1/2	41	44	42	45	45	49	36	39	72	3
2	60	64	63	67	68	72	57	61	83	5
2 1/2	72	77	75	80	82	87	-	-	94	5
3	93	99	100	106	110	118	86	92	129	8
4	135	142	143	150	155	165	120	127	165	12
6	262	272	280	294	300	318	245	255	257	15
8	430	450	455	480	480	510	415	435	-	20
10	670	710	718	768	758	813	-	-	-	20
12	-	-	960	1020	1010	1080	-	-	-	28
14	-	-	1380	1450	-	-	-	-	-	30
16	-	-	1950	2040	-	-	-	-	-	36

Remark: For ANSI 900, 1500, 2500 rating valves please contact AST representative.

Design: The valves type 8100 have a globe body of the invertible type, single seat, top and bottom guide. Double guiding reduces vibration and guarantees a more stable flow regulation. The seat is screwed on the body.

Sizes: From 3/4" to 10" (see table below).

Rating: Up to ANSI 600 (PN100). Higher ratings are available, consult AST for details.

Connections: According to ASME/ANSI B16.5; DIN, UNI, AFNOR and others are available.

Bonnets: Bonnet is available in the standard, extended or finned construction (see page 9).

Tightness class: The standard class is IV; class V and class VI with soft seat are available upon request.

Body Materials: Bodies are obtained from casting or from forging (in the smaller size), available materials are WCB (as a standard), WC6, LCB, CF8, CF8M, CF3M, Monel (see page 8 for details). Other materials upon request.

Bonnet Materials: Bonnets are obtained from bar or forging, available materials are the corresponding materials of the body (see page 8 for details).

Trim Materials: Trim material is 316 as standard. For severe service the seat and plug may be stellited or made of 17-4PH (see page 8 for details).

Actuators: The valves may be equipped with AST pneumatic actuators (see pages 2-5) or with any other kind of actuator (double-effect piston, electrical, hydraulic) manufactured by others.

Accessories: The valve and actuator may be equipped with any accessory, from pneumatic to digital positioner, body and bonnet jackets, stem flushing, solenoid valve, lock-up valve, booster etc, ask AST for details.

Body nominal dimension [inches]	Seat nominal dimension [inches]	CV max (=%V-port =% contoured linear)	CV max (disk)	Travel [mm]	Standard actuator
3/4	3/4	6	9	13	9-9R
1	1	10	13	13	9-9R
1-1/2	1-1/4	16	21	20	9L-9LR
	1-1/2	23	30		
2	2	39	52	25	11-11R
2-1/2	2-1/2	58	80	25	11-11R
3	3	82	105	40	13-13R
4	4	135	180	40	13-13R
6	6	295	400	50	15-15R
8	8	525	680	60	18-18R
10	10	750	1100	60	18-18R

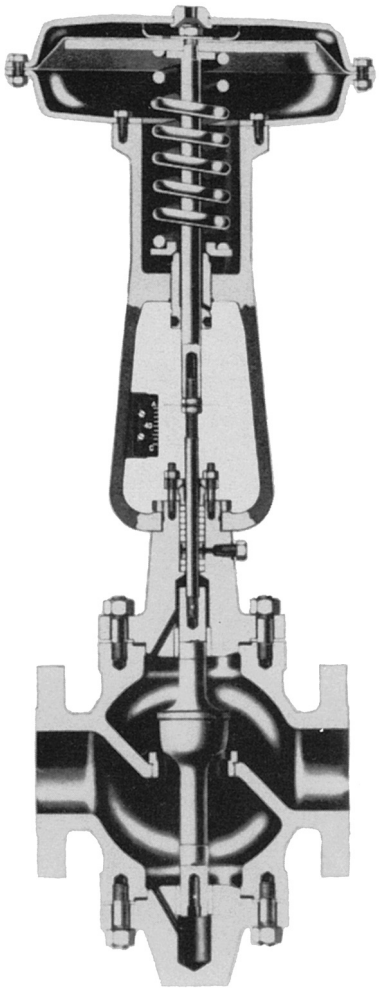
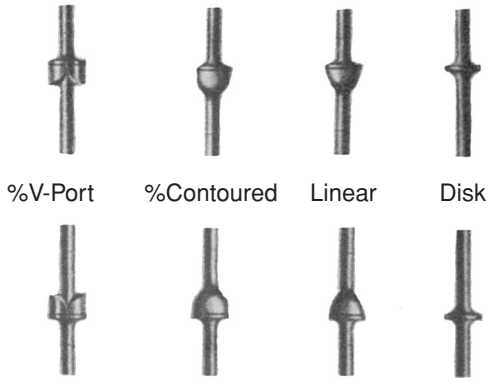


Fig. 11-1. Single Seated

PLUG TYPES

Direct Actuator

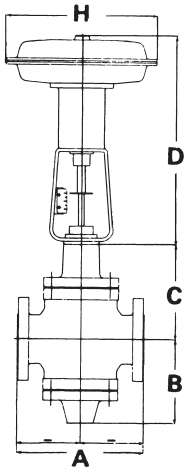


air - to - close

%V-Port %Contoured Linear Disk

air - to - open

MOUNTING DIMENSIONS (mm)



Valve Size (inches)	A							B	C		D		H
	Scr'd	Flanged RF			Flanged RTJ			150 300 600	S	F E	Direct	Reverse	
	600	150	300	600	150	300	600						
3/4	155	184	194	206	-	206	206	113	150	250	400	455	280
1	155	184	197	210	197	210	210	113	150	250	400	455	280
1 1/2	203	222	235	251	235	248	251	139	175	275	400	455	280
2	235	254	267	286	267	283	289	159	192	298	475	545	330
2 1/2	-	276	292	311	289	308	314	173	205	305	475	545	330
3	-	298	318	337	311	333	340	213	240	355	530	630	380
4	-	352	368	394	365	384	397	229	225	370	530	630	380
6	-	450	473	508	464	489	511	296	355	480	680	796	450
8	-	543	568	610	556	584	613	375	418	573	715	-	530
10	-	673	708	752	686	724	756	410	450	635	715	-	530

S - Standard Bonnet F - Finned Bonnet E - Extension Bonnet

Design: The valves type 8200 have a globe body of the invertible type, double seat and double guide. The seats are screwed on the body. The double seat design allows to achieve bigger flows than usual single seated valves. The flow is directed between the two seats. The nearly balanced design together with top and bottom guiding guarantee for smooth operation also with relatively high differential pressure when dynamic forces on the plug may cause unstable operation of single seated, top guided valves. The thrusts required to the actuator are also reduced thus reducing costs.

Sizes: From 3/4" to 16" (see table below).

Rating: Up to ANSI 600 (PN100). Higher ratings are available, consult AST for details.

Connections: According to ASME/ANSI B16.5; DIN, UNI, AFNOR and others are available.

Bonnets: Bonnet is available in the standard, extended or finned construction (see page 9).

Tightness class: The higher seat tightness class for the double seated valves type 8200 is III due to the impossibility to close both seats at the same time.

Body Materials: Bodies are obtained from casting or from forging (in the smaller sizes), available materials are WCB (as a standard), WC6, LCB, CF8, CF8M, CF3M, Monel (see page 8 for details). Other materials upon request.

Bonnet Materials: Bonnets are obtained from bar or forging, available materials are the corresponding materials of the body (see page 8 for details).

Trim Materials: Trim material is 316 as standard. For severe service the seat and plug may be stellited or made of 17-4PH (see page 8 for details).

Actuators: The valves may be equipped with AST pneumatic actuators (see pages 2-5) or with any other kind of actuator (double-effect piston, electrical, hydraulic) manufactured by others. For the 14" and 16" valves the actuator is not usually constructed by AST.

Accessories: The valve and actuator may be equipped with any accessory, from pneumatic to digital positioner, body and bonnet jackets, stem flushing, solenoid valve, lock-up valve, booster etc, ask AST for details.

Body nominal dimension [inches]	Seat nominal dimension [inches]	CV max (=%V-port) =% contourded linear	CV max (disk)	Travel [mm]	Standard actuator
3/4	3/4	9	11	13	9-9R
1	1	13	17	13	9-9R
1-1/2	1-1/4 1-1/2	20 30	25 36	20	9L-9LR
2	2	52	65	25	11-11R
2-1/2	2-1/2	80	100	25	11-11R
3	3	110	155	40	13-13R
4	4	190	275	40	13-13R
6	6	440	590	50	15-15R
8	8	740	1050	60	18-18R
10	10	1150	1650	60	18-18R
12	12	1600	2400	80	18L-18LR
14	14	2000	-	100	special
16	16	2560	-	100	special

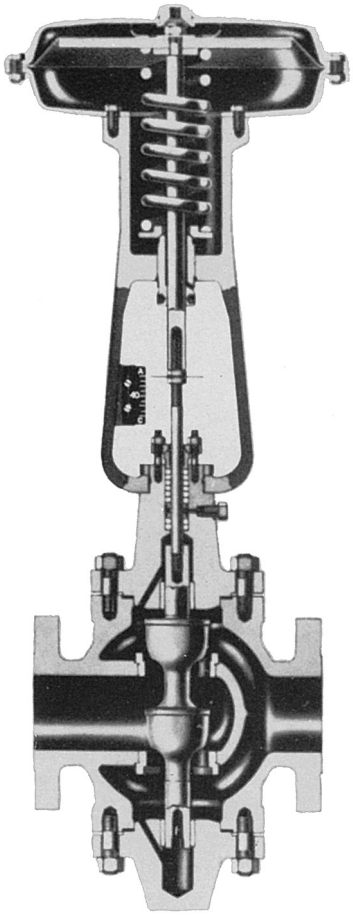
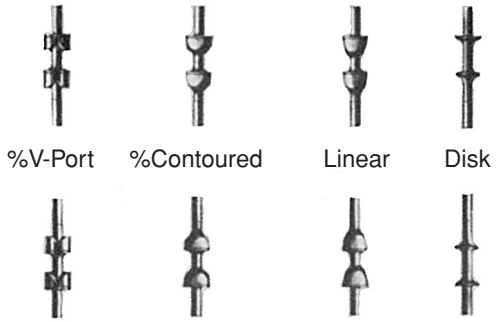


Fig. 12-1. Double Seated

PLUG TYPES

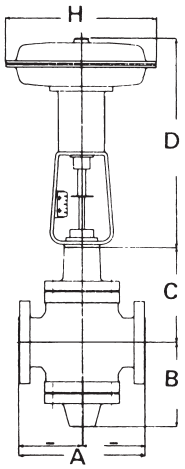
Direct Actuator



air - to - close

air - to - open

MOUNTING DIMENSIONS (mm)



Valve Size (inches)	A							B	C		D		H
	Scr'd	Flanged RF			Flanged RTJ			150 300 600	S	F E	Direct	Reverse	
	600	150	300	600	150	300	600						
3/4	155	184	194	206	-	206	206	113	150	250	400	455	280
1	155	184	197	210	197	210	210	113	150	250	400	455	280
1 1/2	203	222	235	251	235	248	251	139	175	275	400	455	280
2	235	254	267	286	267	283	289	159	192	298	475	545	330
2 1/2	-	276	292	311	289	308	314	173	205	305	475	545	330
3	-	298	318	337	311	333	340	213	240	355	530	630	380
4	-	352	368	394	365	384	397	229	255	370	530	630	380
6	-	450	473	508	464	489	511	296	355	480	680	796	450
8	-	543	568	610	556	584	613	375	418	573	715	870	530
10	-	673	708	752	686	724	756	410	450	635	715	870	530
12	-	737	775	819	749	791	822	510	560	845	900	1042	530
14	-	822	860	902	835	876	905	550	660	950	1090	1314	630
16	-	1026	1067	1118	1038	1083	1121	580	680	990	1090	1314	630

S - Standard Bonnet F - Finned Bonnet E - Extension Bonnet

Design: The valves type 8300 have a globe body and a three way design. The seat is screwed on the body. The valves are available with the combining (8300C) or diverting (8300D) design. In the combining design two fluids are mixed with variable propositions depending on the plug position; in the diverting design a fluid entering the valve is divided between two pipelines in proportion depending on process needs.

Sizes: From 3/4" to 10" (see table below).

Rating: Up to ANSI 600 (PN100). Higher ratings are available, consult AST for details.

Connections: According to ASME/ANSI B16.5; DIN, UNI, AFNOR and others are available.

Bonnets: Bonnet is available in the standard, extended or finned construction (see page 9).

Tightness class: The standard class is IV; class V and class VI with soft seat are available upon request.

Body Materials: Bodies are obtained from casting or from forging (in the smaller size), available materials are WCB (as a standard), WC6, LCB, CF8, CF8M, CF3M, Monel (see page 8 for details). Other materials upon request.

Bonnet Materials: Bonnets are obtained from bar or forging, available materials are the corresponding materials of the body (see page 8 for details).

Trim Materials: Trim material is 316 as standard. For severe service the seat and plug may be stellited or made of 17-4PH (see page 8 for details).

Actuators: The valves may be equipped with AST pneumatic actuators (see pages 2-5) or with any other kind of actuator (double-effect piston, electrical, hydraulic) manufactured by others.

Accessories: The valve and actuator may be equipped with any accessory, from pneumatic to digital positioner, body and bonnet jackets, stem flushing, solenoid valve, lock-up valve, booster etc, ask AST for details.

Body nominal dimension [inches]	Seat nominal dimension [inches]	CV max (linear V-port disk)	Travel [mm]	Standard actuator
3/4	3/4	6	13	9-9R
1	1	10	13	9-9R
1-1/2	1-1/2	23	20	9L-9LR
2	2	39	25	11-11R
2-1/2	2-1/2	58	25	11-11R
3	3	82	40	13-13R
4	4	135	40	13-13R
6	6	295	50	15-15R
8	8	525	60	18-18R
10	10	750	60	18-18R

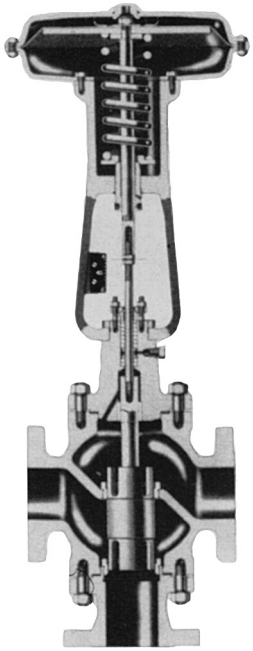


Fig. 13-1. Three-way - Combining

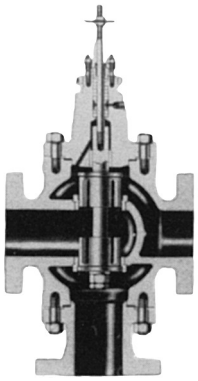


Fig. 13-2. Three-way - Diverting

PLUG TYPES

Linear V-Port Disk Linear V-Port Disk

Direct Actuator:

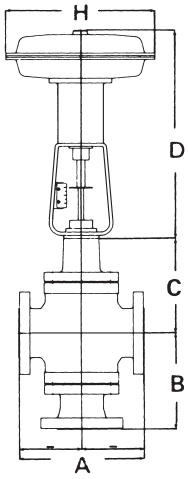
C air - to - close angle way
D air - to - close straight way

Reverse Actuator:
C air - to - close straight way
D air - to - close angle way

MOUNTING DIMENSIONS (mm)					
Valve Size (inches)	C		D		H
	S	F E	Direct	Reverse	
3/4	150	250	400	455	280
1	150	250	400	455	280
1 1/2	175	275	400	455	280
2	192	298	475	545	330
2 1/2	205	305	475	545	330
3	240	355	530	630	380
4	255	370	530	630	380
6	355	480	680	795	450
8	418	573	715	870	530
10	450	635	715	870	530

S - Standard F - Finned E - Extension

MOUNTING DIMENSIONS (mm)



Valve Size (inches)	A							B						
	Scr'd	Flanged RF			Flanged RTJ			Scr'd	Flanged RF			Flanged RTJ		
	600	150	300	600	150	300	600	600	150	300	600	150	300	600
3/4	155	184	194	206	-	206	206	146	162	162	168	-	168	168
1	155	184	197	210	197	210	210	146	162	162	168	168	168	168
1 1/2	203	222	235	251	235	248	251	171	184	184	197	191	191	197
2	235	254	267	286	267	283	289	190	200	200	216	206	208	217
2 1/2	-	276	292	311	289	308	314	-	225	225	241	232	233	243
3	-	298	318	337	311	333	340	-	244	244	267	251	252	268
4	-	352	368	394	365	384	397	-	286	286	311	292	294	313
6	-	450	473	508	464	489	511	-	356	356	375	362	364	376
8	-	543	568	610	556	584	613	-	435	435	486	441	443	487
10	-	673	708	752	686	724	756	-	498	498	540	505	506	541

Design: The valves type 8400 have a non invertible globe body single seat and top guide. The seat is screwed on the body. These valves are suitable for a broad variety of applications and may be supplied with a **BALANCED PLUG** (see next pages) or with **MULTIPLE-HOLE CAGE** to solve noise and cavitation problems (see specific catalogue).

Sizes: From 1/2" to 8" (see table below).

Rating: Up to ANSI 600 (PN100). Higher ratings are available, consult AST for details.

Connections: According to ASME/ANSI B16.5; DIN, UNI, AFNOR and others are available.

Bonnets: Bonnet is available in the standard, extended or finned construction (see page 9).

Tightness class: The standard class is IV; class V and class VI with soft seat are available upon request.

Body Materials: Bodies are obtained from casting or from forging (in the smaller sizes), available materials are WCB (as a standard), WC6, LCB, CF8, CF8M, CF3M, Monel (see page 8 for details). Other materials upon request.

Bonnet Materials: Bonnets are obtained from bar or forging, available materials are the corresponding materials of the body (see page 8 for details).

Trim Materials: Trim material is 316 as standard. For severe service the seat and plug may be stellited or made of 17-4PH (see page 8 for details).

Actuators: The valves may be equipped with AST pneumatic actuators (see pages 2-5) or with any other kind of actuator (double-effect piston, electrical, hydraulic) manufactured by others.

Accessories: The valve and actuator may be equipped with any accessory, from pneumatic to digital positioner, body and bonnet jackets, stem flushing, solenoid valve, lock-up valve, booster etc, ask AST for details.

Body nominal dimension [inches]	Seat nominal dimension [inches]	CV max (=%V-port =% contoured linear)	CV max (Micro-flute linear)	Travel [mm]	Standard actuator
1/2 3/4 1	1/50 1/32 1/16 7/64 1/8 1/32 3/16 1/4 3/8 1/2 3/4 1	- - - - 0,25 0,45 0,65 0,85 1,9 3,5 6 10	0,001 0,01 0,08 0,15 - - - - - - - -	13	9-9R
1-1/2	1 1-1/4 1-1/2	13 18 28		20	9L-9LR
2	1-1/4 1-1/2 2	18 28 50		25	11-11R
3	2 2-1/2 3	50 76 110		40	13-13R
4	2-1/2 3 4	76 110 190		40	13-13R
6	4 5 6	190 315 440		50	15-15R
8	5 6 7 8	315 440 545 650		60	18-18R
10	6 7 8 9 10	440 545 650 780 970		60	18-18R

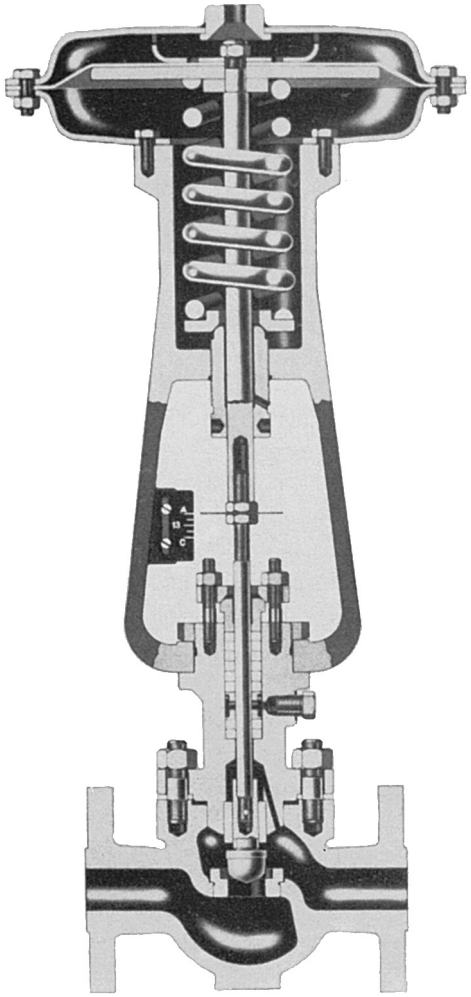
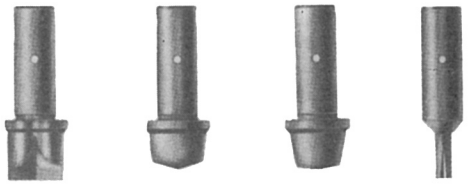


Fig. 14-1. Single Seated

PLUG TYPES

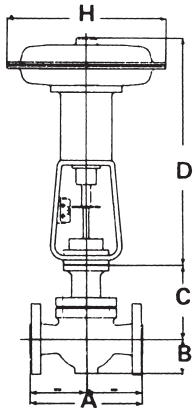


%V-Port %Contoured Linear Linear Micro-Flute

Direct Actuator
air - to - close

Reverse Actuator
air - to - open

MOUNTING DIMENSIONS (mm)



Valve Size (inches)	A							B	C		D		H
	Scr'd	Flanged RF			Flanged RTJ			150 300 600	S	F E	Direct	Reverse	
	600	150	300	600	150	300	600						
1/2	155	184	191	203	195	202	203	60	130	230	400	455	280
3/4	155	184	194	206	197	206	206	60	130	230	400	455	280
1	155	184	197	210	197	210	210	60	130	230	400	455	280
1 1/2	-	222	235	251	235	248	251	83	166	275	400	455	280
2	-	254	267	286	267	283	289	93	186	298	475	545	330
3	-	298	318	337	311	333	340	115	240	355	530	630	380
4	-	352	368	394	365	384	397	135	243	370	530	630	380
6	-	450	473	508	464	489	511	185	315	480	680	796	450
8	-	543	568	610	556	584	613	250	360	520	715	870	530
10	-	673	708	752	686	724	756	362	502	702	715	870	530

S - Standard Bonnet F - Finned Bonnet E - Extension Bonnet

Design: The valves type 8400/B have the same dimensions and features of the valves type 8400 but in this case the plug is shaped as a solid cilinder. The plug has a hole that allows for the process pressure to act on both sides of the piston which therefore results to be balanced (except for the stem area). For this reason these valves can be used with smaller actuator and higher differential pressure. The tightness between the piston/plug and the guide is assured by a gasket (usually of the energized type).

Sizes: From 1/2" to 8" (see table below).

Rating: Up to ANSI 600 (PN100). Higher ratings are available, consult AST for details.

Connections: According to ASME/ANSI B16.5; DIN, UNI, AFNOR and others are available.

Bonnets: Bonnet is available in the standard, extended or finned construction (see page 9).

Tightness class: The standard tightness class is IV. Since the valve has two points of possible leakage (the seat and the plug-guide gasket) the maximum tightness class available is IV-S1.
Class V is normally not available.

Body Materials: Bodies are obtained from casting or from forging (in the smaller sizes), available materials are WCB (as a standard), WC6, LCB, CF8, CF8M, CF3M, Monel (see page 8 for details). Other materials upon request.

Bonnet Materials: Bonnets are obtained from bar or forging, available materials are the corresponding materials of the body (see page 8 for details).

Trim Materials: Trim material is 316 as standard. For severe service the seat and plug may be stellited or made of 17-4PH (see page 8 for details).

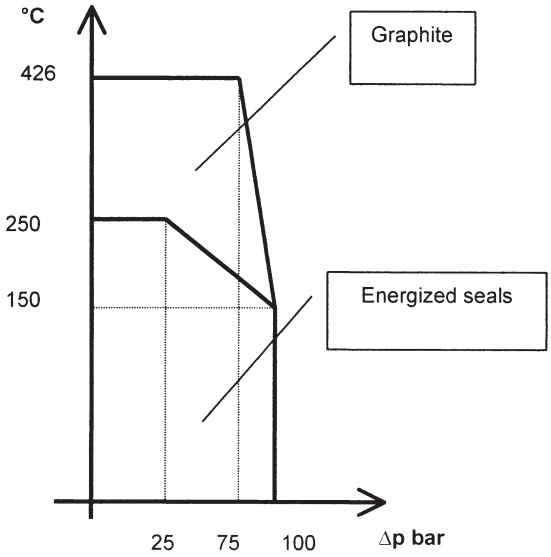
Actuators: The valves may be equipped with AST pneumatic actuators (see pages 2-5) or with any other kind of actuator (double-effect piston, electrical, hydraulic) manufactured by others.

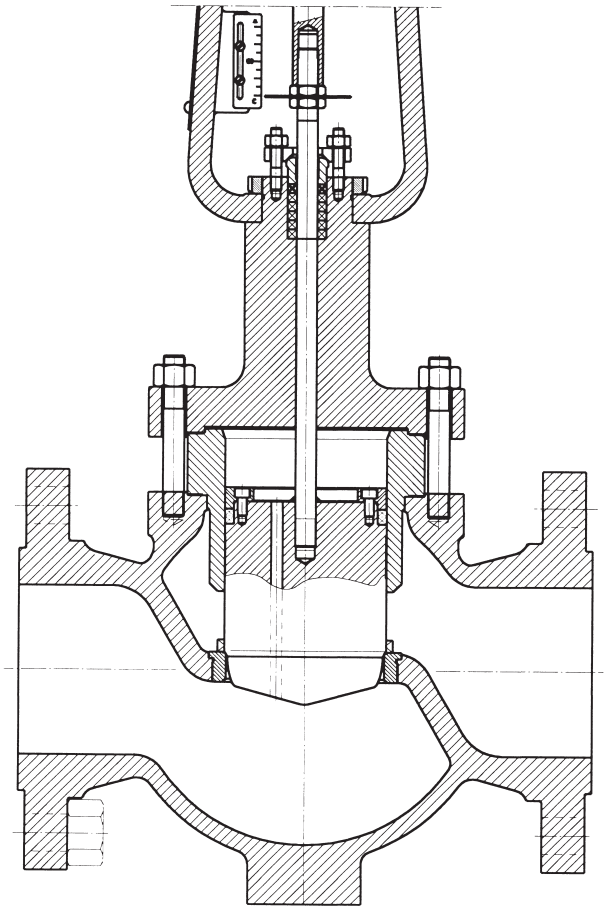
Accessories: The valve and actuator may be equipped with any accessory, from pneumatic to digital positioner, body and bonnet jackets, stem flushing, solenoid valve, lock-up valve, booster etc, ask AST for details.

Body nominal dimension [inches]	Seat nominal dimension [inches]	CV max (=%V-port =% contoured linear)	Travel [mm]	Standard actuator
3/4	3/4	6	13	9-9R
1	3/4 1	6 10	13	9-9R
1-1/2	1 1-1/4 1-1/2	13 18 28	20	9L-9LR
2	1-1/4 2-1/2 2	18 28 50	25	11-11R
3	2 2-1/2 3	50 76 110	40	13-13R
4	2-1/2 3 4	76 110 190	40	13-13R
6	4 5 6	190 315 440	50	15-15R
8	5 6 7 8	315 440 545 650	60	18-18R
10	6 7 8 9 10	440 545 650 780 970	60	18-18R

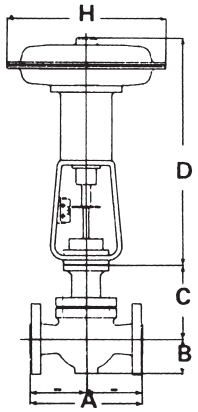
PLUG

Balanced type plug allows for the reduction of the static thrusts on the plug and therefore for the use of smaller actuators. This type of plug uses a gasket to make the tightness between plug and guide. For gasket types refer to following figure.





MOUNTING DIMENSIONS (mm)



Valve Size (inches)	A							B	C		D		H
	Scr'd	Flanged RF			Flanged RTJ			150 300 600	S	F E	Direct	Reverse	
	600	150	300	600	150	300	600						
1/2	155	184	191	203	195	202	203	60	130	230	400	455	280
3/4	155	184	194	206	197	206	206	60	130	230	400	455	280
1	155	184	197	210	197	210	210	60	130	230	400	455	280
1 1/2	-	222	235	251	235	248	251	83	166	275	400	455	280
2	-	254	267	286	267	283	289	93	186	298	475	545	330
3	-	298	318	337	311	333	340	115	240	355	530	630	380
4	-	352	368	394	365	384	397	135	243	370	530	630	380
6	-	450	473	508	464	489	511	185	315	480	680	796	450
8	-	543	568	610	556	584	613	250	360	520	715	870	530
10	-	673	708	752	686	724	756	362	502	702	715	870	530

S - Standard Bonnet F - Finned Bonnet E - Extension Bonnet

Design: The valves type 8700 are of the angle type with single seat, single port, top guiding. The seat is screwed on the body. They are usually used with dense or erosive fluids or when self-draining body is required.

Sizes: From 3/4" to 6" (see table below).

Rating: Up to ANSI 600 (PN100). Higher ratings are available, consult AST for details.

Connections: According to ASME/ANSI B16.5; DIN, UNI, AFNOR and others are available.

Bonnets: Bonnet is available in the standard, extended or finned construction (see page 9).

Tightness class: The standard class is IV; class V and class VI with soft seat are available upon request.

Body Materials: Bodies are obtained from casting or from forging (in the smaller sizes), available materials are WCB (as a standard), WC6, LCB, CF8, CF8M, CF3M, Monel (see page 8 for details). Other materials upon request.

Bonnet Materials: Bonnets are obtained from bar or forging, available materials are the corresponding materials of the body (see page 8 for details).

Trim Materials: Trim material is 316 as standard. For severe service the seat and plug may be stellited or made of 17-4PH (see page 8 for details).

Actuators: The valves may be equipped with AST pneumatic actuators (see pages 2-5) or with any other kind of actuator (double-effect piston, electrical, hydraulic) manufactured by others.

Accessories: The valve and actuator may be equipped with any accessory, from pneumatic to digital positioner, body and bonnet jackets, stem flushing, solenoid valve, lock-up valve, booster etc, ask AST for details.

INTEGRAL TYPE PLUG

In case of "flow action to close" these valves can be equipped with an integral type plug thus reducing the dynamic effect that pulls the standard plugs into the seat when the valve is required to control low flows.

Body nominal dimension [inches]	Seat nominal dimension [inches]	CV max (=% contoured linear)	Travel [mm]	Standard actuator
3/4 1	1/8 3/16 1/4 3/8 1/2 3/4 1	0,4 1 1,6 3,2 6 8 13	20	9L
1-1/2	1 1-1/4 1-1/2	13 20 30	25	11
2	1-1/4 1-1/2 2	20 30 55	40	13
2-1/2	1-1/2 2 2-1/2	30 55 80	40	13
3	2 2-1/2 3	55 80 120	50	15
4	2-1/2 3 4	80 120 195	50	15
6	4 5 6	195 340 425	60	18

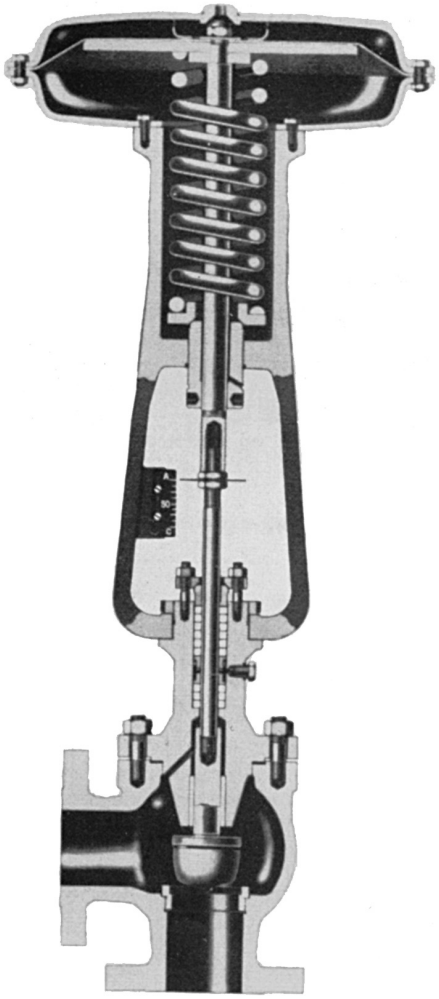
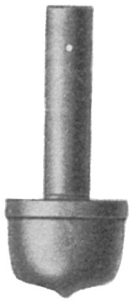


Fig. 15-1. Angle

PLUG TYPE



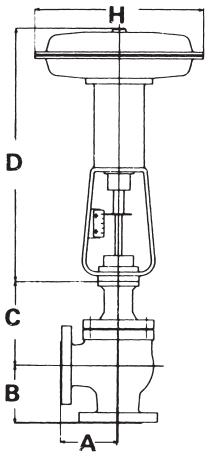
%Contoured

Integral Type

Direct Actuator
air - to - close

Reverse Actuator
air - to - open

MOUNTING DIMENSIONS (mm)



Valve Size (inches)	A & B						C		D		H
	Flanged RF			Flanged RTJ			S	F E	Direct	Reverse	
	150	300	600	150	300	600					
3/4	102	102	102	-	108	108	130	230	400	455	280
1	102	102	102	108	108	108	130	230	400	455	280
1 1/2	116	119	127	122	125	127	150	250	475	545	330
2	122	125	135	128	133	137	175	280	530	630	380
2 1/2	138	141	151	144	149	153	200	305	530	630	380
3	149	154	163	155	162	165	225	340	680	796	450
4	181	189	202	187	197	204	230	345	680	796	450
6	224	235	252	230	243	254	255	380	715	870	530

S - Standard Bonnet F - Finned Bonnet E - Extension Bonnet

AST has the technical experience to satisfy special requests from the clients.

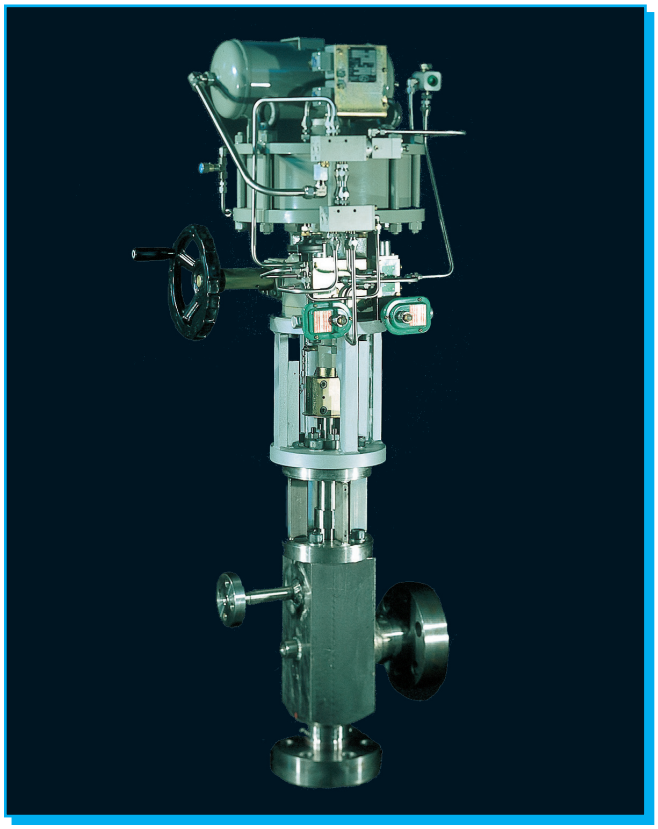
This page shows some of the customized valves produced by AST.

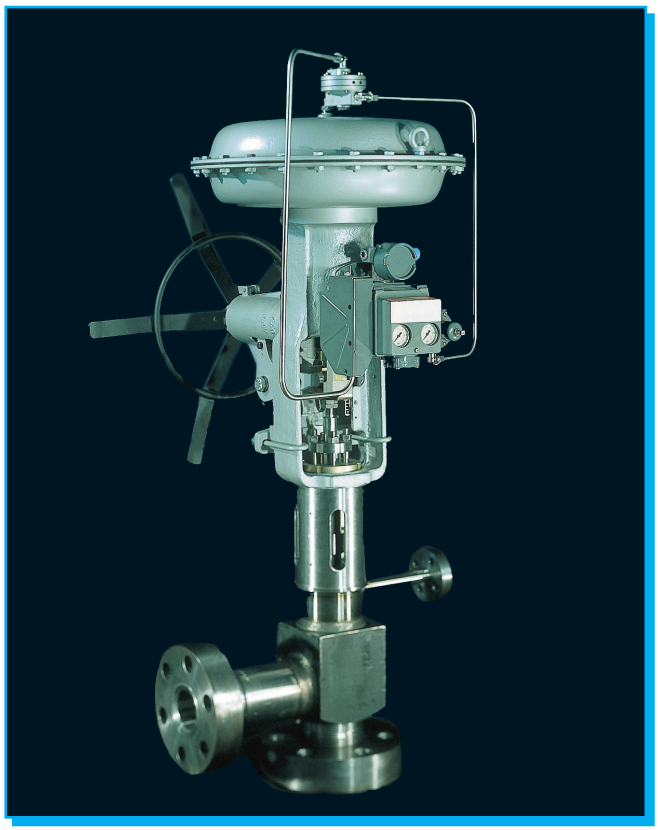
Some applications are in the field of the melamine and urea plants where these valves are constructed from an integral piece of Hastelloy bar.

Flushing nozzles and jackets are provided depending on the fluids and process conditions.

Ratings are up to ANSI 2500 or PN 400.

Contact AST for more details.





VALVOLE DI REGOLAZIONE A COMANDO PNEUMATICO
PNEUMATIC CONTROL VALVES

OFFERTA N° / *QUOTATION* DATE
RICHIESTA N° / *INQUIRY*

CLIENTE *CUSTOMER*

REV.	DATE	SIGN.	FOGLIO *SHEET*	DI *OF*

PREP. **CK'D** **APPR.**

GENERALITA' *GENERAL*

SPECIFICA *SPECIFICATION*		
POSIZIONE *ITEM*		
QUANTITA' *QUANTITY*		
SIGLA *TAG*		

CONDIZIONI DI ESERCIZIO *OPERATING CONDITIONS*

FLUIDO E STATO *FLUID AND STATE*											
PESO MOLEC. *MOLEC. WEIGHT*	K	Z									
PESO SPEC. *SPEC. GRAVITY*	**VISCOSITA'** *VISCOSITY*										
% FLASHING											
SOLIDI IN SOSPENSIONE *SOLID PARTICLES*											
PRESS.CRITICA *CRITICAL PRESSURE*	**PRESS.VAPORE** *VAPOR PRESSURE*										
PORTATA *FLOW*		MIN.	NORM.	MAX.	DESIGN		MIN.	NORM.	MAX.	DESIGN	
Kg/h ☐ Nm/m3 ☐ ☐											
TEMPERATURA *TEMPERATURE*	°C ☐ °F ☐										
PRESSIONE *PRESSURE*	INGRESSO *INLET*										
BAR G. ☐ ☐	USCITA *OUTLET*										
PRESSIONE DIFF.CALC.VALVOLA *PRESSURE DROP FOR VALVE SIZING*											
PRES. DIFF.CALC.ATTUATORE *PRES. DROP FOR ACT. SIZING*											
CV CALCOLATO *CALCULEATED*	**CV VALVOLA** *VALVE*										
LIVELLO RUMORE *NOISE LEVEL* dB (A)		RICH *REQ.*		CALC.			RICH *REQ.*		CALC.		

CORPO *BODY*

VALVOLA SERIE *VALVE SERIES*	**FORMA CORPO** *BODY FORM*										
DIMENS. *SIZE*	**PRESS.NOM. ATTACCHI** *RATING*										
GUIDA *GUIDING*		SOPRA *TOP* ☐	SOTTO *BOTTOM* ☐				SOPRA *TOP* ☐	SOTTO *BOTTOM* ☐			
MATERIALE *MATERIAL*		ACC.C *C.ST.* ☐					ACC.C. *C.ST.* ☐				
TIPO CORPO INTERMEDIO *BONNET TYPE*		STD ☐					STD ☐				
MATERIALE BADERNA *PACKING MATERIAL*		PTFE ☐	GRAPH. ☐				PTFE ☐	GRAPH. ☐			
CAMICIA DI RISC. *HEATING JACKET*	**MATERIAL**	SI *YES* ☐	NO ☐				SI *YES* ☐	NO ☐			
TENUTA SOFFIETTO *BELLOWS SEAL*		SI *YES* ☐	NO ☐				SI *YES* ☐	NO ☐			

NOTE *REMARKS*

MATERIALE PARTI INTERNE *TRIM MATERIAL*

DIMENSIONI *SIZE*	**N° SEDI** *PORTS*			1 ☐	2 ☐				1 ☐	2 ☐	
CARATTERISTICHE FLUSSO *FLOW CARACTERISTIC*		=% ☐	LIN. ☐	ON-OFF ☐			=% ☐	LIN. ☐	ON-OFF ☐		
FORMA *FORM*		CONTOURED ☐	V-PORT ☐	GABBIA *CAGE* ☐			CONTOURED ☐	V-PORT ☐	GABBIA *CAGE* ☐		
OTTURATORE *PLUG*		AISI 316 ☐					AISI 316 ☐				
SEDE / I *SEAT / S*		AISI 316 ☐	17-4PH ☐				AISI 316 ☐	17-4PH ☐			
GABBIA *CAGE*		AISI 316 ☐	17-4PH ☐				AISI 316 ☐	17-4PH ☐			
SEDI DI TENUTA *SEAL SURFACES*		STELLITE ☐					STELLITE ☐				
TENUTA SEDI *SEAL TIGHTNESS*		CL.IV ☐	CL.V ☐				CL.IV ☐	CL.V ☐			

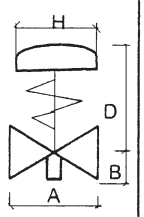


FIG.1

ATTUATORE *ACTUATOR*

TIPO *TYPE*		DIAFRAMMA *DIAPH.* ☐					DIAFRAMMA *DIAPH.* ☐				
MANCANZA ARIA VALVOLA *ON AIR FAILURE*		APRE *OPEN* ☐	CHIUDE *CLOSED* ☐				APRE *OPEN* ☐	CHIUDE *CLOSED* ☐			
AZIONE FLUISSO *FLOW ACTION*		APRE *OPEN* ☐	CHIUDE *CLOSED* ☐				APRE *OPEN* ☐	CHIUDE *CLOSED* ☐			
CAMPO MOLLA *SPRING RANGE* BAR G.		0,20 - 1,03 ☐	0,41 - 2,06 ☐				0,20 - 1,03 ☐	0,41 - 2,06 ☐			
ALIMENTAZIONE *SUPPLY* BAR G.		1,379 ☐	2,758 ☐				1,379 ☐	2,758 ☐			
ATTACCO ARIA *AIR CONNECTION*		1/4" NPTF ☐	1/2"NPTF ☐				1/4" NPTF ☐	1/2"NPTF ☐			
MATERIALE CASTELLO ATTUATORE *ACTUATOR YOKE MATERIAL*		ACC.AL.C *CARB.ST.* ☐					ACC.AL.C *CARB.ST.* ☐				

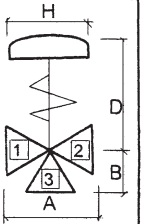


FIG.2

ACCESSORI *ACCESSORIES*

POSIZIONATORE *POSITIONER*	**ALIMENTAZ. (BAR G.)** *SUPPLY*	PNEUM. ☐	ELECTR. ☐				PNEUM. ☐	ELECTR. ☐			
	SEGNALE (BAR G.) *SIGNAL*	IN		USC. *OUT*			IN		USC. *OUT*		
FILTRO RIDUTTORE *FILTER REGULATOR*		SENZA MAN. *WITHOUT GAUGE* ☐		CON MAN. *WITH GAUGE* ☐			SENZA MAN. *WITHOUT GAUGE* ☐		CON MAN. *WITH GAUGE* ☐		
FINE CORSA *LIMIT SWITCH*		APRE *OPEN* ☐	CHIUDE CLOSED ☐				APRE *OPEN* ☐	CHIUDE CLOSED ☐			
COMANDO MANUALE *HANDWHEEL*		LATO *SIDE* ☐	TESTA *TOP* ☐				LATO *SIDE* ☐	TESTA *TOP* ☐			
VERNICIATURA ESTERNA *EXTERNAL PAINTING*		STD. AST ☐	AMB.MARINO *MARINE ENV.* ☐				STD. AST ☐	AMB.MARINO *MARINE ENV.* ☐			
COLLAUDO *TESTING*		STD. AST ☐					STD. AST ☐				

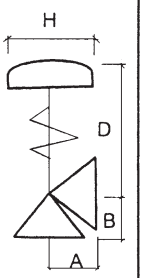


FIG.3

COMMERCIALE *COMMERCIAL*

DIMENSIONI *DIMENSIONS*	mm	**FIG.**	A	B	D	H		**FIG.**	A	B	D	H
PESO *WEIGHT*	KG											
PREZZO *PRICE*	**UNITARIO** *UNIT*											
	TOTALE *TOTAL*											

DET NORSKE VERITAS

QUALITY SYSTEM CERTIFICATE

Certificate No. ***SQ 0174-IT Rev02***

Si attesta che / This is to certify that

IL SISTEMA QUALITA' DI / THE QUALITY SYSTEM OF

A.S.T. S.p.A.

Via Merendi, 20 - 20010 Cornaredo (MI) - Italy

E' CONFORME AI REQUISITI DELLA NORMATIVA
HAS BEEN FOUND TO CONFORM TO THE QUALITY SYSTEM STANDARD

UNI EN ISO 9001; 1994 (ISO 9001; 1994)

Questa certificazione è valida per il seguente campo applicativo:
This certificate is valid for the following product or service ranges:

Progettazione, produzione e vendita di: valvole di sicurezza, valvole di regolazione, raccordi ad y con valvola deviatrice e valvole rompivuoto.

Design, manufacture and sale of: safety relief valves, control valves, change-over valves, vacuum release valves.

Luogo e data
Place and date
Agrate Brianza, (MI) 1999-11-26

Data Prima Emissione:
First Issue Date:
1994-01-21

per l'Organismo di Certificazione
for the Accredited Unit
Det Norske Veritas Italia S.r.l.

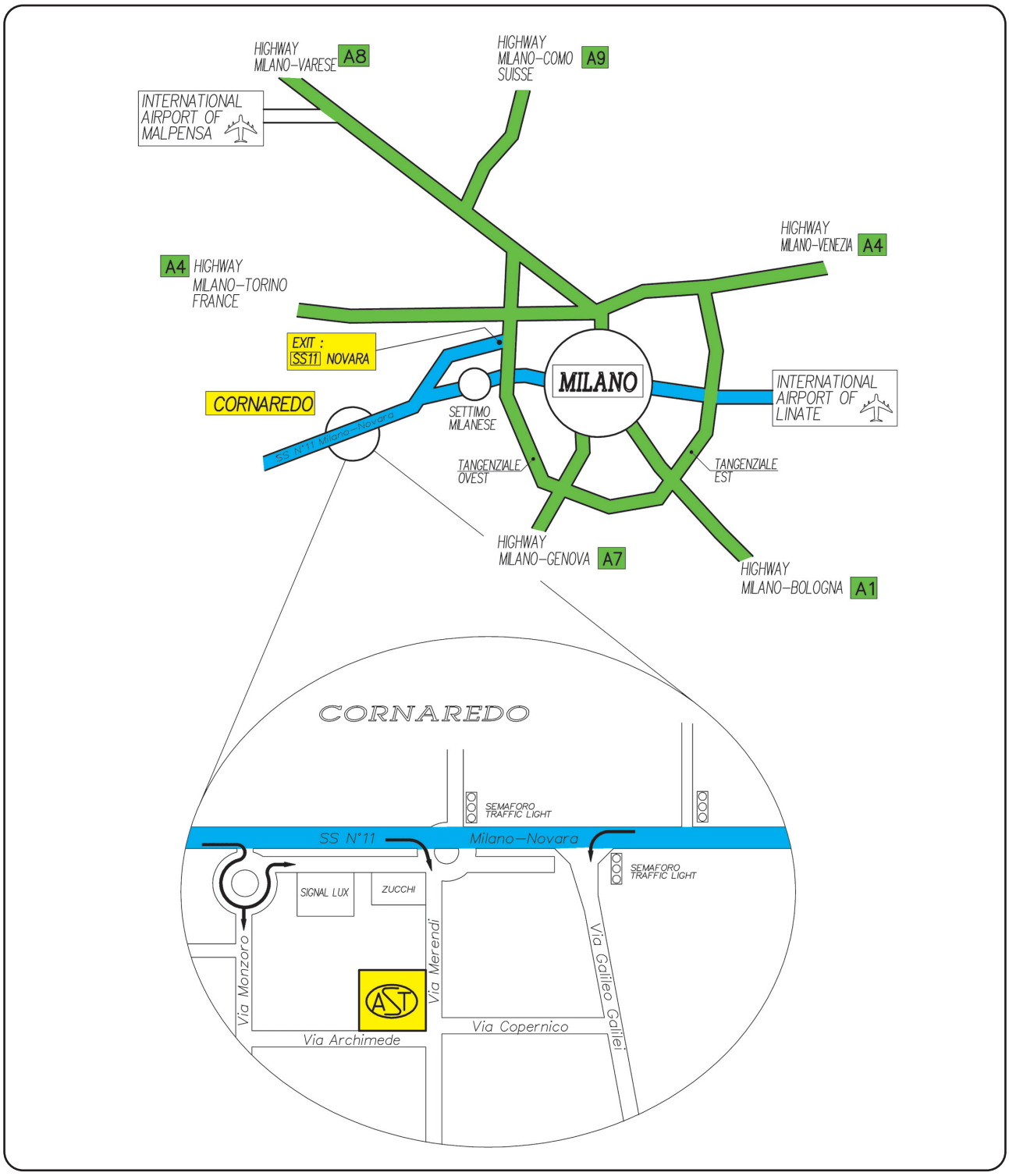
Lead Auditor: ALBERTO MORO

Settore EA: 18

SINCERT
Registrazione N. 003A

Leonardo Omodeo Zorini
Management Representative

La validità del presente certificato è subordinata a sorveglianza periodica (ogni 6, 9 o 12 mesi) e al riesame completo del sistema con periodicità triennale
The validity of this certificate is subjected to periodical audits (every 6, 9 or 12 month) and complete re-assessment of the system every three years



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