

CAST STEEL PLUG VALVE

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YARMOUTH RESEARCH AND TECHNOLOGY





WALWORTH

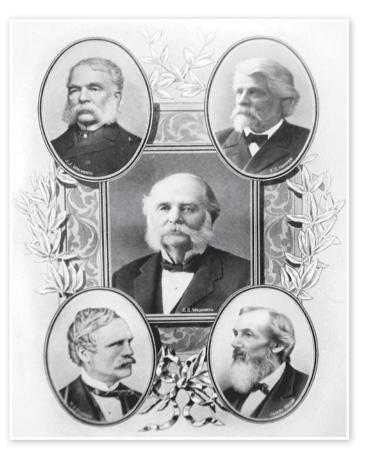
WALWORTH is one of the world's most comprehensive industrial valve manufacturers. Founded in 19th century by James Walworth, the Company has consistently dedicated itself to improvements in design and manufacturing of an array of valves exceptionally suited for the world's fluid control sector. We satisfy all end use industries and comprehensive customer requirements by adhering to the most demanding quality standards.

WALWORTH relies on its broad experience in supplying valves to the petrochemical, oil & gas, petroleum, power generation, pulp and paper, cryogenic and geothermal industries, among others.

Over the years, Walworth has produced over 40,000 different types of products and serves as a global supplier to various markets utilizing the expertise of over 500 trained employees.

Our manufacturing system includes: utilization of Company directed raw material warehouses; modern and newly acquired specialized machinery; welding processes such as SMAW, GMAW, SAW, PAW; assembly testing for all low pressure, high pressure, and at low or high temperatures; painting and coating processes; export crating and shipment.

WALWORTH is capable of providing the world's most comprehensive industrial valve line to the North American, Central American, South American, European and African markets. WALWORTH is proud to meet and satisfy the precise demands of our customers throughout the world by providing a quality product, competitive cost, and excellent service.



WALWORTH VALUES

MISSION

WALWORTH manufactures and supplies world-class valves and components for the flow control industry through exceptional service, competitive pricing, and consistently, on-time deliveries.



VISION

To be the world leader of unparalleled valve manufacturing and supply, WALWORTH:

- Set the standard for product quality in the flow control industry.
- Exceed the service expectations of our customers.
- Forge enduring relationships with customers, team members, and community.
- Hire, develop, and retain experienced and dedicated team members.





WALWORTH ENGINEERING CONTROL

WALWORTH products are manufactured following the strict international standards recognized all over the world, such as API, ANSI, ASME, ASTM, MSS, NACE, AWWA, BSI, CSA, among others. Our Engineering team consistently monitors updates to these standards and incorporates any applicable changes that affect the design, regulations and/or performance of our products.

Our designs are made using the most advanced technology and equipment, finite elements, and CAD system programs to ensure proper assembly and performance. From conception to calculation to detailed drawings for manufacturers, WALWORTH is a leader in development of new products that meet the needs of the current valve market."



WALWORTH QUALITY SYSTEM

Throughout the years, WALWORTH has developed its Quality System which is an integral part of our manufacturing policy. Our primary goal is to provide products that meet and exceed market standards. In this sense, WALWORTH is an ISO-9001 Audited and Certified Company that has achieved major certifications worldwide. Our system includes the selection of raw materials from approved vendors, and rigorous oversight of our manufacturing process that is vital to quality control. The use of serial numbers allows WALWORTH the ability to not only ensure the quality of components used but to monitor and trace the fabrication process as well.





Certificate API-6D No. 6D-0097

Issued by American Petroleum Institute to apply on Gate valves, Plug valves, Ball valves and Check valves manufactured in accordance with API-6D specification.

Certificate API-6A No. 6A-0234

From American Petroleum Institute to apply on valves at PSI, 1 through 4.





Certificate API-594 No. 594-0007

Issued by American Petroleum Institute to apply on Check Valves-Type A; Check Valves Type B manufactured in accordance with API-594 specification.



API-600 Certificate No. 600-0109

Issued by American Petroleum Institute to apply on Bolted Bonnet Steel Gate Valves manufactured in accordance with API-600 specification.



API-602 Certificate No. 602-0024

Issued by American Petroleum Institute to apply on Compact Steel Gate Valves, Compact Steel Globe Valves, and Compact Steel Check Valves manufactured in accordance with API-602 specification.



Certificate ISO-9001 No. 0038

Issued by American Petroleum Institute since April 1999.

Certificat	le
	Quality-Assurance System
	acc. to Directive 97/23/EC
Certificate no./	61 362 USA/Q-16 6013
Name and address of the manufacturer:	Wateroth – Inval Facility Industrial de Válvulas, S.A. de C.V. Avenida de la Industrial (Lota 16 Procelonarisante Industrial El Trébol C.P. Selfol, Tepotrollar, Extando de Mexico
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Area of validity	Design, Manufacturing and testing of industrial valves, are amines to certificate
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Certificate NMX-CC-9001 (Mexican Standards ISO-9001) No. 0552/2007 Issued by PEMEX in accordance with ISO-9001 Quality Assurance System.

Supplier Qualification Certificate NO. 279/13

Issued by the Equipment and Materials Testing Laboratory, CFE (LAPEM in Spanish)



Emissions after 500 cycles at ambient and 350 °F

Issued by Yarmouth Research and Technology Lab for 3 inch Class 300 Gate Valve After 500 cycles the measurement result was less than 50 ppm.



Emissions after 500 cycles at ambient and 350 °F Issued by Yarmouth Research and Technology Lab for 16 inch Class 150 Gate Valve After 500 cycles the measurement result was less than 50 ppm.



Emissions after 500 cycles at ambient and 350 °F

Issued by Yarmouth Research and Technology Lab for 8 inch Class 300 Gate Valve After 500 cycles the measurement result was less than 50 ppm.



PRODUCT CERTIFICATIONS



	PROJECT SUMMARY
Project Numbers	BROOM
Deputiement PT	The Walworth Company
Context	David Cortectors
late(a) of Test-	13999-122398
freduction Trenedi	One 6" Class 200 Gate Valve with Empsk 5los EAP 100.001 pseking
Parpens of Tests	The test was similaried to evaluate the early's room owing performance of ambient and at 2027 F as related to the 1990 Associations to the Chern Ark Stringterments. Leakage measurements were conducted in merediant with 40 CPR Part 62, Agenetic A. Method 21.
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	At cycle mancher 3500, the packing backage was 25–29 PP3/s with the storm static. The packing muts were tightened from 12/18 fb.8 back to 28 fb.9s and leakage decremand to about 1 PP3/s.
	Not the attached data shows for more information.
fart Witneren	Mathew 2. Wandwerks, P. L. President Vanascene Researce and Technickow
	Place of fut (202) Markels a Data Innov (11) Say 100 - Samardi, Marco (2006-0710

Certificates of Ultra Low Fugitive Emissions No. 20985-3, 8 & 16 in accordance with ISO-15848-1 "Industrial Valves" Measurement, Test and Qualification Procedures for Fugitive Emissions "Part 1: Classification System and Qualification Procedures for Type Testing of Valves".





In accordance with API-6FA and API Standard API-607 for Trunnion Ball Valves in accordance with API-6D.

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TÜV Rheinland Certificate No. TRASA 700-13-0019

API-6D Trunnion mounted bolted body ball valves, carbon steel (A105-WCB) construction, double block and bleed service, primarily used but not limited to the oil and gas standard and severe applications.

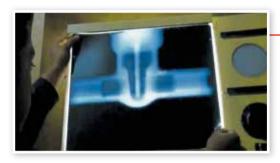
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		IFICA	ГЕ	
Concer	ming the Agreement	with the Technical Re	equinements in:	
TA-Lu	ft 2002, VDI 24	40 Nov. 2000,	Sec. 3.3.1.3	
Test report	200140	Detum	49 December, 2000	
Client :		dustrial de Valorilas, S.	A do C.Y.	
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TA Luft Certificate (Fugitive Emission) Approval ISO-5211 Top Flange, Anti-Static Device.



QUALITY CONTROL EQUIPMENT

In order to assure that WALWORTH products comply with international quality standards, in-house equipment is kept for monitoring control. Some of this equipment includes:



X-Ray Examination Equipment. WALWORTH has its own Ir-92 source in-house for the radiographic examination (RT) of castings from 0.100" up to 2 1/2" wall thickness to verify the soundness of the casting raw material.

PMI Equipment. A new generation of Positive Material Identification Equipment gives WALWORTH the capability to perform quick chemical analysis on incoming raw materials and on pieces after assembly, to certify that materials used were produced and assembled in accordance with WALWORTH's and our Customer's specifications.





Magnetic Particle Test. On a random basis for standard products or when a Customer requests MT Certification, WALWORTH has Magnetic Particle Test Equipment to perform on ferromagnetic materials.

Penetrant Test Examination. WALWORTH has the personnel and materials to perform PT examination by solvent removable or water washable techniques. NDT personnel are ASNT Certified.





Test Loop. A complete Laboratory Test loop exists for design validation of WALWORTH products. The test is performed at maximum design pressure, advances the valves from 3000 to 5000 cycles, and requires more than four months to complete.

Pressure Gradient Test Loop. This test exposes Plug valves to the extremes of both positive and negative pressure gradients to verify that the plug in a balanced plug design will prevent lock-up in the body.





10

Fire Test Facilities. WALWORTH has the facilities to perform fire tests in

accordance with API requirements. The test exposes the valve to a fire flame at 1400 to 1800 °F (761 to 980 °C) to verify proper seal of the valve.



Low Fugitive Emissions Test. This test is performed when a Customer requires low fugitive emissions certification. Our Lab has its own LFE test equipment that is capable of measuring less than 20 ppm in both static and mechanical conditions at either ambient temperature or thermal cycle operations.

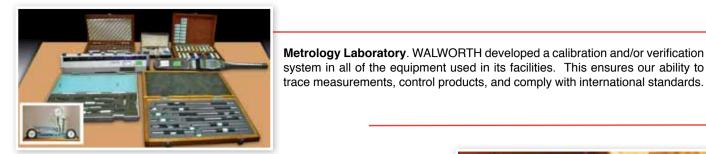
Ultrasonic Testing Equipment. Using ultrasonic techniques, we can detect sub surface flaws in materials and evaluate castings and forgings that cannot be radiographed. In addition, we utilize these techniques to measure the wall thickness of castings and forgings.

> Tensile Test Equipment. We use this equipment to verify the mechanical properties of materials used for manufacturing. WALWORTH tests samples on a random basis even though we receive MTRs from our suppliers and foundries.

Hardness Test Equipments.- In both lab and shop tests, WALWORTH uses hardness tester equipment, such as Rockwell B, C Brinell or Vickers, to ensure compliance with specifications.







WALWORTI





WALWORTH LUBRICATED PLUG VALVES

ADVANTAGES

Plug Valves have inherent advantages over the other conventional types of Valves, especially when used in corrosive or erosive service. Some of these advantages are:

1. Sealing surfaces are not exposed

The vital surfaces of the plug are self protecting and self cleaning. When fully open, all machined seating surfaces of the plug are protected from erosion or corrosive materials. When closed, only a small area, which is not needed to effect a positive shut off, is exposed to the line fluid.

2. Self cleaning seating surfaces

The shearing action of the plug valve scrapes off any abrasive ingredient which may touch the plug in a closed position.

3. Smooth Flow

The straightway passage through the plug port affords a smooth unobstructed flow, offering no opportunity for sediment or scale to collect.

4. Bubble tight shutoff

The lubricated plug and sealant system assure positive bubble tight shut off when properly maintained.

5. Ease of operation

Positive quarter turn operation is quick and sure.

6. Plug Adjustment

A WALWORTH lubricated plug valve can be adjusted with the valve in line, helping to extend the service life of the valve.

PATTERNS

WALWORTH plug valves are available in three different patterns to provide the efficiency and flexibility to meet the valve need of most piping systems.



SHORT PATTERN Provides face to face dimensions that match gate valves.





REGULAR PATTERN Offers the largest port opening in a trapezoidal configuration – close to a full pipe size.

VENTURI PATTERN Has a smaller port than the other two patterns. Is lower in cost and flow contours maximize hydraulic efficiency.



WALWORTH LUBRICATED PLUG VALVES THE WALWORTH COMPENSATOR

The plug valve eliminates taper lock, for years of dependable service with little or no maintenance, even in hostile environments.

"Positive Bias" Balance Plug Design

The COMPENSATOR plug valve design is based on a load compensating, mechanically balanced tapered plug, which cannot bind or lock. Maintenance is virtually eliminated; lower operating torque is achieved, and size and weight are reduced by 20% to 25%. The COMPENSATOR provides these major benefits, while retaining the positives attributes of automatic shut-off, fire safety, and resistance to corrosion and erosion not found in conventional tapered plug valves.

How it works

Unlike other lubricated plug valve designs, WALWORTH's COMPENSATOR plug valve does not rely on sealant or line pressure to keep the plug from wedging or binding in the valve body. Instead, the COMPENSATOR utilizes SS-304 long life spring-type helicoidal and an adjusting screw to mechanically balance the plug and compensate for line pressure. The function of the sealant, therefore, is to provide a backup to the tight seal between the plug and body. The sealant chamber is isolated from the line media. A sealant fitting is provided to permit injection of sealant into the isolated chamber to assure a bubble tight seal and to lubricate internal parts.

Positive Downward Bias Pressure Balance

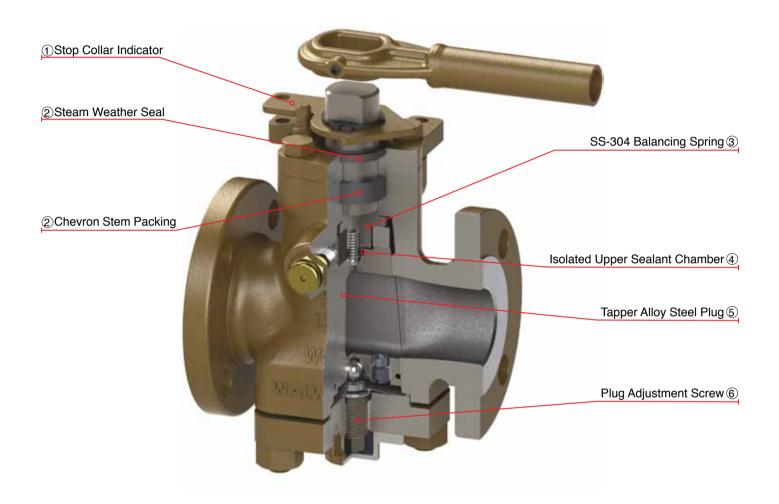
There is a passageway with a ball check between the flow port of the plug and the lower chamber. When a pressure rise occurs in the flow port area, the ball check is held shut, forcing pressure equalization to take place through the annular clearance gap at the top and bottom of the lubricated plug. Since the net differential plug area is greater at the bottom, the result is a net downward force acting on the plug. In the event of a sudden drop in flow port pressure, the positive bias downward is maintained because the upper sealant chamber is forced to equalize through the annular gap, while the lower cavity equalizes through both the gap and the ball check valve. Thus, the lower chamber reaches equilibrium with the flow port well before the upper chamber, causing the plug to stay against the ball at its base.







THE WALWORTH COMPENSATOR PLUG VALVE SHORT PATTERN



Design Features

- (1) Open/Close Indicator quarter turn stop collar also functions as an indicator of the plug's position.
- (2) Stem Sealing System the stem is protected two ways. The weather seal protects it from external attack. High temperature soft packing protects the stem against internal leakage.
- (3) Balancing Spring the mechanical spring type grade 304 Stainless Steel is under compression and holds the plug in an equalized pressure position, thus eliminating the possibility of plug taper lock.
- ④ Isolated Sealant Chamber the sealant's function is to provide a backup to the positively biased surface between the plug and the body.
- (5) Plug the mechanically balanced plug has a permanently bonded PERFLO coating for a very low coefficient of friction. Operating torque remains low over the 4,000 cycle test life of the valve.
- (6) Plug Adjustment the steel plug is mechanically loaded into the body to put tension on the balance spring and is then adjusted for optimum balance and performance. The adjustment screw is covered to prevent tampering and possible misadjustment.

*End to End Dimension as per ASME B16.10 to meet Short Pattern Length



COMPENSATOR PLUG VALVE SHORT PATTERN CLASS 150 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug ⁽¹⁾	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Stem Environmental Seal	Elastomer
22	Cover Studs Environmental Seals	Buna N
23	Stop Collar	Carbon Steel
24	Stop Pin	Carbon Steel
25	Retainer	Carbon Steel
26	Adjustment Cover	Carbon Steel
27	Adjustment Cover Gasket	Natural Fiber
28	Adjustment Cover Screw	Carbon Steel
29	Identification Plate*	Stainless Steel 304
30	Sealant*	Walseal #10
31	Balance Spring Ball	A295 Type 52100
32	Wrench	Carbon Steel

- 32

*Not Shown

(1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.



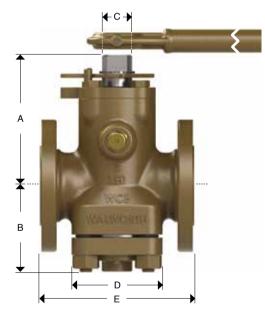
COMPENSATOR PLUG VALVE SHORT PATTERN CLASS 150 (WRENCH OPERATED)

Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
- Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
1412	Wrench	RF
1414	Wrench	WE





С

Dimensions and Weights

										General Dimensions End to End Dimensions					Approx Weight					
Nominal Size				Ger	ieral D	Imensi	ons			E				DE/	RTJ	w		Wrench		
01	20	4	4	I	в	(2	0)	R	F	R	ТJ	W	/E		nij	vv	E	No.
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	
2	50	5.9	150	3.78	96	1.37	35	4.125	105	7	178	7.5	191	10.5	267	16	35	-	-	IB-2
3	76	6.84	174	4.53	115	1.37	35	4.62	117	8	203	8.5	216	13	330	30	66	-	-	IB-2
4	100	7.37	187	5.05	128	1.37	35	5.25	133	9	229	9.5	241	14	356	35	77	31	68	IB-2
6	150	9.51	242	6.25	159	1.99	51	8.12	206	10.5	267	11	279	18	457	64	141	45	99	IB-3
8	200	11.75	298	9	229	1.99	51	9.75	248	11.5	292	12	305	20.5	521	89	196	70	154	IB-3

Note: The same range of valves is available with Flanged by Butt-weld end (RF x WE) with the figure: 1415



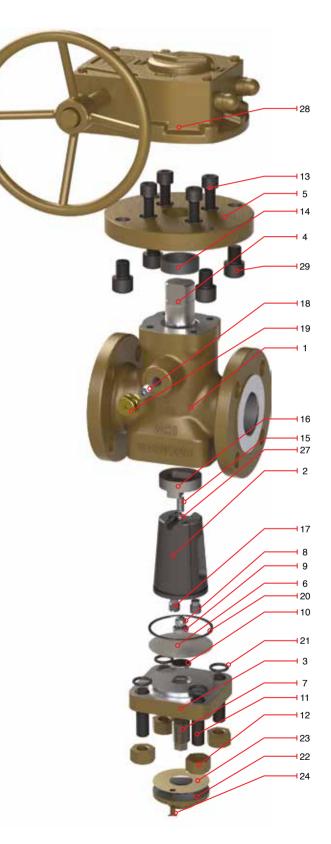
COMPENSATOR PLUG VALVE SHORT PATTERN CLASS 150 (GEAR OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Cover Studs Environmental Seals	Buna N
22	Adjustment Cover	Carbon Steel
23	Adjustment Cover Gasket	Natural Fiber
24	Adjustment Cover Screw	Carbon Steel
25	Identification Plate*	Stainless Steel 304
26	Sealant*	Walseal #10
27	Balance Spring Ball	A295 Type 52100
28	Gear Box	Commercial Steel
29	Top Socket Screw	Carbon Steel A449 Gr. 5

*Not Shown

(1) Valves from 1/2" to 1 1/2" classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





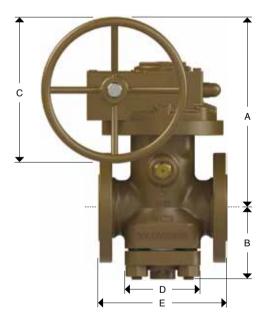
COMPENSATOR PLUG VALVE SHORT PATTERN CLASS 150 (GEAR OPERATED)

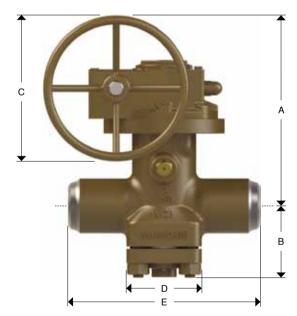
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
1422	Gear operator	RF
1424	Gear operator	WE







Dimensions and Weights

				0						End to End Dimensions							Approx Weight				
	ninal ze		General Dimensions								E										
0	20	A	•	E	3	(C	I	C	R	F	R	TJ	W	'E	RF/RTJ			WE		
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb		
4	100	10.18	259	5.05	128	12	305	5.25	133	9	229	9.5	241	14	356	62	136	54	119		
6	150	11.4	290	6.38	162	20	508	8.12	206	10.5	267	11	279	18	457	87	191	65	143		
8	200	13.11	333	9	229	20	508	9.75	248	11.5	292	12	305	20.5	521	116	255	87	191		
10	250	14.83	377	9.5	241	20	508	11.5	292	13	330	13.5	343	22	559	205	451	170	374		
12	300	16.5	419	11.69	297	20	508	12	305	14	356	14.5	368	25	635	272	598	190	418		

Note: The same range of valves is available with Flanged by Butt-weld end (RF x WE) with the figure: 1425



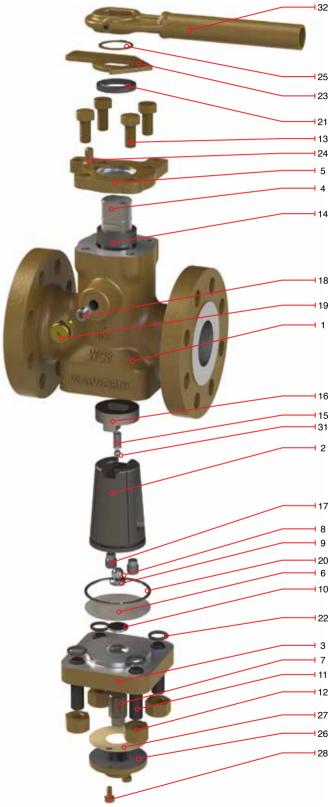
COMPENSATOR PLUG VALVE SHORT PATTERN CLASS 300 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Stem Environmental Seal	Elastomer
22	Cover Studs Environmental Seals	Buna N
23	Stop Collar	Carbon Steel
24	Stop Pin	Carbon Steel
25	Retainer	Carbon Steel
26	Adjustment Cover	Carbon Steel
27	Adjustment Cover Gasket	Natural Fiber
28	Adjustment Cover Screw	Carbon Steel
29	Identification Plate*	Stainless Steel 304
30	Sealant*	Walseal #10
31	Balance Spring Ball	A295 Type 52100
32	Wrench	Carbon Steel

*Not Shown

(1) Valves from $\frac{1}{2}$ to 1 $\frac{1}{2}$ classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





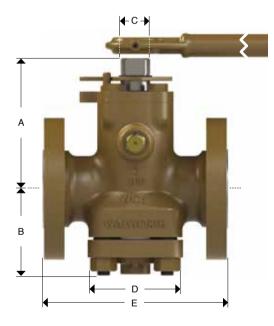
COMPENSATOR PLUG VALVE SHORT PATTERN CLASS 300 (WRENCH OPERATED)

Design Features

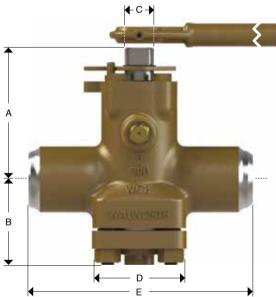
- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
- Butt-weld Dimensions conform to ANSI/ASME B16.25
- · Design as per API 6D
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
3412	Wrench	RF
3413	Wrench	RTJ
3414	Wrench	WE





Dimensions and Weights



				0.0							End t	o End	Dimen	sions		A	pprox	Weigh	nt	
	ninal ize			Ger	neral D	Imens	ons					E	1			DE/	RTJ	J WE		Wrench
	20	ł	4	I	в	(2	0	כ	R	F	R	ГJ	W	/E	nr/	nij			No.
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	
2	50	4.5	114	3.78	96	1.37	35	4.37	111	8.5	216	9.12	232	10.5	267	20	44	13	29	IB-2
3	76	6.84	174	4.41	112	1.37	35	4.62	117	11.12	283	11.75	298	13	330	35	77	26	57	IB-2
4	100	7.37	187	5.05	128	1.37	35	5.25	133	12	305	12.62	321	14	356	41	90	36	79	IB-2
6	150	9.51	242	6.38	162	1.99	51	8.12	206	15.87	403	16.50	419	18	457	91	200	73	161	IB-3
8	200	11.72	298	9.19	233	1.99	51	9.75	248	16.5	419	17.12	435	20.5	521	150	330	115	253	IB-3

Note: The same range of valves is available with Flanged by Butt-weld end (RF x WE) with the figure: 3415



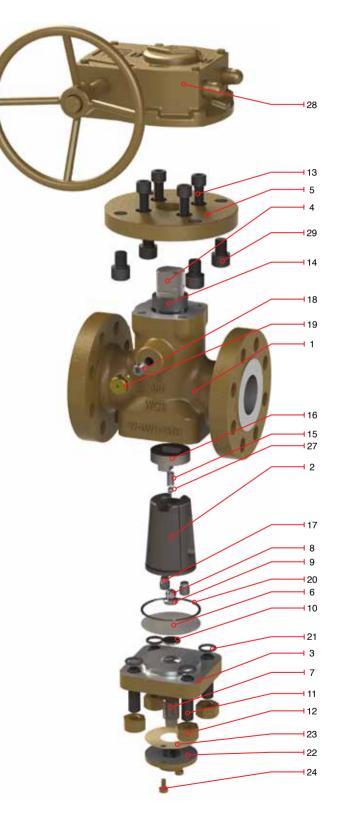
COMPENSATOR PLUG VALVE SHORT PATTERN CLASS 300 (GEAR OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Cover Studs Environmental Seals	Buna N
22	Adjustment Cover	Carbon Steel
23	Adjustment Cover Gasket	Natural Fiber
24	Adjustment Cover Screw	Carbon Steel
25	Identification Plate*	Stainless Steel 304
26	Sealant*	Walseal #10
27	Balance Spring Ball	A295 Type 52100
28	Gear Box	Commercial Steel
29	Top Socket Screw	Carbon Steel A449 Gr. 5

*Not Shown

(1) Valves from ½" to 1 ½" classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





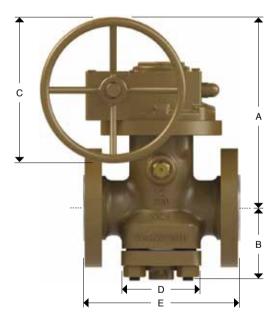
COMPENSATOR PLUG VALVE SHORT PATTERN CLASS 300 (GEAR OPERATED)

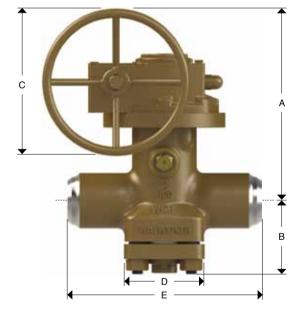
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends		
3422	Gear operator	RF		
3423	Gear operator	RTJ		
3424	Gear operator	WE		







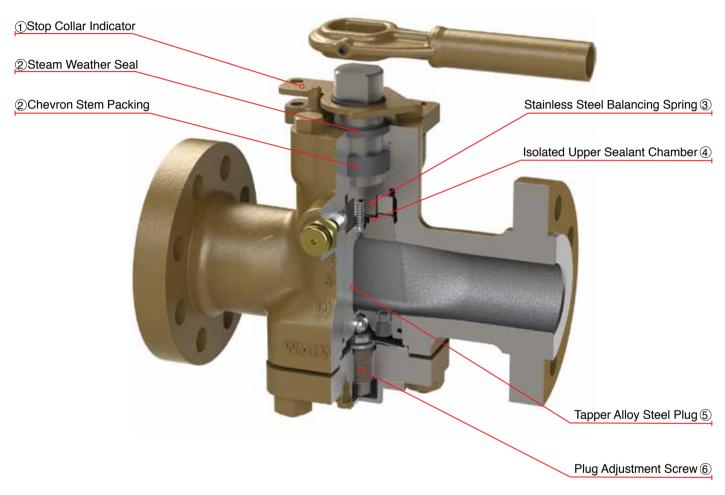
Dimensions and Weights

				•						End to End Dimensions							Approx Weight				
	ninal ze		General Dimensions								E						RF/RTJ		WE		
0	20	4	۱	E	3	(C	I	D	R	F	R	ГJ	W	/E	N F/	nij	VVE			
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb		
3	76	11.3	287	4.41	112	12	305	4.62	117	11.12	283	11.75	298	13	330	62	136	50	110		
4	100	10.1	257	5.05	128	12	305	5.25	133	12	305	12.62	321	14	356	68	150	52	114		
6	150	11.4	290	6.38	162	20	508	8.12	206	15.87	403	16.5	419	18	457	118	260	89	196		
8	200	13.11	333	9.14	232	20	508	9.75	248	16.5	419	17.12	435	20.5	521	181	398	140	308		
10	250	16.53	420	10.4	264	30	762	?	?	18	457	18.62	473	22	559	340	748	300	660		

Note: The same range of valves is available with Flanged by Butt-weld end (RF x WE) with the figure: 3425



COMPENSATOR PLUG VALVE REGULAR PATTERN



Design Features

- (1) Open/Close Indicator quarter turn stop collar also functions as an indicator of the plug's position.
- (2) Stem Sealing System the stem is protected two ways. The weather seal protects it from external attack. High temperature soft packing protects the stem against internal leakage.
- (3) Balancing Spring the mechanical spring type Stainless steel 304 is under compression and holds the plug in an equalized pressure position, thus eliminating the possibility of plug taper lock.
- (4) Isolated Sealant Chamber the sealant's function is to provide a backup to the positively biased surface between the plug and the body.
- (5) Plug the mechanically balanced plug has a permanently bonded PERFLO coating for a very low coefficient of friction. Operating torque remains low over the 4,000 cycle test life of the valve.
- (6) Plug Adjustment the steel plug is mechanically loaded into the body to put tension on the balance spring and is then adjusted for optimum balance and performance. The adjustment screw is covered to prevent tampering and possible misadjustment.

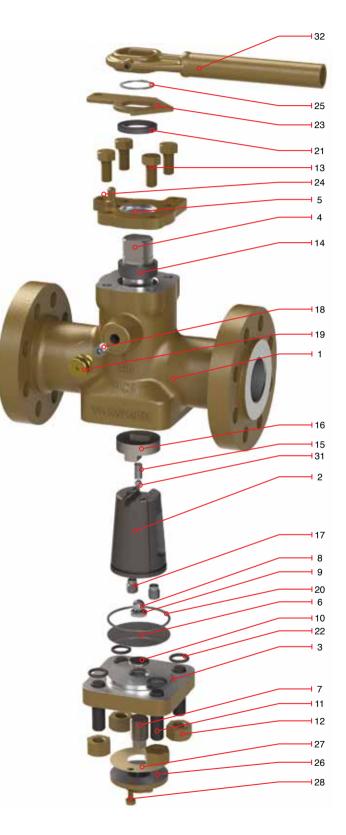
*End to End Dimension as per ASME B16.10 to meet Regular Pattern Length



COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 150 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Stem Environmental Seal	Elastomer
22	Cover Studs Environmental Seals	Buna N
23	Stop Collar	Carbon Steel
24	Stop Pin	Carbon Steel
25	Retainer	Carbon Steel
26	Adjustment Cover	Carbon Steel
27	Adjustment Cover Gasket	Natural Fiber
28	Adjustment Cover Screw	Carbon Steel
29	Identification Plate*	Stainless Steel 304
30	Sealant*	Walseal #10
31	Balance Spring Ball	A295 Type 52100
32	Wrench	Carbon Steel



*Not Shown (1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.



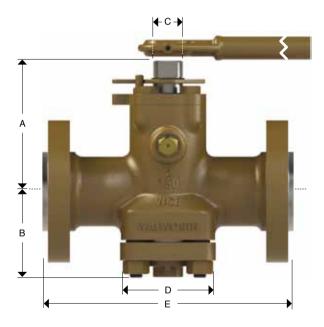
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 150 (WRENCH OPERATED)

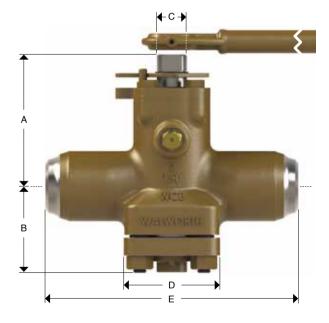
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
1512	Wrench	RF
1514	Wrench	WE







Dimensions and Weights

				Com	eral D	Imanal					End t	o End	Dimen	sions		A	pprox	Weigh	nt	
	ninal ze			Gen	ierai D	imensi	ons					E	E			RF/	ртι	/=	Wrench	
0.	20	4	۹.	E	3	(2	0)	R	F	R	TJ	N	/E	nr/		WE		No.
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	
2	50	5.9	150	3.78	96	1.37	35	4.125	105	-	-	-	-	-	-	19	42	-	-	IB-2
3	76	6.84	174	4.53	115	1.37	35	4.62	117	-	-	-	-	-	-	30	66	-	-	IB-2
4	100	7.37	187	5.05	128	1.37	35	5.25	133	-	-	-	-	-	-	35	77	31	68	IB-2
6	150	9.51	242	6.25	159	1.99	51	8.12	206	15.5	394	16	406	-	-	64	141	45	99	IB-3
8	200	11.75	298	9	229	1.99	51	9.75	248	18	457	18.5	470	-	-	89	196	70	154	IB-3

Note: The same range of valves is available with Flanged by Butt-weld end (RF x WE) with the figure 1515



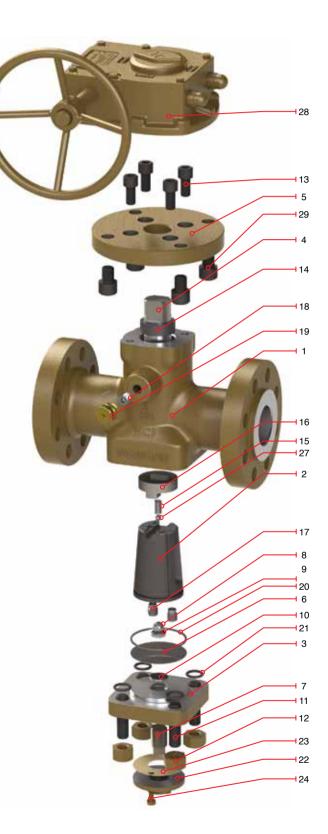
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 150 (GEAR OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Cover Studs Environmental Seals	Buna N
22	Adjustment Cover	Carbon Steel
23	Adjustment Cover Gasket	Natural Fiber
24	Adjustment Cover Screw	Carbon Steel
25	Identification Plate*	Stainless Steel 304
26	Sealant*	Walseal #10
27	Balance Spring Ball	A295 Type 52100
28	Gear Box	Commercial Steel
29	Top Socket Screw	Carbon Steel A449 Gr. 5

*Not Shown

(1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





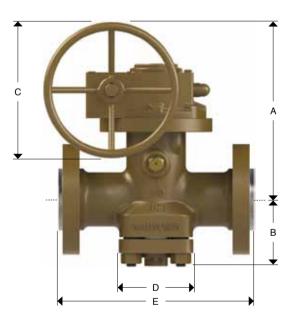
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 150 (GEAR OPERATED)

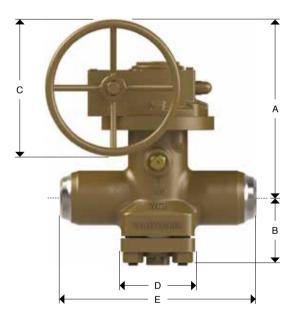
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
1522	Gear operator	RF
1524	Gear operator	WE







Dimensions and Weights

				0						End to End Dimensions							Approx Weight				
	ninal General Dimensions									E							ртι	10	/=		
	20	A	۱	E	3	(C	I	D	R	F	R	TJ	N	/E	RF/RTJ		WE			
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb		
4	100	10.18	259	5.05	128	12	305	5.25	133	-	-	-	-	-	-	77	169	54	119		
6	150	11.4	290	6.38	162	20	508	8.12	206	15.5	394	16	406	-	-	101	222	65	143		
8	200	13.11	333	9	229	20	508	9.75	248	18	457	15.5	475	-	-	133	293	87	191		
10	250	14.83	377	9.5	241	20	508	11.5	292	21	533	21.5	546	-	-	209	460	170	374		
12	300	16.5	419	11.69	297	20	508	12	305	24	610	24.3	622	-	-	314	691	190	418		

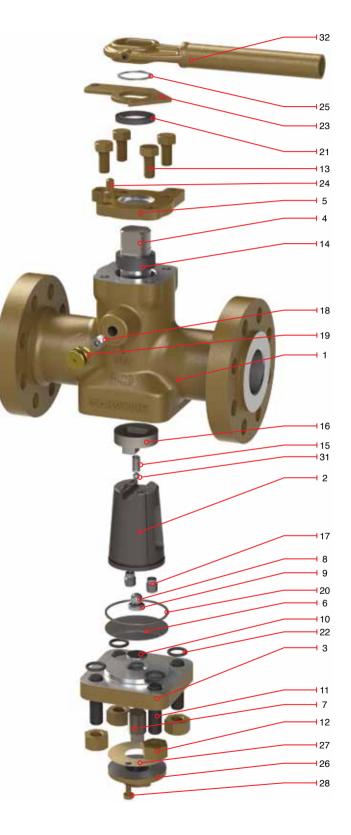
Note: The same range of valves is available with Flanged by Butt-weld end (RF x WE) with the figure 1525



COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 300 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Stem Environmental Seal	Elastomer
22	Cover Studs Environmental Seals	Buna N
23	Stop Collar	Carbon Steel
24	Stop Pin	Carbon Steel
25	Retainer	Carbon Steel
26	Adjustment Cover	Carbon Steel
27	Adjustment Cover Gasket	Natural Fiber
28	Adjustment Cover Screw	Carbon Steel
29	Identification Plate*	Stainless Steel 304
30	Sealant*	Walseal #10
31	Balance Spring Ball	A295 Type 52100
32	Wrench	Carbon Steel



*Not Shown

(1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.



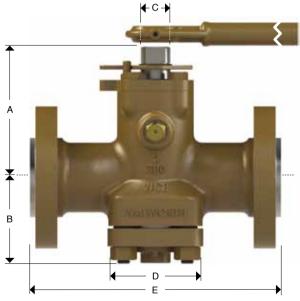
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 300 (WRENCH OPERATED)

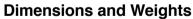
Design Features

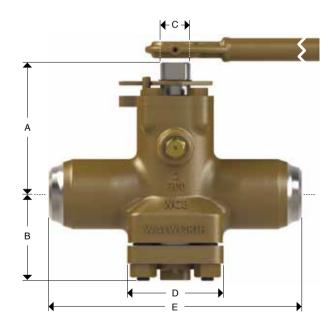
- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D •
- Fire Test as per API 6FA •

Figure no.	Operation	Type of ends
3512	Wrench	RF
3513	Wrench	RTJ
3514	Wrench	WE









				0.00						End to End Dimensions							pprox	Weigh	nt		
	ninal ize			Ger	neral D	Imens	ons					E	=			DE/	RTJ	WE		Wrench	
J	120	4	1	I	в	(C	[כ	R	F	R	ТJ	N	/E	nr/	nij			No.	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb		
2	50	4.5	114	3.78	96	1.37	35	4.37	111	-	-	-	-	-	-	26	57	21	46	IB-2	
3	76	6.84	174	4.41	112	1.37	35	4.62	117	-	-	-	-	-	-	46	101	38	84	IB-2	
4	100	7.37	187	5.05	128	1.37	35	5.25	133	-	-	-	-	-	-	54	119	45	99	IB-2	
6	150	9.51	242	6.38	162	1.99	51	8.12	206	15.87	403	16.5	419	-	-	119	262	99	218	IB-3	
8	200	11.72	298	9.19	233	1.99	51	9.75	248	19.75	502	20.37	518	-	-	195	429	162	356	IB-3	

Note: The same range of valves is available with Flanged by Butt-weld end (RF x WE) with the figure 3515

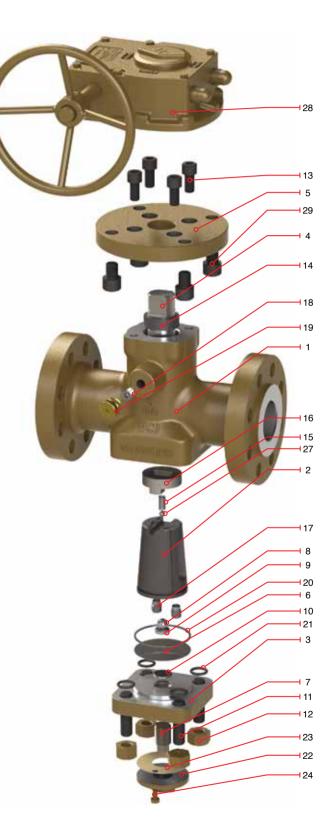


COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 300 (GEAR OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Cover Studs Environmental Seals	Buna N
22	Adjustment Cover	Carbon Steel
23	Adjustment Cover Gasket	Natural Fiber
24	Adjustment Cover Screw	Carbon Steel
25	Identification Plate*	Stainless Steel 304
26	Sealant*	Walseal #10
27	Balance Spring Ball	A295 Type 52100
28	Gear Box	Commercial Steel
29	Top Socket Screw	Carbon Steel A449 Gr. 5

*Not Shown (1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





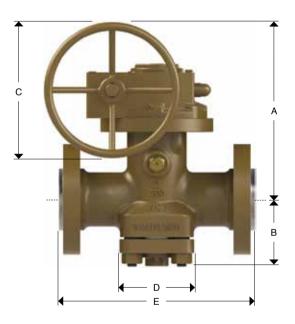
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 300 (GEAR OPERATED)

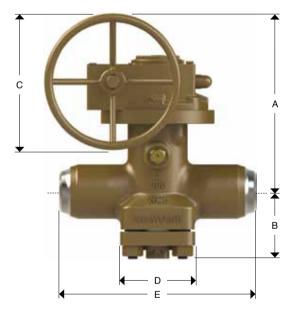
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
3522	Gear operator	RF
3523	Gear operator	RTJ
3524	Gear operator	WE







Dimensions and Weights

				0						End to End Dimensions							Approx Weight				
	ninal ze		Gei	neral Di	ons			E						RF/	στι	WE					
	20	4	4	E	3	(0	0)	R	F	R	TJ	N	/E	N F/		v			
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb		
2	50	8.43	214	3.78	96	12	305	4.37	111	-	-	-	-	-	-	33	73	27	59		
3	76	9.84	250	5.09	129	12	305	5	127	-	-	-	-	-	-	69	152	59	130		
4	100	10.01	254	5.06	129	12	305	5.75	146	-	-	-	-	-	-	100	220	75	165		
6	150	11.6	295	7.63	194	20	508	9.63	245	-	-	-	-	-	-	200	440	150	330		
8	200	14.62	371	9.82	249	30	762	10.75	273	15.87	403	16.5	419	-	-	321	706	255	561		
10	250	17.03	433	12.31	313	30	762	15.62	397	19.75	502	20.37	518	-	-	545	1199	410	902		
12	300	18.04	458	14.19	360	30	762	15	381	22.37	568	23	584	-	-	820	1804	615	1353		

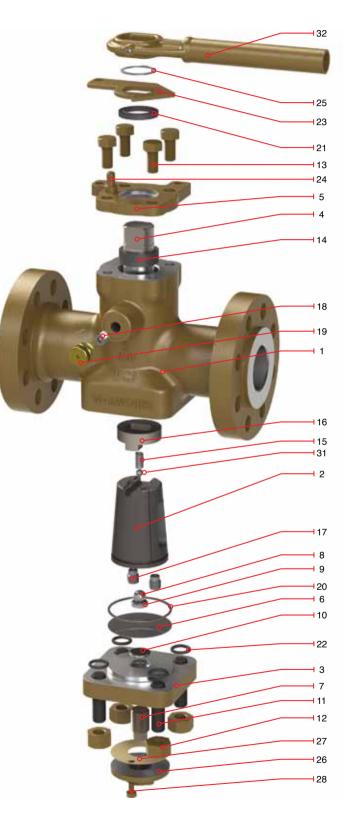
Note: The same range of valves is available with Flanged by Butt-weld end (RF x WE) with the figure 3525



COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 600 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Stem Environmental Seal	Elastomer
22	Cover Studs Environmental Seals	Buna N
23	Stop Collar	Carbon Steel
24	Stop Pin	Carbon Steel
25	Retainer	Carbon Steel
26	Adjustment Cover	Carbon Steel
27	Adjustment Cover Gasket	Natural Fiber
28	Adjustment Cover Screw	Carbon Steel
29	Identification Plate*	Stainless Steel 304
30	Sealant*	Walseal #10
31	Balance Spring Ball	A295 Type 52100
32	Wrench	Carbon Steel



*Not Shown

(1) Valves from ½" to 1 ½" classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.



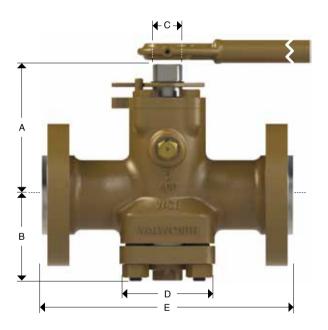
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 600 (WRENCH OPERATED)

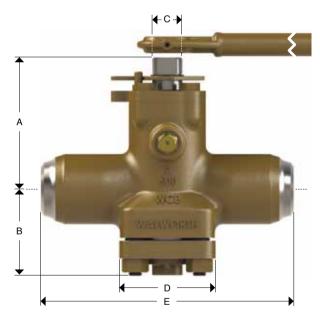
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Threaded Dimensions conform to ANSI/ASME B1.20.1 •
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends					
6511	Wrench	THREADED					
6512	Wrench	RF					
6513	Wrench	RTJ					
6514	Wrench	WE					







Dimensions and Weights

			General Dimensions								End to End Dimensions							Approx Weight						
Norr Si				Gene	eral D	imens	sions			E						RF/	σтι	WE		THREDADED		h No		
0.		4	4	E	3	(2	0)	R	F	R	ГJ	THREE	DADED	W	/E	nr/		VVE		INNEDADED		Wrench
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	Kg	lb	Š
1	25	4.5	114	2.78	71	0.74	19	3.62	92	-	-	-	-	-	-	-	-	10	22	7	15	7	15	IB-0
1 1/2	40	5.06	129	3.37	86	1	25	4	102	-	-	-	-	-	-	-	-	17	37	12	26	12	26	IB-1
2	50	5.98	152	3.78	96	1.37	35	4.37	111	11.5	292	11.62	295	7.75	197	11.5	292	24	53	18	40	18	40	IB-2
3	76	6.84	174	5.09	129	1.37	35	5	127	14	356	14.12	359	10	254	14	356	40	88	29	64	29	64	IB-2
4	100	7.37	187	5.88	149	1.37	35	5.75	146	17	432	17.12	435	11.5	292	17	432	70	154	50	110	50	110	IB-2
6	150	9.65	245	7.63	194	1.99	51	9.62	244	22	559	22.12	562	-	-	22	559	172	378	-	-	118	260	IB-3

Note: The same range of valves is available with Flanged by Butt-weld end (RF x WE) with the figure 6515



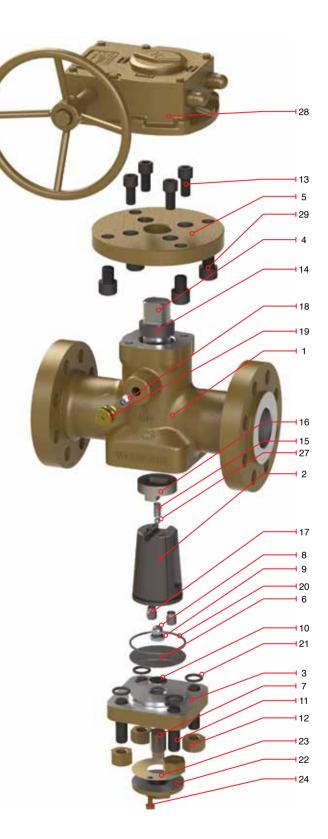
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 600 (GEAR OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Cover Studs Environmental Seals	Buna N
22	Adjustment Cover	Carbon Steel
23	Adjustment Cover Gasket	Natural Fiber
24	Adjustment Cover Screw	Carbon Steel
25	Identification Plate*	Stainless Steel 304
26	Sealant*	Walseal #10
27	Balance Spring Ball	A295 Type 52100
28	Gear Box	Commercial Steel
29	Top Socket Screw	Carbon Steel A449 Gr. 5

*Not Shown

(1) Valves from $1\!\!\!/ _2$ " to 1 $1\!\!\!/ _2$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





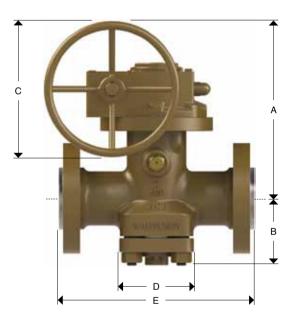
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 600 (GEAR OPERATED)

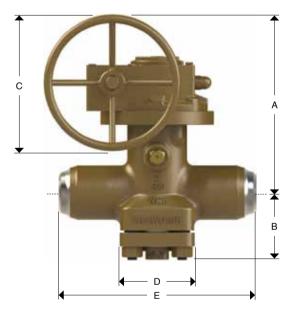
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
6522	Gear operator	RF
6523	Gear operator	RTJ
6524	Gear operator	WE







Dimensions and Weights

				0						End to End Dimensions							Approx Weight			
Nomi Size		General Dimensions								E							RF/RTJ		WE	
CIZE		А		В		С		D		RF		RTJ		WE		nr/filj		VV C		
in	mm	in mm		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	
2	50	8.43	214	3.78	96	12	305	4.37	111	11.5	292	11.62	295	11.5	292	33	73	27	59	
3	76	9.84	250	5.09	129	12	305	5	127	14	356	14.12	359	14	356	69	152	59	130	
4	100	10.01	254	5.06	129	12	305	5.75	146	17	432	17.12	435	17	432	100	220	75	165	
6	150	11.6	295	7.63	194	20	508	9.63	245	22	559	22.12	562	22	559	200	440	150	330	
8	200	14.62	371	9.82	249	30	762	10.75	273	26	660	26.12	664	26	660	321	706	255	561	
10	250	17.03	433	12.31	313	30	762	15.62	397	31	787	31.12	791	31	787	545	1199	410	902	
12	300	18.04	458	14.19	360	30	762	15	381	-	-	-	-	-	-	820	1804	615	1353	

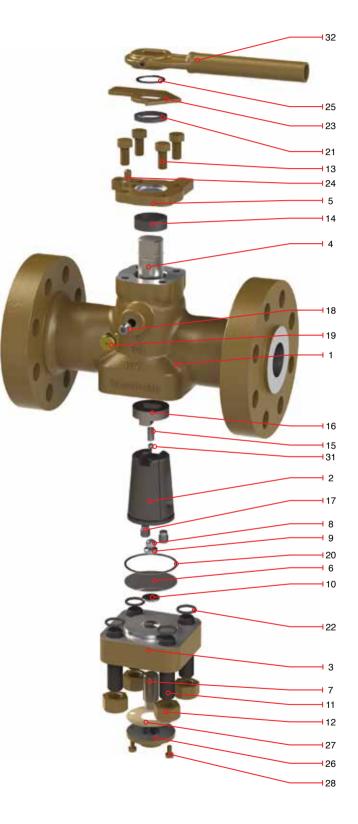
Note: The same range of valves is available with Flanged by Butt-weld end (RF x WE) with the figures 6525



COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 900 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug ⁽¹⁾	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Stem Environmental Seal	Elastomer
22	Cover Studs Environmental Seals	Buna N
23	Stop Collar	Carbon Steel
24	Stop Pin	Carbon Steel
25	Retainer	Carbon Steel
26	Adjustment Cover	Carbon Steel
27	Adjustment Cover Gasket	Natural Fiber
28	Adjustment Cover Screw	Carbon Steel
29	Identification Plate*	Stainless Steel 304
30	Sealant*	Walseal #10
31	Balance Spring Ball	A295 Type 52100
32	Wrench	Carbon Steel



*Not Shown

(1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.



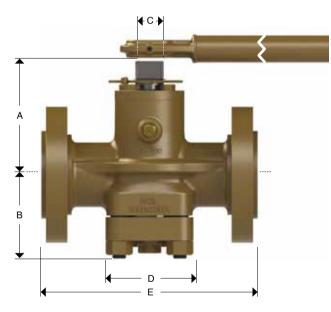
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 900 (WRENCH OPERATED)

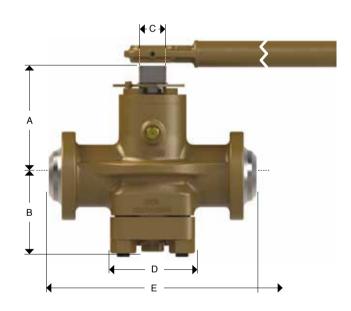
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Threaded Dimensions to conform to ANSI/ASME B 1.20.1 •
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends					
9511	Wrench	THREADED					
9512	Wrench	RF					
9513	Wrench	RTJ					
9514	Wrench	WE					







Dimensions and Weights

			General Dimensions									End to End Dimensions								Approx Weight					
Nominal Size		General Dimensions								E								RF/RTJ		WE		THREDADED		ch No.	
0120		Α		В		С		D		RF		RTJ		THREDADED		WE				VVE		INNEDADED		É.	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	Kg	lb	Wre	
2	50	6	152	3.91	99	1.37	35	4.75	121	14.5	368	14.62	371	7.75	197	-	-	41	90	31	68	31	68	IB-2	
3	76	7.93	201	5.09	129	2	51	6.12	155	15	381	15.12	384	10	254	15	381	65	143	55	121	55	121	IB-3	
4	100	8.65	220	6.19	157	2	51	8.5	216	18	457	18.12	460	11.5	292	18	457	104	229	90	198	90	198	IB-3	

Note: The same range of valves is available with Flanged by Butt-weld end (RF x WE) with the figure 9515

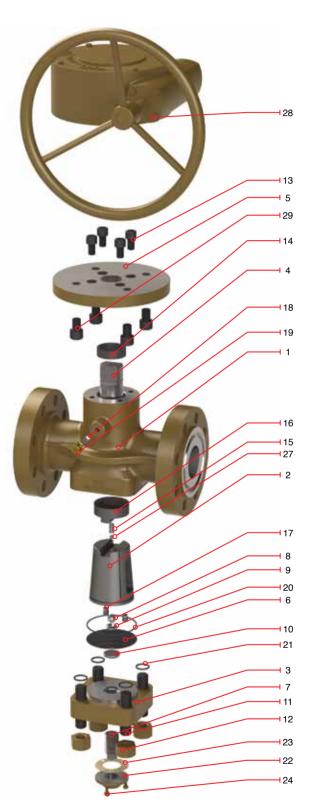


COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 900 (GEAR OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Cover Studs Environmental Seals	Buna N
22	Adjustment Cover	Carbon Steel
23	Adjustment Cover Gasket	Natural Fiber
24	Adjustment Cover Screw	Carbon Steel
25	Identification Plate*	Stainless Steel 304
26	Sealant*	Walseal #10
27	Balance Spring Ball	A295 Type 52100
28	Gear Box	Commercial Steel
29	Top Socket Screw	Carbon Steel A449 Gr. 5

*Not Shown (1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





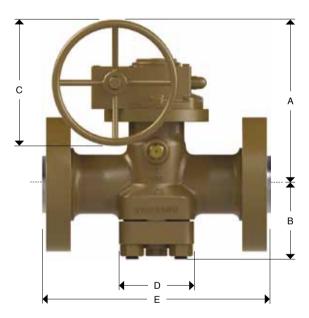
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 900 (GEAR OPERATED)

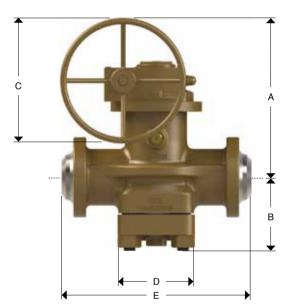
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
9522	Gear operator	RF
9523	Gear operator	RTJ
9524	Gear operator	WE







Dimensions and Weights

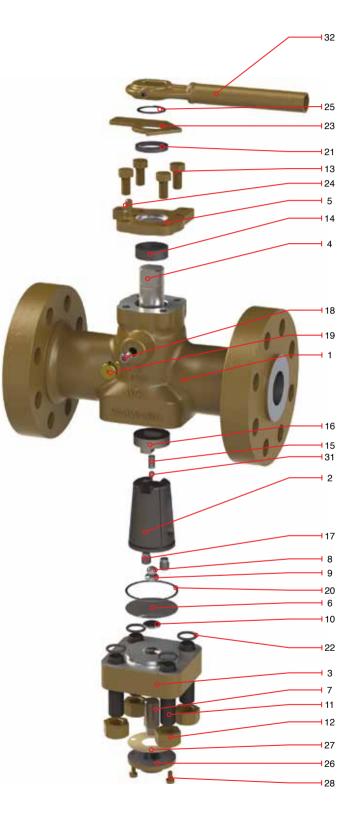
				0							End	to End	Dimens	sions		Approx Weight				
	ninal ize			Ger	neral D	Imensi	ons					I	E		DE/	рті	14			
	20	A	۱.	В		С		D		RF		RTJ		WE		RF/RTJ		WE		
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	
3	76	11.69	297	5.09	129	20	508	6.13	156	15	381	15.12	384	15	381	92	202	70	154	
4	100	12.44	316	6.19	157	20	508	8.5	216	18	457	18.12	460	18	457	132	290	100	220	
6	150	15.15	385	9	229	20	508	10	254	24	610	24.12	613	24	610	150	330	190	418	
8	200	16.37	416	9.75	248	30	762	13	330	29	737	29.12	740	29	737	464	1021	350	770	
10	254	19.37	492	11.37	289	20	508	15.62	397	33	838	33.12	841	33	838	625	1375	470	1034	



COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 1500 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Ball Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Stem Environmental Seal	Elastomer
22	Cover Studs Environmental Seals	Buna N
23	Stop Collar	Carbon Steel
24	Stop Pin	Carbon Steel
25	Retainer	Carbon Steel
26	Adjustment Cover	Carbon Steel
27	Adjustment Cover Gasket	Natural Fiber
28	Adjustment Cover Screw	Carbon Steel
29	Identification Plate*	Stainless Steel 304
30	Sealant*	Walseal #10
31	Balance Spring Ball	A295 Type 52100
32	Wrench	Carbon Steel



*Not Shown

(1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.



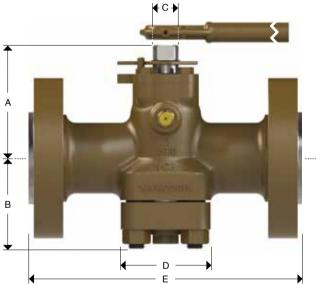
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 1500 (WRENCH OPERATED)

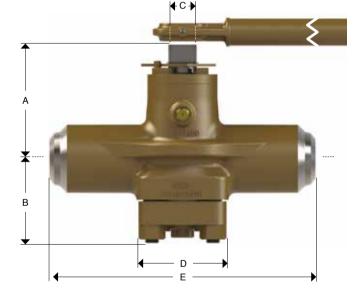
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Threaded Dimensions conform to ANSI/ASME B1.20.1 •
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
5511	Wrench	THREADED
5512	Wrench	RF
5513	Wrench	RTJ
5514	Wrench	WE







Dimensions and Weights

				0		•					I	End to	End	Dime	nsion	s		Approx Weight						
	ninal ize			Gene	eral D	imens	sions			E								BF/	пті	14	'E	TUDE		h No
	20	1	۹	E	3	C	>		כ	R	F	R	RTJ		THREDADED		'E	111/1110		vv	E	THREDADED		č
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	Kg	lb	Wre
1/2	15	4.24	108	2.42	61	0.74	19	3.43	87	-	-	-	-	4.5	114	-	-	-	-	5	11	-	-	IB-0
3/4	20	4.24	108	2.42	61	0.74	19	3.43	87	-	-	-	-	4.5	114	-	-	-	-	5	11	-	-	IB-0
1	25	4.5	114	2.78	71	0.74	19	3.87	98	-	-	-	-	5	127	-	-	14	10	10	22	-	-	IB-0
2	50	5.06	129	3.5	89	1	25	4.25	108	14.5	368	14.62	371	6.69	170	14.5	368	25	17	17	37	-	-	IB-1
3	76	5.98	152	3.91	99	1.37	35	4.75	121	18.5	470	18.62	473	7.75	197	18.5	470	41	31	31	68	31	68	IB-2
4	100	7.93	201	5.09	129	1.99	51	6.37	162	21.5	546	21.62	549	10	254	21.5	546	89	67	67	147	67	147	IB-3
6	150	8.56	217	6.19	157	1.99	51	8.5	216	27.75	705	30	711	11.5	292	27.75	705	133	100	100	220	100	220	IB-3



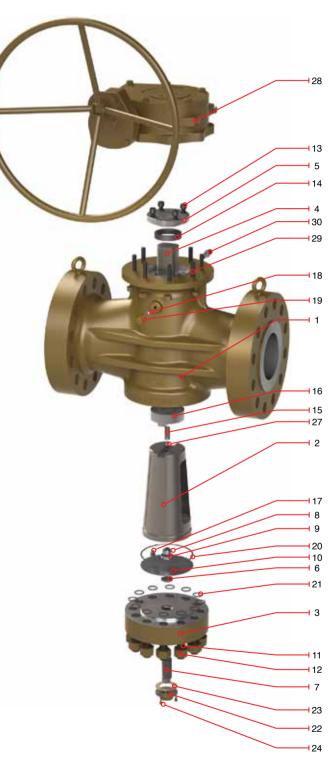
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 1500 (GEAR OPERATED)

Regular Bill of Materials

N	lo.	Description	Standard Material
	1	Body	Carbon Steel A216 Gr. WCB
:	2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
:	3	Cover	A515 Gr. 70
.	4	Stem	Stainless Steel A276 Type 410
1	5	Gland	A515 Gr. 70
'	6	Diaphragm	Stainless Steel A167 Type 304
	7	Adjustment Screw	Alloy Steel A322 Gr. 4140
;	8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
	9	Thrust Ball Seat	Alloy Steel AISI 4140
1	10	Thrust Button	Carbon Steel
1	11	Cover Studs	Alloy Steel A193 Gr. B7
1	12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
1	13	Gland Screw	Carbon Steel A449 Gr. 5
1	14	Stem Packing	Graphite
1	15	Balance Spring	Stainless Steel
1	16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
1	17	Plug Check Valve	Commercial Steel
1	18	Sealant Check Valve	Commercial Steel
1	19	Sealant Injection Fitting	Commercial Steel
2	20	Cover Gasket	Soft Steel
2	21	Cover Studs Environmental Seals	Buna N
2	22	Adjustment Cover	Carbon Steel
2	23	Adjustment Cover Gasket	Natural Fiber
2	24	Adjustment Cover Screw	Carbon Steel
2	25	Identification Plate*	Stainless Steel 304
2	26	Sealant*	Walseal #10
2	27	Balance Spring Ball	A295 Type 52100
2	28	Gear Box	Commercial Steel
2	29	Top Socket Screw	Carbon Steel A449 Gr. 5
3	30	Packing Injector	Carbon Steel

*Not Shown

(1) Valves from $1\!\!\!/ _2$ " to 1 $1\!\!\!/ _2$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





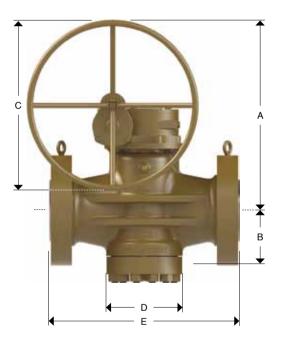
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 1500 (GEAR OPERATED)

Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
5522	Gear operator	RF
5523	Gear operator	RTJ
5524	Gear operator	WE





С X в D Е

Dimensions and Weights

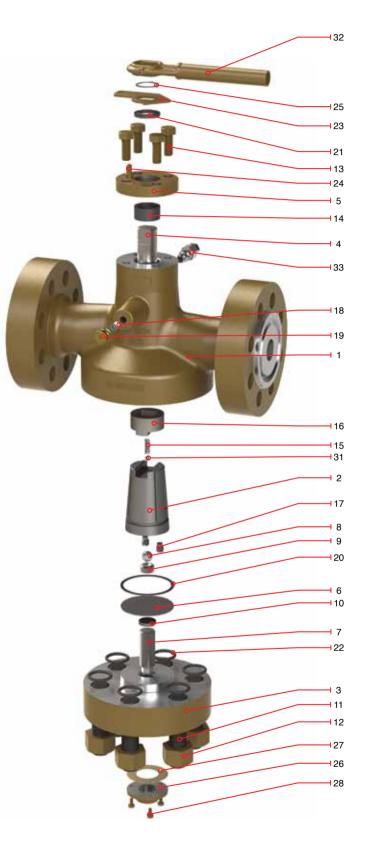
	Nominal General Dimensions											to End	Dimen	sions		Approx Weight				
	ninal ze			Ger	ieral D	Imensi	ons					I	Ξ			RF/	ртι	WE		
0.20		Α		В		С		D		R	RF		ТJ	WE		111/1110		VV E		
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	
2	50	10.41	264	3.91	99	12	305	4.75	121	14.5	368	14.62	371	-	-	69	152	52	114	
3	76	13.96	355	8.71	221	20	508	6.37	162	18.5	470	18.62	473	18.5	470	110	242	80	176	
4	100	12.44	316	6.19	157	20	508	8.5	216	21.5	546	21.62	549	21.5	546	160	352	127	279	
6	150	15.29	388	8.25	210	30	762	10.75	273	27.75	705	28	711	27.75	705	384	845	290	638	
8	200	21.62	549	11.5	292	20	508	13	330	32.75	832	33.12	841	32.75	832	755	1661	565	1243	
10	250	20.53	521	15.56	395	30	762	13	330	39	991	39.37	1000	39	991	1682	3700	1465	3223	



COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 2500 (WRENCH OPERATED)

Regular Bill of Materials

1BodyCarbon Steel A216 Gr. WCB2Plug (*)ASTM A 216 Gr. WCB / A395 Gr. 60-40-183CoverA515 Gr. 704StemStainless Steel A276 Type 4105GlandA515 Gr. 706DiaphragmStainless Steel A167 Type 3047Adjustment ScrewAlloy Steel A322 Gr. 41408Thrust BallCr. Steel Gr. 200, A295 Type 521009Thrust Ball SeatAlloy Steel AIS1 414010Thrust Ball SeatAlloy Steel AIS3 Gr. B712Cover StudsAlloy Steel A193 Gr. B713Gland ScrewCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A194 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Injection FittingCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Step CollarCarbon Steel22SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment Cover ScrewCarbon Steel27Adjustment Cover ScrewCarbon Steel28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*<	No.	Description	Standard Material
2Fill g ¹⁰ 60-40-183CoverA515 Gr. 704StemStainless Steel A276 Type 4105GlandA515 Gr. 706DiaphragmStainless Steel A167 Type 3047Adjustment ScrewAlloy Steel A322 Gr. 41408Thrust BallCr. Steel Gr. 200, A295 Type 521009Thrust Ball SeatAlloy Steel AIS1 414010Thrust Ball SeatAlloy Steel A193 Gr. B712Cover StudsAlloy Steel A193 Gr. B713Gland ScrewCarbon Steel A194 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover ScrewCarbon Steel28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	1	Body	Carbon Steel A216 Gr. WCB
4StemStainless Steel A276 Type 4105GlandA515 Gr. 706DiaphragmStainless Steel A167 Type 3047Adjustment ScrewAlloy Steel A322 Gr. 41408Thrust BallCr. Steel Gr. 200, A295 Type 521009Thrust Ball SeatAlloy Steel A1S1 414010Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A1449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Step Environmental SealElastomer22Cover Studs EnvironmentalBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment Cover GasketNatural Fiber27Adjustment Cover ScrewCarbon Steel28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	2	Plug (1)	
5 Gland A515 Gr. 70 6 Diaphragm Stainless Steel A167 Type 304 7 Adjustment Screw Alloy Steel A322 Gr. 4140 8 Thrust Ball Cr. Steel Gr. 200, A295 Type 52100 9 Thrust Ball Seat Alloy Steel AISI 4140 10 Thrust Ball Seat Alloy Steel AISI 4140 10 Thrust Button Carbon Steel 11 Cover Studs Alloy Steel A193 Gr. B7 12 Cover Stud Nuts Carbon Steel A194 Gr. 2H 13 Gland Screw Carbon Steel A149 Gr. 5 14 Stem Packing Graphite 15 Balance Spring Stainless Steel 16 Stem to Plug Coupling Alloy Steel A322 Gr. 4140 17 Plug Check Valve Commercial Steel 18 Sealant Check Valve Commercial Steel 19 Sealant Injection Fitting Commercial Steel 20 Cover Gasket Soft Steel 21 Steals Buna N 22 Seals Buna N 23 Stop Collar Carbon Steel 24 Stop	3	Cover	A515 Gr. 70
6DiaphragmStainless Steel A167 Type 3047Adjustment ScrewAlloy Steel A322 Gr. 41408Thrust BallCr. Steel Gr. 200, A295 Type 521009Thrust Ball SeatAlloy Steel AISI 414010Thrust Ball SeatAlloy Steel AISI 414010Thrust BultonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22SealsSun N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment Cover GasketNatural Fiber27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	4	Stem	Stainless Steel A276 Type 410
7Adjustment ScrewAlloy Steel A322 Gr. 41408Thrust BallCr. Steel Gr. 200, A295 Type 521009Thrust Ball SeatAlloy Steel AISI 414010Thrust Ball SeatAlloy Steel AISI 414011Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A149 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	5	Gland	A515 Gr. 70
8Thrust BallCr. Steel Gr. 200, A295 Type 521009Thrust Ball SeatAlloy Steel AISI 414010Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A1449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Coyer Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover ScrewCarbon Steel28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	6	Diaphragm	Stainless Steel A167 Type 304
9Thrust Ball SeatAlloy Steel AISI 414010Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	7	Adjustment Screw	Alloy Steel A322 Gr. 4140
10Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover ScrewCarbon Steel28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment Cover GasketNatural Fiber27Adjustment Cover ScrewCarbon Steel28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	9	Thrust Ball Seat	Alloy Steel AISI 4140
12Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs EnvironmentalBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	10	Thrust Button	Carbon Steel
13Gland ScrewCarbon Steel A449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs EnvironmentalBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	11	Cover Studs	Alloy Steel A193 Gr. B7
14Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs EnvironmentalBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	13	Gland Screw	Carbon Steel A449 Gr. 5
16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs EnvironmentalBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	14	Stem Packing	Graphite
17Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	15	Balance Spring	Stainless Steel
18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs EnvironmentalBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	17	Plug Check Valve	Commercial Steel
20Cover GasketSoft Steel21Stem Environmental SealElastomer22Cover Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	18	Sealant Check Valve	Commercial Steel
21Stem Environmental SealElastomer22Cover Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	19	Sealant Injection Fitting	Commercial Steel
22Cover Studs Environmental SealsBuna N23Stop CollarCarbon Steel24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	20	Cover Gasket	Soft Steel
22 Seals Buna N 23 Stop Collar Carbon Steel 24 Stop Pin Carbon Steel 25 Retainer Carbon Steel 26 Adjustment Cover Carbon Steel 27 Adjustment Cover Gasket Natural Fiber 28 Adjustment Cover Screw Carbon Steel 29 Identification Plate* Stainless Steel 304 30 Sealant* Walseal #10 31 Balance Spring Ball A295 Type 52100 32 Wrench Carbon Steel	21	Stem Environmental Seal	Elastomer
24Stop PinCarbon Steel25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	22		Buna N
25RetainerCarbon Steel26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	23	Stop Collar	Carbon Steel
26Adjustment CoverCarbon Steel27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	24	Stop Pin	Carbon Steel
27Adjustment Cover GasketNatural Fiber28Adjustment Cover ScrewCarbon Steel29Identification Plate*Stainless Steel 30430Sealant*Walseal #1031Balance Spring BallA295 Type 5210032WrenchCarbon Steel	25	Retainer	Carbon Steel
28 Adjustment Cover Screw Carbon Steel 29 Identification Plate* Stainless Steel 304 30 Sealant* Walseal #10 31 Balance Spring Ball A295 Type 52100 32 Wrench Carbon Steel	26	Adjustment Cover	Carbon Steel
29 Identification Plate* Stainless Steel 304 30 Sealant* Walseal #10 31 Balance Spring Ball A295 Type 52100 32 Wrench Carbon Steel	27	Adjustment Cover Gasket	Natural Fiber
30 Sealant* Walseal #10 31 Balance Spring Ball A295 Type 52100 32 Wrench Carbon Steel	28	Adjustment Cover Screw	Carbon Steel
31 Balance Spring Ball A295 Type 52100 32 Wrench Carbon Steel	29	Identification Plate*	Stainless Steel 304
32 Wrench Carbon Steel	30	Sealant*	Walseal #10
	31	Balance Spring Ball	A295 Type 52100
33 Packing Injector Carbon Steel	32	Wrench	Carbon Steel
	33	Packing Injector	Carbon Steel



*Not Shown



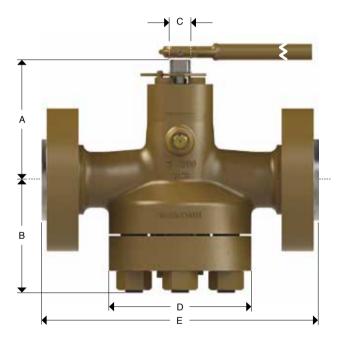
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 2500 (WRENCH OPERATED)

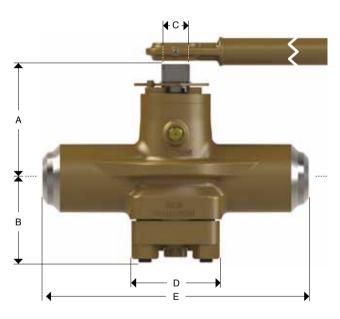
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Threaded Dimensions conform to ANSI/ASME B 1.20.1 •
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
2511	Wrench	THREADED
2512	Wrench	RF
2513	Wrench	RTJ
2514	Wrench	WE







Dimensions and Weights

				C a m		imens	lana				I	End to	End	Dime	nsions	3		Approx Weight						
Nom Si				Gene	eral D	imens	sions			E								RF/	στι	w	Ē	THREDADED		sh No.
0.			4	E	3	C	>	[2	R	F	R	TJ THREDADED			WE						THEORDED		č
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	Kg	lb	Wre
1/2	15	5.7	145	3.9	99	0.85	22	4.6	117	-	-	-	-	5.04	128	-	-	-	-	10	22	-	-	IB-0
3/4	20	5.7	145	3.9	99	0.85	22	4.6	117	-	-	-	-	5.04	128	-	-	-	-	10	22	-	-	IB-0
1	25	5.7	145	3.9	99	0.85	22	4.6	117	-	-	-	-	5.04	128	-	-	23	51	10	22	-	-	IB-0
1 1/2	40	6.6	168	4.8	122	1.09	28	7.15	182	-	-	-	-	-	-	-	-	40	88	-	-	30	66	IB-1
2	50	6.6	168	4.8	122	1.09	28	7.15	182	17.75	451	17.88	454	-	-	-	-	70	154	-	-	53	116	IB-2
3	76	8	203	5.7	145	1.41	36	8.6	218	22.75	578	23	584	-	-	-	-	150	330	-	-	113	248	IB-3
4	100	9.1	231	6.7	170	2.31	59	9.98	253	26.5	673	26.88	683	-	-	-	-	230	506	-	-	173	380	IB-3

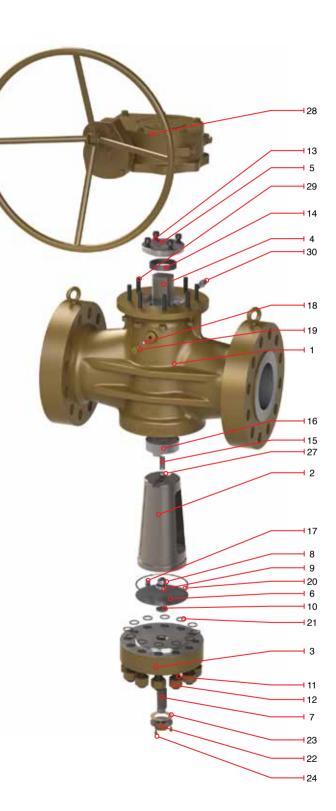


COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 2500 (GEAR OPERATED)

Regular Bill of Materials

r			
	No.	Description	Standard Material
	1	Body	Carbon Steel A216 Gr. WCB
	2	Plug	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
	3	Cover	A515 Gr. 70
	4	Stem	Stainless Steel A276 Type 410
	5	Gland	A515 Gr. 70
	6	Diaphragm	Stainless Steel A167 Type 304
	7	Adjustment Screw	Alloy Steel A322 Gr. 4140
	8	Thrust Ball	Cr. Steel Gr. 200, A295 Type 52100
	9	Thrust Ball Seat	Alloy Steel AISI 4140
	10	Thrust Button	Carbon Steel
	11	Cover Studs	Alloy Steel A193 Gr. B7
	12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
	13	Gland Screw	Carbon Steel A449 Gr. 5
	14	Stem Packing	Graphite
	15	Balance Spring	Stainless Steel
	16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
	17	Plug Check Valve	Commercial Steel
	18	Sealant Check Valve	Commercial Steel
	19	Sealant Injection Fitting	Commercial Steel
	20	Cover Gasket	Soft Steel
	21	Cover Studs Environmental Seals	Buna N
	22	Adjustment Cover	Carbon Steel
	23	Adjustment Cover Gasket	Natural Fiber
	24	Adjustment Cover Screw	Carbon Steel
	25	Identification Plate*	Stainless Steel 304
	26	Sealant*	Walseal #10
	27	Balance Spring Ball	A295 Type 52100
	28	Gear Box	Commercial Steel
	29	Top Socket Screw	Carbon Steel A449 Gr. 5
	30	Packing Injector	Carbon Steel
î			

*Not Shown





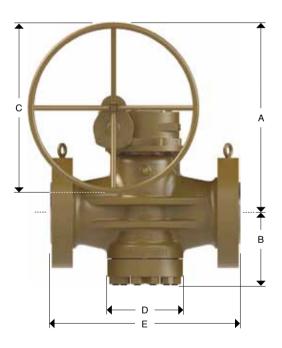
COMPENSATOR PLUG VALVE REGULAR PATTERN CLASS 2500 (GEAR OPERATED)

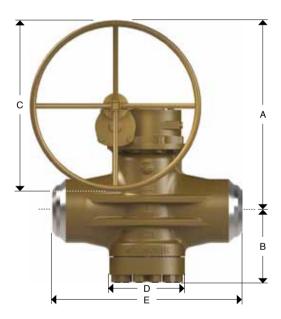
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
2522	Gear operator	RF
2523	Gear operator	RTJ
2524	Gear operator	WE





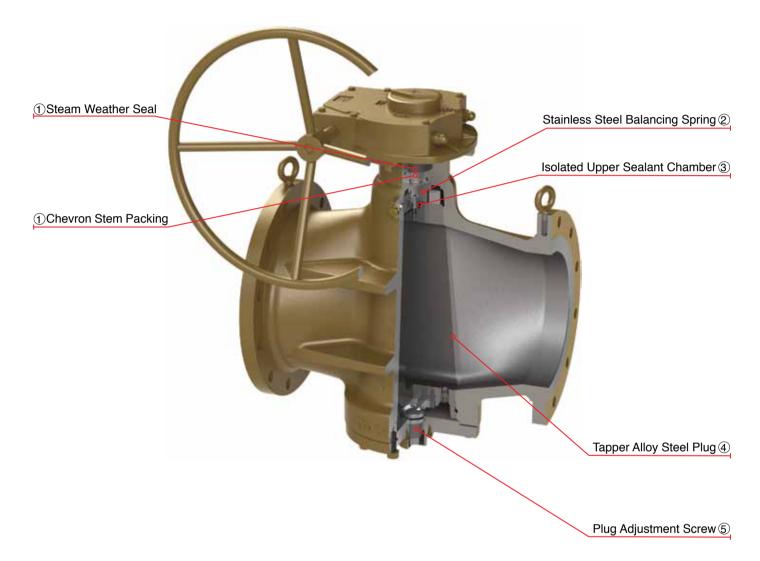


Dimensions and Weights

	Nominal General Dimensions										End	to End		Approx Weight					
-	ninal ze			Gei	neral D	imensi	ons				RF/RTJ								
0.	20	Α		В		С		D		RF		RTJ		WE		RF/RIJ		WE	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb
6	152	17	432	9.6	244	20	508	13.5	343	36	914	36.5	927	-	-	770	1694	578	1271
8	203	19.5	495	11.8	300	30	762	17.8	452	40.25	1022	40.88	1038	-	-	1013	2229	760	1671



COMPENSATOR PLUG VALVE VENTURI PATTERN



Design Features

- (1) Stem Sealing System the stem is protected two ways. The weather seal protects it from external attack. High temperature soft packing protects the stem against internal leakage.
- (2) Balancing Spring the mechanical spring type grade 304 Stainless Steel is under compression and holds the plug in an equalized pressure position, thus eliminating the possibility of plug taper lock.
- ③ Isolated Sealant Chamber the sealant's function is to provide a backup to the positively biased surface between the plug and the body.
- (4) Plug the mechanically balanced plug has a permanently bonded PERFLO coating for a very low coefficient of friction. Operating torque remains low over the 4,000 cycle test life of the valve.
- (5) Plug Adjustment the steel plug is mechanically loaded into the body to put tension on the balance spring and is then adjusted for optimum balance and performance. The adjustment screw is covered to prevent tampering and possible misadjustment.
- * End to End Dimension as per ASME B16.10 to meet Venturi Pattern Length



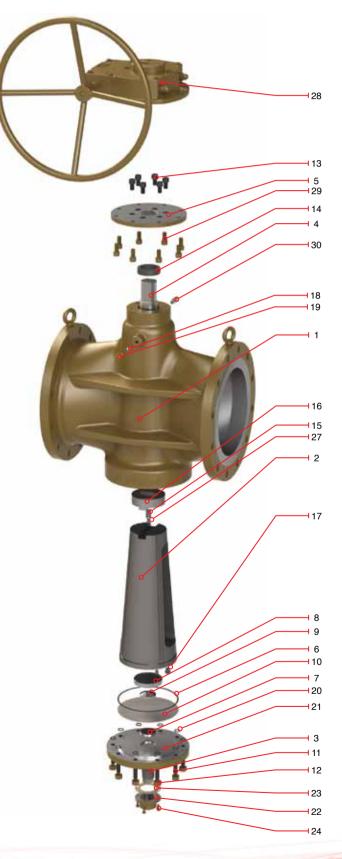
COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 150 (GEAR OPERATED)

Regular Bill of Materials

No.	Description	Standard Material								
1	Body	Carbon Steel A216 Gr. WCB								
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18								
3	Cover	A515 Gr. 70								
4	Stem	Stainless Steel A276 Type 410								
5	Gland	A515 Gr. 70								
6	Diaphragm	Stainless Steel A167 Type 304								
7	Adjustment Screw	Alloy Steel A322 Gr. 4140								
8	Thrust Spherical Disc	Alloy Steel AISI 4140								
9	Thrust Spherical Seat	Alloy Steel AISI 4140								
10	Thrust Button	Carbon Steel								
11	Cover Studs	Alloy Steel A193 Gr. B7								
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H								
13	Gland Screw	Carbon Steel A449 Gr. 5								
14	Stem Packing	Graphite								
15	Balance Spring	ce Spring Stainless Steel								
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140								
17	Plug Check Valve	Commercial Steel								
18	Sealant Check Valve*	Commercial Steel								
19	Sealant Injection Fitting	Commercial Steel								
20	Cover Gasket	Soft Steel								
21	Cover Studs Environmental Seals	Buna N								
22	Adjustment Cover	Carbon Steel								
23	Adjustment Cover Gasket	Natural Fiber								
24	Adjustment Cover Screw	Carbon Steel								
25	Identification Plate*	Stainless Steel 304								
26	Sealant*	Walseal #10								
27	Balance Check valve	Commercial Steel								
28	Gear Box	Commercial Steel								
29	Top Socket Screw	Carbon Steel A449 Gr. 5								
30	Packing Injector	Carbon Steel								

*Not Shown

(1) Valves from $\frac{1}{2}$ to 1 $\frac{1}{2}$ classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





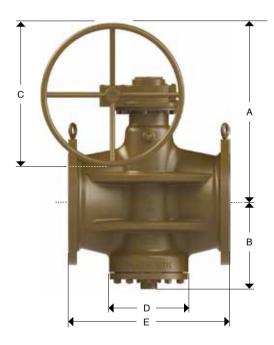
COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 150 (GEAR OPERATED)

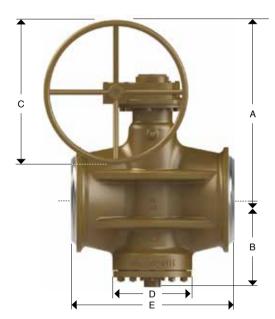
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
1622	Gear operator	RF
1624	Gear operator	WE







Dimensions and Weights

Non				Ge	neral Di	mensi	ons			End to End Dimensions Approx We									-	
Si	ze	Α		В		С		D		RF		RTJ		WE		RF/RTJ		WE		
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	
14	350	20	508	14	356	30	762	18	457	27	686	27.5	699	27	686	460	1012	345	759	
16	400	25	635	13	330	20	508	20	508	30	762	30.7	775	30	762	725	1595	545	1199	



COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 300 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Spherical Disc	Alloy Steel AISI 4140
9	Thrust Spherical Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Stem Environmental Seal	Elastomer
22	Cover Studs Environmental Seals	Buna N
23	Stop Collar	Carbon Steel
24	Stop Pin	Carbon Steel
25	Retainer	Carbon Steel
26	Adjustment Cover	Carbon Steel
27	Adjustment Cover Gasket	Natural Fiber
28	Adjustment Cover Screw	Carbon Steel
29	Identification Plate*	Stainless Steel 304
30	Sealant*	Walseal #10
31	Balance Check Valve	Commercial Steel
32	Wrench	Carbon Steel
33	Packing Injector	Carbon Steel



*Not Shown

(1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.



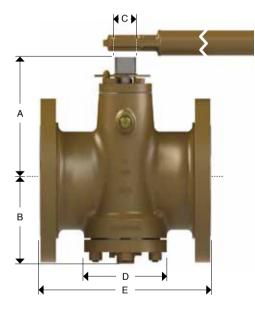
COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 300 (WRENCH OPERATED)

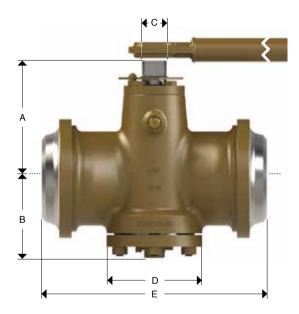
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
3612	Wrench	RF
3613	Wrench	RTJ
3614	Wrench	WE







Dimensions and Weights

				0.00						End to End Dimensions							Approx Weight			
	ninal ize		General Dimensions									E						WE		Wrench
	5120		Α		3	С		D		RF		RTJ		WE		RF/RTJ		VVE		No.
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	
6	150	9.45	240	6.33	161	1.99	51	7.62	194	15.87	403	16.5	419	18	457	75	165	56	123	IB-3
8	200	10.5	267	7.81	198	1.99	51	8.75	222	16.5	419	17.12	435	20.5	521	120	264	96	211	IB-3

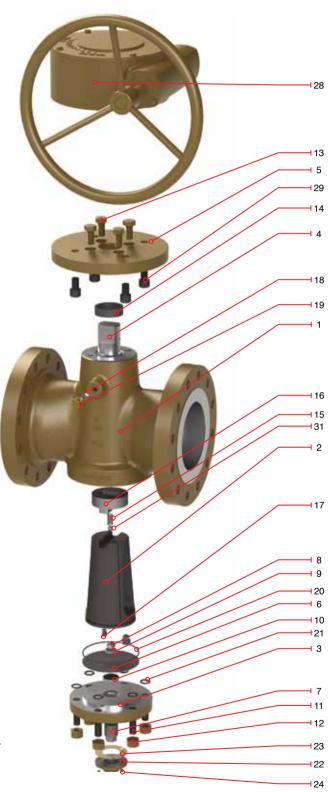


COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 300 (GEAR OPERATED)

Regular Bill of Materials

1BodyCarbon Steel A216 Gr. WCB2Plug ")STM A 216 Gr. WCB / A395 Gr. 60-40-183CoverA515 Gr. 704StemStainless Steel A276 Type 4105GlandA515 Gr. 706DiaphragmStainless Steel A167 Type 3047Adjustment ScrewAlloy Steel A132 Gr. 41408Thrust Spherical DiscAlloy Steel AISI 41409Thrust Spherical SeatAlloy Steel AISI 414010Thrust Spherical SeatAlloy Steel AISI 414011Cover StudsCarbon Steel12Cover StudsCarbon Steel A193 Gr. B713Gland ScrewGraphite14Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Injection FittingCommercial Steel19Sealant Injection FittingBuna N21Cover GasketSoft Steel22Adjustment Cover GasketNatural Fiber23Adjustment Cover ScrewCarbon Steel24Adjustment Cover ScrewCarbon Steel 30425Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel29Top Steel ScrewCommercial Steel	No.	Description	Standard Material								
2Flug60-40-183CoverA515 Gr. 704StemStainless Steel A276 Type 4105GlandA515 Gr. 706DiaphragmStainless Steel A167 Type 3047Adjustment ScrewAlloy Steel A322 Gr. 41408Thrust Spherical DiscAlloy Steel AISI 41409Thrust Spherical SeatAlloy Steel AISI 414010Thrust Spherical SeatAlloy Steel AISI 414010Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewGraphite14Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Check ValveCarbon Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment Cover GasketNatural Fiber23Adjustment Cover ScrewCarbon Steel24Adjustment Cover ScrewCarbon Steel 30425Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel	1	Body	Carbon Steel A216 Gr. WCB								
4StemStainless Steel A276 Type 4105GlandA515 Gr. 706DiaphragmStainless Steel A167 Type 3047Adjustment ScrewAlloy Steel A322 Gr. 41408Thrust Spherical DiscAlloy Steel AISI 41409Thrust Spherical SeatAlloy Steel AISI 414010Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A194 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Injection FittingCommercial Steel19Sealant Injection FittingBuna N22Adjustment Cover GasketNatural Fiber23Identification Plate*Stainless Steel 30424Sealant*Walseal #1025Identification Plate*Stainless Isteel 30426Sealant*Stainless Isteel 30427Balance Check ValveCommercial Steel	2	Plug (1)									
5GlandA515 Gr. 706DiaphragmStainless Steel A167 Type 3047Adjustment ScrewAlloy Steel A322 Gr. 41408Thrust Spherical DiscAlloy Steel AISI 41409Thrust Spherical SeatAlloy Steel AISI 414010Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A194 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Check ValveSoft Steel20Cover Studs Environmental SealsBuna N21Adjustment Cover GasketNatural Fiber22Adjustment Cover ScrewCarbon Steel 30423Identification Plate*Walseal #1024Balance Check ValveCommercial Steel25Balance Check ValveCommercial Steel26Sealant*Walseal #10	3	Cover	A515 Gr. 70								
6DiaphragmStainless Steel A167 Type 3047Adjustment ScrewAlloy Steel A322 Gr. 41408Thrust Spherical DiscAlloy Steel AISI 41409Thrust Spherical SeatAlloy Steel AISI 414010Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A194 Gr. 2H14Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Check ValveSoft Steel20Cover Studs Environmental SealsBuna N21Adjustment Cover GasketNatural Fiber22Adjustment Cover ScrewCarbon Steel 30423Adjustment Cover ScrewStainless Steel 30424Balance Check ValveCommercial Steel25Identification Plate*Walseal #1026Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	4	Stem	Stainless Steel A276 Type 410								
7Adjustment ScrewAlloy Steel A322 Gr. 41408Thrust Spherical DiscAlloy Steel AISI 41409Thrust Spherical SeatAlloy Steel AISI 414010Thrust Spherical SeatAlloy Steel AISI 414010Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment Cover GasketNatural Fiber23Adjustment Cover ScrewCarbon Steel24Adjustment Cover ScrewCarbon Steel 30425Identification Plate*Walseal #1026Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	5	Gland	A515 Gr. 70								
8Thrust Spherical DiscAlloy Steel AISI 41409Thrust Spherical SeatAlloy Steel AISI 414010Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A194 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment Cover GasketNatural Fiber23Adjustment Cover ScrewCarbon Steel24Adjustment Cover ScrewCarbon Steel25Identification Plate*Walseal #1026Sealant*Walseal #1027Balance Check ValveCommercial Steel	6	Diaphragm	Stainless Steel A167 Type 304								
9Thrust Spherical SeatAlloy Steel AISI 414010Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A149 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment Cover GasketNatural Fiber23Adjustment Cover GasketNatural Fiber24Adjustment Cover ScrewCarbon Steel25Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel	7	Adjustment Screw	Alloy Steel A322 Gr. 4140								
10Thrust ButtonCarbon Steel11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment Cover GasketNatural Fiber23Adjustment Cover GasketStainless Steel 30424Adjustment Cover ScrewCarbon Steel 30425Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	8	Thrust Spherical Disc	Alloy Steel AISI 4140								
11Cover StudsAlloy Steel A193 Gr. B712Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment Cover GasketNatural Fiber23Adjustment Cover ScrewCarbon Steel24Adjustment Cover ScrewCarbon Steel25Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	9	Thrust Spherical Seat	Alloy Steel AISI 4140								
12Cover Stud NutsCarbon Steel A194 Gr. 2H13Gland ScrewCarbon Steel A449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment Cover GasketNatural Fiber23Adjustment Cover ScrewCarbon Steel24Adjustment Cover ScrewCarbon Steel 30425Identification Plate*Walseal #1026Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	10	Thrust Button	Carbon Steel								
13Gland ScrewCarbon Steel A449 Gr. 514Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment CoverCarbon Steel23Adjustment Cover GasketNatural Fiber24Adjustment Cover ScrewCarbon Steel 30425Identification Plate*Walseal #1026Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	11	Cover Studs	Alloy Steel A193 Gr. B7								
14Stem PackingGraphite15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment CoverCarbon Steel23Adjustment Cover GasketNatural Fiber24Adjustment Cover ScrewCarbon Steel 30425Identification Plate*Walseal #1026Sealant*Commercial Steel27Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H								
15Balance SpringStainless Steel16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment CoverCarbon Steel23Adjustment Cover GasketNatural Fiber24Adjustment Cover ScrewCarbon Steel25Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	13	Gland Screw	Carbon Steel A449 Gr. 5								
16Stem to Plug CouplingAlloy Steel A322 Gr. 414017Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment CoverCarbon Steel23Adjustment Cover GasketNatural Fiber24Adjustment Cover ScrewCarbon Steel25Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	14	Stem Packing	Graphite								
17Plug Check ValveCommercial Steel18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment CoverCarbon Steel23Adjustment Cover GasketNatural Fiber24Adjustment Cover ScrewCarbon Steel25Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	15	Balance Spring	Stainless Steel								
18Sealant Check ValveCommercial Steel19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment CoverCarbon Steel23Adjustment Cover GasketNatural Fiber24Adjustment Cover ScrewCarbon Steel25Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140								
19Sealant Injection FittingCommercial Steel20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment CoverCarbon Steel23Adjustment Cover GasketNatural Fiber24Adjustment Cover ScrewCarbon Steel25Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	17	Plug Check Valve	Commercial Steel								
20Cover GasketSoft Steel21Cover Studs Environmental SealsBuna N22Adjustment CoverCarbon Steel23Adjustment Cover GasketNatural Fiber24Adjustment Cover ScrewCarbon Steel25Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	18	Sealant Check Valve	Commercial Steel								
21Cover Studs Environmental SealsBuna N22Adjustment CoverCarbon Steel23Adjustment Cover GasketNatural Fiber24Adjustment Cover ScrewCarbon Steel25Identification Plate*Stainless Steel 30426Sealant*Walseal #1027Balance Check ValveCommercial Steel28Gear BoxCommercial Steel	19	Sealant Injection Fitting	Commercial Steel								
21 Seals Buna N 22 Adjustment Cover Carbon Steel 23 Adjustment Cover Gasket Natural Fiber 24 Adjustment Cover Screw Carbon Steel 25 Identification Plate* Stainless Steel 304 26 Sealant* Walseal #10 27 Balance Check Valve Commercial Steel 28 Gear Box Commercial Steel	20	Cover Gasket	Soft Steel								
23 Adjustment Cover Gasket Natural Fiber 24 Adjustment Cover Screw Carbon Steel 25 Identification Plate* Stainless Steel 304 26 Sealant* Walseal #10 27 Balance Check Valve Commercial Steel 28 Gear Box Commercial Steel	21		Buna N								
24 Adjustment Cover Screw Carbon Steel 25 Identification Plate* Stainless Steel 304 26 Sealant* Walseal #10 27 Balance Check Valve Commercial Steel 28 Gear Box Commercial Steel	22	Adjustment Cover	Carbon Steel								
25 Identification Plate* Stainless Steel 304 26 Sealant* Walseal #10 27 Balance Check Valve Commercial Steel 28 Gear Box Commercial Steel	23	Adjustment Cover Gasket	Natural Fiber								
26 Sealant* Walseal #10 27 Balance Check Valve Commercial Steel 28 Gear Box Commercial Steel	24	Adjustment Cover Screw	Carbon Steel								
27 Balance Check Valve Commercial Steel 28 Gear Box Commercial Steel	25	Identification Plate*	Stainless Steel 304								
28 Gear Box Commercial Steel	26	Sealant*	Walseal #10								
	27	Balance Check Valve	Commercial Steel								
29 Top Socket Screw Carbon Steel A449 Gr. 5	28	Gear Box	Commercial Steel								
	29	Top Socket Screw	Carbon Steel A449 Gr. 5								

*Not Shown (1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





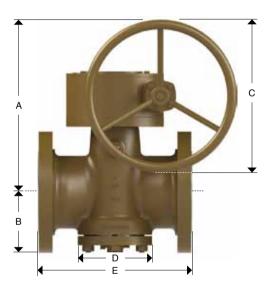
COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 300 (GEAR OPERATED)

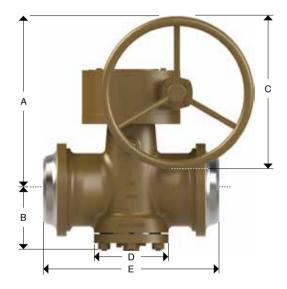
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
3622	Gear operator	RF
3624	Gear operator	RTJ
3624	Gear operator	WE







Dimensions and Weights

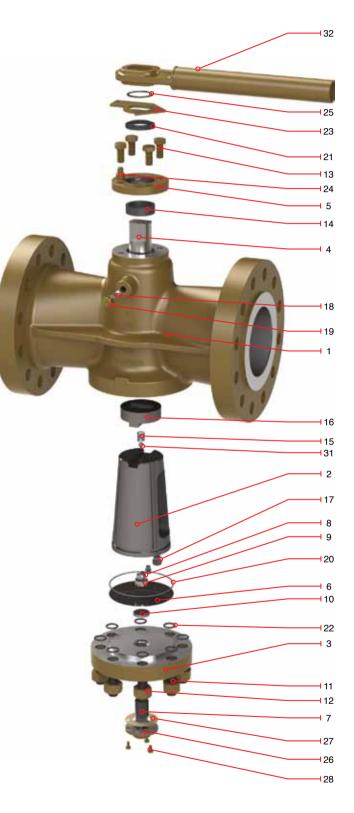
				0							End	to End	Dimens	sions		Approx Weight			
	ninal ze			Gei	neral Di	Imensi	ons					E							
0	20	Α		В		С		D		RF		RTJ		W	/E	RF/RTJ		WE	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb
6	150	11.37	289	6.33	161	20	508	7.62	194	15.87	403	16.5	419	18	457	102	224	85	187
8	200	11.94	303	7.81	198	20	508	8.75	222	16.5	419	17.12	435	20.5	521	150	330	115	253
10	250	16.28	414	10.25	260	30	762	11.75	298	18	457	18.62	473	22	559	310	682	256	563
12	300	18.07	459	13.25	337	30	762	12.87	327	19.75	502	20.37	518	25	635	402	884	335	737
14	350	19.5	495	13.38	340	30	762	23	584	30	762	30.62	778	30	762	639	1406	530	1166
16	400	23.25	591	14.31	363	20	508	25.5	648	33	838	33.62	854	33	838	825	1815	670	1474
20	500	24.75	629	18.12	460	30	762	30.5	775	39	991	39.75	1010	39	991	1516	3335	1340	2948
24	600	30.3	770	21.12	536	30	762	36	914	45	1143	45.87	1165	45	1143	2465	5423	2200	4840



COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 600 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug ⁽¹⁾	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Spherical Disc	Alloy Steel AISI 4140
9	Thrust Spherical Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Stem Environmental Seal	Elastomer
22	Cover Studs Environmental Seals	Buna N
23	Stop Collar	Carbon Steel
24	Stop Pin	Carbon Steel
25	Retainer	Carbon Steel
26	Adjustment Cover	Carbon Steel
27	Adjustment Cover Gasket	Natural Fiber
28	Adjustment Cover Screw	Carbon Steel
29	Identification Plate*	Stainless Steel 304
30	Sealant*	Walseal #10
31	Balance Check Valve	Commercial Steel
32	Wrench	Carbon Steel
33	Packing Injector	Carbon Steel



*Not Shown

(1) Valves from ½" to 1 ½" classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.



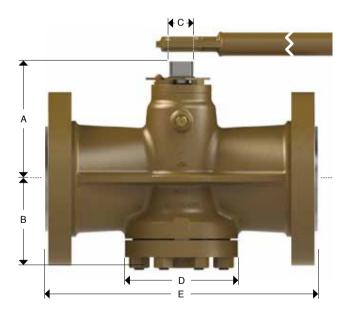
COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 600 (WRENCH OPERATED)

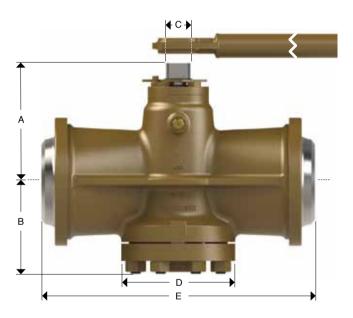
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D •
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
6612	Wrench	RF
6613	Wrench	RTJ
6614	Wrench	WE







Dimensions and Weights

				0.00							End t	o End	Dimen	sions		Approx Weight				
-	ninal ize		General Dimensions									E			RF/RTJ				Wrench	
5	120	Α		В		С		D		RF		RTJ		WE				WE		No.
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	
6	150	11.9	302	7.19	183	1.99	51	9.12	232	22	559	22.12	562	22	559	157	345	120	264	IB-3



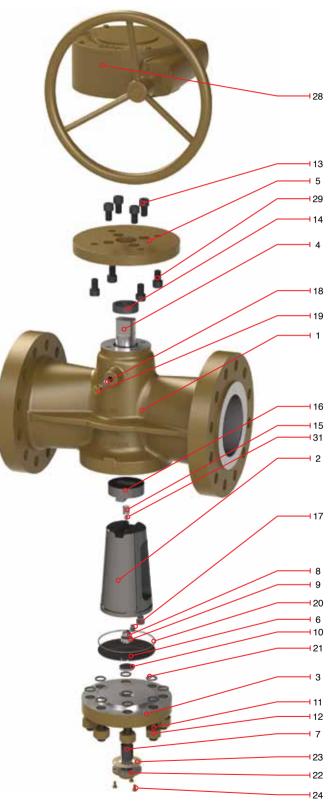
COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 600 (GEAR OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Spherical Disc	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Spherical Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Cover Studs Environmental Seals	Buna N
22	Adjustment Cover	Carbon Steel
23	Adjustment Cover Gasket	Natural Fiber
24	Adjustment Cover Screw	Carbon Steel
25	Identification Plate*	Stainless Steel 304
26	Sealant*	Walseal #10
27	Balance Check Valve	A295 Type 52100
28	Gear Box	Commercial Steel
29	Top Socket Screw	Carbon Steel A449 Gr. 5

*Not Shown

(1) Valves from ½" to 1 ½" classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





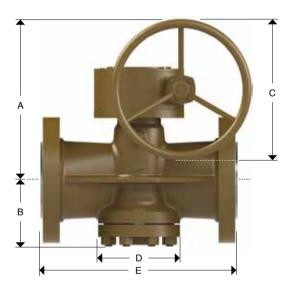
COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 600 (GEAR OPERATED)

Design Features

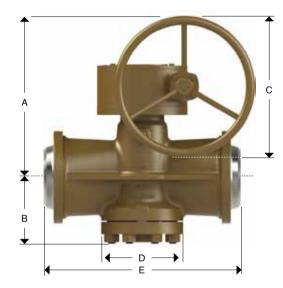
- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
6622	Gear operator	RF
6624	Gear operator	RTJ
6624	Gear operator	WE





Dimensions and Weights



				0	neral Di						End	to End	Dimen	sions			Approx	Weigh	t
	ninal ze			Ger	ierai Di	mensi	ons					E	1			птι	WE		
	20	Α		В		С		D		RF		RTJ		WE		RF/RTJ		VVE	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb
6	150	11.9	302	7.19	183	20	508	9.12	232	22	559	22.12	562	22	559	185	407	150	330
8	200	13.53	344	8.56	217	20	508	10.5	267	26	660	26.12	664	26	660	277	609	208	458
10	250	14.5	368	12.31	313	30	762	12	305	31	787	31.12	791	31	787	455	1001	340	748
12	300	18.84	479	14	356	30	762	13.37	340	33	838	33.12	841	33	838	615	1353	460	1012
14	350	23.37	594	23.37	594	20	508	18.25	464	35	889	35.12	892	35	889	835	1837	630	1386
16	400	24.62	625	24.62	625	30	762	23	584	39	991	39.12	994	39	991	1460	3212	950	2090
18	450	24.1	612	24.1	612	30	762	31.87	809	43	1092	43.12	1095	43	1092	2045	4499	1715	3773
20	500	25.12	638	25.12	638	30	762	33.5	851	47	1194	47.25	1200	47	1194	2475	5445	2090	4598
24	600	36.37	924	36.37	924	30	762	42	1067	55	1397	55.37	1407	55	1397	4515	9933	4020	8844



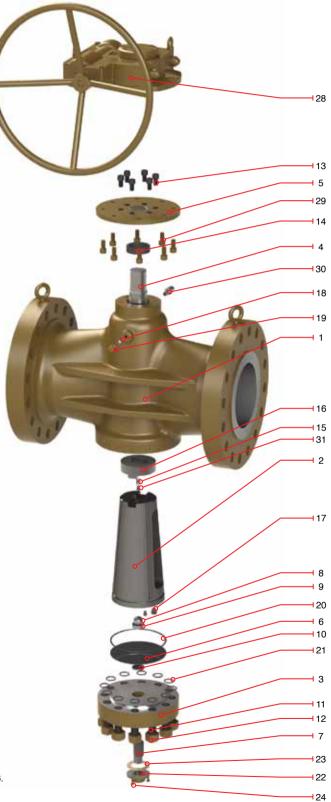
COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 900 (GEAR OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	ASTM A 216 Gr. WCB / A395 Gr. 60-40-18
3	Cover	A515 Gr. 70
4	Stem	Stainless Steel A276 Type 410
5	Gland	A515 Gr. 70
6	Diaphragm	Stainless Steel A167 Type 304
7	Adjustment Screw	Alloy Steel A322 Gr. 4140
8	Thrust Spherical Disc	Cr. Steel Gr. 200, A295 Type 52100
9	Thrust Spherical Seat	Alloy Steel AISI 4140
10	Thrust Button	Carbon Steel
11	Cover Studs	Alloy Steel A193 Gr. B7
12	Cover Stud Nuts	Carbon Steel A194 Gr. 2H
13	Gland Screw	Carbon Steel A449 Gr. 5
14	Stem Packing	Graphite
15	Balance Spring	Stainless Steel
16	Stem to Plug Coupling	Alloy Steel A322 Gr. 4140
17	Plug Check Valve	Commercial Steel
18	Sealant Check Valve	Commercial Steel
19	Sealant Injection Fitting	Commercial Steel
20	Cover Gasket	Soft Steel
21	Cover Studs Environmental Seals	Buna N
22	Adjustment Cover	Carbon Steel
23	Adjustment Cover Gasket	Natural Fiber
24	Adjustment Cover Screw	Carbon Steel
25	Identification Plate*	Stainless Steel 304
26	Sealant*	Walseal #10
27	Balance Check Valve	A295 Type 52100
28	Gear Box	Commercial Steel
29	Top Socket Screw	Carbon Steel A449 Gr. 5
30	Packing Injector	Carbon Steel

*Not Shown

(1) Valves from 1/2" to 1 1/2" classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





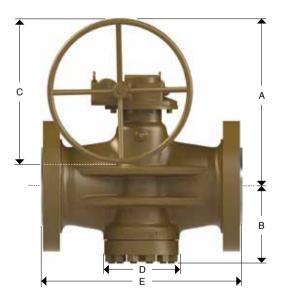
COMPENSATOR PLUG VALVE VENTURI PATTERN CLASS 900 (GEAR OPERATED)

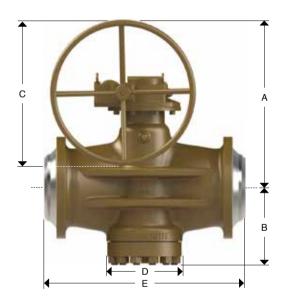
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D
- Fire Test as per API 6FA

Figure no.	Operation	Type of ends
9622	Gear operator	RF
9624	Gear operator	RTJ
9624	Gear operator	WE







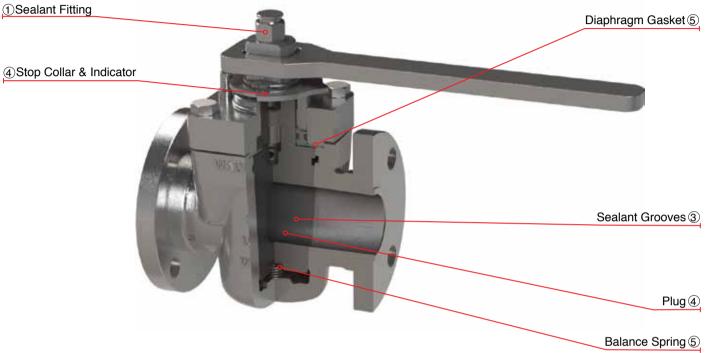
Dimensions and Weights

				0							End	to End	Dimen	sions		Approx Weight			
Non Si	inal			Ger	neral D	Imensi	ons					E	Ξ						
51	20	Α		В		(C	C)	F	F	RTJ		WE		RF/RTJ		WE	
in	mm	in	mm	in	mm	in	in mm in		mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb
10	250	19.25	489	12.81	325	20	508	12.25	311	33	838	33.12	841	33	838	540	1188	450	990
12	300	22.03	560	14.87	378	30	762	14.125	359	38	965	38.12	968	38	965	920	2024	600	1320
16	400	24.8	630	17.75	451	30	762	18.25	464	44.5	1130	44.8	1140	44.5	1130	2000	4400	1740	3828



TOP ENTRY PLUG VALVE SHORT PATTERN

WALWORTH Top Entry Cast Steel Plug valves provide safe, reliable, long life service at an economical price. The taper of the plug and seat maintains an intimate working contact between the two parts at all times, and with the proper lubricant, the valve seals drop tight from zero to full rated differential pressure.



Design Features

- (1) Sealant Fitting fast sealant injection that can be removed under pressure. The system includes ball check valves that prevent back pressure and maintain pressure in the sealant cavity.
- (2) Balancing Spring the mechanical spring type grade 304 Stainless Steel washer is under compression and holds the plug in an equalized pressure position, thus eliminating the possibility of plug taper lock.
- ③ Sealant Grooves this system permits sealant injection while the valve is under full line pressure. WALWORTH recommends that the valves be lubricated, with the plug in the fully opened or fully closed position for optimum valve performance.
- ④ Open/Close Indicator quarter turn stop collar also functions as an indicator of the plug`s position.
- (5) Diaphragm Gasket ensures a complete sealing of the valve against any leakage.
- (6) Plug WALWORTH plugs are designed with a specific coating material that reduces the coefficient of friction friction, making the valve operate with low torque.
- * End to End Dimension as per ASME B16.10 to meet short Pattern Length



SHORT PATTERN Provides face to face dimensions that match gate valves.



REGULAR PATTERN Offers the largest port opening in a trapezoidal configuration – close to a full pipe size.



VENTURI PATTERN Has a smaller port than the other two patterns. Is lower in cost and flow contours maximize hydraulic efficiency.



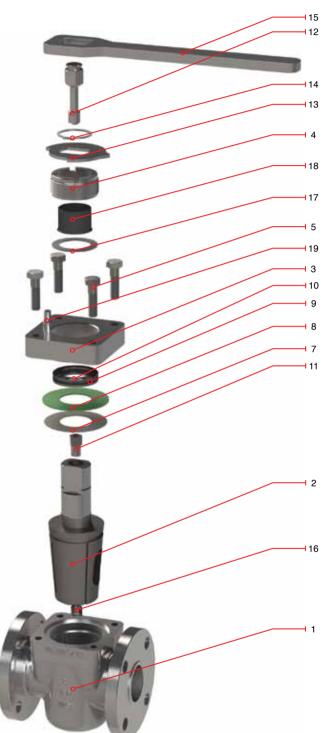
TOP ENTRY PLUG VALVE SHORT PATTERN CLASS 150 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	STM A 216 Gr. WCB/ A395 Gr.60-40-18
3	Retainer	Carbon Steel A216 Gr. WCB
4	Gland	Carbon Steel A216 Gr. WCB
5	Retainer Bolting	B7 Alloy Steel Studs
6	Gland Bolting	B7 Alloy Steel Studs
7	Diaphragm	Stainless Steel Type 410
8	Diaphragm Gasket	Non-asbestos composite
9	Packing	Alloy Steel O'ring Retainer Sleeve with Buna-N O'ring
10	Packing Retainer	Steel
11	Plug Check Valve	Steel
12	Sealant Fitting	Steel
13	Stop Collar	Steel
14	Collar Retainer	Steel
15	Wrench	Carbon Steel
16	Spring	Stainless Steel
17	Spring Washer	Steel
18	Seal	Nitrile (Buna-N)
19	Stop Post	Steel
20	Identification Plate*	Stainless Steel 304

*Not Shown

(1) Valves from 1/2" to 1 1/2" classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.



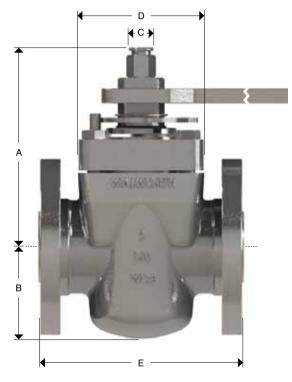


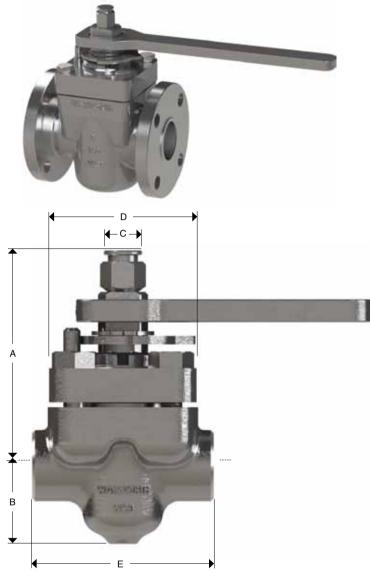
TOP ENTRY PLUG VALVE SHORT PATTERN CLASS 150 (WRENCH OPERATED)

Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Threaded Dimensions conform to ANSI/ASME B1.20.1 •
- Design as per API 6D

Figure no.	Operation	Type of ends
1749F	Wrench	RF
1750	Wrench	THREADED





Dimensions and Weights

				Go	noral D	imensi	0.00			End	to End	Dimens	sions		Approx	Weigh	t	
Norr Si				Gei		mensi	0115				l	E		RF/RTJ		THREADED		Wrench
		Α		В		С		D		RF		THREADED				IIIIIEADED		No.
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	
1	25	6.87	174	2.12	54	1.22	31	3.12	79	-	-	-	-	6	13	4	9	IH-2
1 1/2	38	7.62	194	2.5	64	1.41	36	3.75	95	-	-	-	-	11	24	8	18	IH-3
2	50	9	229	3	76	1.6	41	4.25	108	7	178	7.75	197	16	35	12	26	IH-4
2 1/2	63	9.87	251	3.75	95	1.6	41	4.25	108	7.5	191	10	254	22	48	16	35	IH-4
3	80	10.87	276	4.37	111	1.94	49	5.25	133	8	203	10	254	32	70	25	55	IH-6
4	100	10.87	276	4.87	124	1.94	49	7	178	9	229	11.5	292	44	97	34	75	IA-1
6	150	14.62	371	5.62	143	2.31	59	8.5	216	10.5	267	-	-	63	139	-	-	IA-2
8	200	16.75	425	7.12	181	2.62	67	10	254	11.5	292	-	-	104	229	-	-	IA-3

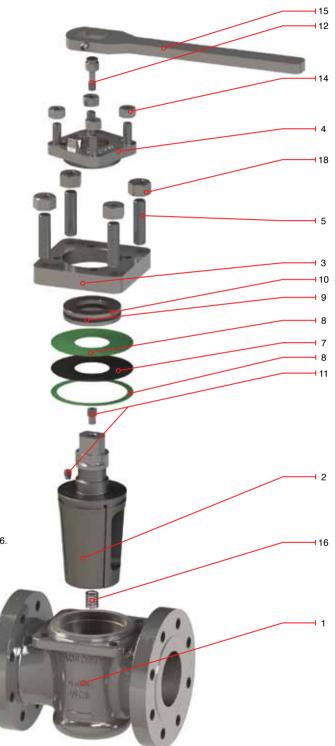


TOP ENTRY PLUG VALVE SHORT PATTERN CLASS 300 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	STM A 216 Gr. WCB/ A395 Gr.60-40-18
3	Retainer	Carbon Steel A216 Gr. WCB
4	Gland	Carbon Steel A216 Gr. WCB
5	Retainer Bolting	B7 Alloy Steel Studs
6	Gland Bolting	B7 Alloy Steel Studs
7	Diaphragm	Stainless Steel Type 410
8	Diaphragm Gasket	Non-asbestos composite
9	Packing	Alloy Steel O'ring Retainer Sleeve with Buna-N O'ring
10	Packing Retainer	Steel
11	Plug Check Valve	Steel
12	Sealant Fitting	Steel
13	Stop Collar	Steel
14	Collar Retainer	Steel
15	Wrench	Carbon Steel
16	Spring	Stainless Steel
17	Spring Washer	Steel
18	Seal	Nitrile (Buna-N)
19	Stop Post	Steel
20	Identification Plate*	Stainless Steel 304

*Not Shown (1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





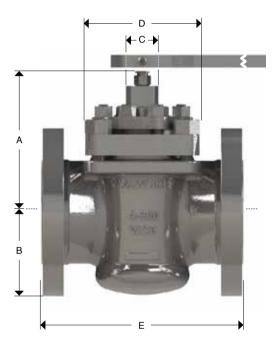
TOP ENTRY PLUG VALVE SHORT PATTERN CLASS 300 (WRENCH OPERATED)

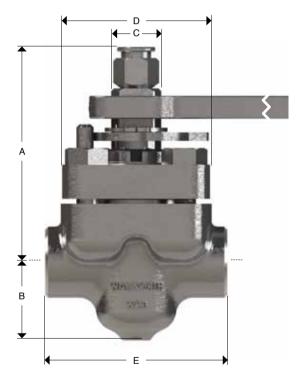
Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Threaded Dimensions conform to ANSI/ASME B1.20.1 •
- Design as per API 6D

Figure no.	Operation	Type of ends			
1760	Wrench	THREADED			
1760F	Wrench	RF			







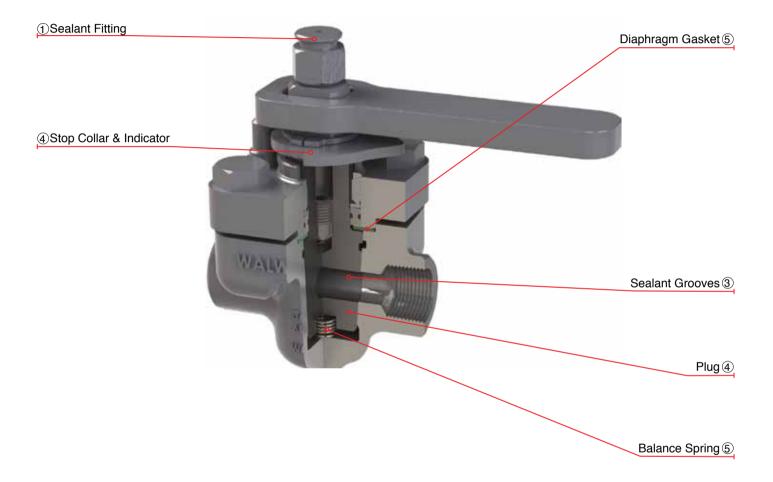
Dimensions and Weights

				Gai	oral D	imonei	one			End t	o End	Dimen	sions		Approx	Weigh	t	
Nom Si			General Dimensions							Е				RF/RTJ		THREADED		Wrench
		A B		3	(0	I	כ	R	RF THREADED		ADED			TIMEADED		No.	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	
1/2	13	6.25	159	1.75	44	1.1	28	3.12	79	-	-	-	-	-	-	4	9	IH-1
3/4	19	6.25	159	1.75	44	1.1	28	3.12	79	-	-	-	-	-	-	4	9	IH-1
1	25	6.87	174	2	51	1.22	31	3.12	79	6.25	159	4.5	114	10	22	6	13	IH-2
1 1/2	38	7.62	194	2.5	64	1.41	36	3.75	95	7.5	190	6.69	170	14	31	8	18	IH-3
2	50	9	229	3	76	1.6	41	4.25	108	8.5	216	7.75	197	19	42	12	26	IH-4
2 1/2	63	9.62	244	3.75	95	1.6	41	4.25	108	9.5	241	10	254	26	57	17	37	IH-4
3	80	10.87	276	4.37	111	1.94	49	5.25	133	11.12	283	10	-	48	106	15	33	IH-6
4	100	11.12	282	4.87	124	1.94	49	7	178	12	305	-	-	57	125	-	-	IA-1



TOP ENTRY PLUG VALVE REGULAR PATTERN

WALWORTH Top Entry Cast Steel Plug valves provide safe, reliable, and long life service at an economical price. The taper of the plug and seat maintains an intimate working contact between the two parts at all times, and with the proper lubricant, the valve seals drop tight from zero to full rated differential pressure.



Design Features

- Sealant Fitting fast sealant injection that can be removed under pressure. The system includes ball check valves that prevent back pressure and maintain pressure in the sealant cavity.
- (2) Balancing Spring the mechanical spring type grade 304 Stainless Steel washer is under compression and holds the plug in an equalized pressure position, thus eliminating the possibility of plug taper lock.
- ③ Sealant Grooves this system permits sealant injection while the valve is under full line pressure. WALWORTH recommends that the valves be lubricated with the plug in the fully opened or fully closed position for optimum valve performance.
- ④ Open/Close Indicator quarter turn stop collar also functions as an indicator of the plug's position.
- (5) Diaphragm Gasket ensures a complete sealing of the valve against any leakage.
- (6) Plug WALWORTH plugs are designed with a specific coating material that reduces the coefficient of friction, making the valve operate with low torque.

* End to End Dimension as per ASME B16.10 to meet Regular Pattern Length



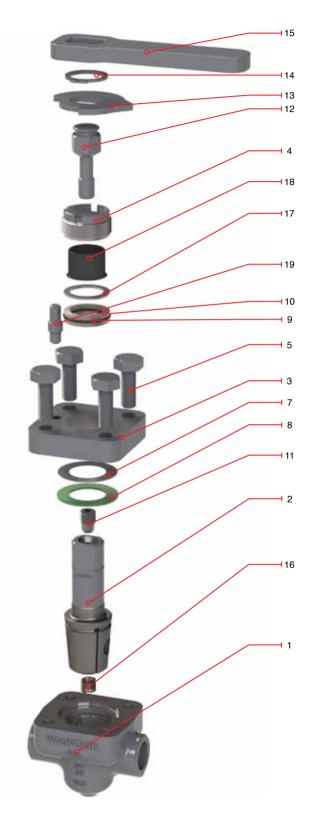
TOP ENTRY PLUG VALVE REGULAR PATTERN CLASS 600 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	STM A 216 Gr. WCB/ A395 Gr.60-40-18
3	Retainer	Carbon Steel A216 Gr. WCB
4	Gland	Carbon Steel A216 Gr. WCB
5	Retainer Bolting	B7 Alloy Steel Studs
6	Gland Bolting	B7 Alloy Steel Studs
7	Diaphragm	Stainless Steel Type 410
8	Diaphragm Gasket	Non-asbestos composite
9	Packing	Alloy Steel O'ring Retainer Sleeve with Buna-N O'ring
10	Packing Retainer	Steel
11	Plug Check Valve	Steel
12	Sealant Fitting	Steel
13	Stop Collar	Steel
14	Collar Retainer	Steel
15	Wrench	Carbon Steel
16	Spring	Stainless Steel
17	Spring Washer	Steel
18	Seal	Nitrile (Buna-N)
19	Stop Post	Steel
20	Identification Plate*	Stainless Steel 304

*Not Shown

(1) Valves from 1/2" to 1 1/2" classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





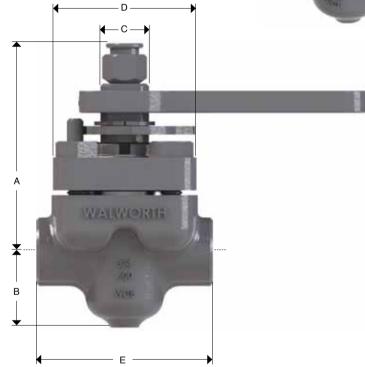
TOP ENTRY PLUG VALVE REGULAR PATTERN CLASS 600 (WRENCH OPERATED)

Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Threaded Dimensions conform to ANSI/ASME B1.20.1 •
- Design as per API 6D

Figure no.	Operation	Type of ends
1748	Wrench	THREADED





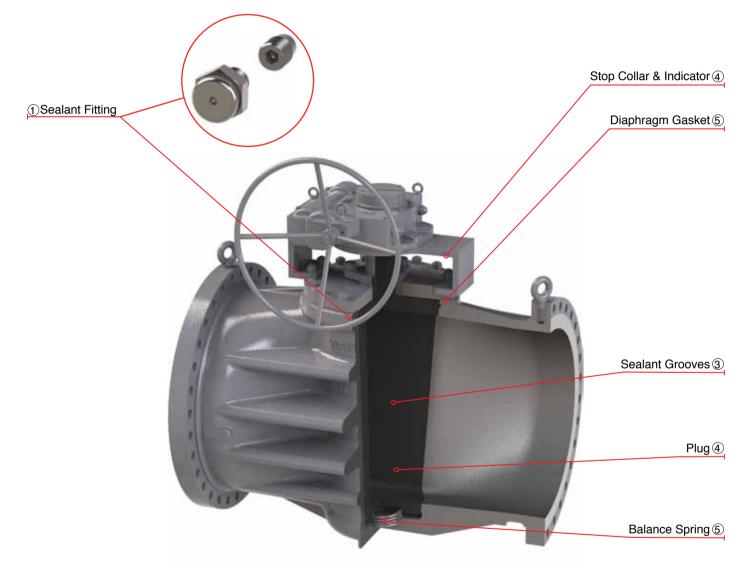
Dimensions and Weights

Nor	ninal			G	aeneral D	imension	IS				O END SIONS	Approx	Weight	
Si											E		THREADED	
		1	4	E	В		С		D		THREADED		INREADED	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	
1/2	13	6.25	159	1.75	44	1.1	28	3.25	83	4.25	108	4	9	IH-1
3/4	19	6.25	159	1.75	44	1.1	28	3.25	83	4.25	108	4	9	IH-1
1	25	6.87	174	2.12	54	1.22	31	3.25	83	4.5	114	6	13	IH-2
1 1/2	38	7.62	194	2.5	64	1.41	36	4	102	6.7	170	9	20	IH-3
2	50	9	229	3.25	83	1.6	41	5.43	138	7.75	197	14	31	IH-4



TOP ENTRY PLUG VALVE VENTURI PATTERN

WALWORTH Top Entry Cast Steel Plug valves provide safe, reliable long life service at an economical price. The taper of the plug and seat maintains an intimate working contact between the two parts at all times, and with the proper lubricant, the valve seals drop tight from zero to full rated differential pressure.



Design Features

- (1) Sealant Fitting fast sealant injection that can be removed under pressure. The system includes ball check valves that prevent back pressure and maintain pressure in the sealant cavity.
- (2) Balancing Spring the mechanical spring type grade 304 Stainless Steel washer is under compression and holds the plug in an equalized pressure position, thus eliminating the possibility of plug taper lock.
- ③ Sealant Grooves this system permits sealant injection while the valve is under full line pressure. WALWORTH recommends that the valves be lubricated with the plug in the fully opened or fully closed position for optimum valve performance.
- ④ Open/Close Indicator quarter turn stop collar also functions as an indicator of the plug's position.
- (5) Diaphragm Gasket Ensures a complete sealing of the valve against any leakage.
- (6) Plug WALWORTH plugs are designed with an specific coating material that reduces the coefficient of friction, making the valve operate with low torque.

* End to End Dimension as per ASME B16.10 to meet Venturi Pattern Length



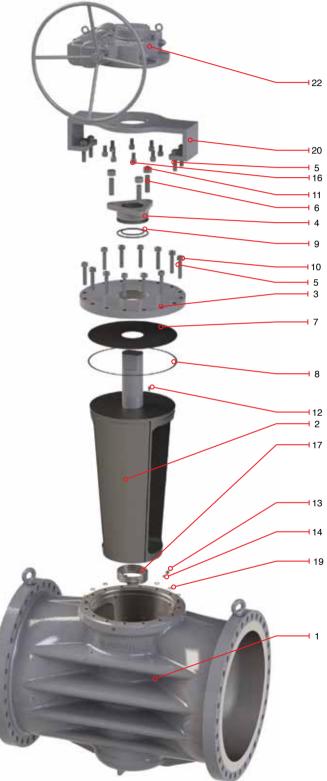
TOP ENTRY PLUG VALVE VENTURI PATTERN CLASS 150 (GEAR OPERATED)

Regular Bill of Materials

ſ	No.	Description	Standard Material
	1	Body	Carbon Steel A216 Gr. WCB
	2	Plug (1)	STM A 216 Gr. WCB/ A395 Gr.60-40-18
	3	Retainer	Carbon Steel A216 Gr. WCB
	4	Gland	Carbon Steel A216 Gr. WCB
	5	Retainer Studs	B7 Alloy Steel Studs
	6	Gland Studs	B7 Alloy Steel Studs
	7	Diaphragm	Stainless Steel Type 410
	8	Diaphragm Gasket	Carbon Steel A635 Gr. 1010
	9	Packing	Alloy Steel O'ring Retainer Sleeve with Buna-N O'ring
	10	Retainer Nuts	Carbon Steel A194 Gr. 2H
	11	Gland Nuts	Carbon Steel A194 Gr. 2H
	12	Plug Check Valve	Steel
	13	Sealant Fitting	Steel
	14	Sealant Check Valve	Commercial Steel
	15	Collar Retainer	Steel
	16	Gear Box Bolting	Alloy Steel
	17	Spring	Stainless Steel
	18	Spring Washer	Steel
	19	Seal	Nitrile (Buna-N)
	20	Gear Box Support	Carbon Steel
	21	Identification Plate*	Stainless Steel 304
	22	Gear Box	Commercial Steel

*Not Shown

(1) Valves from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " classes from 150 to 1500 with A322 Gr. 4140 or A216 Gr. WC6.





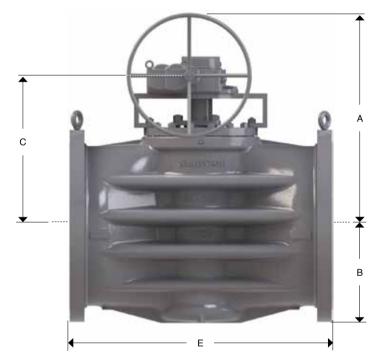
TOP ENTRY PLUG VALVE VENTURI PATTERN CLASS 150 (GEAR OPERATED)

Design Features

- Flanged Dimensions conform to ANSI/ASME B16.5, B16.34
 Design as per API 6D

Figure no.	Operation	Type of ends			
1752F	Gear operator	RF			





Dimensions and Weights

Nom	Nominal General Dimensions								O END ISIONS	Approx Weight		
Si					E	1	RF					
		1	4	E	3	С		RF		ПГ		
in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	
14	350	24.5	622	12.62	321	16.12	409	27	686	574	1263	
16	400	24.5	622	12.62	321	16.12	409	30	762	624	1373	
18	450	26.37	670	13.87	352	18	457	34	864	851	1872	
20	500	28.5	724	15.5	394	19.52	496	36	914	1030	2266	
24	600	30.5	775	17.25	438	21.37	543	42	1067	1690	3718	
30	750	41.06	1043	20.5	521	37.25	946	-	-	3250	7150	
36	900	41.75	1060	23.25	591	38.25	972	-	-	4725	10395	



GAS SERVICE PLUG VALVE FIG. 1966

The WALWORTH Gas Service Plug valves were designed specially to give natural gas utility companies high quality carbon steel lubricated plug valves at a price comparable to cast iron gate valves with flanged ends.

The cast carbon steel body and ends have proved to be far superior to conventional cast iron gate valves in cases where gas lines have been subjected to ground shifting.

These WALWORTH plug values incorporate a high strength cast iron plug. This plug is coated for long trouble-free life and low operating torque. The values are single gland construction employing two cap screws and packing arrangements.



Design Features

- (1) Sealant Fitting fast sealant injection that can be removed under pressure. The system includes ball check valves that prevent back pressure and maintain pressure in the sealant cavity.
- (2) Balancing Spring the mechanical spring type grade 304 Stainless Steel washer is under compression and holds the plug in an equalized pressure position, thus eliminating the possibility of plug taper lock.
- ③ Sealant Grooves this system permits sealant injection while the valve is under full line pressure. Walowrth recommends that the valves be luibricated with the plug in the fully opened or fully closed position for optimum valve performance.
- ④ Open/Close Indicator quarter turn stop collar also functions as an indicator of the plug's position.
- (5) Diaphragm Gasket Ensures a complete sealing of the valve against any leakage.
- (6) Plug Walworth Plugs are designed with a specific coating material that reduces the coefficient of friction, making the valve operate with low torque.



CLASS 200



CLASS 150



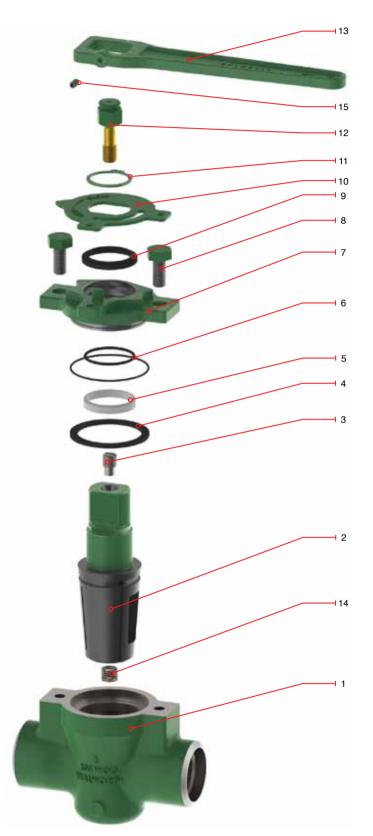
GAS SERVICE PLUG VALVE CLASS 200 CWP FIG. 1966 (WRENCH OPERATED)

Regular Bill of Materials

	_	
No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug ⁽¹⁾	Gray Iron ASTM A126 Class B
3	Plug Check Valve	Carbon Steel
4	Center Packing	Nitrile
5	Pressure Ring	RPTFE
6	Packing	Buna'-N O'Ring
7	Gland	Gray Iron ASTM A126 Class B
8	Gland Bolt	ASTM A 307 Gr. B
9	Weather Seal	Nitrile
10	Stop Collar	Stainless Steel
11	Circlip	Stainless Steel
12	Sealant Fitting	Carbon Steel
13	Wrench	Gray Iron ASTM A126 Class B
14	Spring	Stainless Steel
15	Set Screw	Alloy Steel

*Not Shown

¹ Valves from 1/2 to 1 1/2 classes from 150 to 1500 with A322 Gr. 4140





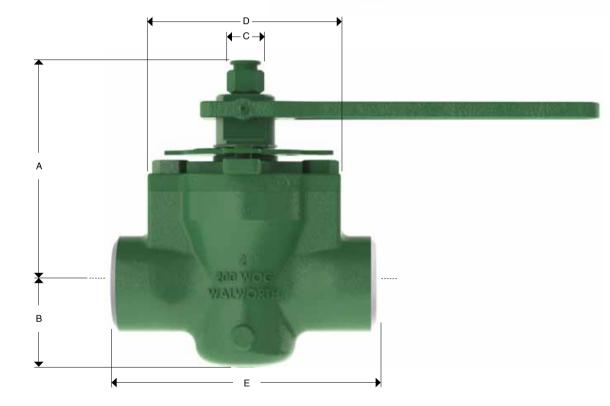
GAS SERVICE PLUG VALVE CLASS 200 CWP FIG. 1966 (WRENCH OPERATED)

Design Features

- Socket Weld Dimensions conform to ANSI/ASME B16.11
 Butt-weld Dimensions conform to ANSI/ASME B16.25
- Design as per API 6D

Figure no.	Operation	Type of ends
1966SW	Wrench	SW
1966WE	Wrench	WE





Dimensions and Weights

			Concept dimensions								End to End Dimensions			APPROX. WIEGHT				T
	ninal neter		General dimensions							E			sw		WE		NCI NCI	
Dian		1	4	E	3	(2	[כ	S	W	V	/E	5	vv	V	E	WRENCH
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	Kg	lb	\$
3/4	19	3.8	97	1.62	41	3	76	0.81	21	4.5	114	-	-	3	7	-	-	D-4
1 1/4	31	4.5	114	1.94	49	3.12	79	0.91	23	5	127	-	-	8	18	-	-	D-4
2	50	4.81	122	2.56	65	3.62	92	1.06	27	-	-	7	178	-	-	7	15	G-1
3	80	6.31	160	3.12	79	4.75	121	1.37	35	-	-	8	203	-	-	13	29	M-1
4	100	7.37	187	3.87	98	5.75	146	1.5	38	-	-	9	229	-	-	22	48	P-1

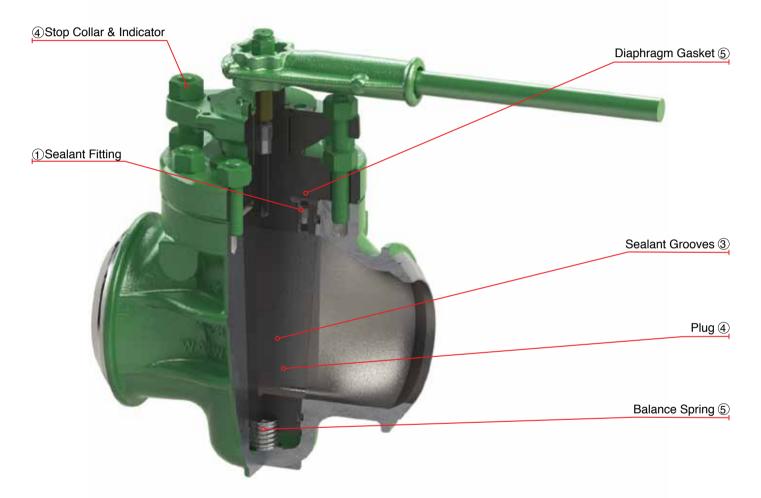


GAS SERVICE PLUG VALVE FIG. 1967

The WALWORTH Gas Service Plug valves were designed specially to give natural gas utility companies high quality carbon steel lubricated plug valves at a price comparable to cast iron gate valves with flanged ends.

The cast carbon steel body and ends have proved to be far superior to conventional cast iron gate valves in cases where gas lines have been subjected to ground shifting.

These WALWORTH plug valves incorporate a high strength cast iron plug. This plug is coated for long trouble-free life and low operating torque. The valves are single gland construction employing two cap screws and packing arrangements.



Design Features

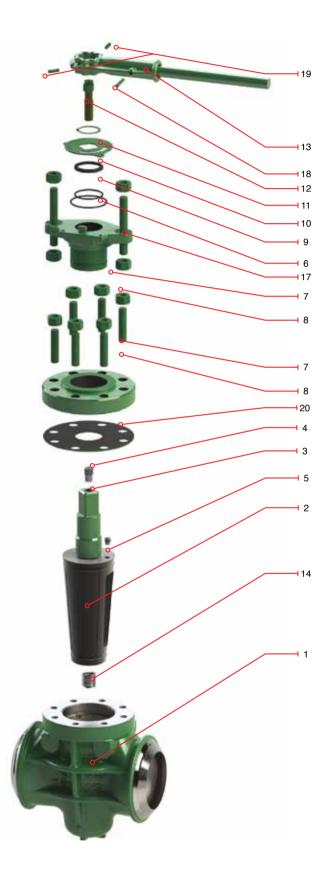
- Sealant Fitting fast sealant injection that can be removed under pressure. The system includes ball check valves that prevent back pressure and maintain pressure in the sealant cavity.
- (2) Balancing Spring the mechanical spring type grade 304 Stainles Steel washer is under compression and holds the plug in an equalized pressure position, thus eliminating the possibility of plug taper lock.
- ③ Sealant Grooves this system permits sealant injection while the valve is under full line pressure. WALWORTH recommends that the valves be lubricated with the plug in the fully opened or fully closed position for optimum valve performance.
- (4) Open/Close Indicator quarter turn stop collar also functions as an indicator of the plug`s position.
- (5) Diaphragm Gasket ensures a complete sealing of the valve against any leakage.
- (6) Plug Walworth plugs are designed with a specific coating material that reduces the coefficient of friction, making the valve operate with low torque.



GAS SERVICE PLUG VALVE CLASS 150 Fig. 1967 (WRENCH OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug (1)	Gray Iron ASTM A126 Class B
3	Plug Check Valve	Carbon Steel
4	Gasket	Nitrile
5	Plug Check	Carbon Steel
6	Packing	Buna'-N O'Ring
7	Gland	Gray Iron ASTM A126 Class B
8	Gland Stud	ASTM A 307 Gr. B
9	Weather Seal	Nitrile
10	Stop Collar	Stainless Steel
11	Circlip	Stainless Steel
12	Sealant Fitting	Carbon Steel
13	Wrench	Gray Iron ASTM A126 Class B
14	Spring	Stainless Steel
15	Cover Stud	ASTM A193 Gr. B7
16	Cover Stud Nut	ASTM A194 Gr. 2H
17	Gland Stud Nut	ASTM A194 Gr. 2H
18	Handwheel Pin	ASTM A568
19	Set Screw	Alloy Steel
20	Cover	Gray Iron ASTM A126 Class B
21	Identification Plate *	Stainless Steel



*Not Shown $^{\rm 1}$ Valves from 1/2 to 1 1/2 classes from 150 to 1500 with A322 Gr. 4140

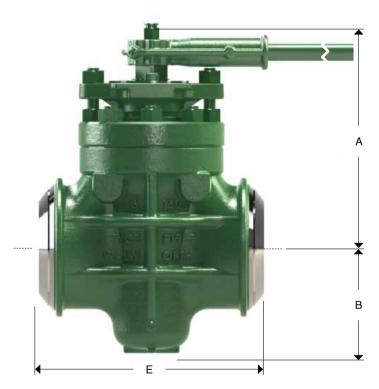


GAS SERVICE PLUG VALVE CLASS 150 Fig. 1967 (WRENCH OPERATED)

Design Features

- Butt-weld Dimensions conform to ANSI/ASME B16.25
 Design as per API 6D

Figure no.	Operation	Type of ends
1967WE	Wrench	WE





Dimensions and Weights

			Our and Dimensions								Dimensions	Approx. Weight		
-	minal lize		General Dimensions								E	WE		Jch
	120	4	4	E	В	C D WE WE		VE	Wrench					
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb	-
6	19	11.75	298	6.12	155	1.5	38	8.37	213	13	330	65	143	P-3
8	31	12.81	325	7.5	191	1.75	44	9.62	244	15.5	394	94	207	R-3



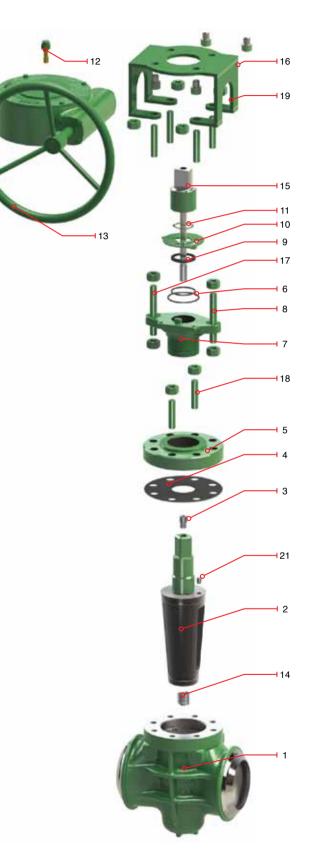
GAS SERVICE PLUG VALVE CLASS 150 Fig. 1968 (GEAR OPERATED)

Regular Bill of Materials

No.	Description	Standard Material
1	Body	Carbon Steel A216 Gr. WCB
2	Plug ⁽¹⁾	Gray Iron ASTM A126 Class B
3	Plug Check Valve	Carbon Steel
4	Center Packing	Nitrile
5	Pressure Ring	RPTFE
6	Packing	Buna'-N O'Ring
7	Gland	Gray Iron ASTM A126 Class B
8	Gland Bolt	ASTM A 307 Gr. B
9	Weather Seal	Nitrile
10	Stop Collar	Stainless Steel
11	Circlip	Stainless Steel
12	Sealant Fitting	Carbon Steel
13	Gear Operator	Commercial Steel
14	Spring	Stainless Steel
15	Stem Extension	ASTM A322 Gr 4140
16	Base	ASTM A36
17	Cover Bolt	ASTM 193 GR. B7
18	Cover Bolt Nut	ASTM A194 GR. 2H
19	Gland Nut	ASTM A194 GR. 2H
20	Allen Screw	ASTM A 571
21	Check	Carbon Steel
22	Identification Plate*	Stainless Steel

*Not Shown

¹ Valves from 1/2 to 1 1/2 classes from 150 to 1500 with A322 Gr. 4140



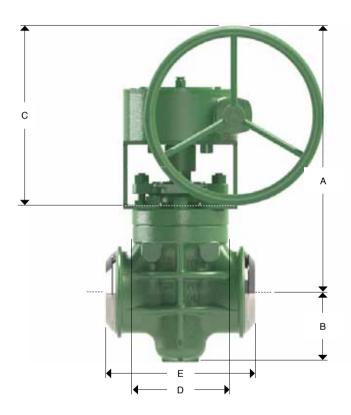


GAS SERVICE PLUG VALVE CLASS 150 Fig. 1968 (WRENCH OPERATED)

Design Features

- Butt-weld Dimensions conform to ANSI/ASME B16.25
 Design as per API 6D

Figure no.	Operation	Type of ends
1968WE	Wrench	WE





Dimensions and Weights

Nom			General Dimensions								o End nsions -	Approx. Weight	
Si	ze	Å	1	B C D							E /E	WE	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Kg	lb
6	19	19.75	502	6.12	155	17.5	445	8.37	213	13	330	87	191
8	31	19.03	483	7.5	191	17.5	445	9.62	244	15.5	394	116	255



TECHNICAL INFORMATION PLUG VALVES WRENCHES

COMPENSATOR STEEL PLUG VALVES WRENCHES

WRENCH NUMBER	SIZE OPENING	HANDLE LENGTH	FOR USE WITH VALVES SIZE, CLASS OR FIGURE NUMBER
IB – 0	15/16" X 1 1/2"	18"	1" 600 Class 1/2", 3/4", 1" 1500 Class
IB – 1	1 1/8" X 13/16	27"	1500 Class, 1" 2500
IB – 2	1 1/2" x 1 1/8"	36"	2", 3" & 4" Class 150, 300 & 600; 2" Class 900 & 1500
IB – 3	2 1/8" x 1 7/16"	48"	6" & 8" Class 150 & 300, 6" Class 600; 3" & 4" Class 900 & 1500

TOP ENTRY STEEL PLUG VALVES WRENCHES

WRENCH NUMBER	SIZE OPENING	HANDLE LENGTH	FOR USE WITH VALVES SIZE, CLASS OR FIGURE NUMBER
IH – 1	1 7/64" X 13/16	5 ½"	1/2" AND 3/4" 1748, 1749WE, 1760, 1760WE
IH – 2	1 ¼" X 57/64"	6"	1" 1748, 1749F, 1749WE, 1760, 1760F, 1760WE
IH – 3	1 ½" X 1 1/64"	9"	1 1/2" 1748, 1749F, 1749WE, 1760, 1760F, 1760WE
IH – 4	1 21/32" X 1 9/64"	12"	2" 1748, 2" & 2 1/2" 1749F, 1750, 1760, 1760F, 1760WE
IH – 6	1 3/8" X 2 1/32"	18"	3" 1749F, 1749WE, 1750, 1760, 1760F, 1760WE
IA – 1	1 3/8" X 2 1/16"	25 1/8"	4" 1749F, 1749WE, 1750, 1760F, 1760WE
IA – 2	1 7/8" X 1 7/8"	24 1/8"	6" 1749F, 1760, 1760F
IA – 3	2 1/8" X 2 1/8"	40 1/8"	8" 1749F, 1760, 1760F
G – 1	1 1/16" X 1 1/16"	9"	2" 1966WE & 1966SW (Wrench size if 2" square nut is removed)
M – 1	1 3/8" x 1 3/8"	15"	3" 1966WE & 1966SW (Wrench size if 2" square nut is removed)
P – 1	1 1/2" 1 1/2"	18"	4 - 1966WE
P – 3	1 1/2" x 1 1/2"	36"	6" 1967WE
R – 3	1 3/4" X 1 3/4"	36"	8" 1967WE



TECHNICAL INFORMATION 2" SQUARE OPERATING NUTS

TOP ENTRY STEEL PLUG VALVES

OPERATING No.	RECTANGLE OPENING SIZE	VALVE	FOR USE WITH VALVE NUMBER
ON1	1 7/64" X 13/16"	1/2" & 3/4"	1748, 1760
ON2	1 1/4" X 57/64"	1"	1748, 1749F, 1760, 1760F
ON3	1 1/2" X 1 1/64"	1 1/2"	1748, 1749F, 1760, 1760F
ON4	1 01/2011 X 1 0/641	2"	1748, 1749F, 1750, 1760, 1760F
UN4	1 21/32" X 1 9/64"	2 1/2"	1749F, 1750, 1760, 1760F
ON10	2 1/8" X 1 7/16"	3" 4"	1749F, 1750, 1760, 1760F

COMPENSATOR STEEL PLUG VALVES

OPERATING	RECTANGLE	VALVE	FOR USE WITH VALVE NUMBER
ON7	1 1/16" X 1/2"	1"	6511 TO 6516
ON/	1 1/10 X 1/2	1/2", 3/4"	5511 TO 5516
ON8	1 1/0" V 1 2/16"	1 1/2"	6511 TO 6516
UNO	1 1/8" X 1 3/16"	1 1/2"	5511 TO 5516
ON9	1 1/2" X 1 1/8"	2", 3", 4"	1412 TO 6516
0119	1 1/2 X 1 1/0	2"	9511 TO 9516
		6", 8"	1412 TO 3616
ON10	2 1/8" X 1 7/16"	6"	6512 TO 6616
		3", 4"	9511 TO 5516
ON11			ALL COMPENSATOR VALVES WITH GEAR OPERATOR

CORRESPONDING OPERATING NUT AND RECTANGLE OPENING SIZE

OPERATING No.	VALVE SIZE					
ON1	1 7/64" X 13/16"					
ON2	1 1/4" X 57/64"					
ON3	1 1/2" X 1 1/64"					
ON4	1 21/32" X 1 9/64"					
ON7	1 1/16" X 1/2"					
ON8	1 1/8" X 1 3/16"					
ON9	1 1/2" X 1 1/8"					
ON10	2 1/8" X 1 7/16"					



TECHNICAL INFORMATION WALSEAL PLUG VALVES SEALANT

FUNCTION AND PROPERTIES OF WALSEAL SEALANTS

To assure thoroughly satisfactory service, WALWORTH Walseal Sealants should always be used with WALWORTH Plug Valves.

Function: The sealant minimizes friction during operation of the valve and protects seating surfaces from corrosion. Because the ports of valves are completely encircled with sealant grooves, leakage is prevented by the Walseal sealant.

Properties: Walseal sealants have the necessary properties to serve a variety of purposes.

- 1. Have lubricating value to allow the valve to turn easily.
- 2. Have sufficient body to resist dilution by line fluids and still assure tight sealing.
- 3. Are chemically inert in the fluids for which they are specified, and have the ability to adhere to the metal of the finished seating surfaces to protect from corrosion.
- 4. Remain in a plastic state over a wide range of temperature conditions, to act as a hydraulic medium and provide for lubrication and corrosion protection.
- 5. Contain a minimum of ingredients that might solidify from temperature or chemical reactions and clog the groove system.

SELECTION AND MAINTENANCE OF WALSEAL SEALANT

How to select a sealant:

1. Line Contents - Select a sealant recommended for the particular service requirements.

- 2. Color Where discoloration of the line contents must be guarded against, select a white sealant if available. In special cases consult a WALWORTH representative.
- Contamination Sealant for use with foodstuffs or pharmaceuticals must be non-toxic, taste -and color- free and chemically inert.
- 4. Temperature As a general rule, choose the sealant with the lowest maximum temperature rating. Such a sealant will usually have greater lubricating value at normal temperatures than one with a higher limit. This is important as it affects the ease of operation of the valve.
- Compromise If a sealant is required for a mixed service condition, a good practical rule is to select the sealant recommended for the predominating part of the pipeline contents.
- 6. Nitrating Acids It is dangerous to use certain sealants on nitrating acids. Please contact your WALWORTH representative for this application.

Proper sealant maintenance:

The amount of maintenance required depends upon the frequency of operation of the valve.

Regular maintenance preserve the seating surfaces and prevents leakage. Definite periodic service gives the best results. Any valve not regularly operated should be serviced at least every six months.

Ordering Information:

- 1. State whether jumbo, stick or bulk sealant is desired.
- 2. For bulk sealant, give Walseal number and container size.

STICK	STICK SIZE	AVAILABLE IN WALSEAL NO.
B (24/box)	318' X 1 1/2' (Box approx. 1.2 lb.)	10, 20, 40 and 60
C (24/box)	7/16' X 2 1/8' (Box approx. 1.2 lb.)	10, 20, 40 and 60
D (24/box)	1/2' X 2 1/4' (Box approx. 1.2 lb.)	10, 20, 40 and 60
G (24/box)	518' X 3 1/2' (Box approx. 1.2 lb.)	10, 20, 40 and 60
CARTRIDGE - (Box of 4 - 1 lb. each)		AII TYPES
BULK		
J-Jumbo Jr. (6)	1 3/8' X 8 1/2' (Box approx. 3.2 lb.)	10, 20, 40 and 60
K-Jumbo (12)	1 1/2' X 10 1/2' (Box approx. 9.2 lb.)	10, 20,40 and 60
Gun Pack (Box-6 GP)		
10 pound (5 quart can)		AII TYPES
40 pound (5 gallon can)		AITTES
400 pound (55 gallon drum)		

TECHNICAL INFORMATION WALSEAL PLUG VALVES SEALANT

WALSEAL #10

Temperature range from -20F to 500F Stick / -40F to 500F Bulk

Color: dark gray

Service: General purpose sealant intended for use in natural gas and liquid petroleum services, including crude distillates combustible fuels such as gasoline, jet fuel and heating oils. Used as assembly sealant in all WALWORTH plug valves unless otherwise specified.

Not intended for use in: solvents (aromatic); strong acids; alkalies or steam.

WALSEAL #20

Temperature range from OF to 650F Bulk / 30F to 690F Stick

Color: red

Service: Service: High temperature general purpose sealant for use in acids, alkalis, alcohols, amines, asphalt, aqueous solutions, fats, glycerine, glycols, soap, steam, or water service having continuous exposure to temperatures above 400F.

Not intended for use in: aromatic solvents; light liquid hydrocarbons; or nitrating acids.

WALSEAL #40

Temperature range from 1 OF to 350F Stick / -10F to 350F Bulk

Color: light brown

Service: Specifically formulated for resistance to all octane gasolines, aviation and jet fuels, kerosene, fuel blending ingredients and water. Approved for government use per MIL-G-6032.

Not intended for use in: strong acids and alkalies.

WALSEAL #50

Temperature range from -50F to 300F

Color: beige

Service: Low temperature general purpose sealant for use in services similar to Walseal #10. Recommended for continuous exposure to temperatures below 0°F.

Not intended for use in: solvents (aromatic and chlorinated); strong acids and alkalies.

WALSEAL #60

Temperature range from 1 OF to 350F Stick / 0F to 300F Bulk Service: Suitable for water, acids, alkalies, alcohols, and amines. May be used in food or pharmaceutical applications if approved by user. Certified by the National Sanitary Foundation.

Not intended for use in: hydrocarbon solvents.

Continued use of any sealant at either the low or high temperature limit is not recommended.

For more information concerning these sealants or recommendations for a particular service, contact your WALWORTH representative.

WALWORTH VALVE FLUSH

For hard-to-operate valves

-20°F to 400°F

(-28°C) (204°C) BLACK

VALVE FLUSH is not a sealant; however, it is compatible with any lubricant or sealant. It contains molybdenum disulfide for added lubricity. VALVE FLUSH may be applied with conventional lubricating equipment.

VALVE FLUSH will work through any fitting that is not completely plugged. In other words, if VALVE FLUSH cannot be injected past the fitting, it will not free the valve. If the fitting is plugged, then it is recommended that the fitting be removed and replaced with the appropriate WALWORTH fitting.

WALWORTH "VALVE FLUSH" JUMBO, JR. BAG 6/BX WALWORTH "VALVE FLUSH" JUMBO, BAG 6/BX WALWORTH "VALVE FLUSH" 1 CARTRIDGE 12/CTN WALWORTH "VALVE FLUSH" 10LB. (5QT.) CAN. WALWORTH "VALVE FLUSH" 20 LB. (3GAL.) PAIL WALWORTH "VALVE FLUSH" 40 LB. (6GAL.) PAIL

TECHNICAL INFORMATION

ACTUATORS

Valves can be furnished with either electric, pneumatic or hydraulic actuators. The actuators can be furnished as either waterproof and/or explosion proof. The Customer must specify such things as open-close speed, maximum differential pressure, service temperature, type of voltage-phase-frequency, air or gas pressure for pneumatic actuators, and flow characteristics for hydraulic actuators to be assured of correct performance.



LUBRICANT ACCESORIES

1002 WALSEAL HYDRAULIC DELTA STICK SEALANT GUN, FOR USE WITH "K" SIZED SEALANT.

1699 HIGH PRESSURE LUBRICANT GUN

1699 G HIGH PRESSURE LUBRICANT GUN WITH GAUGE

Where a number of valves are installed under the same or related service conditions, it is advantageous to lubricate them with a **WALWORTH High Pressure Lubricant Gun.**

The Walworth High Pressure Lubricant Gun is the only portable gun that can handle full-bodied valve lubricants in stick form.

The gun is self-priming and may be used in any position. The pump handle is detachable and has a hole drilled near one end.

By detaching the handle and placing the hole over the protruding button on the charging cap, the cap can readily be removed and replaced.

The handle is also used as a pusher for returning the piston to the bottom of the cylinder for the purpose of charging the gun.

To charge the gun, the by-pass is opened and the piston pushed down as far as it will go. The by-pass valve is then closed and two

sticks of WALWORTH Jumbo Size Lubricant are inserted. Then the charging cap is replaced, using the pump handle and protruding button on the cap to tighten it, and the gun is ready for use. The lever handle is then pumped until sealant appears at the end of the hose.

During operation of the gun, if the pressure that is created locks the coupling to the button-head filling, the pressure can be relieved and the coupling disconnected by opening the bypass valve. Relief fittings are provided on the hose and within the gun to prevent damage to the valve, should the lubricating system be clogged, or to the gun itself if operated when empty.

HIGH PRESSURE GAUGE

For use with sealant hand guns and pumps. An essential accessory to indicate when sufficient sealant pressure has been developed.

Gauge needle pulsation goes up by steps until the valve is completely filled with Sealant. When Sealant pressure reaches a certain point, the gauge needle begins to drop, showing that the valve is full. Gauge also indicates valve adjustment and other service is required.





TECHNICAL INFORMATION WALWORTH LUBRICANT FITTINGS

Most types of WALWORTH Lubricated Plug Valves are regularly provided with the WALWORTH Lubricant Fitting below illustrated. It is a Giant Button-Head Fitting to which the lubricant gun may be easily coupled for a leakproof connection. These fittings may also be used as regular lubricant screws with standard size lubricant sticks. One size of Button-Head Fitting is used for all Compensator Plug Valves. The Button-Head figure number for other WALWORTH Plug Valves is the same as the "Sealant Stick Size" listed on the catalog page for each valve type and size.









WALWORTH BUTTON-HEAD LUBRICANT FITTINGS	LUBRICANT FITTING SIZE	WALWORTH LUBRICANT FITTING NUMBER	DC
For Standard Compensators	1⁄4"	BH1	
For NACE MR0-01-75 Compensators	1⁄4"	BH1-N	
For valves with Sealant Stick Size: B	1⁄4"	BH2	
C	3⁄8	BH3	
D	1⁄2	BH4	
G	3⁄4	BH5	

DOUBLE BALL CHECK VALVE ASSEMBLIES									
No.	Valve Size								
В	½ to 2"								
С	2½ to 3"								
D	4 & 5"								
G	6" & up								



TECHNICAL INFORMATION BUTT WELD DIMENSIONS

NOMINAL PIPE SIZE (INCHES)	3	4	5	6	8	10	12	14	16	18	20	24
AA DIAMETER (INCHES)	3 ¹ %32	4 ⁵ /8	5 ¹¹ / ₁₆	6 ²⁵ / ₃₂	8 ²⁵ / ₃₂	10 ¹⁵ / ₁₆	12 ³¹ / ₃₂	14 ¹ %	16 ¹ %	18 ¹ %	20 ¹ %	24 ¹⁹ / ₃₂

ANSI STANDARD B16.25

A - Nominal outside diameter of pipe in inches.

AA- Nominal outside diameter for cast steel valves in inches (see table).

8 - Nominal inside diameter of pipe in inches. **

t -Nominal wall thickness of pipe in inches.

C - A-0.031-1.75t-0.010 in inches.

For complete dimensions, details, other configurations, and tolerances, ANSI B16.25

OUTSIDE CONTOUR

When the thickness of the welding end of the valve is greater than that of the mating pipe, and when the additional thickness Increases the outside diameter, a taper weld having a slope not exceeding 1:3 may be employed or the greater outside diameter may be extended back in a manner within the maximum slope lines indicated in Figs. 1A and 1B. The transition shall be of a shape avoiding sharp reentrant angles and abrupt changes in slope. The profile of the outside contour shall be at the manufacturer's option provided above conditions are met.

INSIDE CONTOUR

For a joint without a continuous backing ring, the inside contour of the valve end shall be bored to a diameter B to a depth of 1/2" min. The inside diameter of a valve end beyond this machined surface may be either larger or smaller than the inside diameter of the pipe. The transition shall be of a shape avoiding sharp re-entrant angles and abrupt changes in slope. See Figs. 1A and 1B. (Transition shape also applies to Figs. 2 and 3).

For a joint with a continuous rectangular backing ring, the contour of the valve end shall be a straight bore of diameter C, 1/2 in. deep. This depth is based on a backing ring 3/4 in. wide; but if a wider ring is used, the depth shall be increased to provide the 1/8 in. minimum end clearance indicated. See Fig. 2.

For a joint with a continuous tapered backing ring, the inside contour of the valve end shall be taper bored from diameter C at the lip tapering at 10 deg to a taper length of 7/32 in minimum. Beyond this taper length the bore may be extended to the inside port diameter. See fig. 3

*See Figs. 1A and 1 for Outside Contours.

** Tolerances for B : NPS 10 and Smaller: +0.03': NPS 12 to 18: \pm 0.06'; NPS 20 to 24: +0.12, - 0.06"

BORES: WALWORTH's standard practice for Class 150 and 300 cast steel valves is that buttwelding ends be machined in accordance with Figs. 1A and 1B, bored to match the inside diameters of Schedule 40 pipe in sizes 12-inch and smaller, and of 0.375 inch Standard Wall Pipe in larger sizes, unless otherwise specified. Orders for all sizes of Class 600 and higher must specify the diameter of valves bore, type of backing ring, etc.

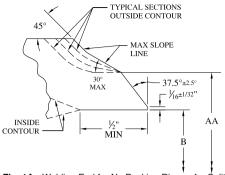


Fig. 1A.- Welding End for No Backing Ring or for Split Backing Ring. Pipe Wall Thickness "t" 7/8" and less.

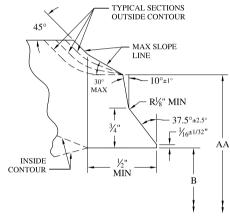


Fig. 1B.- Welding End for No backing Ring or for Split BackIngRing. Pipe Wall Thickness "t" Greater Than 7/8"

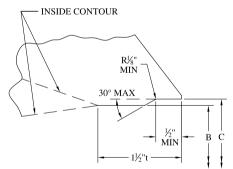
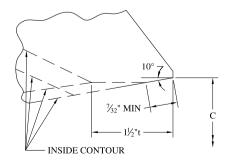
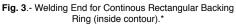


Fig. 2.- Welding End for Continous Rectangular Backing Ring (inside contour).*

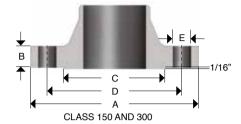






TECHNICAL INFORMATION FLANGE DIMENSIONS AND TEMPLATES

STEEL FLANGE DIMENSIONS AND DRILLING TEMPLATES ANSI B 16.5





LENGTH OF STUD BOLT



LENGTH OF MACHINE BOLT

CLASS 150

		FLANGE 1	HICKNESS							
NOMINAL PIPE SIZE	FLANGE DIAMETER A	COMPANION FLANGE B	VALVE FLANGE B	DIAMETER OF RAISED FACE C	DIAMETER OF VOLT CIRCLE D	DIAMETER OF BOLT HOLES E	NUMBER OF BOLTS	DIAMETER OF BOLTS	LENGTH OF STUD BOLTS F	LENGTH OF MACHINE G
1	4 1/2	9/16	7/16	2	3 1/8	5/8	4	1/2	2 1/2	2 1/4
1 1/2	5	11/16	9/6	2 7/8	3 7/8	5/8	4	1/2	2 3/4	2 1/2
2	6	3/4	5/8	3 5/8	4 3/4	3/4	4	5/8	3 1/4	2 3/4
2 1/2	7	7/8	11/16	4 1/8	5 1/2	3/4	4	5/8	3 1/4	3
3	7 1/2	15/16	3/4	5	6	3/4	4	5/8	3 1/2	3
4	9	15	5/16	6 3/16	7 1/2	3/4	8	5/8	3 1/2	3
6	11		1	8 1/2	9 1/2	7/8	8	3/4	4	3 1/4
8	13 1/2	1	1/8	10 5/8	11 3/4	7/8	8	3/4	4 1/4	3 1/2
10	16	13	3/16	12 3/4	14 1/4	1	12	7/8	4 1/2	4
12	19	1	1/4	15	17	1	12	7/8	4 3/4	4
14	21	1	3/8	16 1/4	18 3/4	1 1/8	12	1	5 1/4	4 1/2
16	23 1/2	15	7/16	18 1/2	21 1/4	1 1/8	16	1	5 1/4	4 1/2
18	25	1 9	9/16	21	22 3/4	1 1/4	16	1 1/8	5 3/4	5
20	27 1/2	11	1/16	23	25	1 1/4	20	1 1/8	6 1/4	5 1/2
24	32	1	7/8	27 1/4	29 1/2	1 3/8	20	1 1/4	6 3/4	6

CLASS 300

NOMINAL PIPE SIZE	FLANGE DIAMETER A	FLANGE THICKNESS B	DIAMETER OF RAISED FACE C	DIAMETER OF VOLT CIRCLE D	DIAMETER OF BOLT HOLES E	NUMBER OF BOLTS	DIAMETER OF BOLTS	LENGTH OF STUD BOLTS F	LENGTH OF MACHINE G
1/2	3 3/4	9/16	1 3/8	2 5/8	5/8	4	1/2	2 1/2	2 1/4
3/4	4 5/8	5/8	1 11/16	3 1/4	3/4	4	5/8	3	2 1/2
1	4 7/6	11/16	2	3 1/2	3/4	4	5/8	3	2 1/2
1 1/4	5 1/4	3/4	2 1/2	3 7/8	3/4	4	5/8	3 3/4	2 3/4
1 1/2	6 1/8	13/16	2 7/8	4 1/2	7/8	4	3/4	3 1/2	3
2	6 1/2	7/8	3 5/8	5	3/4	8	5/8	3 1/2	3
2 1/2	7 1/2	1	4 1/8	5 7/8	7/8	8	3/4	4	3 1/4
3	8 1/4	1 1/8	5	6 5/8	7/8	8	3/4	4 1/2	3 1/2
4	10	1 1/4	6 3/16	7 7/8	7/8	8	3/4	4 1/2	3 3/4
5	11	1 3/8	7 5/16	9 1/4	7/8	8	3/4	4 3/4	4 1/4
6	12 1/2	1 7/16	8 1/2	10 5/8	7/8	12	3/4	4 3/4	4 1/4
8	15	1 5/8	10 5/8	13	1	12	7/8	5 1/2	4 3/4
10	17 1/2	1 7/8	12 3/4	15 1/4	1 1/8	16	1	6	5 1/2
12	20 1/2	2	15	17 3/4	1 1/4	16	1 1/8	6 3/4	5 3/4
14	23	2 1/8	16 1/4	20 1/4	1 1/4	20	1 1/8	7	6 1/4
16	25 1/2	2 1/4	18 1/12	22 1/2	1 3/8	20	1 1/4	7 1/2	6 1/2
18	28	2 3/8	21	24 3/4	1 3/8	24	1 1/4	7 3/4	6 3/4
20	30 1/2	2 1/2	23	27	1 3/8	24	1 1/4	8	7 1/4
24	36	2 3/4	27 1/4	32	1 5/8	24	1 1/2	9	8

The regular 1/16-inch raised face of Class 150 and 300 flanges is included in the minimum flange thickness given above, but other raised faces must be added thereto. Class 150 loose flanges are thicker than integral flanges for sizes 3" inch and smaller. Note Column B.

Lengths of stud bolts do not include the height of the points.

Bolt lengths not shown in the tables can be determined by reference to Appendix F of ANSI B16.5-1981.

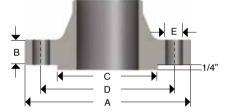
When flanges are integral with valves, the bolt holes which are in multiples of four are drilled to straddle the center line unless otherwise ordered.

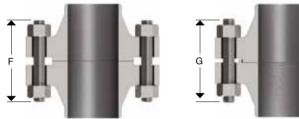


TECHNICAL INFORMATION FLANGE DIMENSIONS AND TEMPLATES

CLASS 600

	FLANGE DIAMETER	FLANGE THICKNESS	DIAMETER OF RAISED	DIAMETER OF VOLT	DIAMETER OF BOLT	NUMBER OF STUD	DIAMETER OF STUD		STUD BOLTS NUTS
SIZE	А	в	FACE C	CIRCLE D	HOLES E	BOLTS	BOLTS	F	G
1	4 7/8	1 1/16	2	3 1/2	3/4	4	5/8	3 1/2	3 1/4
1 1/2	6 1/8	7/8	2 7/8	4 1/2	7/8	4	3/4	4 1/4	4
2	6 1/2	1	3 5/8	5	3/4	8	5/8	4 1/4	4
3	8 1/4	1 1/4	5	6 5/8	7/8	8	3/4	5	4 3/4
4	10 3/4	1 1/2	6 3/16	8 1/2	1	8	7/8	5 3/4	5 1/2
6	14	1 7/8	8 1/2	11 1/2	1 1/8	12	1	6 3/4	6 1/2
8	16 1/2	2 3/16	10 5/8	13 3/4	1 1/4	12	1 1/8	7 1/2	7 1/4
10	20	2 1/2	12 3/4	17	1 3/8	16	1 1/4	8 1/2	8 1/4
12	22	2 5/8	15	19 1/4	1 3/8	20	1 1/4	8 3/4	8 1/2
14	23 3/4	2 3/4	16 1/4	20 3/4	1 1/2	20	1 3/8	9 1/4	9
16	27	3	18 1/2	23 3/4	1 5/8	20	1 1/2	10	9 3/4
18	29 1/4	3 1/4	21	25 3/4	1 3/4	20	1 5/8	10 3/4	10 1/2
20	32	3 1/2	23	28 1/2	1 3/4	24	1 5/8	11 1/4	11
24	37	4	27 1/4	33	2	24	1 7/8	13	12 3/4





STUD BOLT LENGTH "G" ALSO APPLIES FOR TONGUE TO GROOVE FLANGED JOINT

CLASS 900

NOMINAL	FLANGE DIAMETER	FLANGE THICKNESS	DIAMETER OF RAISED	DIAMETER OF VOLT	DIAMETER OF BOLT	NUMBER	DIAMETER	LENGTH OF WITH 2	STUD BOLTS NUTS
PIPE SIZE	А	в	FACE C	CIRCLE D	HOLES	OF STUD BOLTS	OF STUD BOLTS	F	G
3*	9 1/2	1/12	5	7 1/2	1	8	7/8	5 1/2	5 1/4
4	11 1/2	1 3/4	6 3/16	9 1/4	1 1/4	8	1 1/8	6 1/2	6 1/4
6	15	2 3/16	8 1/2	12 1/2	1 1/4	12	1 1/8	6 1/2	6 1/4
8	18 1/2	2 1/2	10 5/8	15 1/2	1 1/2	12	1 3/8	8 1/2	8 1/4
10	21 1/2	2 3/4	12 3/4	18 1/2	1 1/2	16	1 3/8	8 1/2	8 1/4
12	24	3 1/8	15	21	1 1/2	20	1 3/8	9 3/4	9 1/2
16	27 3/4	3 1/2	18 1/2	24 1/4	1 3/4	20	1 5/8	11	10 3/4

* Use Class 1500 dimensions in sizes smaller than 3-inch.

CLASS 1500

NOMINAL	FLANGE DIAMETER	FLANGE THICKNESS	DIAMETER OF RAISED	DIAMETER OF VOLT	DIAMETER OF BOLT	NUMBER OF STUD	DIAMETER OF STUD	LENGTH OF WITH 2	STUD BOLTS NUTS
SIZE	А	в	FACE C	CIRCLE D	HOLES	BOLTS	BOLTS	F	G
1	5 7/8	1 1/8	2	4	1	4	7/8	5	4 3/4
2	8 1/2	1 1/2	3 5/8	6 1/2	1	8	7/8	5 3/4	5 1/2
3	10 1/2	1 7/8	5	8	1 1/4	8	1 1/8	7	6 3/4
4	12 1/4	2 1/8	6 3/16	9 1/2	1 3/8	8	1 1/4	7 3/4	7 1/2
6	15 1/2	3 1/4	8 1/2	12 1/2	1 1/2	12	1 3/8	10	9 3/4
8	19	3 5/8	10 5/8	15 1/2	1 3/4	12	1 5/8	11 1/4	11

The regular 1/4-inch raised face of class 600, 900 and 1500 flanges is not included in the minimum flange thickness given above.

The addition of any facing is beyond the outside edge of the flange.

Lengths of steel stud bolts do not include the height of the points.

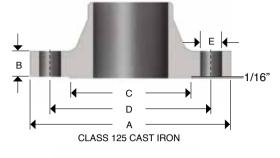
Bolt lengths not shown in the tables can be determined by reference to Appendix F of ANSI B 16.5- 1961.

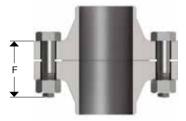
When flanges are integral with valves, the bolt holes, which are in multiples of four, are drilled to straddle the center line unless otherwise ordered.



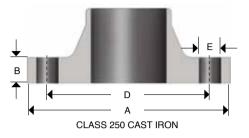
TECHNICAL INFORMATION FLANGE DIMENSIONS AND TEMPLATES

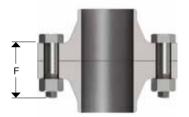
CAST IRON FLANGE DIMENSIONS AND DRILLING TEMPLATES ANSI B 16.5





LENGTH OF MACHINE BOLT





LENGTH OF MACHINE BOLT

CLASS 125

NOMINAL	FLA	NGES	DRIL	LING	BOL	TING	LENGTH OF
PIPE SIZE	FLANGE DIAMETER A	FLANGE THICKNESS MIN B	DIAMETER OF VOLT CIRCLE D	DIAMETER OF BOLT HOLES E	NUMBER OF BOLTS	DIAMETER OF BOLTS	MACHINE BOLTS F
1	4 1/4	7/16	3 1/8	5/8	4	1/2	1 3/4
1 1/4	4 5/8	1/2	3 1/2	5/8	4	1/2	2
1 1/2	5	9/16	3 7/8	5/8	4	1/2	2
2	6	5/8	4 3/4	3/4	4	5/8	2 1/4
2 1/2	7	3/4	5 1/2	3/4	4	5/8	2 1/2
3	7 1/2	15/16	6	3/4	4	5/8	2 1/2
4	9	15/16	7 1/2	3/4	8	5/8	3
5	10	15/16	8 1/2	7/8	8	3/4	3
6	11	1	9 1/2	7/8	8	3/4	3 1/4
8	13 1/2	1 1/8	11 3/4	7/8	8	3/4	3 1/2
10	16	1 3/16	14 3/4	1	12	7/8	3 3/4
12	19	1 1/4	17	1	12	7/8	3 3/4

Bolt lengths are for flanges of thickness shown herein. Bolt lengths should be checked for the thicker flanges shown in some individual valve description pages. When flanges are integral with valves or fittings, the bolt holes, which are in multiples of four, are drilled to straddle the center lines unless otherwise ordered. Class 125 cast iron flanges have plain faces.

CLASS 250

NOMINAL	OMINAL FLANGE THICKNESS				LING	BOL	LENGTH OF	
PIPE SIZE	FLANGE DIAMETER A	FLANGE THICKNESS MIN B	DIAMETER OF RAISED FACE C	DIAMETER OF VOLT CIRCLE D	DIAMETER OF BOLT HOLES E	NUMBER OF BOLTS	DIAMETER OF BOLTS	MACHINE BOLTS F
1	4 7/8	1 1/16	2 11/15	3 1/2	3/4	4	5/8	2 1/2
2	6 1/2	7/8	4 3/16	5	3/4	8	5/8	2 3/4
3	8 1/4	1 1/8	5 11/16	6 5/8	7/8	8	3/4	3 1/2
4	10	1 1/4	6 15/16	7 7/8	7/8	8	3	3 3/4

The 1/16-inch raised face on the Class 250 cast iron flanges is included in the dimension B for thickness of flange.

Bolt lengths are for flanges of thickness shown herein. Bolt lengths should be checked for the thicker flanges shown in some individual valve description pages.



PRESSURE-TEMPERATURE RATINGS

CAST STEEL ASTM A 216 GR WCB

°E Tomp	motume °C	MAXIMUM ALLOWABLE NON-SHOCK WORKING PRESSURE IN PSIG BY CLASS							
'F Tempe	erature °C	150 300		600	900	1,500	2500		
-20 a 100	-29 to 38	285	740	1,480	2,220	3,705	6,170		
200	93	260	680	1,360	2,035	3,395	5,655		
300	149	230	655	1,310	1,965	3,270	5,450		
400	204	200	635	1,265	1,900	3,170	5,280		
500	260	170	605	1,205	1,810	3,015	5,025		
600	316	140	570	1,135	1,705	2,840	4,730		
650	343	125	550	1,100	1,650	2,745	4,575		
700	371	110	530	1,060	1,590	2,665	4,425		
750	399	95	505	1,015	1,520	2,535	4,230		
800	427	80	410	825	1,235	2,055	3,430		
850	454	65	320	640	955	1,595	2,655		
900	482	50	230	460	690	1,150	1,915		
950	510	35	135	275	410	685	1,145		
1,000	538	20	85	170	255	430	715		

Note: Upon prolonged exposure to temperatures above 800°F, the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800°F.

CAST STEEL ASTM A 217 GR WC9

°F Temperature °C		MAXIMUM ALLOWABLE NON-SHOCK WORKING PRESSURE IN PSIG BY CLASS							
		150	300	600	900	1,500	2500		
-20 a 100	-29 a 38	290	750	1,500	2,250	3,750	6,250		
200	93	260	750	1,500	2,250	3,750	6,250		
300	149	230	730	1,455	2,185	3,640	6,070		
400	204	200	705	1,410	2,115	3,530	5,880		
500	260	170	665	1,330	1,995	3,325	5,540		
600	316	140	605	1,210	1,815	3,025	5,040		
650	343	125	590	1,175	1,765	2,940	4,905		
700	371	110	570	1,135	1,705	2,840	4,730		
750	399	95	530	1,065	1,595	2,660	4,430		
800	427	80	510	1,015	1,525	2,540	4,230		
850	454	65	485	975	1,460	2,435	4,060		
900	482	50	450	900	1,350	2,245	3,745		
950	510	35	385	755	1,160	1,930	3,220		
1,000	538	20	265	535	800	1,335	2,230		
1,050	566	20(a)	175	350	525	875	1,455		
1,100	593	20(a)	110	220	330	550	915		
1,150	621	20(a)	70	135	205	345	570		
1,200	649	15(a)	40	80	125	205	345		

Notes:

Use normalized and tempered material only.

Not to be used over 1,100°F.

• The deliberate addition of any element not listed in ASTM A 217, Table 1 is prohibited, except that Ca and Mg may be added for deoxidation.

(a) Flanged-end valve ratings terminate at 1,000°F.



PRESSURE-TEMPERATURE RATINGS

CAST STEEL ASTM A 351 GR CF8

°F Temperature °C		MAXIMUM ALLOWABLE NON-SHOCK WORKING PRESSURE IN PSIG BY CLASS							
		150	300 600		900	1,500	2,500		
-20 a 100	-29 a 38	275	720	1,440	2,160	3,600	6,000		
200	93	230	600	1,200	1,800	3,000	5,000		
300	149	205	540	1,075	1,615	2,690	4,480		
400	204	190	495	995	1,490	2,485	4,140		
500	260	170	465	930	1,395	2,330	3,880		
600	316	140	440	885	1,325	2,210	3,680		
650	343	125	430	865	1,295	2,160	3,600		
700	371	110	420	845	1,265	2,110	3,520		
750	399	95	415	825	1,240	2,065	3,440		
800	427	80	405	810	1,215	2,030	3,380		
850	454	65	395	790	1,190	1,980	3,300		
900	482	50	390	780	1,165	1,945	3,240		
950	510	35	380	765	1,145	1,910	3,180		
1,000	538	20	355	710	1,065	1,770	2,950		
1,050	566	20(a)	325	650	975	1,630	2,715		
1,100	593	20(a)	255	515	770	1,285	2,145		
1,150	621	20(a)	205	410	615	1,030	1,715		
1,200	649	20(a)	165	330	495	825	1,370		
1,250	677	20(a)	135	265	400	970	1,115		
1,300	704	20(a)	115	225	340	565	945		
1,350	732	20(a)	95	185	280	465	770		
1,400	760	20(a)	75	150	225	380	630		
1,450	788	20(a)	60	115	175	290	485		
1,500	816	15(a)	40	85	125	205	345		

Notes:

- At temperatures over 1,000°F, use only when the carbon content is 0.04% or higher.

(a) For welding ends valves only. Flanged ends ratings terminate at 1000°F (538°C).

CAST STEEL ASTM A 351 GR CF8 M

° F T amana	nature 80	MAXIMUM ALLOWABLE NON-SHOCK WORKING PRESSURE IN PSIG BY CLASS							
°F Temperature °C		150	300	600	900	1,500	2,500		
-20 a 100	-29 a 38	275	720	1,440	2,160	3,600	6,000		
200	93	235	620	1,240	1,860	3,095	5,160		
300	149	215	560	1,120	1,680	2,795	4,660		
400	204	195	515	1,025	1,540	2,570	4,280		
500	260	170	480	955	1,435	2,390	3,980		
600	316	140	450	900	1,355	2,255	3,760		
650	343	125	440	885	1,325	2,210	3,680		
700	371	110	435	870	1,305	2,170	3,620		
750	399	95	425	855	1,280	2,135	3,560		
800	427	80	420	845	1,265	2,110	3,520		
850	454	65	420	835	1,255	2,090	3,480		
900	482	50	415	830	1,245	2,075	3,460		
950	510	35	385	775	1,160	1,930	3,220		
1,000	538	20	365	725	1,090	1,820	3,030		
1,050	566	20	360	720	1,080	1,800	3,000		
1,100	593	20(a)	305	610	915	1,525	2,545		
1,150	621	20(a)	235	475	710	1,185	1,970		
1,200	649	20(a)	185	370	555	925	1,545		
1,250	677	20(a)	145	295	440	735	1,230		
1,300	704	20(a)	115	235	350	585	970		
1,350	732	20(a)	95	190	290	480	800		
1,400	760	20(a)	75	150	225	380	630		
1,450	788	20(a)	60	115	175	290	485		
1,500	816	15(a)	40	85	125	205	345		

Notes:

- At temperatures over 1,000°F, use only when the carbon content is 0.04% or higher.

(a) For welding ends valves only. Flanged ends ratings terminate at 1000°F (538°C).



DESIGN BASIS

All of WALWORTH's Valve Designs, when applicable, follow one or more of the following standards.

API Standards	American Petroleum Institue								
	• API-6D	Steel gate, ball and plug valves for pipeline service							
	• API-6A	Wellhead and Christmas Tree Equipment							
	• API-6FA	Specification for Fire test for Valves							
	• API-598	Valve inspection and testing							
	• API-599	Steel adn Ductil Iron Plug Valves							
ANSI Standards	National Standards	Institute							
	• B16.5	Steel pipe flanges and flanged fittings							
	• B16.10	Length of ferrous flanged and welding end valves							
	• B16.25	Butt-welding ends							
	• B1.20.1	Pipe Threads, General Purpose.							
	• B16.34	Valves -Flad, Threaded and Welding End							
ASTM Standards	American Society fo	erican Society for Testing and Materials							
	• ASTM A126	Gray Iron Castings For valves, flanges and pipe fittings.							
	• ASTM A193	Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service							
	• ASTM A194	Carbon and Alloy Steel nuts for bolts for High-Pressure and High-Temperature Service							
	• ASTM A216	Steel Castings, Carbon, suitable for Fusion Welding for High-Temperature Service							
	 ASTM A276 	Stainless and Heat-Resisting Steel Bars and Shapes							
	• ASTM A307	Carbon Stell bolts and studs , 60,000 psi Tensile							
	 ASTM A320 	Alloys - Steel bolting materials for Low-Temperature Service.							
	• ASTM A352	Steel Castings, Ferritic and Martensitic, for Pressure-Containing Parts. Suitable for Low-Temperature Service							
	 ASTM A487 	Steel Castings Suitable for Pressure Service							
	• ASTM A515	Pressure Vessel Plates, Carbon Steel, for intermediate and High-Temperature Service							
MSS Standards	Manufacturers Stan	•							
	MSS SP-6	Standard Finishes for Contact Faces of Pipe Flanges and Connecting-end Flanges of Valves and Fittings							
	 MSS SP-9 	Spot Facing Bronze, Iron and Steel Flanges							
	 MSS SP-25 	Standard Marking System for Valves, Fittings, Flanges and Unions							
	• MSS SP-44	Steel Pipe Line Flanges							
	• MSS SP-55	Visual Method							
	MSS SP-61	Pressure Testing of Steel Valves							
NACE Standards	National Association	n of Corrosion Engineers							
	• NACE MR-01-75	Standard material requirements sulfide stress cracking resistant metallic materials for oilfield equipment							
ASME Codes	American Society o	f Mechanical Engineers							
	ANSI/ASME B31.1	1 Power Piping							
	ANSI/ASME B31.2	2 Fuel Gas Piping							
	ANSI/ASME B31.3	3 Process Piping							
ANSI/ASME B31									
	ANSI/ASME B31.8	3 Gas Transmission and Distribution Piping Systems							
	ANSI/ASME B31.9	9 Building Services Piping.							
Boiler and Pressure	o Voscol Codo:								
Doller and Pressure	e vesser coue.								
Doner and Pressure	Section II	Material Specifications - Parts A, B and C							
Boller and Pressure		Non-Destructive Examination.							
	Section II	•							



HOW TO ORDER COMPENSATOR PLUG VALVES

SEE WALVORTHI FIGURE TUPE OF OPERATION SUPPLEXEMANY REQUIREMENTS 122 142 150 Wesch FP 1 WESCH Ge Bac/Operated Ge Bac/Operated MOVE FB 1 WESCH MOVE FB 1 WESCH MOVE FB ST VESCH FB ST ST </th <th>SIZE</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>TYPE OF OPERATION</th> <th>SUPPLEMENTARY REQUIREMENTS</th>	SIZE						TYPE OF OPERATION	SUPPLEMENTARY REQUIREMENTS
Set 1 Hits Stort Pattern Tool Wence FIL 2 - GEAR OFERATION BE - Bare Stem 11/2 1428 Stort Pattern TSOM Wence Wence	-	1410				DE		
1 1414 Storp Pattern 150F Wench West 3 = PRELIMINIC ACTUATOR MOV = Presumatic Operated Value 2 1428 Storp Pattern 150F Gear Operator RT ALE ICTRIC ACTUATOR POV = Presumatic Operated Value 2 1428 Storp Pattern 150F Gear Operator RT NOTE: AT THE MONETY OF A PD, PLEASE NACE MA10-7:5 2 1428 Storp Pattern 300F Merch A NOTE: AT THE MONETY OF A PD, PLEASE NACE MA10-7:5 2 1428 Storp Pattern 300F Wench RT ALE MACE (ACR) Storp Pattern NACE MA10-7:5 107 3522 Storp Pattern 300F Gear Operator WE CARMON NETWOR CLARK Storp Pattern Storp Pattern NACE MA10-7:5 128 Storp Pattern 300F Gear Operator WE CARMON NETWOR CLARK Storp Pattern NACE MA10-7:5 129 1514 Regular Pattern 150F Regular Pattern 150F Regular Pattern 150F Regular Pattern 150F Reg								· · · · · · · · · · · · · · · · · · ·
112: 1422 Head Short Pattern 1506 Gear Operator PF 4 ELECTRIC ACTUATOR PO LD LD <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
2* 1428 Short Pattern 1064 Gear Operator FT NDTE: AT THE KOMENT OF A FOL, PLEASE NACE MR-01-75 4* 3412 Short Pattern 1064 Gear Operator FR NACE MR-01-75 4* 3412 Short Pattern 3004 Werch FF ALE MONITOR NACE MR-01-03 1** 3422 Short Pattern 3004 Werch FF ATA NAVE OC (50) SF = Special Pattern 1** 3422 Short Pattern S004 Gear Operator FF ATA NAVE OC (50) SF = Special Pattern SF = Spec								
3* 1424 Shurt Pattern 1604 Gear Operator WE SPECIFY CLEARLY THE TYPE OF OPERATION. NACE MR-10-3 8* 3413 Shurt Pattern 3004 Werch HT OWERD STATUS NACE MR-10-75 8* 3413 Shurt Pattern 3004 Werch HT OWERD STATUS SNE MATERIALS SN= Special Fault 8* 3504 Bint Fattern 3004 Werch HT OWERD STATUS SNE MATERIALS SN= Special Fault 14* 3242 Site Fattern 1504 Werch HT ANA WORD CONDUCT SN = Special Fault							1	
6* 9413 Short Pattern 3004 Wench RT I CASE MATERIALS SP = Special Pattern 10* 3422 Short Pattern 3004 Gear Operator FF Attwords (<-s)	3"	1424	Short Pattern	150#	Gear Operator	WE	SPECIFY CLEARLY THE TYPE OF OPERATION.	NACE MR-01-75
0 4413 Shoff Haltmin 300 Werkon H10 Context NET1213 SH = Sobial Falamin, SH = Shoff Falamin, SH = SH		3412	Short Pattern	300#	Wrench	RF	BASE MATERIALS	NACE MR-01-03
10° 3422 Shot Pattern 3004 Gear Operator FF Att W.RC (C-S) SFK = Special Packing 12° 3424 Shot Pattern 3004 Gear Operator WF LOW ALCO (C-S) SFK = Special Packing 12° 14° 3124 Shot Pattern 3004 Gear Operator WF LOW ALCO (C-S) SFK = Special Packing 12° 1513 Regular Pattern 1504 Wirench RF Atta X-D CO (C-S) SFK = Special Packing 20° 1514 Regular Pattern 1504 Wirench RF Atta X-D CO (C-S) RF Regular Pattern 1504 Wirench RF Atta X-D CO (C-S) RF Regular Pattern 3004 Werch RF Atta X-D CO (C-S) THD = Thesade Face S = 500 RE								
12' 3423 Short Pattern 3004 Gear Operator NT. Anti-MCC (C-S) SE = Sime Extension 13' 1512 Regular Pattern 1504 Wench RF ASTM A27 WC3P 14 % C-T-Mag) XX + Additional Regularements 24' 1524 Regular Pattern 1504 Wench RF ASTM A27 WC3P 14 % C-T-Mag) EXDS XX + Additional Regularements 24' 1524 Regular Pattern 1504 Wench RF ASTM A27 WC3P 14 % C-T-Mag) EXDS XX + Additional Regularements 24' 1524 Regular Pattern 1504 Gear Operator RF ASTM A27 WC3P 14 % C-T-Mag) EXDS EXDS EXDS XX + Additional Regularements 3513 Regular Pattern 1504 Gear Operator RF ASTM A27 WC3P 14 % C-T-Mag) EXDS EXDS EXDS EXDS XX + Additional Regularements EXDS <								
14* 3424 Shot Parlam 3000 Gear Operator WE LOW ALLYSTERS XX = Additoual Requirements 16* 1513 Regular Pattern 1508 Wernch RF REMOS ENDS 24* 1514 Regular Pattern 1508 Wernch RF REMOS ENDS 24* 1524 Regular Pattern 1508 Wernch NF ASTM ASS C-GTMSCH SNR 0350-0 RF = Reseaf Pace 24* 1522 Regular Pattern 1508 Gear Operator NF ASTM ASS C-GTMSCH SNR 0350-0 RF = Reseaf Pace 3513 Regular Pattern 3004 Gear Operator NF ASTM ASS C-GTMSCH SNR 0350-0 RF = Reseaf Pace 3522 Regular Pattern 3004 Gear Operator NF RTJ ENOS 1 = 150 3523 Regular Pattern 3004 Gear Operator NF RTJ ENOS 5 = 1500 3524 Regular Pattern 3004 Gear Operator NF A = SNO(NT TH 614 Regular								
16° 1512 Regular Pattern 1560 Weinch RF ASTM A21 VMO20 14% Stort Make) ELDS 20° 1514 Regular Pattern 1560 Weinch RTU A21 VMO20 14% Stort Make) RTU A31 VMO20 14% Stort M								
18* 19:0 Wonch FTJ LDV CARDA AUSTINUTC STANLESS STELS LDVS 20* 1514 Regular Pattern 1504 Gear Operator FF Resular Pattern 1504 Gear Operator FF Resular Pattern 1504 Gear Operator FF ASTMAS 1-CF31WES-CF3NA-0.03×C) FF Resular Pattern 1504 Gear Operator FF ASTMAS 1-CF31WES-CF3NA-0.03×C) FF Resular Pattern 1504 Gear Operator FF ASTMAS 1-CF31WES CF3NA-0.03×C) FF FF <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>XX = Additional Requirements</td>								XX = Additional Requirements
201 1514 Pequare Pattern 1504 Wench WE ATM AST-CP3(Hes-C=MM-0.03VC) RTJ RTJ Repute Pattern 1507 1523 Regulare Pattern 1507 Gear Operator RTJ ASTM AST-CP3(Hes-C=MM-0.03VC) RTJ								ENDS
24* 1522 Reguin Pattern 1500 Gear Operator FF ASTM ASS-CPSM(495-C):24N-2MA0-03N-C) RTJ = Ring Type Joint 3513 Reguin Pattern 1500 Gear Operator WE Welch Edd THRD = Threaded Ends 3513 Reguin Pattern 3000 Wench RF ASTM ASS-CPSM(495-C):24N-24M-0.08N-C) PRESSURE 3513 Reguin Pattern 3000 Gear Operator RF RESIDER STM ASS-CPSM(495-C):24N-24M-0.08N-C) PRESSURE 3524 Reguin Pattern 3000 Gear Operator RF RESIDER STM ASS-CPSM(495-C):24N-24M-0.08N-C) PRESSURE 3524 Reguin Pattern 3000 Gear Operator RF RESIDER STM ASS-CPSM(495-C):24N-24M-0.08N-C) BE STM ASS-CPSM(495-C):24N-24M-0.05N-C) BE STM ASS-CPSM(400-0.05N-C) BE STM ASS-CPSM(400-0.05N-C								RF = Raised Face
1523 Reguin Pattern 1500 Gear Operator RTJ AUTENTIC STANLESS STELS: WE = Weid Ends 1531 Reguin Pattern 3000 Wrench RTJ STM 351-0784/0540-03%-0.0 THD 3 Threaded Ends 3512 Reguin Pattern 3000 Wrench RTJ			<u> </u>					
3512 Regular Pattern 3007 Wrench RT ASTM Asst-CPMN19K/DEXMM-2009%C) PRESSURE 3524 Regular Pattern 3006 Wrench WE RT = Raised Face 3 = 300 3524 Regular Pattern 3006 Gear Operator RT J RT = Raised Face 3 = 300 6511 Regular Pattern 0006 Gear Operator RT J RT = Raised Face 3 = 300 6513 Regular Pattern 0006 Wench RT Pattern 5 = 1500 6514 Regular Pattern 0006 Wench RT Pattern 5 = 1500 6514 Regular Pattern 0006 Wench RT 4 = 540RT T1 6526 Regular Pattern 0006 Wench RT 5 = REGULAR T1 T2 6527 Regular Pattern 0006 Wench RT T6 T6 T6 6516 Regular Pattern 0006 Wench RT T6 T6 T6 T6 T6			Regular Pattern	150#		RTJ	AUSTENITIC STAINLESS STEELS:	
3513 Regular Pattern 3004 Wrench RTJ ENDS Image: Pattern State 3524 Regular Pattern 3004 Gear Operator RT RT Regular Pattern 3004 Gear Operator RT RT Regular Pattern 3004 Gear Operator RT Regular Pattern 3004 Gear Operator RT Regular Pattern 3004 Gear Operator RT Regular Pattern 3004 Werech RT Regular Pattern 6004 Wrench RT Regular Pattern 6004 Wrench RT Regular Pattern 6004 Werech RT Searco S		1524	Regular Pattern	150#	Gear Operator	WE	ASTM A351-CF8(18%Cr-8%Ni-0.08%C)	THRD = Threaded Ends
3313 Heguid P attern 3000// 3000// 3224 Reguid P attern 3000// 3224 Wrench HT HD ENDS 1 = 150 3524 Reguid P attern 3000// 3224 Gear Operator RF RT Raised Face 3 = 300 3524 Reguid P attern 3000// 3224 Gear Operator WE RF = Raised Face 3 = 300 6511 Reguid P attern 3000// 40							ASTM A351-CF8M(18%Cr-12%Ni-2%Mo-0.08%C)	PRESSURE
3514 Hegular Paterni 3000 Wrench WE 1 = 180 3528 Regular Paterni 3000 Gear Operator RTJ RTTR R							ENDS	
3533 Regular Pattern 3000* Gear Operator RTJ RTJ = Ring Type Joint 6 = 600 6511 Regular Pattern 6000* Werench THRD THRD = Threaded Ends 5 = 1500 6513 Regular Pattern 6000* Werench RF PATTERN 2 = 2500 6514 Regular Pattern 6000* Werench RF PATTERN 2 = 2500 6514 Regular Pattern 6000* Werench RF 5 = REGULAR T1 6524 Regular Pattern 6000* Werench RFJ 4 = SHORT T1 6535 Regular Pattern 9000* Werench RFJ 5 = REGULAR T1 6531 Regular Pattern 9000* Werench RFJ 74 6532 Regular Pattern 9000* Werench RFJ 6531 Regular Pattern 9000* Werench RFJ 6531 Regular Pattern 1900# Werench RFJ 5531 Regula								
1324 Regular Pattern 300# Gear Operator WE WE = Weid Ends 9 = 900 6511 Regular Pattern 600# Wrench RF THRD Threaded Ends 5 = 1500 6513 Regular Pattern 600# Wrench RF PATTERN 2 = 2500 6531 Regular Pattern 600# Gear Operator RF 5 = VENTURI TI 6532 Regular Pattern 600# Gear Operator RF 5 = VENTURI T2 6531 Regular Pattern 600# Wiench RF 5 = VENTURI T3 6531 Regular Pattern 900# Wiench RF 5 = VENTURI T3 6532 Regular Pattern 900# Wiench RF 5 = VENTURI T3 9532 Regular Pattern 900# Wiench RF 5 = VENTURI T3 9532 Regular Pattern 900# Gear Operator RF 5 = VENTURI T3 9532 Regular Pattern 100# Werch RF 5 = VENTURI T6 9532 Regular Pattern 150# Gear Operator RF 5 = VENTURI VENTURI 1 = 4 = 2 - 2 - 11 - A105 2534 Regular Pattern <								
6511 Regular Pattern 6007 Wrench RF Phreaded Ends 5 = 1500 6513 Regular Pattern 6007 Wrench RTJ 2 = 2500 6514 Regular Pattern 6007 Wrench RTJ 4 = 5 + REQULAR T1 6524 Regular Pattern 6007 Gear Operator RF 5 = REQULAR T1 6524 Regular Pattern 6007 Gear Operator RF 5 = REQULAR T1 6524 Regular Pattern 6007 Gear Operator RF 5 = REQULAR T1 751 Regular Pattern 9006 Wrench RTJ 6 = VENTURI T2 752 Regular Pattern 9006 Gear Operator RF T5 T6 752 Regular Pattern 15007 Wrench RF T6 T6 753 Regular Pattern 15007 Wrench RF T6 T6 7511 Regular Pattern 15007 Wrench RF T6 T6 T6 5512 Regular Pattern 15007 Gear Operator </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>• //</td> <td></td>							• //	
6512 Regular Pattern 6004 Wrench RTJ 4 = SHORT 2 = 2500 6514 Regular Pattern 6004 Wrench WE 5 = REGULAR T1 6522 Regular Pattern 6004 Gear Operator RTJ 6 = VENTURI 12 6524 Regular Pattern 6004 Gear Operator WE 5 = REGULAR T1 9511 Regular Pattern 9004 Wrench RTJ 6 = VENTURI 12 9512 Regular Pattern 9004 Wrench RTJ 6 = VENTURI 13 9513 Regular Pattern 9004 Wrench RTJ 16 5 = VENTURI 17 9524 Regular Pattern 9004 Gear Operator RTJ 16 6 = VENTURI 16 5513 Regular Pattern 10004 Gear Operator RTJ 6 = VENTURI 16 2 = 4 = 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2								
6513 Regular Pattern 6007 Wrench RTJ PALEN TRIM 6522 Regular Pattern 6008 Gear Operator RF 5 = REGULAR 11 6523 Regular Pattern 6008 Gear Operator RF 5 = REGULAR 11 6524 Regular Pattern 6008 Gear Operator WE 13 13 6513 Regular Pattern 6007 Wrench RF 5 = REGULAR 11 6524 Regular Pattern 6007 Wrench RF 13 14 15 6513 Regular Pattern 9007 Wrench RF 16 14 15 9523 Regular Pattern 9007 Gear Operator WE 16 16 16 16 16 17 16 16 17 16 16 16 17 16 16 16 17 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 17 <								
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HOW TO ORDER TOP ENTRY PLUG VALVES

WALWORTH valves are designed by catalogue figure numbers which describe their main characteristics. The valve identification system shown herein is intended to assist our Customer in specifying the valve required and avoid mistakes during manufacturing.

	<u>1749 - F - T1 - A105</u>									
						BODY				
						TRIM (INTERIOR	(5)			
						ENDS				
	L					TYPE OF VALVE	& PRESSURE CL	ASS AS PER FIGURE NUMBER		
SIZE (INCH)		WALWORTH	FIGURE		TRIM	SUPPLEMENTAR	RY REQUIREMENTS	ENDS		
1/2"	1749F	150#	Wrench	RF	T1	GO = Gear Operate	ed	RF = Raised Face Ends		
3/4"	1749WE	150#	Wrench	WE	T2	BS = Bare Stem		WE = Welded Ends		
1"	1750TH	150#	Wrench	THRD	T3	MOV = Motor Oper	ated Valve	THRD = Threaded Ends		
1 1/4"	1760F	300#	Wrench	RF	T4	POV = Pneumatic Operated Valve		BASE MATERIALS		
1 1/2"	1760WE	300#	Wrench	WE	T5	LD = Locking Devic	ce	BASE MATERIALS		
2"	1760TH	300#	Wrench	THRD	T6	NACE MR-01-75		CARBON STEELS:		
2 1/2"	1748	600#	Wrench	THRD		NACE MR-01-03		A216-WCB (C-Si)		
3"	1752	150#	Gear Op.	RF		SP = Special Paint		A216-WCC (C-Si)		
4"						SG = Special Gask	et	LOW ALLOY STEELS:		
6"						SPK = Special Pac	king	ASTM A217-WC9(2 1/4 % Cr-1%Mo)		
8"						SE = Stem Extensi	on	LOW CARBON AUSTENITIC STAINLESS STEELS:		
10"						XX = Additional Re	quirements	ASTM A351-CF3(18%Cr-8%Ni-0.03%C)		
12"								ASTM A351-CF3M(18%Cr-12%Ni-2%Mo-0.03%C)		
14"]							AUSTENITIC STAINLESS STEELS:		
16"				TOWO				ASTM A351-CF8(18%Cr-8%Ni-0.08%C)		
18"				TRIMS	(INTERIORS)			ASTM A351-CF8M(18%Cr-12%Ni-2%Mo-0.08%C)		
20"	TRIM	PLUG	STEM	STEM	TO PLUG	THRUST BALL	THRUST BALL			
24"		PLOG	STEW	co	UPLING	THRUST DALL	SEAT			
30"	M1	Iron / WCB	SS-410	Ste	el 4140	Carbon Steel	Steel 4140			
36"	M2	A487 grade A	SS-410	Ste	el 4140	Carbon Steel	Steel 4140			
	M3	SS-316	17-4PH	1	7-4PH	Monel	17-4PH			
	M4	Steel 4140	SS-410	Ste	el 4140	Carbon Steel	Steel 4140			
			1	1 -	-					

HOW TO ORDER GAS SERVICE PLUG VALVES

SS-410

M5

SS-410

SS-410

WALWORTH valves are designed by catalogue figure numbers which describe their main characteristics. The valve identification system shown herein is intended to assist our Customer in specifying the valve required and avoid mistakes during manufacturing.

Carbon Steel

Steel 4140

<u>1966</u> - Ψౖ - Ţႍ1 - <u>A105</u>	
	BODY
	TRIM (INTERIORS)
	ENDS
	TYPE OF VALVE & PRESSURE CLASS AS PER FIGURE NUMBER

SIZE (INCH)	WALWORTH FIGURE				TRIM	SUPPLEMENTARY REQUIREMENTS	ENDS
3/4"	1966 WE	150#	Wrench	WE	T1	GO = Gear Operated	WE = Welded Ends
1 1/4"	1966 SW	150#	Wrench	SW	T2	BS = Bare Stem	SW = Socket Welde Ends
2"	1967 WE	150#	Wrench	WE		MOV = Motor Operated Valve	BASE MATERIALS
3"	1968 WE	150#	Wrench	WE		POV = Pneumatic Operated Valve	DASE MATERIALS
4"						LD = Locking Device	CARBON STEELS:
6"]					NACE MR-01-75	A216-WCB (C-Si)
8"]					NACE MR-01-03	
	-					SP = Special Paint	
						SG = Special Gasket	
						SPK = Special Packing	
						SE = Stem Extension	
				XX = Additional Requirements			



THE WALWORTH COMPANY GENERAL TERMS AND CONDITIONS

ACCEPTANCE: All quotations are for acceptance within 30 days from date of quotation unless extended in writing. In the event a purchase order is placed after this period of time. The WALWORTH Company reserves the right to requote base prices of all valves offered. All orders and contracts are subject to credit approval and acceptance by the WALWORTH Company.

FREIGHT: When prices are FOB point of shipment –no freight allowance, we will attempt to route shipments in the method which will result in the lowest cost unless otherwise instructed. All shipments will be freight charges collect except when stipulated on the purchase order, in which case you will be invoiced for all transportation charges. Delivery of material to a common carrier shall be considered to be delivery to Buyer and shall be at Buyer's risk thereafter. Claims of loss of or damage to material in transit shall be filed by the Buyer directly with the carrier.

PRICES: There will be added to all prices quoted sales, use, occupation or any other excise or similar tax which Seller may be required to pay or collect on or in connection with the sale. Seller shall be established by Federal, State or other government regulation with respect to the product(s) covered by the order which shall be lower than the price(s) specified in the order.

ESCALATION TERMS: Prices shown in this price schedule reflect the costs in effect at the time of publication. These prices will remain firm on all products with a quoted delivery of twenty-six (26) weeks or less. On products which have a scheduled delivery of more than twenty-six (26) weeks, the goods will be invoiced based on the applicable price sheet in effect at the time of shipment. In no event will the invoiced price be less than the price originally quoted.

PURCHASED COMPONENTS: (i.e. motors, gearing, etc.) Prices are quoted on supplier price in effect at time of quotation. Actual invoice Price will be adjusted in accordance with the supplier's escalation policy.

DEFERRED SHIPMENTS: If for any reason the customer desires to delay shipments more than 30 days after manufacturing is complete or to place a hold or stop to the order during the manufacturing cycle, The WALWORTH Company reserves the right to consider the order cancelled and to invoke cancellation charges per the schedule bellow.

CANCELLATION: After order acceptance by WALWORTH, items or completed orders may be cancelled and buyer will be charged for work performed, based on the following schedule:

- Five (5%) percent of prices of stock items.

- Ten (10%) percent of price of stock items ordered in quantities which exceed normal inventory levels.

Five (5%) percent of prices prior to drawing submittal on made-to-order items.
15% after drawing approval, but prior to the start of castings.

- 30% to 50% during casting cycle, depending on the state of completion.

- 55% to 75% during machining and assembly operations, depending on the state of completion.

-100% after final assembly and test.

REMITTANCES: Remittances must be made to the address indicated on the invoice.

CREDIT TERMS: As quoted. Invoices on balances overdure will be subject to a service charge of 11/2 % per month on such indebtedness.

DELIVERIES: Shipments and deliveries shall at all times be subject to the approval of Seller's Credit Department. If the Buyer shall fail to make any payments according to the terms of the contract, Seller may, in addition to and not in limitation of its other rights and remedies, at its option, cancel all or any part of Buyer's incomplete contracts with Seller or may defer shipments of deliveries under Buyer's contracts with Seller except upon receipt of satisfactory security or for cash shipment.

All schedule of shipments are estimated as closely as possible and Seller will use its best efforts to ship within the time scheduled, but does not guarantee to do so. Schedules commence with the date Seller receives authorization to proceed with order, subject to the provisions of the next sentence. The order will not be released for manufacture until complete specifications and approved drawings (if drawing approval is required) are received at the plant of manufacture and the estimated schedule of shipment will commence with the date of such receipt.

Seller shall not be liable for any direct, indirect or consequential damage or loss caused by any delay in delivery, regardless of the cause of delay.

Without limiting the generality of the foregoing, Seller assumes no responsibility for delays in delivery resulting from fire, flood, accidents, riots, strikes, transportation delays, labor or material shortages, existing or future laws, acts of any governmental authority, or any other cause beyond Seller's control. Items offered from stock are subject to prior sale.

INSPECTION: Final inspection and acceptance of products must be made at the plant of manufacture, unless otherwise provided in the order and/ or in agreed upon specifications. Prices do not include charges for special tests or inspections performed at the request of the Buyer, unless called for in the order and/or in agreed upon specifications.

RETURNS: Permission in writing and return tagging instructions must be obtained from Seller before any goods returned for credit or adjustment will be acceptance. Where returned goods are accepted, a minimum charge of 25% of the invoice price will be made, plus freight from both directions and costs of reconditioning the material for resale as new.

WARRANTY CERTIFICATE: WALWORTH, exhibits this product Warranty, for a 12 month period in operation or 18 months in storage, whatever comes firs as of the date of product delivery.

WALWORTH, guarantees that products are fabricated according to quality, design and manufacturing standards and customer requirements as well. When the buyer expressly and in written confirms the non-compliance of such standards, WALWORTH is forced to comply with the repair, replacement or to issue the written authorization for the buyer or another agent, to replace or repair at no cost for the buyer, at WALWORTH fabrication costs, those parts confirmed as defective.

This warranty is valid when the material selection by the customer for the design, material arrangement (TRIM, bodies, ends, operation devices, etc.) internal and/ or external overlays had been the proper ones for the operation fluid. This warranty is applicable if operation and service conditions are maintained as per the requirements of the product.

To validate the Warranty, the user is responsible of performing the proper maintenance according to what is stated in the Operation and Maintenance Manual applicable to the product. WALWORTH, reserves the right to request the records (evidence) to confirm the correct maintenance.

WALWORTH obligations are limited and will be released of any responsibility when the products are altered, repaired or replaced without WALWORTH's written authorization.

Except of what is stated in this document WALWORTH waives and excludes any other warranty expressed or implied, for loss, direct damage, indirect damage or consequential of other products, processes, installations or equipment of the buyer or end user, either partial or total, due to material defects and/or work and/or WALWORTH product design.

DESIGN, ETC: Seller reserves the right to change design, materials or specifications without notice. There will be a charge for modifying an order after it has been entered when such change or modification results in additional engineering or clerical work for either The WALWORTH Company or our suppliers.

MINIMUM CHARGE: Orders totaling less than \$100.00 USD net will be billed at a minimum charge of \$100.00 USD. Repair parts will be billed at a minimum charge of \$50.00 USD.

NOTE: We reserve the right to correct obvious clerical errors in quotations, invoices, and other contracts.





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