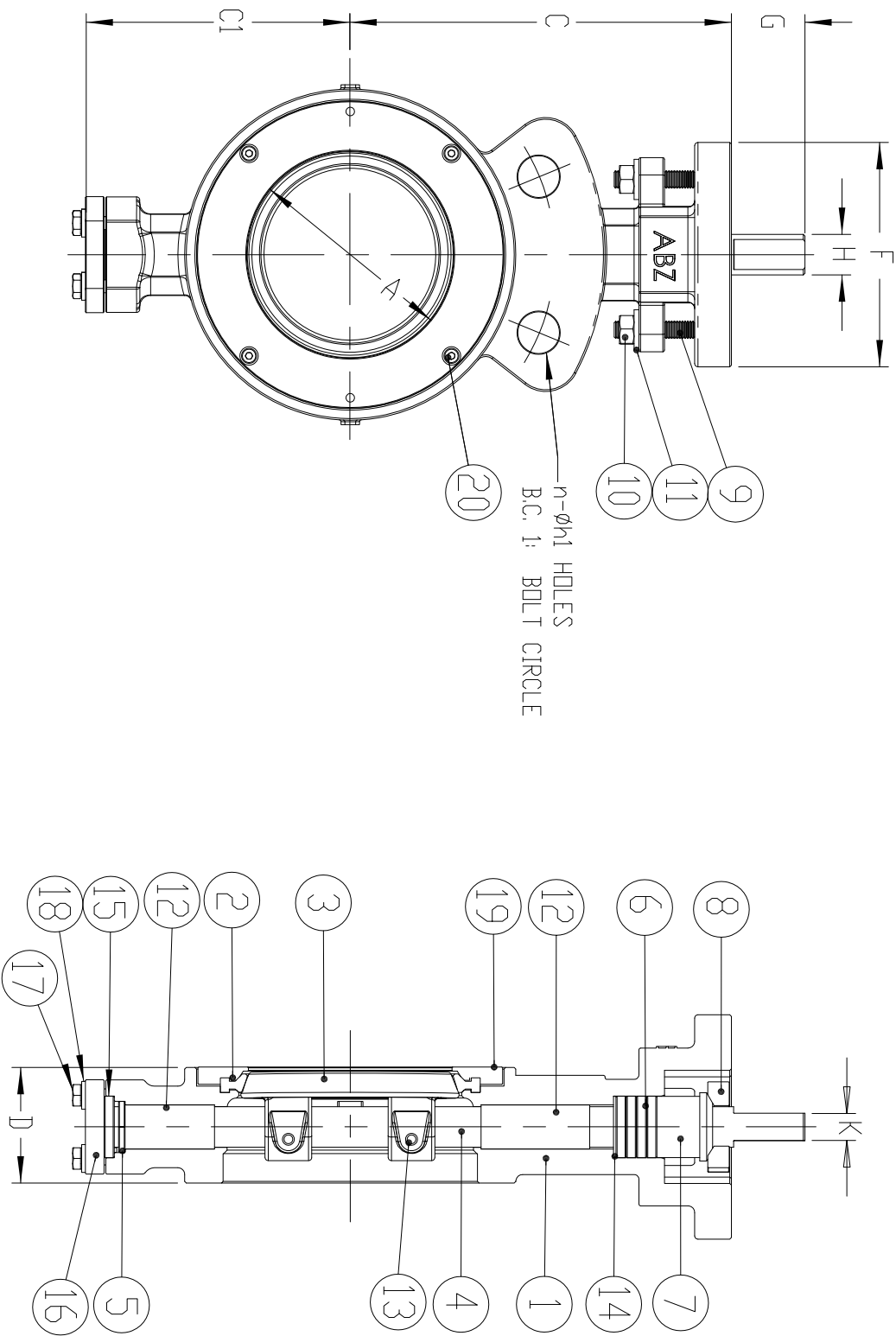
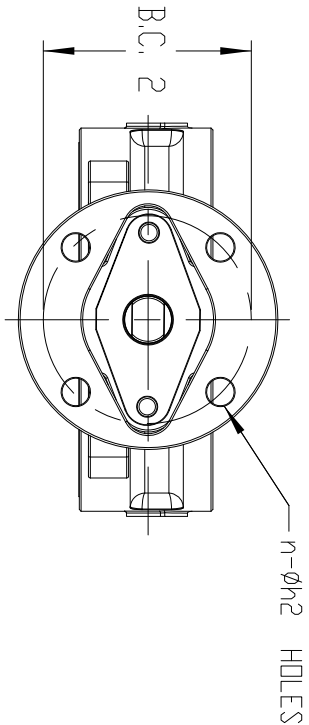




Rev.	By	Rev. Description	Rev. Date	PROJECT INFORMATION											NOTE #	NOTE					
				Customer: Inti Power Inc. Customer PO: 20090811-002 End User: -- Project: EDC Tacoa Skid Tag: TBD LM 2500 Liquid Fuel Forwarding Skid IFS Job Number: 24876 IFS Document: VL-24876-01																	
0	AP	For Approval	3-Sep-09																		
VALVE LIST																					
Seq.	Qty.	Tag Number	Valve Type	Connections			Body Materials of Construction	Trim Materials of Construction	Seats/ Seals/ Packing	Manual Operator Type	Rated Pressure (psig)	Rated Temp. (deg F)	Operating Presssure (psig)	Operating Temp. (deg F)	Service	Reference P&ID	Manufacturer	Model Number	Comments		
				(units)	Type	Class															
1	3	V01	Butterfly wafer	3"	RF	150	WCB CARBON STEEL	316SS DISC	17/4 PH SS STEM / RTFE SEAT	Handle	100	120	ATM	70	Diesel Fuel	P-24876	ABZ	401-100-3"			
2	3	V02	Butterfly wafer	2"	RF	150	WCB CARBON STEEL	316SS DISC	17/4 PH SS STEM / RTFE SEAT	Handle	100	120	60	70	Diesel Fuel	P-24876	ABZ	401-100-2"			
3	3	V03	Check Valve	2"	RF	150	CS	API TRIM 12/316SS	BOLTED CAP	NA	100	120	60	70	Diesel Fuel	P-24876	DSI	137LU-N-2"			
4	9	V04	Block & Bleed Valve	1/2"	MNPT X FNPT	6000#	316 SS	316 SS	Integral seat/ Packing Teflon	Handle	100	120	60	70	Diesel Fuel	P-24876	AGCO	M9-VIS-44			
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PARTS SCHEDULE		
ITEM NO.	NAME	NO. REQ'D
1	BDDY	1
2	SEAT RING	1
3	DISC	1
4	STEM	1
5	RETAINER RING	1
6	PACKING	1 SET
7	PACKING GLAND	1
8	GLAND FLANGE	1
9	GLAND BOLT	2
10	NUT	2
11	SPRING WASHER	2
12	BUSH BEARING	2
13	DISC PIN	2
14	PACKING RETAINER	1
15	CAP PACKING	1
16	CAP	1
17	CAP BOLT	4
18	SPRING WASHER	4
19	SEAT RETAINER	1
20	RETAINER BOLT	4

DIMENSIONS															
VALVE SIZE		øA	C	C1	D	øF	G	øH	K	FLANGE DIMENSION			MOUNTING BASE		
INCH	MM									B.C. 1	n	øh1	B.C. 2	n	øh2
2	50	1.85	4.92	3.94	1.69	4.02	1.25	.551	.374	4.75	2	.75	3.25	4	.43
2.5	65	2.40	5.87	4.02	1.85	4.02	1.25	.626	.437	5.50	2	.75	3.25	4	.43
3	80	2.83	6.30	4.41	1.89	4.02	1.25	.626	.437	6.00	2	.75	3.25	4	.43
4	100	3.74	7.01	4.88	2.13	4.02	1.25	.748	.500	7.50	2	.75	3.25	4	.43
5	125	4.65	7.60	5.55	2.24	4.02	1.25	.748	.500	8.50	2	.875	3.25	4	.43
6	150	5.43	8.39	6.57	2.24	4.02	1.25	.748	.500	9.50	2	.875	3.25	4	.43
8	200	7.40	9.45	7.68	2.52	5.98	1.25	.874	.626	11.75	2	.875	5.00	4	.55
10	250	9.25	11.03	8.66	2.83	5.98	2.05	1.126	1/4x1/4 KEY	14.25	2	1.00	5.00	4	.55
12	300	10.83	12.20	10.43	3.19	5.98	2.05	1.126	1/4x1/4 KEY	17.00	2	1.00	5.00	4	.55

ABZ Valves & Controls

ABZ VALVE

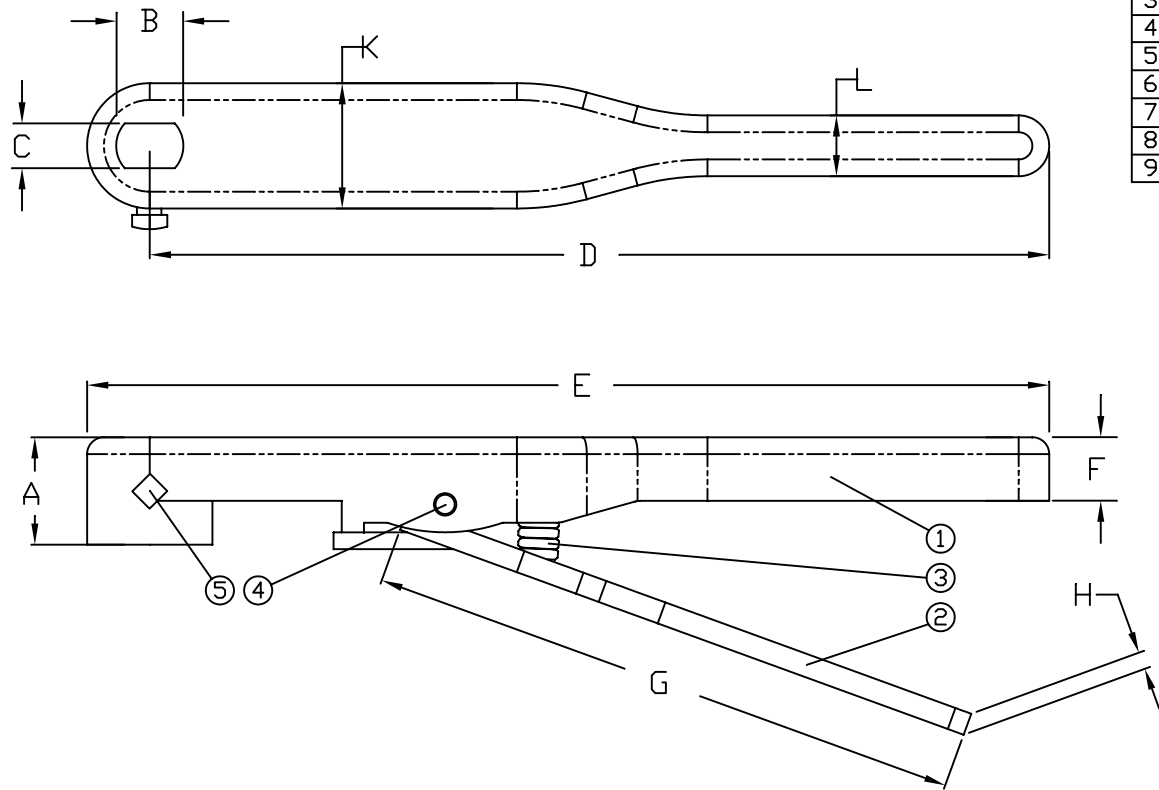
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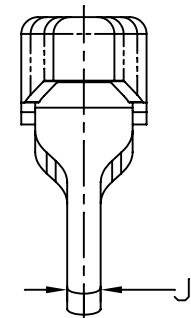
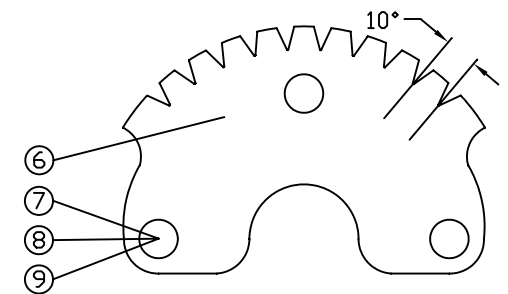
DATE: 05-23-06

REV: 2

DRAWING NO. 2-12 150 FIG 401



HANDLE PARTS					
ITEM NO.	NAME	NO. REQ'D	PART NO.	MATERIAL	REMARKS
1	HANDLE	1	202-321	DI	
2	LEVER	1	202-322	DI	
3	SPRING	1	204-323	316 SS	
4	PIN	1	204-324	316 SS	
5	SIDE BOLT	1	211-325	C.P. STEEL	
6	90° NOTCH PLATE	1	211-326	C.P. STEEL	
7	BOLTS	2	211-327	C.P. STEEL	
8	NUTS	2	211-327	C.P. STEEL	
9	WASHERS	2	211-327	C.P. STEEL	



HANDLE DIMENSIONS

HANDLE SUBASSEMBLY NUMBER	A	B	C	D	E	F	G	H	J	K	L	WEIGHT
800-320-020-101-000	1.25	9/16	3/8	10.05	10.75	0.71	6.70	0.26	0.375	1.40	0.68	2.50 LBS
800-320-025-101-000	1.25	9/16	3/8	10.05	10.75	0.71	6.70	0.26	0.375	1.40	0.68	2.50 LBS
800-320-030-101-000	1.25	9/16	3/8	10.05	10.75	0.71	6.70	0.26	0.375	1.40	0.68	2.50 LBS
800-320-040-101-000	1.25	5/8	7/16	10.05	10.75	0.71	6.70	0.26	0.375	1.40	0.68	2.50 LBS
800-320-050-101-000	1.25	5/8	7/16	10.05	10.75	0.71	6.70	0.26	0.375	1.40	0.68	2.50 LBS
800-320-060-101-000	1.25	5/8	7/16	10.05	10.75	0.71	6.70	0.26	0.375	1.40	0.68	2.50 LBS
800-320-060-090-000	1.25	3/4	1/2	10.05	10.75	0.71	6.70	0.26	0.375	1.40	0.68	2.50 LBS
800-320-080-101-000	1.25	3/4	1/2	13.77	14.77	0.60	9.38	0.325	0.375	1.72	0.85	4.0 LBS
800-320-080-090-000	1.25	7/8	5/8	13.77	14.77	0.60	9.38	0.325	0.375	1.72	0.85	4.0 LBS
800-320-100-101-000	1.25	7/8	5/8	13.77	14.77	0.60	9.38	0.325	0.375	1.72	0.85	4.0 LBS
800-320-100-090-000	1.25	1 1/8	RD.	13.77	14.77	0.60	9.38	0.325	0.375	1.72	0.85	4.0 LBS
800-320-120-101-000	1.25	1 1/8	RD.	13.77	14.77	0.60	9.38	0.325	0.375	1.72	0.85	4.0 LBS
800-320-120-090-000	1.25	1 1/8	RD.	13.77	14.77	0.60	9.38	0.325	0.375	1.72	0.85	4.0 LBS

V02

V01

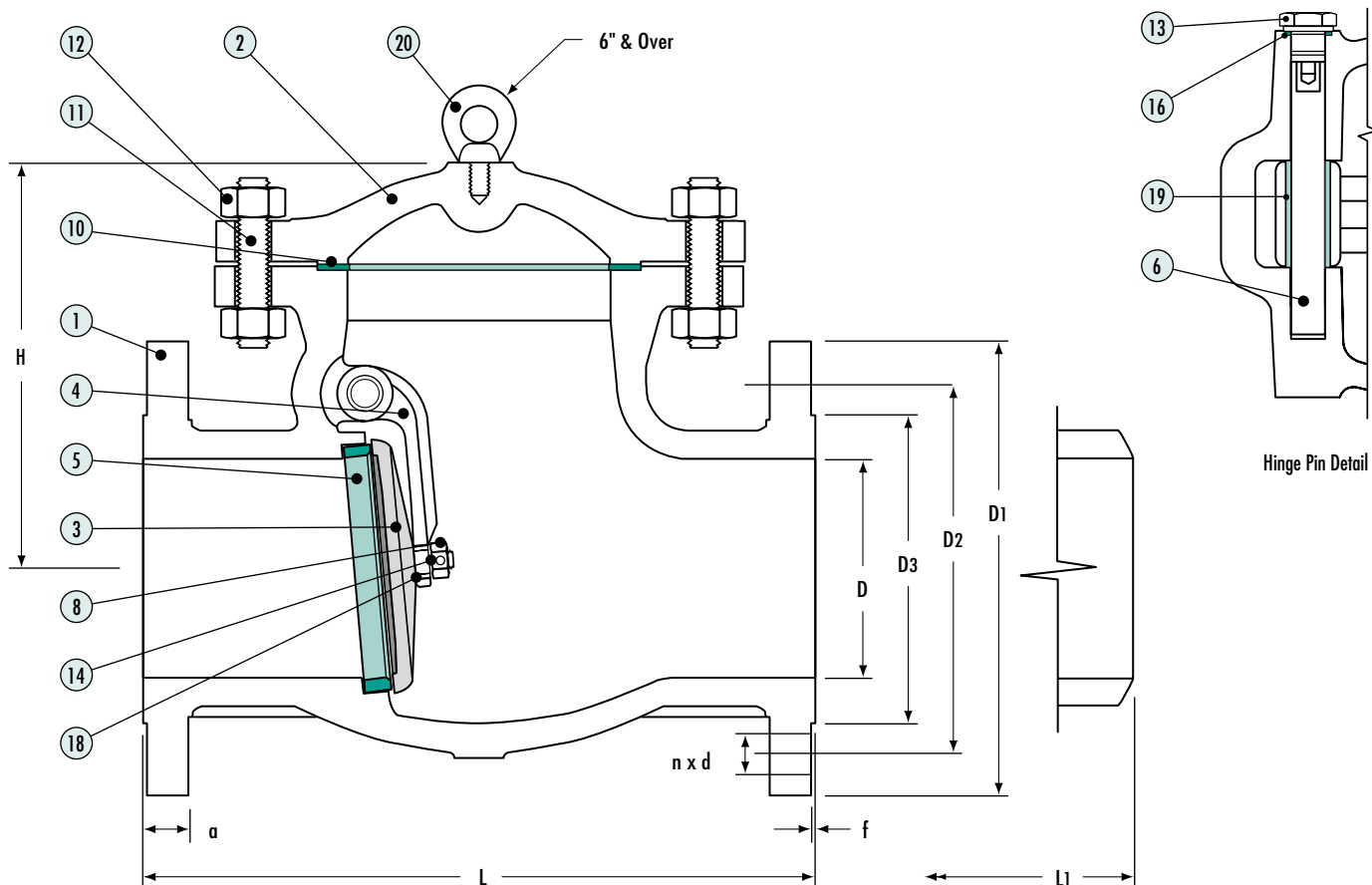


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ABZ VALVES & CONTROLS		
TITLE: STANDARD HANDLE ASSEMBLY DRIVE HOLE VARIES		
SIZE C	DWG. NO. HANDLE 1	REV
DATE: 03-07-05	SHEET 1 OF 1	



Class 150 Swing Check Valves (137-137 1/2)



Dimensional Data (in.) and Flow Coefficient (Cv)

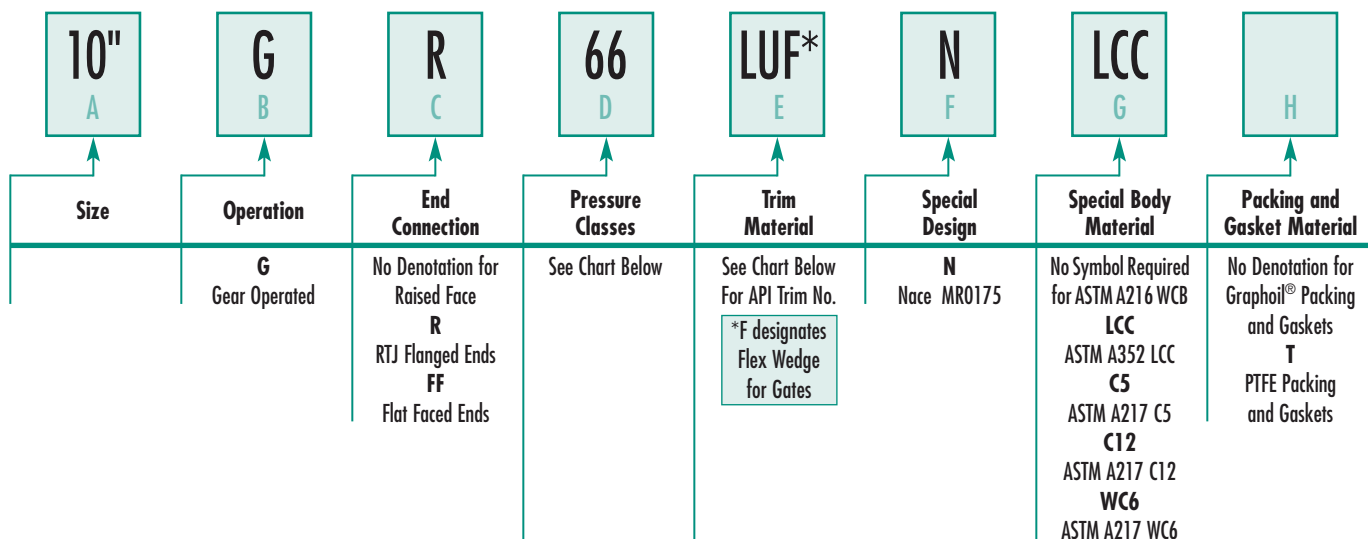
Size	End Flange													
	D	D1	Bolt Hole			D3	a	f	L	L1	H	Wt. Lbs.	Cv	
			D2	n	d									
2	2.00	6.00	4.75	4	0.75	3.62	0.63	0.06	8.00	8.00	6.30	32	218.1	
3	3.00	7.50	6.00	4	0.75	5.00	0.75	0.06	9.50	9.50	8.27	54	499.2	
4	4.00	9.00	7.50	8	0.75	6.18	0.94	0.06	11.50	11.50	8.46	97	903.2	
6	6.00	11.00	9.50	8	0.87	8.50	1.02	0.06	14.00	14.00	10.43	155	2032.1	
8	8.00	13.50	11.75	8	0.87	10.63	1.14	0.06	19.50	19.50	12.28	245	3679	
10	10.00	16.00	14.25	12	0.98	12.75	1.22	0.06	24.50	24.50	13.86	481	5857.9	
12	12.00	19.00	17.00	12	0.98	15.00	1.26	0.06	27.50	27.50	15.83	593	8435.4	
14	13.25	21.00	18.75	12	1.10	16.25	1.38	0.06	31.00	31.00	15.94	776	11708.8	
16	15.25	23.50	21.25	16	1.10	18.50	1.46	0.06	34.00	34.00	17.91	1063	15293.2	
18	17.25	25.00	22.75	16	1.26	21.00	1.57	0.06	38.50	38.50	19.69	1265	19754.5	
20	19.25	27.50	25.00	20	1.26	23.00	1.69	0.06	38.50	38.50	20.69	1553	24912.9	
24	23.25	32.00	29.50	20	1.38	27.25	1.89	0.06	51.00	51.00	25.59	2381	36680.8	

Specifying DSI® Cast Carbon Steel Valve Figure Numbers

It's easy to specify DSI® Cast Steel Valves. Just follow the example and use the figure number chart below to specify the valve you need.

Carbon Steel Example:

10" Class 600 Gate Valve with RTJ Flanged Ends operated by a Zy-Gear Bevel Gear Operator, API Trim No. 12 with Flex Wedge, Special NACE Design meeting NACE MR0175 Requirements, and utilizing ASTM A352 LCC for Special Body Material, Graphoil® Packing and Gaskets.



Valve Type	Class	Flanged End	Welding End
Gate	150	37	37 1/2
	300	23	23 1/2
	600	66	66 1/2
	900	73	73 1/2
	1500	77	77 1/2
Globe	150	133	133 1/2
	300	141	141 1/2
	600	161	161 1/2
	900	173	173 1/2
	1500	179	179 1/2
Swing Check	150	137	137 1/2
	300	149	149 1/2
	600	165	165 1/2
	900	177	177 1/2
	1500	189	189 1/2

Symbol	API Trim No.	Seating* Disc/Seat	Stem/Backseat
U	5	HF/HF	13Cr
XU	8	13Cr/HF	13Cr
AU	11	Monel/HF	Monel
LU	12	316/HF	316
L	10	316/316	316
LUU	16**	HF/HF	316
A	9	Monel/Monel	Monel

*Note: HF denotes hardfaced with Stellite® 6.

**Per API 600 10th Edition.

Note: All information is subject to change without notice.

Block and Bleed Gauge Valve – M9

Product Overview

The M9 (block and bleed) gauge valve is specifically designed to facilitate safe, compact, and economical gauge installation.

Block valve seating is interchangeable between 'hard' or 'soft' without changing the bonnet assembly. This feature enhances the value of the M9 by extending the useful life of the valve.

The M9's Bleed Plug is integral and employs metal-to-metal seating. It enables pressure to be safely vented without breaking threaded connections.



Applications

Static pressure gauge and instrument installation for isolation and venting.

Features and Benefits

- **Packing below threads (O-ring bonnet)** prevents lubricant washout, thread corrosion, and keeps solids from entering thread area, which can cause galling. It also prevents process contamination.
- **Adjustable packing** – Teflon® and GRAFOIL® packed bonnets adjust easily, decreasing packing replacement downtime and increasing valve life.
- **Safety back seating** prevents stem blowout or accidental removal while in operation and provides a metal-to-metal secondary stem seal while in the full open position.
- **Chrome plating of 316 SS stem** prevents galling or freezing of stem threads when similar metals mate. CS valves use a 303 SS stem.
- **Rolled threads** provide additional thread strength. The stem, bonnet, and male NPT threads are rolled, not cut.

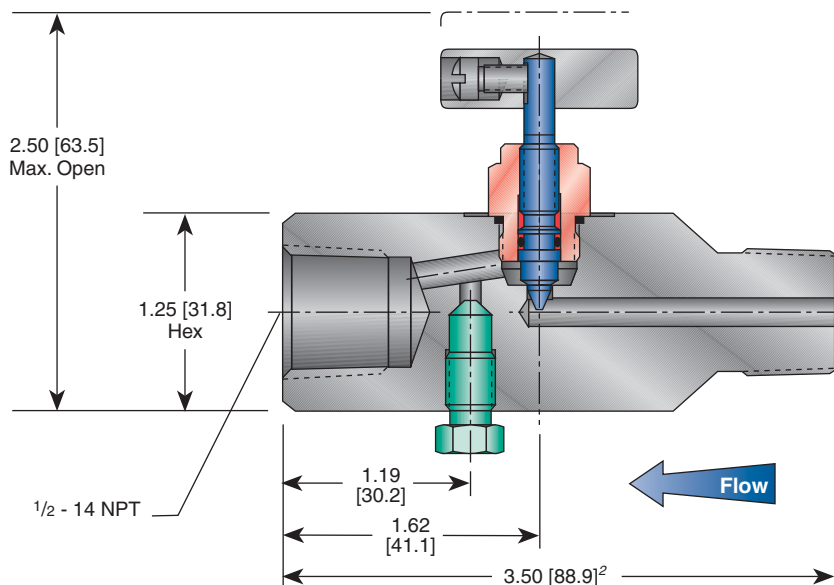
- **Mirror stem finish** burnished to a 16 RMS finish in the packing area enabling smooth stem operation and extending packing life.
- **One-piece handle design** prevents loss of the valve handle due to vibration or during maintenance.
- **Soft or metal seat for bubble-tight shutoff** is field replaceable for easy maintenance. The V-tipped stem provides accurate flow control.
- **Extended valve life**, if soft seat becomes damaged it can be removed, leaving a metal seated valve.

Note

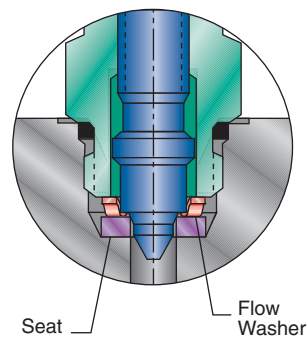
1. Teflon® is a registered trademark of the E.I. duPont de Nemours Company.

Block and Bleed Gauge Valve – M9 Specifications⁴

M9RIS – 44 Dimensions with O-ring Bonnet¹, inches [mm]

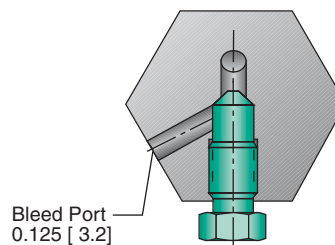
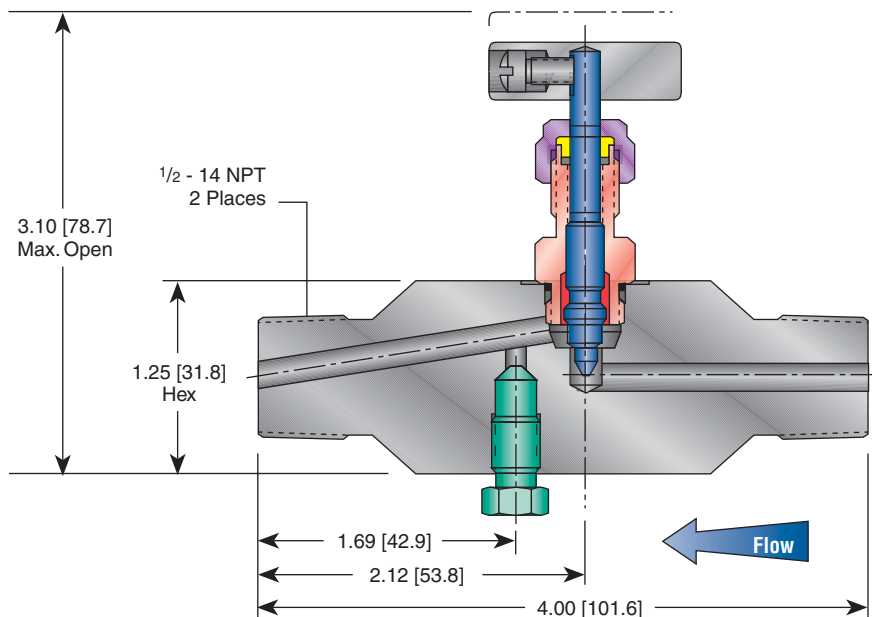


1/2" MNPT X
1/2" FNPT



Optional Soft Seat

M9VIS – 4M Dimensions with Teflon® Bonnet¹, inches [mm]



Section Through Bleed Plug

Notes

1. Bonnets interchangeable between all body configurations.
2. 4.00-inch [101.6 mm] for -44C, -46C.
3. M9()-4 body length 2.88-inch [73.2 mm].
4. For Hastelloy® and SG3 call factory for dimensions and weights.
5. Hastelloy® is a registered trademark of Haynes International.

Block and Bleed Gauge Valve – M9 Specifications

Standard Materials

Metal Seat

Valve ¹	Body	Bonnet	Stem	Packing	Bleed Plug	Seat
CS ²	A108 CS	A108 CS	A581-303 SS	Teflon® or BUNA-N O-ring	A108 CS	Integral
SS	A479-316 SS	A479-316 SS	A276-316 SS	Teflon® or BUNA-N O-ring	A276-316 SS	Integral
SG ³	A479-316 SS	A479-316 SS	Monel® 400	Teflon®	A279-316 SS	Integral
Monel®	Monel® R405	Monel® R405	Monel® R405	Teflon®	Monel® R405	Integral

Soft Seat

Valve ¹	Body	Bonnet	Stem	Packing	Flow Washer	Bleed Plug	Seat ⁴
CS ²	A108 CS	A108 CS	A581-303 SS	Teflon® or BUNA-N O-ring	316 SS	A108 CS	Delrin®
SS	A479-316 SS	A479-316 SS	A276-316 SS	Teflon® or Viton® O-ring	316 SS	A276-316 SS	PCTFE ⁵
SG ³	A479-316 SS	A479-316 SS	Monel® 400	Teflon®	316 SS	A276-316 SS	PCTFE ⁵

Notes

- Approximate valve weight 1.2 lb [.54 kg].
Orifice size .136-inch [3.5 mm] diameter.
Valve C_v Hard Seat .25 maximum.
Valve C_v Soft Seat .24 maximum.
- CS is zinc-cobalt plated to prevent corrosion (except male plain end is black oxide coated).
- SG (Sour Gas) meets the requirements of NACE MR-01-75-latest revision.
- PEEK available.
- PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
- Viton® and Delrin® are registered trademarks of the E.I. duPont de Nemours Company.
- Monel® is a registered trademark of the International Nickel Company.

Pressure and Temperature Ratings

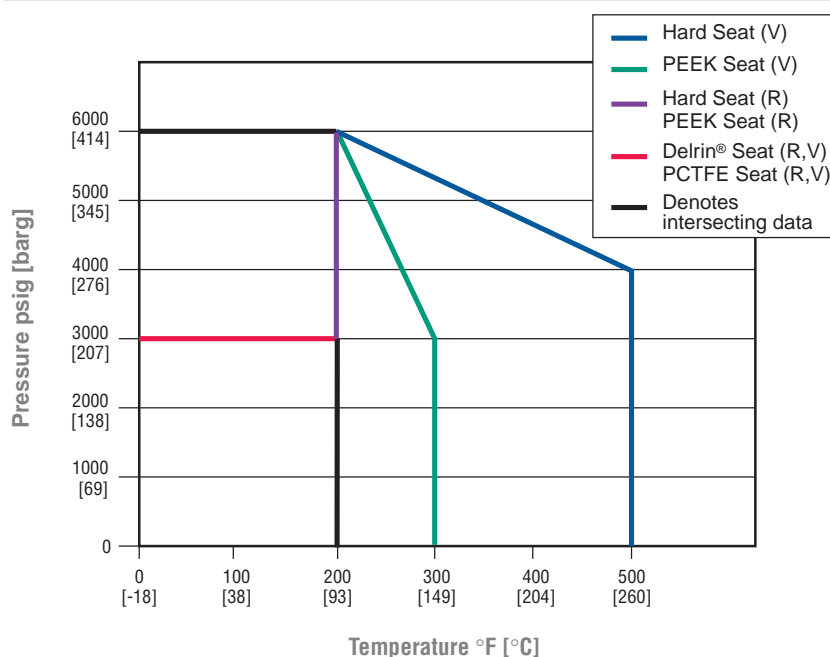
Ratings with Teflon® Bonnet

Hard Seat	6000 psig @ 200°F [414 barg @ 93°C] 4000 psig @ 500°F [276 barg @ 260°C]
Delrin® and PCTFE ⁵	3000 psig @ 200°F [207 barg @ 93°C]
PEEK Seat	6000 psig @ 200°F [414 barg @ 93°C] 3000 psig @ 300°F [207 barg @ 149°C]

Ratings with O-ring Bonnet

Hard Seat	6000 psig @ 200°F [414 barg @ 93°C]
Delrin® and PCTFE ⁵	3000 psig @ 200°F [207 barg @ 93°C]
PEEK Seat	6000 psig @ 200°F [414 barg @ 93°C]

Pressure vs. Temperature



(V) = with Teflon® Bonnet Assembly
(R) = with O-ring Bonnet Assembly

Block and Bleed Gauge Valve – M9 Specifications

Ordering Information

M9

V

I

S

– 44C

– SG

Packing

V – Teflon® Bonnet (standard for 316 SS)

R – O-ring Bonnet

H – GRAFOIL® (500°F [260°C] max)

Seat

I – Integral

D – Delrin® (standard)

E – PEEK

K – PCTFE¹

Body Materials

C – CS

S – SS

M – Monel®

J – Hastelloy®

Connections (Inlet/Outlet)

44 – 1/2-inch MNPT x 1/2-inch FNPT

46 – 3/4-inch MNPT x 1/2-inch FNPT

4M – 1/2-inch MNPT x 1/2-inch MNPT

4 – 1/2-inch FNPT x 1/2-inch FNPT

C – Male plain end (CS is black oxide coated)

Options

AL – Arctic Lubricant (Low Temperature Service) Not available for CS valves.

CLC – Chlorine Cleaning

HD – Hydrostatic Testing (100%) (MSS-SP-61)

MS – Monel® Stem

OC – Oxygen Cleaning

PHB – Phenolic Black Handle

PHG – Phenolic Green Handle

PHR – Phenolic Red Handle

PM – Panel Mount (Teflon® packed only)

SG – Sour Gas meets the requirements of NACE MR0175-2002 (SS only)

SP – Special Requirements - please specify

SG3 – Sour Gas meets the requirements of NACE MR0175-2003

Note

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.