

# Swing Check Valves Full Opening

- 1 Design construction: API 6D - ANSI B16.34  
Testing according to API 6D  
Marking according to MMS SP25 - API 6D  
Compliance to Nace MR 01-75
- 2 Flanges according to:  
ANSI B16.5 for size 2" to 24" - ASME B16.47 for size >26"  
Butt Welding Ends according to ANSI B 16.25  
Face to face according to API 6D
- 3 Lock-open device or counter weight on request  
Spiral wound gasket for Classes ANSI 150 and ANSI 300  
Oval ring joint gasket for ANSI Classes 600, 900, 1500 and 2500
- 4 Screwed in seat  
Soft seat design  
Sub Sea application on request  
For pressure temperature rating see technical data



**Typical Coating Options \*Standard Shop Primer:**

- High build epoxy (12-16 mils DFT) color - yellow or white, 3 coat system that is compatible with gearing and ROV
- Coal tar epoxy - 2 coat system DFT 12-16 mils (not for ROV application)

# Swing Check Valves Full Opening

## ANSI CLASS 150

SIZE (INCH)	2	3	4	6	8	10	12
A	2.067	3.068	4.026	6.065	7.981	10.02	12
H	6.5	7.75	8	10	11.75	13.875	15.125
L - RF/WE	8	9.5	11.5	14	19.5	24.5	27.5
Weight RFFE	45	75	110	190	350	525	760
Weight WE	35	55	90	165	310	420	605

## ANSI CLASS 300

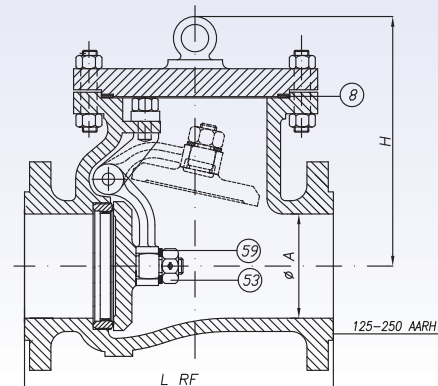
SIZE (INCH)	2	3	4	6	8	10	12
A	2.067	3.068	4.026	6.065	7.981	10.02	12
H	8.25	9.625	11	13	17.5	20	21.625
L - RF/WE	10.5	12.5	14	17.5	21	24.5	28
Weight RFFE	50	105	155	305	525	795	1070
Weight WE	45	75	115	240	440	705	870

## ANSI CLASS 600

SIZE (INCH)	2	3	4	6	8	10	12	16	20	24
A	2.067	3.068	4.026	6.065	7.981	10.02	12	15.25	19.25	23.25
H	11.125	12.375	14.5	17.25	20.125	22.375	25.5	27.25	36.25	41
L - RF/WE	11.5	14	17	22	26	31	33	39	47	55
Weight RFFE	85	140	265	475	925	1255	1735	3170	5720	7985
Weight WE	65	115	210	400	795	1015	1465	2640	4900	6675

## ANSI CLASS 900

SIZE (INCH)	2	3	4	6	8	10	12	16	20	24
A	2.067	3.068	4.026	6.065	7.981	10.02	12	15.25	19.25	23.25
H	11.5	12.5	14.75	18	21.25	22.5	28	34.25	40	46.875
L - RF/WE	14.5	15	18	24	29	33	38	44.5	52	61
L - RTJ	14.63	15.13	18.13	24.13	29.13	33.13	38.13	44.88	52.5	61.75
Weight RFFE	115	200	380	645	1205	2075	3435	4665	8250	12320
Weight WE	90	165	320	495	980	1850	3015	3985	6380	9485



## **Materials of Construction for standard, full-open swing check valves:**

- 1** Body - ASTM A216 GR WCB/WCC
- 2** Bonnet - ASTM A216 GR WCB/WCC
- 3** Disc - Carbon steel with 316L SS overlay
- 4** Removable seat - Carbon steel with 316L SS overlay
- 5** Bonnet gasket - spiral wound ANSI Class 150-300  
RTJ gasket (soft iron) ANSI Class 600 and higher
- 6** Seat face seal - Viton
- 7** Hinge - 316 SS (size 2" thru size 4")  
ASTM A216 GR WCB/WCC on size 6" and larger
- 8** Hinge Pin - 316 SS  
17-4 PH SS for extended hinge pin application
- 9** Bonnet studs - ASTM A193 GR B7M
- 10** Bonnet nuts - ASTM A194 GR 2HM

*\* Designed, tested and monogrammed per API-6D*

## ***Non-slam application with Rotary Vane Damper for QTR Inventory 16" and larger***

*16" and larger stocked Vitas swing check valves can be easily retrofitted for a rotary vane damper for installations in compressor stations or use in other pulsating gas flow conditions.*





## **Check Valves for Sub Sea Service**

- Thru-Conduit Clapper
- Diver Assisted  
Lock-open device
- ROV Interface per  
API-17D upon request

# Materials of Construction and technical features for Sub Sea check valves:

## Body Style:

- Top entry, bolted bonnet

## Materials:

- Body: ASTM A216 GR WCC
- Bonnet: ASTM A216 GR WCC
- Disc/Clapper - carbon steel with 316L SS overlay on sealing surface
- Seat - removable carbon steel with 316L SS overlay on sealing surface
- Hinge: ASTM A216 GR WCC
- Hinge pin: ASTM A564 (17-4 PH SS)
- Seat seals: Viton --- (O ring in seat face)
- Bonnet gasket: (RTJ) soft iron cadmium plated
- Disc/clapper nut: ASTM A194 GR 8M
- Split pin for disc nut: AISI 304 SS
- Packing gland: ASTM A105
- Tongue: AISI 4140 (Internal lifting device)
- Packing gland cover: ASTM A105
- Packing gland cap screws: ASTM A193 GR B7M (fluoroc coated)
- Gland packing: Viton --- for "SEA" gland  
PTFE Chevron "V"-Type for "FREE" gland

## Technical features:

- Thru-conduit clapper (elliptical face) for smooth passage of pigs and spheres
- 45° degree seat face for reverse flow pigging operation
- "SEA" gland lock-open device incorporates combination wrench for gland cover removal and hold open mechanism
- "FREE" gland lock-open device incorporates internal lock plate for the hold open mechanism and allows the packing gland cover to be re-installed in open position
- Both "SEA and FREE" gland lock-open devices allow for a free swinging clapper in normal service
- Both "SEA and FREE" gland lock-open devices require approximately 180° degree rotation for full-open position
- "FREE" gland lock-open device allows for emergency pill sealant for Chevron "V"-type packing thru an injector fitting on the packing gland body

## ROV (as specified) (for Lock Open using ROV)

- Interface meeting API 17D specifications - or other standard
- Vertical or Horizontal plane mounting
- Visual indication of clapper position options (in same plane as ROV interface is recommended)
- Grab Plate for ROV
- Custom variable height of ROV (vertical positioned) interface

## Materials of Construction and technical features for Sub Sea check valves, cont'd:

### **NDE (weld end connection):**

- Radiographic tested - butt weld connections 2 inches from end - 100% per ASTM E446 Class 2
- Liquid penetrant tested machined weld bevels per ASTM E 165

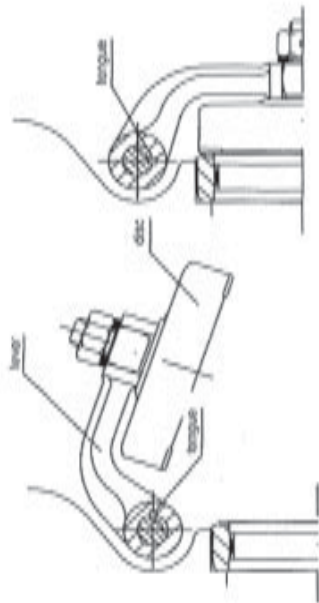
### **Testing:**

- Std. per API spec. 6D
- Additional test duration and chart recorded  
Testing available
- Third party witness testing available
- Controlled environment and inspector facilities available

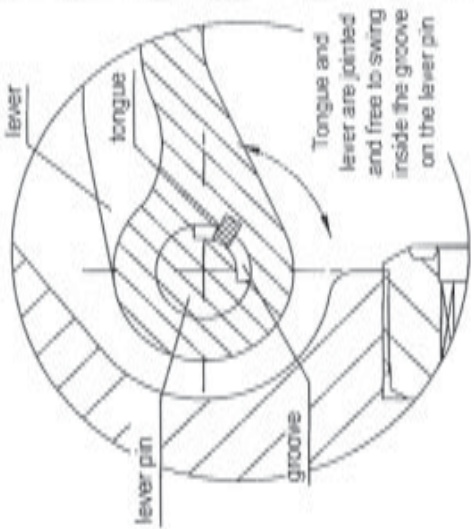
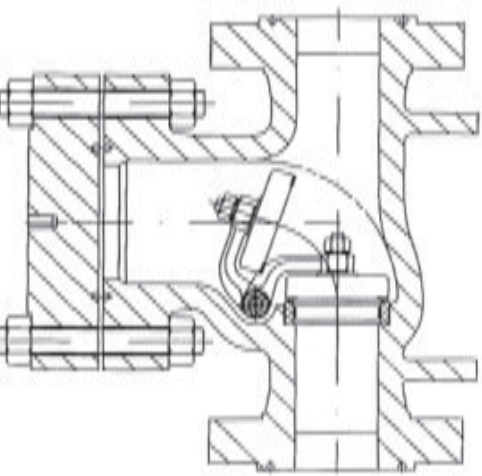
### **Coatings:**

- Inhouse coating facility to meet customer specifications

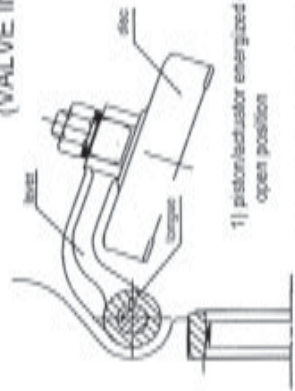
**VALVE FREE TO MOVE**



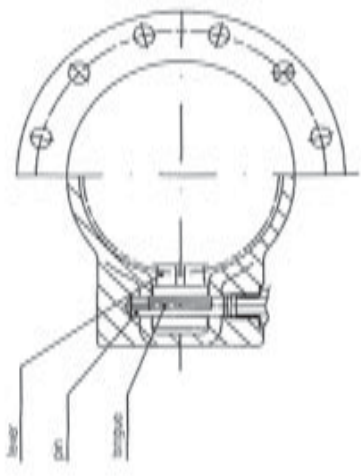
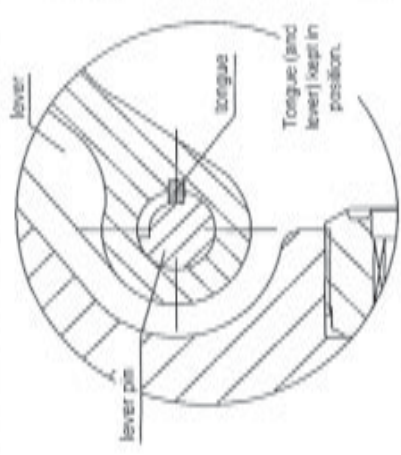
When the piston/actuator are de-energized or manual lever is free, the disc is in close position and the valve is free to operate as a swing check.



**VALVE STOPPED  
(VALVE IN OPEN POSITION)**



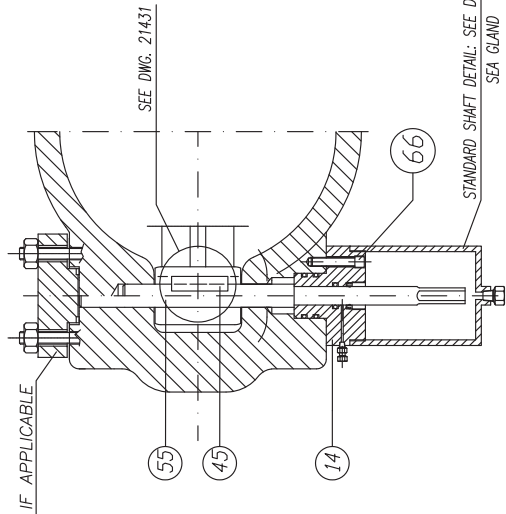
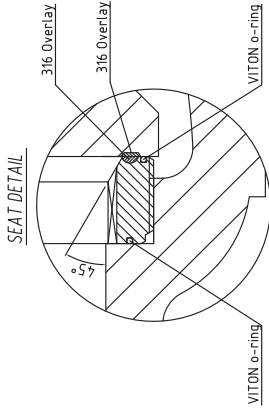
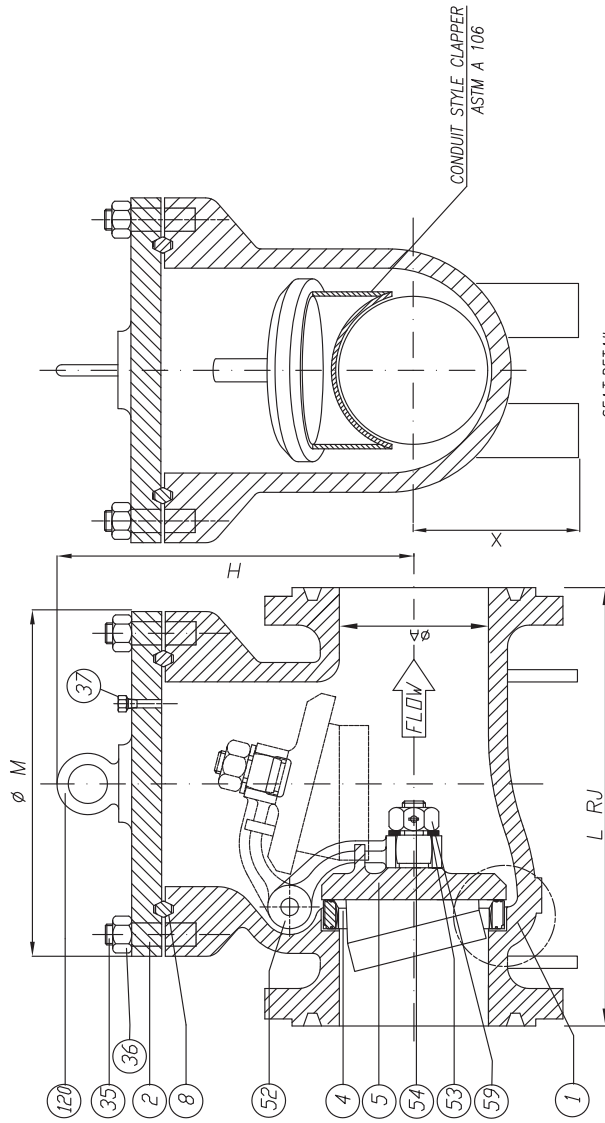
- 1) piston/actuator energized or manual lever fixed in open position
- 2) The disc is stopped in open position (the pig can go through the valve in flow direction or reverse flow)



REV. 00 01	DATE 25/06/07	DESIGNED APPROVED	DATE 25/06/07	25/06/07	25/06/07
	DRAWN Gubin	CHECKED Gubin	APPROVED Gurnell	DATE 25/06/07	25/06/07
SIGNATURE / PP		SIGNATURE / PP		SIGNATURE / PP	
DWG. N° D-21431-A		TITLE LOCKING DEVICE FOR SWING CHECK			
VITAS		SCALA III			



Size	øA	H	LRF-LBW	LRJ	øM	weight rf(kg)	weight bw(kg)
4"	102 4"	278 10.94"	432 17"	435 17.13"	250 9.84"	114	97
6"	152 6"	345 13.58"	559 22"	562 22.13"	330 12.99"	215	180
8"	203 8"	402 15.83"	660 26"	664 26.13"	404 15.90"	400	340
10"	254 10"	502 19.76"	788 31"	791 31.13"	504 19.84"	596	485
12"	305 12"	563 22.16"	838 33"	841 33.13"	504 19.84"	788	665



- 1 BODY
  - 2 BONNET
  - 4 SEAT
  - 5 DISC
  - 8 BONNET GASKET
  - 14 GLAND FLANGE
  - 35 BONNET STUD BOLTS
  - 36 BONNET NUTS
  - 37 PLUG
  - 45 TONGUE
  - 52 HINGE
  - 53 NUT FOR DISC
  - 54 SPLIT PIN
  - 55 HINGE PIN
  - 56 LATERAL FLANGE
  - 59 WASHER
  - 66 BOLTS
  - 120 LIFTING
- ASTM A 216 Gr. WCC
  - ASTM A 216 Gr. WCC
  - ASTM A 105+F316+VITON
  - ASTM A 216 Gr. WCC+F316+A106
  - RTJ - SOFT IRON
  - ASTM A 105 (ZINC PLATED)
  - ASTM A 193 B7M+Fluoro-Carbon Coated
  - ASTM A 194 2HM+Fluoro-Carbon Coated
  - AISI 316
  - AISI 4140
  - ASTM A 216 Gr. WCC
  - ASTM A 194 Gr. 8M
  - AISI 304
  - ASTM A564 17 4-PH
  - ASTM A 105 (ZINC PLATED)
  - AISI 304
  - AISI 316
  - INTEGRAL OR ASTM A105 (ZINC PLATED)

NOTE: Material according to MACE MR-01-75

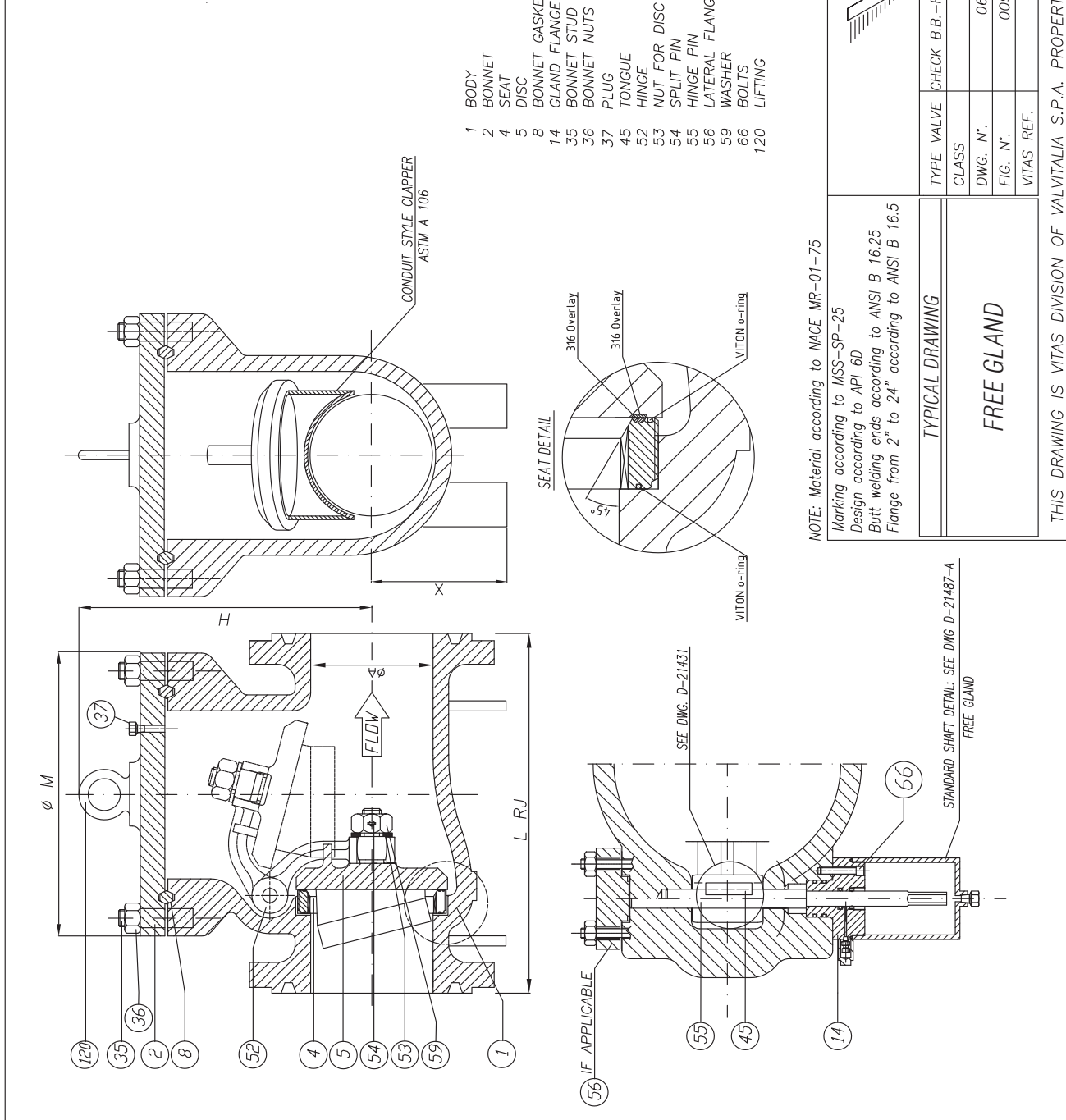
Marking according to MSS-SP-25  
 Design according to API 6D  
 Butt welding ends according to ANSI B 16.25  
 Flange from 2" to 24" according to ANSI B 16.5  
 Flange 26" and larger by customer's request



TYPICAL DRAWING	
TYPE VALVE	CHECK B.B.-FULL BORE-SEA GLAND
CLASS	600
DWG. N°.	0606R7116
FIG. N°.	006R 700 FAM
VITAS REF.	060159
REV.	A
DATE	24/07/06
DRAW.	FR
VER.	PZ
APPR.	GS

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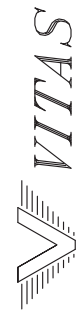
Size	ØA	H	LRF-LBW	LRJ	ØM	Weight RF(kg) BW(kg)
4"	102	300	457	460	265	163
4"	11.81"	18"	18.12"	10.43"		137
6"	152.4	373	610	613	352	325
6"	14.68"	24"	24.13"	13.86"		256
8"	203.2	480	737	740	434	446
8"	18.9"	29"	29.13"	17.09"		446
10"	254	590	838	841	520	868
10"	23.23"	33"	33.13"	20.47"		763
12"	305	680	965	968	610	1560
12"	26.77"	38"	38.13"	24.01"		1370



- 1 BODY
- 2 BONNET
- 4 SEAT
- 5 DISC
- 8 BONNET GASKET
- 14 GLAND FLANGE
- 35 BONNET STUD BOLTS
- 36 BONNET NUTS
- 37 PLUG
- 45 TONGUE
- 52 HINGE
- 53 NUT FOR DISC
- 54 SPLIT PIN
- 55 HINGE PIN
- 56 LATERAL FLANGE
- 59 WASHER
- 66 BOLTS
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- ASTM A 216 Gr. WCC
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- RTJ - SOFT IRON
- ASTM A 105 (ZINC PLATED)
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- AISI 316
- AISI 4140
- ASTM A 216 Gr. WCC
- ASTM A 194 Gr. 8M
- AISI 304
- ASTM A564 17 4-PH
- ASTM A 105 (ZINC PLATED)
- AISI 304
- AISI 316
- INTEGRAL OR ASTM A105 (ZINC PLATED)

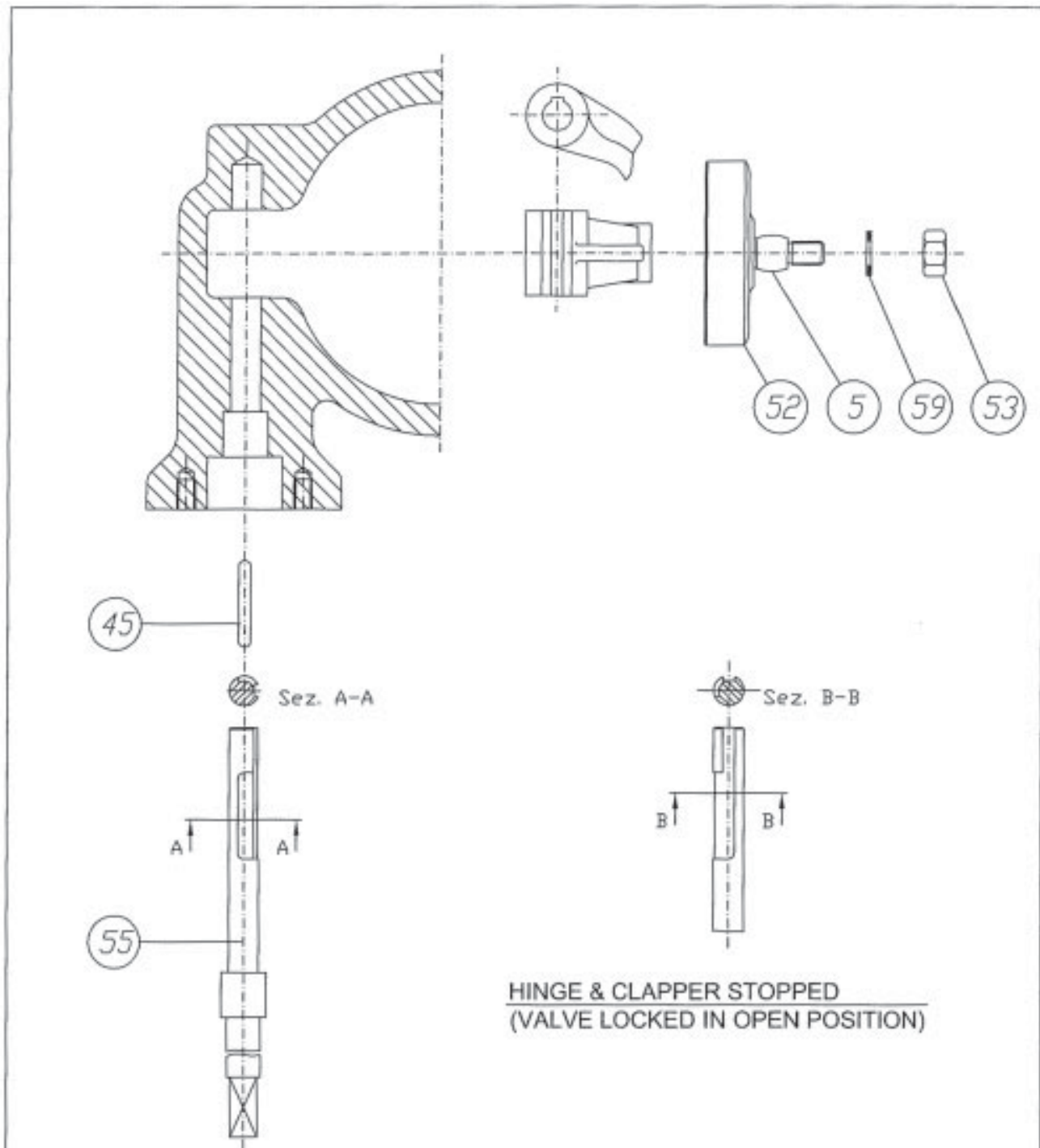
NOTE: Material according to NACE MR-01-75  
 Marking according to MSS-SP-25  
 Design according to API 6D  
 Butt welding ends according to ANSI B 16.25  
 Flange from 2" to 24" according to ANSI B 16.5



TYPE VALVE	CHECK B.B.-FULL BORE-FREE GLAND	REV.	A
CLASS	900	DATE	24/07/06
DWG. N°.	0609R7118_1	DRAW.	FR
FIG. N°.	009R 700 FAM	VER.	PZ
VITAS REF.	060159	APPR.	GS

TYPICAL DRAWING  
**FREE GLAND**

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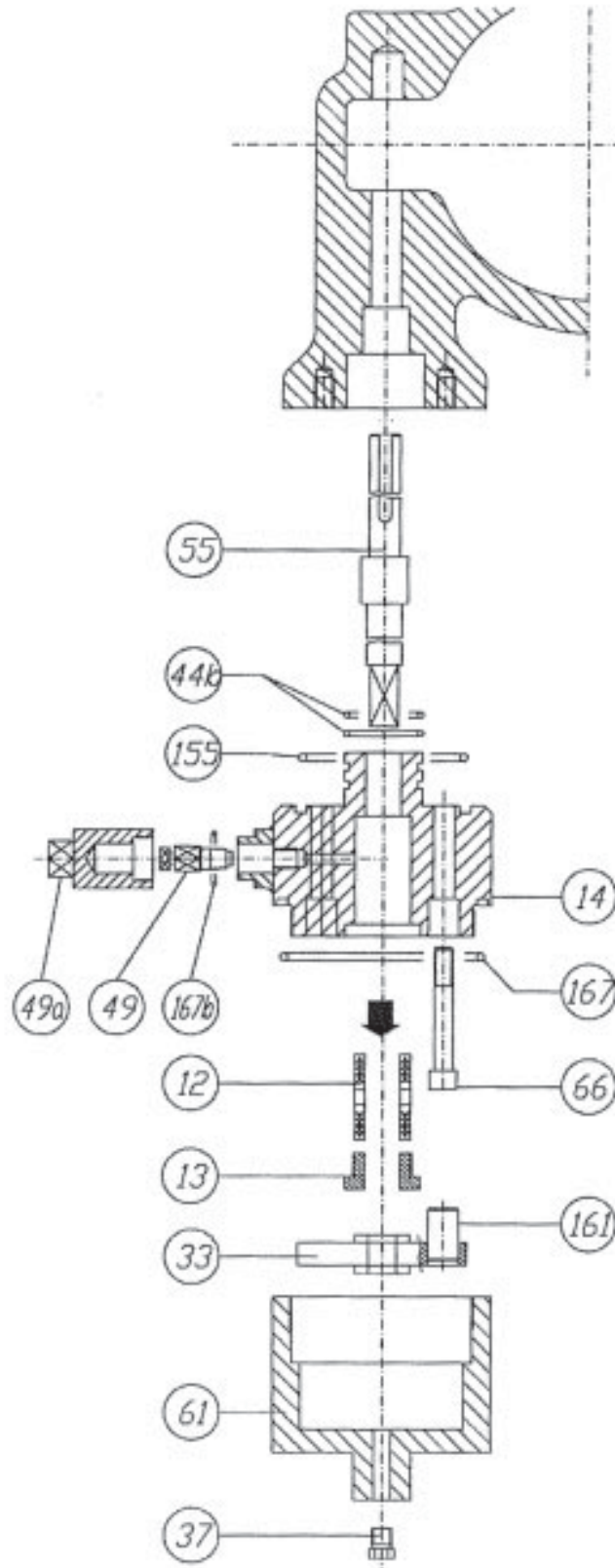


**HINGE & CLAPPER STOPPED**  
**(VALVE LOCKED IN OPEN POSITION)**

**HINGE & CLAPPER FREE TO MOVE**

DON'T MEASURE THE DRAWING, WHEN YOU HAVE A DOUBT, PLEASE ASK.		REV.	00			
NOTES :		DATE	29/06/2007			
FOR PARTS N° AND MATERIAL SEE GENERAL ASSEMBLY		DRAWN	Garbin			
FOR ASSEMBLY PARTS SEE DWG. N° D-21431-A		CHECKED	Garbin			
		APPROVED	Girardello			
	DWG N°		DRAWN	CHECKED	APPROVED	
	D-22371-A		DATE	29/06/07	29/06/07	29/06/07
			SIGNATURE	FR	DG	GS
TITLE					SCALE	
EXPLODED VIEW LOCKING DEVICE "FREE & SEA GLAND"					///	
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12.4 - "FREE GLAND" EXPLODED VIEW



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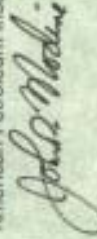
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