



VACUUM BREAKER  
VB16C

DESCRIPTION

The VB16C vacuum breakers are simple and reliable devices that automatically relieve or “break” an unwanted vacuum condition, restoring the atmospheric pressure.  
This device is particularly suitable for steam heated units of small and medium volume, such as heat exchangers, heating coils, calorifiers, jacketed kettles, steam boilers, etc.

MAIN FEATURES

Internal wetted parts: ≤ 0,51 micron Ra – SF1.  
External: ≤ 0,76 micron Ra – SF3.  
Other surface conditions see IS PV20.00 E – Technical information.  
Ultrasonic cleaning.

USE: Saturated steam and other gases compatible with the construction.

AVAILABLE MODELS: VB16C.

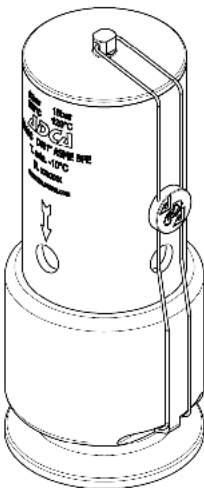
SIZES: 1” – DN 25.

REGULATING RANGES: 0,05 – 0,10 bar; 0,09 – 0,20 bar; 0,19 – 0,30 bar; 0,29 – 0,40 bar; 0,39 – 0,50 bar.

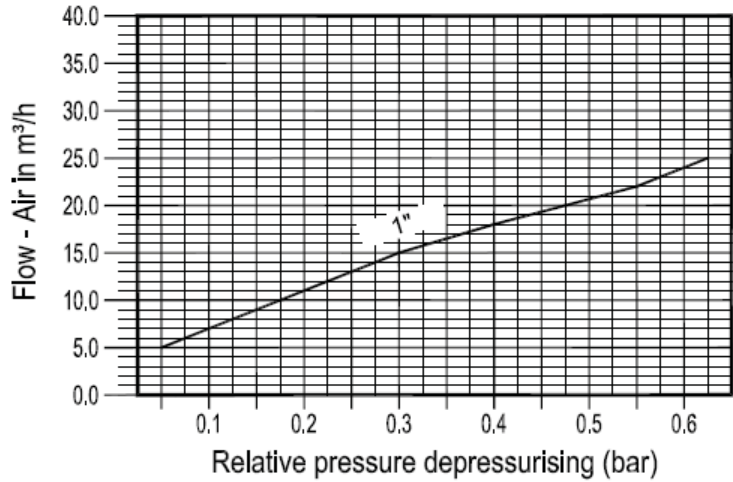
CONNECTIONS: ASME BPE, DIN and ISO clamp ferrules.  
Others on request.

PACKAGING: Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

INSTALLATION: Vertical installation. See IMI – Installation and maintenance instructions.



CAPACITY CHART



LIMITING CONDITIONS	
Body design conditions	PN 16
Maximum operating pressure	13 bar @ 38°C
Maximum operating steam pressure	6 bar
Max. operating temp. (steam and water)	170 °C
Maximum operating temperature (air)	150 °C
Minimum operating temperature	- 10 °C

CE MARKING – GROUP 2 (PED – European Directive)	
PN 16	Category
1” – DN 25	SEP

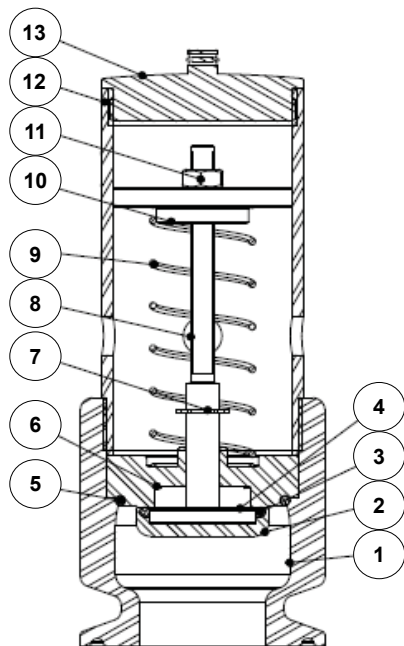
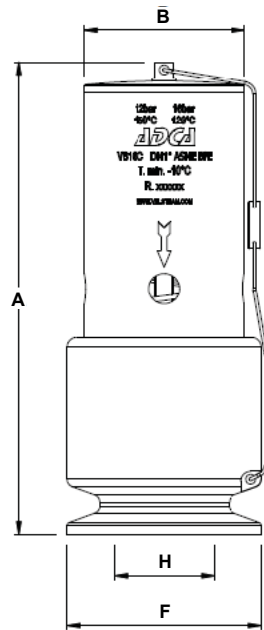
DIMENSIONS (mm) ASME BPE					
SIZE	A	B	F	H	WEIGHT (kg)
1"	120	42	50,5	22,1	0,85

DIMENSIONS (mm) DIN					
SIZE	A	B	F	H	WEIGHT (kg)
DN 25	120	42	50,5	26	0,85

Remark: Clamp ferrules according to DIN 32676-A.

DIMENSIONS (mm) ISO					
SIZE	A	B	F	H	WEIGHT (kg)
DN 25	120	42	50,5	29,7	0,85

Remark: Clamp ferrules according to DIN 32676-B.



MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Body	AISI 316L / 1.4404
2	* Valve plug	AISI 316L / 1.4404
3	* O-ring	High performance EPDM
4	* Plug disc	AISI 316L / 1.4404
5	* O-ring	High performance EPDM
6	Seat	AISI 316L / 1.4404
7	* Retaining washer	Stainless steel A2-70
8	* Stem	AISI 316L / 1.4404
9	* Spring	AISI 302 / 1.4300
10	Spring guide	AISI 316L / 1.4404
11	Nut	Stainless steel A2-70
12	Spring cover	AISI 316L / 1.4404
13	Top cover	AISI 316L / 1.4404

\* Available spare parts.

Remarks: FDA / USP Class VI seals certificate on request.

## SANITARY SIGHT GLASS SWS

### DESCRIPTION

The SWS sanitary sight glasses are designed to monitor liquid flow in any direction. Sight glasses (or flow indicators) are usually employed to detect either the presence or absence of fluid flow, turbulence, colour, etc. They are specially recommended for high purity applications.

### MAIN FEATURES

Compact design.  
Completely machined from bar stock materials, no castings or forgings are used on the standard version.  
Precision glass mounted without stress.  
Excellent visualization.

### STANDARD SURFACE FINISH

Internal wetted parts:  $\leq 0,51$  micron Ra – SF1.  
External:  $\leq 0,76$  micron Ra – SF3.  
Other surface conditions see IS PV20.00 E – Technical information.  
Ultrasonic cleaning.

OPTIONS: Full view design.

USE: Water and other gases and liquids compatible with the construction.

AVAILABLE MODELS: SWS.

SIZES: 1/2" to 4".

CONNECTIONS: DIN clamp ferrules.  
Others on request.

PACKAGING: Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

INSTALLATION: In any position. See IMI – Installation and maintenance instructions.

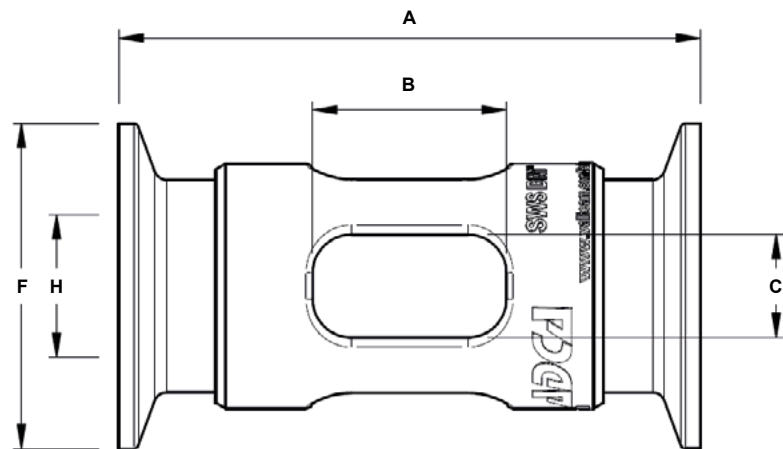


LIMITING CONDITIONS	
Maximum operating temperature (steam and water) – EPDM seals *	180 °C
Maximum operating temperature (air and other gases) – EPDM seals	150 °C
Maximum operating temperature – PTFE seals	200 °C
Minimum operating temperature	- 10 °C

\* High performance EPDM. Maximum operating temperature of 210 °C, for short periods of time.

CE MARKING – GROUP 2 (PED – European Directive)	
Size	Category
1/2" to 4"	SEP

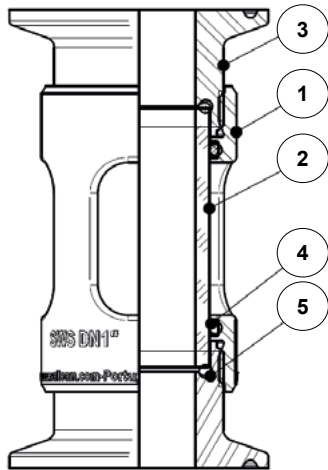
MAXIMUM OPERATING PRESSURE (bar)							
1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"
20	16	14	10	10	9	9	8



DIMENSIONS (mm) DIN						
SIZE	A	B	C	F	H	WEIGHT (kg)
1/2"	76	20	10	25	9,4	0,13
3/4"	92	30	10	25	15,75	0,23
1"	92	30	15	50,5	22,1	0,4
1 1/2"	105	32	24	50,5	34,8	0,58
2"	120	48	34	64	47,5	0,83
2 1/2"	151	55	40	77,5	60,2	1,35
3"	175	90	50	91	72,9	2,53
4"	200	110	60	119	97,38	3,81

MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Valve body	AISI 316L / 1.4404
2	* Glass	Borosilicate
3	Connection ends	AISI 316L / 1.4404
4	* O-ring	High performance EPDM
5	* O-ring	High performance EPDM **
	* O-ring	PTFE **

\* Available spare parts; \*\* Others available on request.  
Remarks: FDA / USP Class VI seals certificate on request.  
All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



SANITARY CHECK VALVE  
SRT10

DESCRIPTION

The SRT10 all stainless steel disc check valve has a compact design and is specially designed for use with clean steam, hot condensate and other process fluid applications. They are particularly recommended for high purity applications.

MAIN FEATURES

Compact design.  
Completely machined from bar stock material, no castings or forgings are used on the standard version.

STANDARD SURFACE FINISH

Internal wetted parts: ≤ 0,51 micron Ra – SF1.  
External: ≤ 0,76 micron Ra – SF3.  
Other surface conditions see IS PV20.00 E – Technical information.  
Ultrasonic cleaning.

USE: Clean steam, water and other gases and liquids compatible with the construction.

AVAILABLE MODELS: SRTV10 – vertical installation.  
SRT H10 – horizontal installation.

SIZES: 1/2" to 4".

CONNECTIONS: ASME BPE clamp ferrules or tube weld (ETO) ends.  
Others on request.

PACKAGING: Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

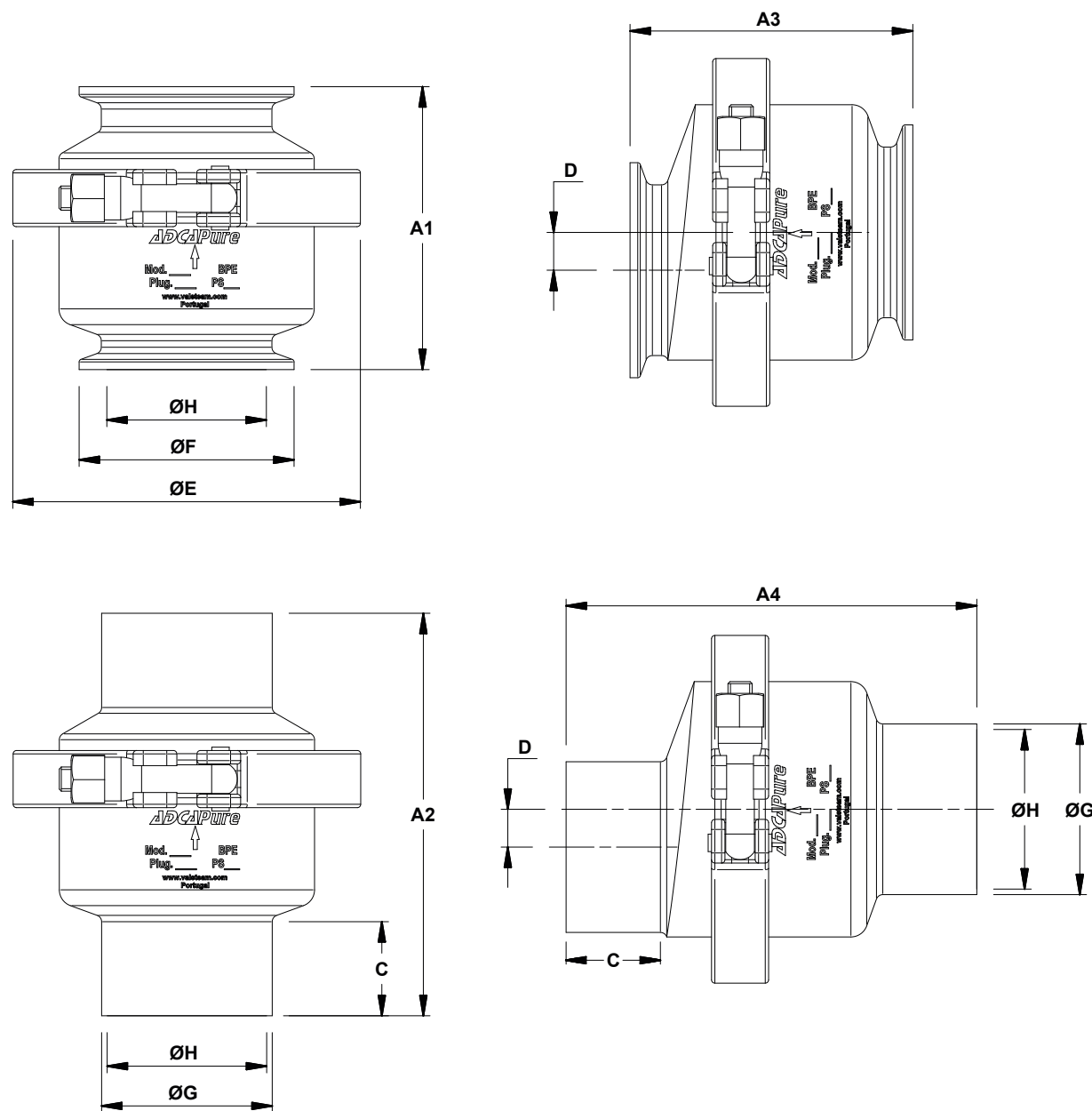
INSTALLATION: Vertical or horizontal according to the selected model and type of fluid.  
See IMI – Installation and maintenance instructions.



CE MARKING – GROUP 2 (PED – European Directive)	
Size	Category
1/2" to 4"	SEP

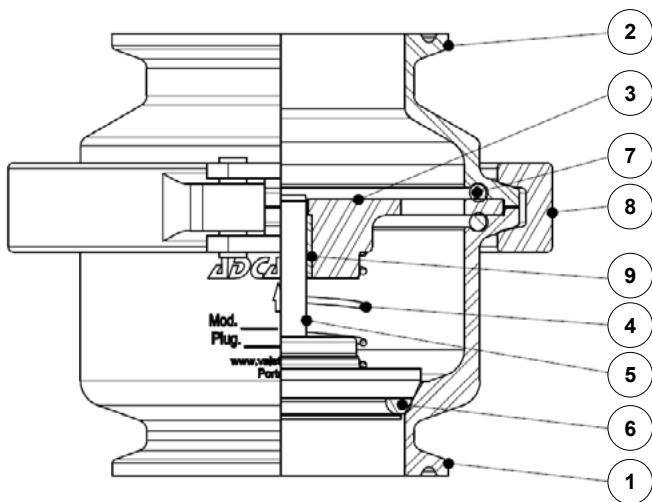
LIMITING CONDITIONS	
Body design conditions	PN 10
Maximum operating temperature (steam and water) – EPDM seals *	180 °C
Maximum operating temperature (air and other gases) – EPDM seals	150 °C
Maximum operating temperature – PTFE seals	200 °C
Minimum operating temperature	- 10 °C

\* High performance EPDM. Maximum operating temperature of 210 °C, for short periods of time.



DIMENSIONS (mm) ASME BPE											
SIZE	A1	A2	A3	A4	C	D	E	F	G	H	WEIGHT (kg)
1/2"	50	88,8	50	90,4	28	11,8	61	25	12,7	9,4	0,4
3/4"	50	91,9	50	91,1	28	8,6	61	25	19,05	15,8	0,5
1"	60	97	60	96,5	28	5,5	61	50,5	25,4	22,1	0,6
1 1/2"	73	112,2	73	112,1	28	11,1	90	50,5	38,1	34,8	1,1
2"	84	119,8	84	122,3	28	11,3	104	64	50,8	47,5	1,4
2 1/2"	89	129	89	124	28	9,2	119	77,5	63,5	60,2	1,8
3"	98	141	98	134	28	11,1	134	91	76,2	72,9	2,7
4"	109	165,7	109	160	36	15,6	170	119	101,6	97,38	4,9

Remarks: Face to face dimensions are not standardized. Different dimensions available on request.



MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Valve inlet body	AISI 316L / 1.4404
2	Valve outlet body	AISI 316L / 1.4404
3	Guide plate	AISI 316L / 1.4404
4	Spring	AISI 316 / 1.4401 electropolished
5	* Valve and stem	AISI 316L / 1.4404
6	* Valve seal	High performance EPDM **
		PTFE **
7	* Body seals	High performance EPDM **
		PTFE **
8	Safety clamp	AISI 316 / 1.4401
9	Plain bearing	PTFE

\* Available spare parts; \*\* Others on request.  
Remarks: FDA / USP Class VI seals certificate on request.  
All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



## HIGH PURITY BALL VALVES M3HP TRUE BORE (1/2" – 2" ASME BPE)

### DESCRIPTION

M3HP three piece body ball valves are isolating valves designed for use with clean steam, condensate and other gases and liquids used in high purity and aseptic processes.

The valve is not designed as a control valve and should only be used as an isolating valve, fully open or fully closed.

The product is mainly designed for the pharmaceutical, biotech, semiconductor, cosmetics, fine chemical, food and beverage industries.

### MAIN FEATURES

True bore floating ball design.

Completely made from solid bar stock material.

Can be serviced without removal from pipeline.

Bidirectional.

Antistatic device.

Anti blow out proof stem.

Tube weld with loose body flanges (360° rotation after installation).

ISO 5211 mounting (only sizes ≥1").

### STANDARD SURFACE FINISH

Internal wetted parts: ≤ 0,51 micron Ra – SF1.

External : ≤ 0,76 micron Ra – SF3.

Other surface conditions see IS PV20.00 E – Technical information.

Ultrasonic cleaning.

**OPTIONS:** Different sealing materials.  
1/2" and 3/4" ISO mounting with flange adapter.  
Degreased for oxygen use.  
Cavity filler.

**USE:** Clean steam, gases and liquids compatible with the construction.

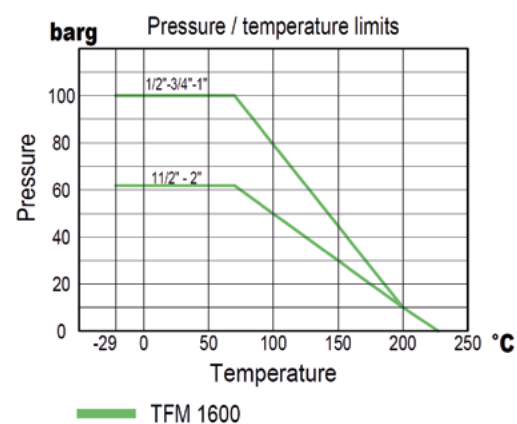
**AVAILABLE MODELS:** M3HP – Complete bar stock construction.

**SIZES:** 1/2" to 2".

**CONNECTIONS:** According to ASME BPE.  
TC – Sanitary clamps.  
ETO – Extended tube orbital welding.  
TC / ETO – Combination.

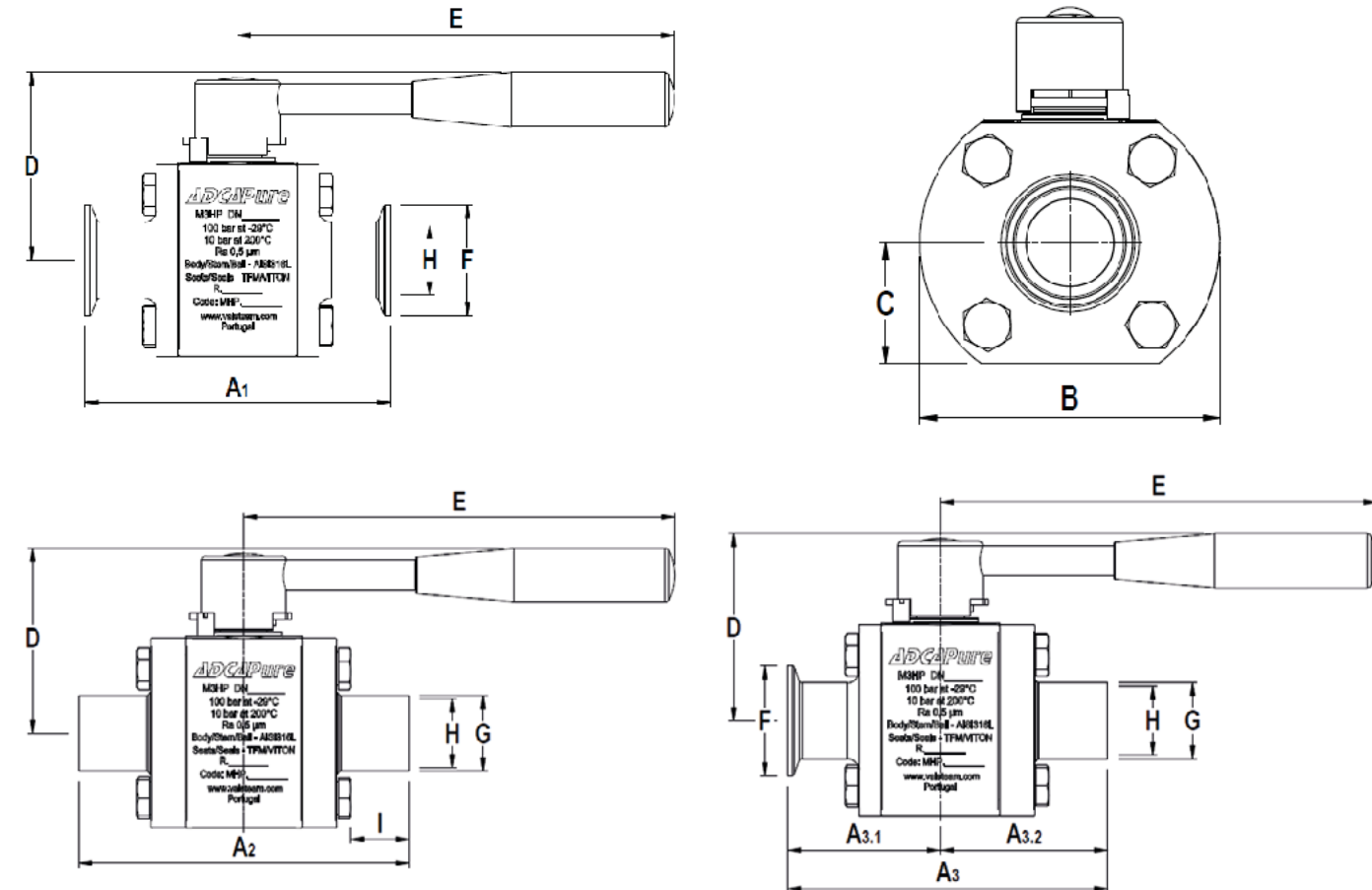
**PACKAGING:** Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

**INSTALLATION:** See IMI – Installation and maintenance instructions.



Note: Working pressure may be limited by the valve connections.

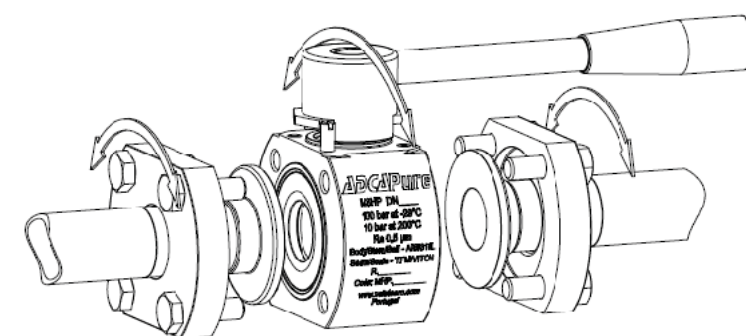
CE MARKING – GROUP 2 (PED – European Directive)		
PN63	PN100	Category
—	1/2" to 1"	SEP
1 1/2" to 2"	—	1 (CE marked)



DIMENSIONS (mm) ASME BPE																
SIZE	A1	A2	A3	A3.1	A3.2	B	C	D	E	F	G	H	I	BALL PORT	ISO 5211	WGT (kg)
1/2"	88,9	101,6	95,5	44	51,5	59	22	49	130	25	12,7	9,4	25	9,4	F03 *	0,9
3/4"	101,6	114,3	108	51	57	64	24,5	53	130	25	19,05	15,75	27	15,8	F03 *	1,4
1"	114,3	127	120,5	57	63,5	79	31	68	165	50,5	25,4	22,1	27	22,1	F04	2,3
1 1/2"	139,7	152,4	146,5	70	76,5	109	44	86	200	50,5	38,1	34,8	27	34,8	F05	5,3
2"	165,1	177,8	171,5	82,5	89	134	53	97	200	64	50,8	47,5	28	47,5	F05	8,5

\* Flange adapter is required, against extra price. See IS M3H.25 E Options and extras.

### Tube weld easy and quick installation - standard



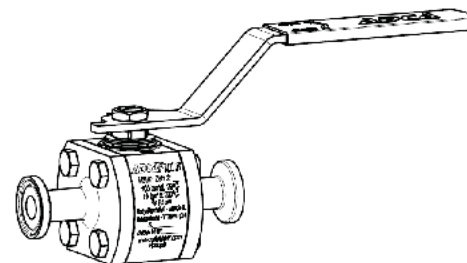
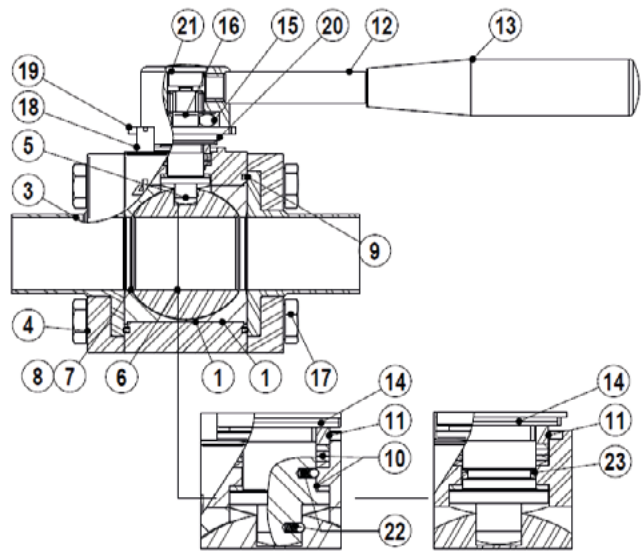
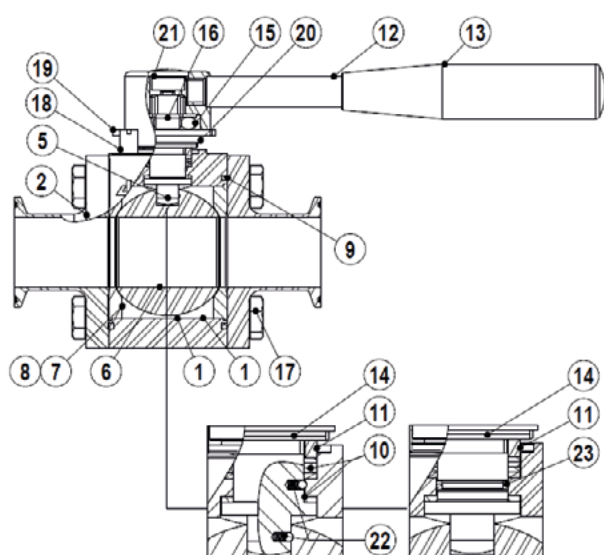
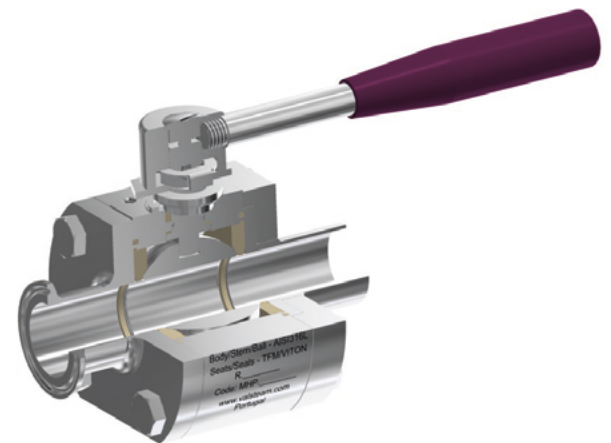
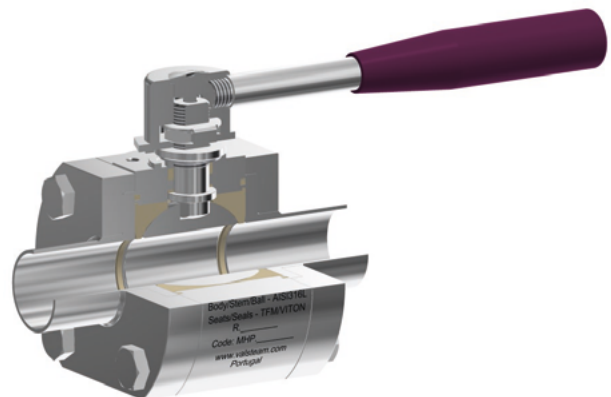
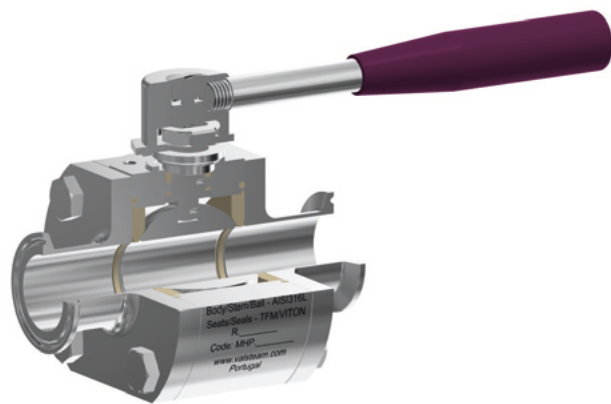
Loose body flanges make it possible to install the valve without the aligning of the welded end connections.  
After installation the valve can rotate 360° for the desired orientation.

MATERIALS		
POS. Nº	DESIGNATION	MATERIAL
1	Valve body	AISI 316L / 1.4404
2	TC end connection	AISI 316L / 1.4404
3	Tube weld end connection	AISI 316L / 1.4404
4	Flange	AISI 316L / 1.4404
5	Stem	AISI 316L / 1.4404
6	* Valve ball	AISI 316L / 1.4404
7	* Standard seat	TFM 1600
8	* Cavity filler seat	TFM 1600
9	* Body seal	PTFE
10	* Stem seals	TFM 1600
11	* Spacer	AISI 316 / 1.4401
12	Handle	AISI 304 / 1.4301
13	Handle end	Vinyl
13	Handle end (optional)	AISI 316L / 1.4404
14	* Spring washers	AISI 304 / 1.4301
15	Compression nut	AISI 304 / 1.4301
16	* Lock washer	AISI 304 / 1.4301
17	Fixing bolt	AISI 304 / 1.4301
18	Stop pin	AISI 304 / 1.4301
19	Handle stopper	AISI 304 / 1.4301
20	Washer	AISI 304 / 1.4301
21	Fixing screw	AISI 304 / 1.4301
22	Antistatic device	AISI 316 / 1.4401
23	O-ring	Viton

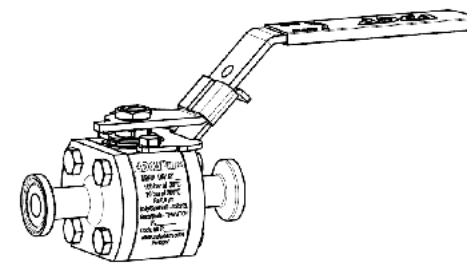
\* Available spare parts;

Remarks: FDA / USP Class VI seals certificate on request.

All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



Flat lever handle with plastic cover.



Flat lever handle with plastic cover and lockable system.

ORDERING CODES M3HP												
Valve model	MHP	X	X	X	F	X	X	CB	X	15		
M3HP 3 pieces ball valve - AISI 316L	MHP											
Lever handle												
Round lever handle stainless steel / plastic cover		X										
Round lever handle complete stainless steel		1										
Flat lever handle stainless steel / plastic cover		2										
Flat lever handle stainless steel / plastic cover w/ lockable system		3										
Bare stem		9										
Material												
AISI 316L / 1.4404			X									
Seat design												
Standard seats				X								
Cavity fillers					F							
Seat material												
TFM 1600					F							
Surface finish a)												
Standard surface finish						X						
Mirror mechanical polished external surfaces (SF1)							P					
Electropolished internal wetted parts (SF5)								E				
Special features												
None								X				
Oxygen cleaning									O			
Pipe connections												
TC – Sanitary clamps ASME BPE										CB		
ETO – Extended tube orbital welding ASME BPE (360° rotation design)											TB	
TC / ETO – Combination ASME BPE (360° rotation design)												CTB
Ball port												
True bore (standard)											X	
Full bore												NA
Size												
1/2"												15
3/4"												20
1"												25
1 1/2"												40
2"												50
Special valves / Extras												
Full description or additional codes have to be added in case of a non standard combination												E

a) Consult IS PV20.00 (Technical information) for further details and other surface finish options.

NA – Not available.



## HIGH PURITY BALL VALVES M3HP TRUE BORE (21/2" – 4" ASME BPE)

### DESCRIPTION

M3HP three piece body ball valves are isolating valves designed for use with clean steam, condensate and other gases and liquids used in high purity and aseptic processes.

The valve is not designed as a control valve and should only be used as an isolating valve, fully open or fully closed.

The product is mainly designed for the pharmaceutical, biotech, semiconductor, cosmetics, fine chemical, food and beverage industries.

### MAIN FEATURES

True bore floating ball design.

Completely made from solid bar stock material.

Can be serviced without removal from pipeline.

Bidirectional.

Antistatic device.

Anti blow out proof stem.

Tube weld with loose body flanges (360° rotation after installation).

ISO 5211 mounting.

### STANDARD SURFACE FINISH

Internal wetted parts: ≤ 0,51 micron Ra – SF1.

External : ≤ 0,76 micron Ra – SF3.

Other surface conditions see IS PV20.00 E – Technical information.

Ultrasonic cleaning.

**OPTIONS:** Different sealing materials.  
Degreased for oxygen use.  
Cavity filler.

**USE:** Clean steam, gases and liquids compatible with the construction.

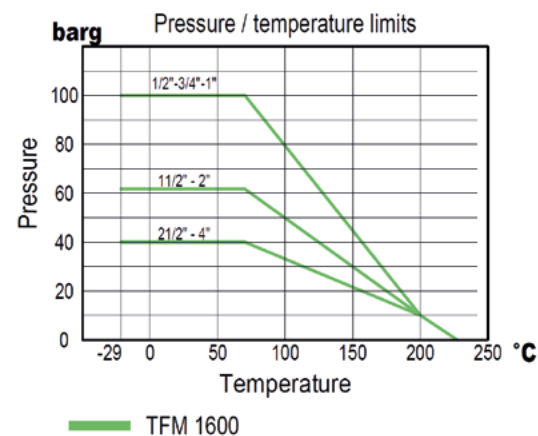
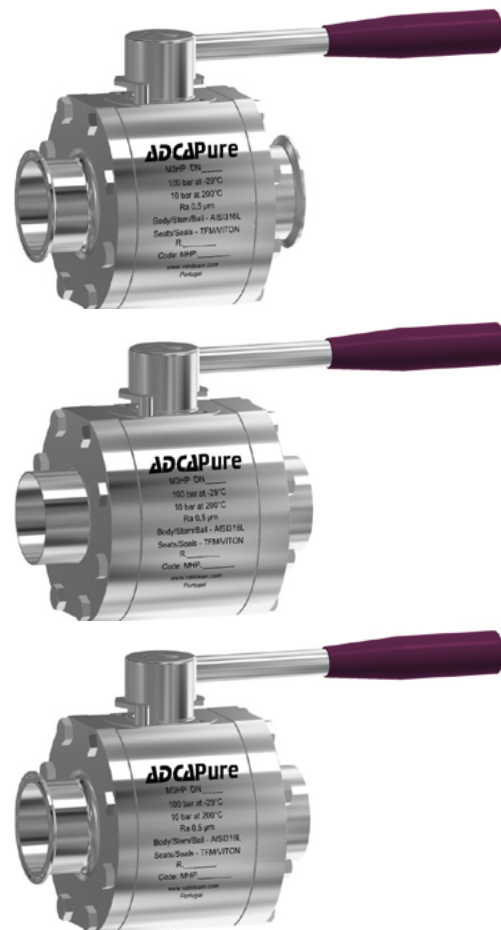
**AVAILABLE MODELS:** M3HP – Complete bar stock construction.

**SIZES:** 21/2" to 4".

**CONNECTIONS:** According to ASME BPE.  
TC – Sanitary clamps.  
ETO – Extended tube orbital welding.  
TC / ETO – Combination.

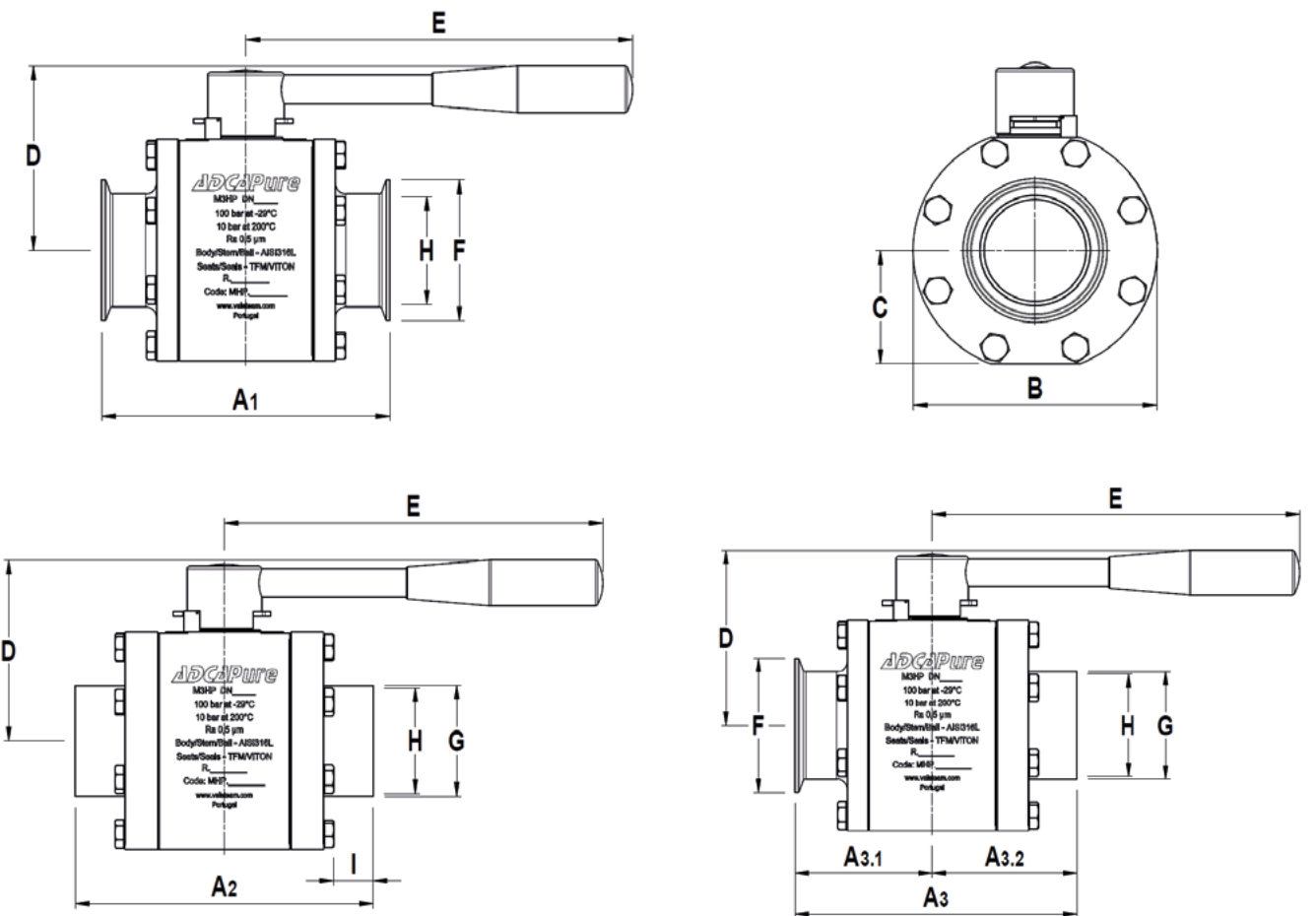
**PACKAGING:** Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

**INSTALLATION:** See IMI – Installation and maintenance instructions.



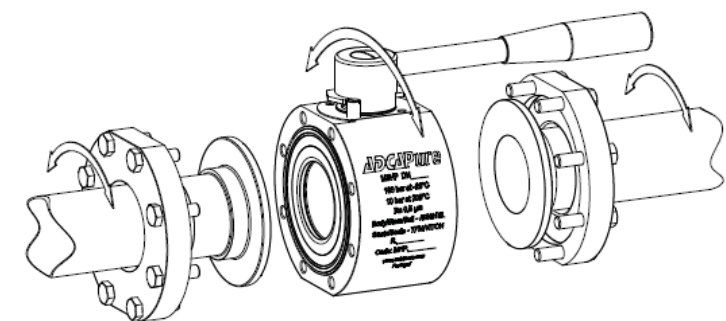
Note: Working pressure may be limited by the valve connections.

CE MARKING – GROUP 2 (PED – European Directive)	
PN40	Category
21/2" to 4"	1 (CE marked)



DIMENSIONS (mm) ASME BPE															
SIZE	A1	A2	A3	A3.1	A3.2	B	C	D	E	F	G	H	I	BALL PORT	ISO 5211
21/2"	190	203	196,3	95	101,5	160	72,5	130	250	77,5	63,5	60,2	29	60,2	F7
3"	216	228	222	108	114	180	83,5	140	290	91	76,2	72,9	30	72,9	F7
4"	254	267	260,5	127	133,5	220	101,5	158	290	119	101,6	97,4	36	97,4	F10

### Tube weld easy and quick installation - standard



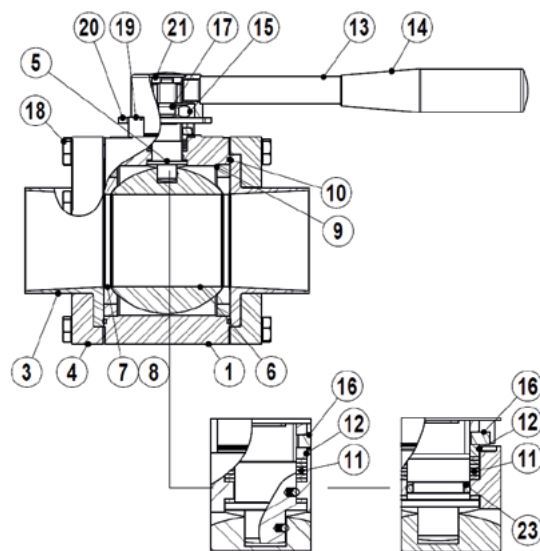
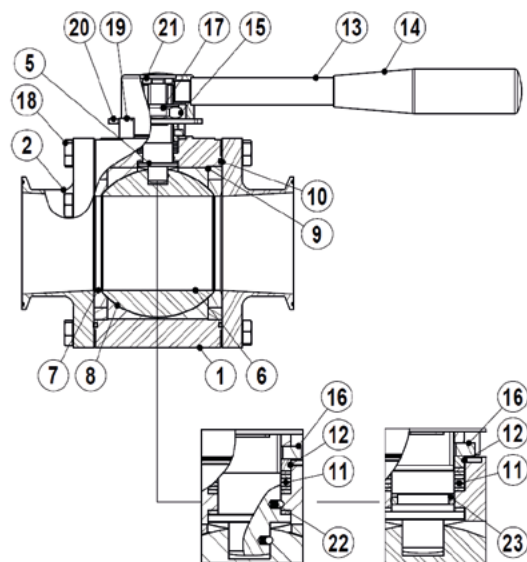
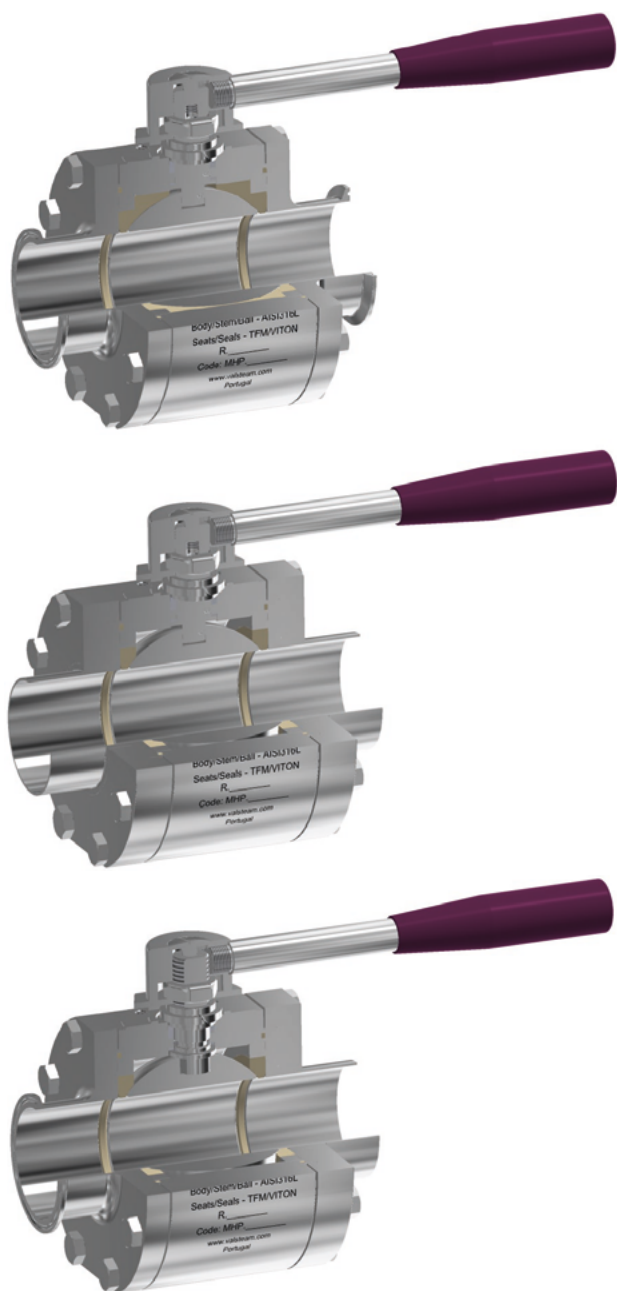
Loose body flanges make it possible to install the valve without aligning of the welded end connections.  
After installation the valve can rotate on 360° for the desired orientation.

MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Valve body	AISI 316L / 1.4404
2	TC end connection	AISI 316L / 1.4404
3	Tube weld end connection	AISI 316L / 1.4404
4	Flange	AISI 316L / 1.4404
5	Stem	AISI 316L / 1.4404
6	* Valve ball	AISI 316L / 1.4404
7	* Standard seat	TFM 1600
8	* Cavity filler seat	TFM 1600
9	Body ring	AISI 316L / 1.4404
10	* Body seal	PTFE
11	* Stem seals	TFM 1600
12	* Spacer	AISI 316 / 1.4401
13	Handle	AISI 304 / 1.4301
14	Handle end	Vinyl
14	Handle end (optional)	AISI 316L / 1.4404
15	Compression nut	AISI 304 / 1.4301
16	* Spring washers	AISI 304 / 1.4301
17	* Lock washer	AISI 304 / 1.4301
18	Fixing bolt	AISI 304 / 1.4301
19	Stop pin	AISI 304 / 1.4301
20	Handle stopper	AISI 304 / 1.4301
21	Fixing screw	AISI 304 / 1.4301
22	Antistatic device	AISI 316 / 1.4401
23	O-ring	Viton

\* Available spare parts;

Remarks: FDA / USP Class VI seals certificate on request.

All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



ORDERING CODES M3HP												
Valve model	MHP	X	X	X	F	X	X	CB	X	65		
M3HP 3 pieces ball valve - AISI 316L	MHP											
Lever handle												
Round lever handle stainless steel / plastic cover		X										
Round lever handle complete stainless steel		1										
Flat lever handle stainless steel / plastic cover		2										
Flat lever handle stainless steel / plastic cover w/ lockable system		3										
Bare stem		9										
Material												
AISI 316L / 1.4404		X										
Seat design												
Standard seats				X								
Cavity fillers				F								
Seat material												
TFM 1600					F							
Surface finish a)												
Standard surface finish						X						
Mirror mechanical polished external surfaces (SF1)						P						
Electropolished internal wetted parts (SF5)						E						
Special features												
None							X					
Oxygen cleaning							O					
Pipe connections												
TC – Sanitary clamps ASME BPE								CB				
ETO – Extended tube orbital welding ASME BPE (360° rotation design)								TB				
TC / ETO – Combination ASME BPE (360° rotation design)								CTB				
Ball port												
True bore (standard)									X			
Full bore									NA			
Size												
21/2"										65		
3"										80		
4"										100		
Special valves / Extras												
Full description or additional codes have to be added in case of a non standard combination												E

a) Consult IS PV20.00 (Technical information) for further details and other surface finish options.

NA – Not available.



## HIGH PURITY BALL VALVES M3HP TRUE BORE (6" ASME BPE)

### DESCRIPTION

M3HP three piece body ball valves are isolating valves designed for use with clean steam, condensate and other gases and liquids used in high purity and aseptic processes.

The valve is not designed as a control valve and should only be used as an isolating valve, fully open or fully closed.

The product is mainly designed for the pharmaceutical, biotech, semiconductor, cosmetics, fine chemical, food and beverage industries.

### MAIN FEATURES

True bore floating ball design.

Completely made from solid bar stock material.

Can be serviced without removal from pipeline.

Bidirectional.

Antistatic device.

Anti blow out proof stem.

Tube weld with loose body flanges (360° rotation after installation).

ISO 5211 mounting.

### STANDARD SURFACE FINISH

Internal wetted parts:  $\leq 0,51$  micron Ra – SF1.

External :  $\leq 0,76$  micron Ra – SF3.

Other surface conditions see IS PV20.00 E – Technical information.

Ultrasonic cleaning.

**OPTIONS:** Different sealing materials.  
Degreased for oxygen use.  
Cavity filler.

**USE:** Clean steam, gases and liquids compatible with the construction.

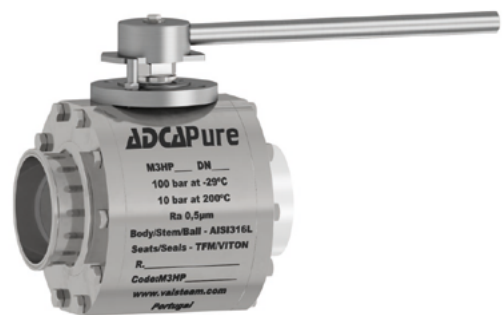
**AVAILABLE MODELS:** M3HP – Complete bar stock construction.

**SIZES:** 6".

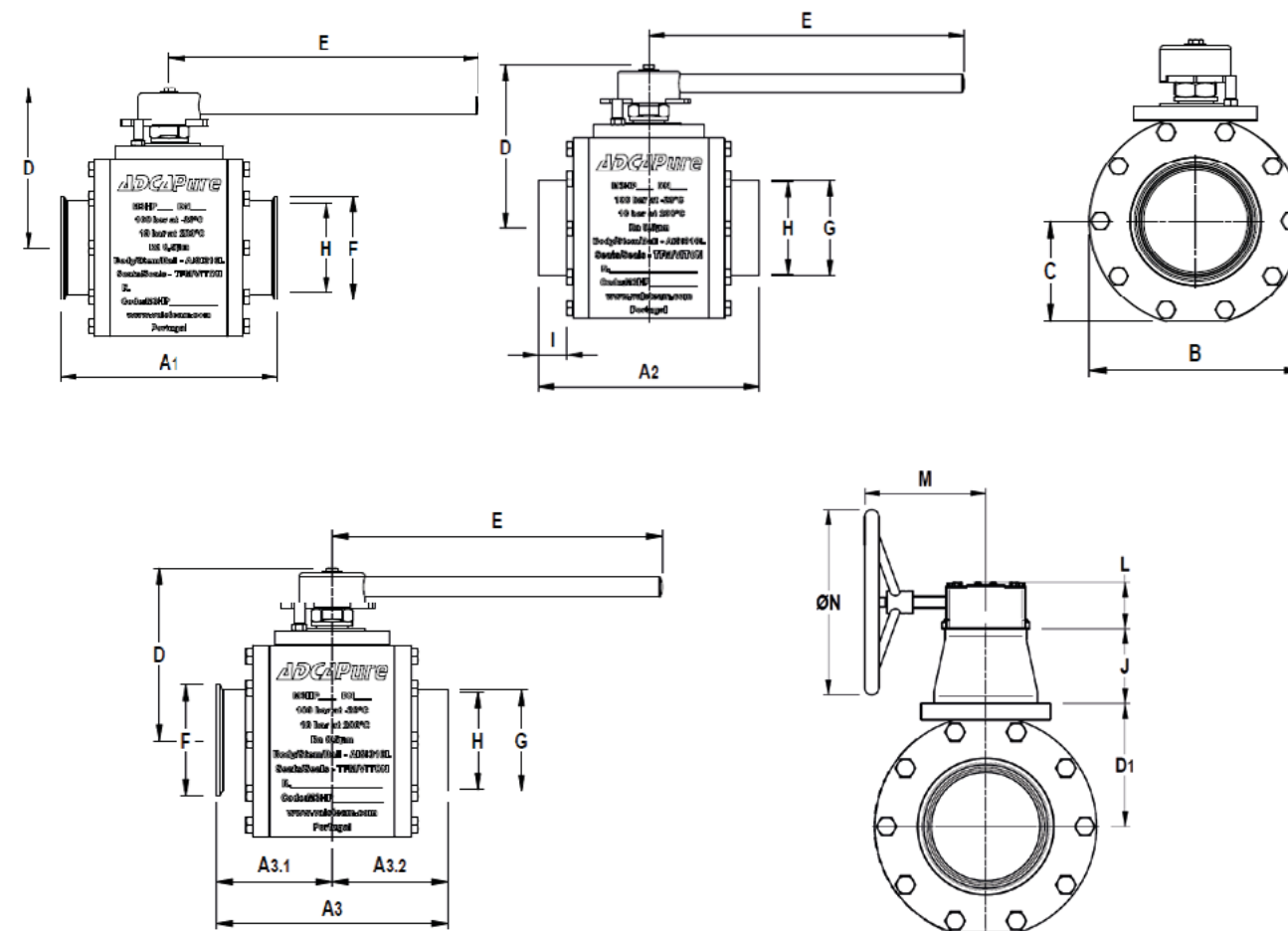
**CONNECTIONS:** According to ASME BPE.  
TC – Sanitary clamps.  
ETO – Extended tube orbital welding.  
TC / ETO – Combination.

**PACKAGING:** Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

**INSTALLATION:** See IMI – Installation and maintenance instructions.

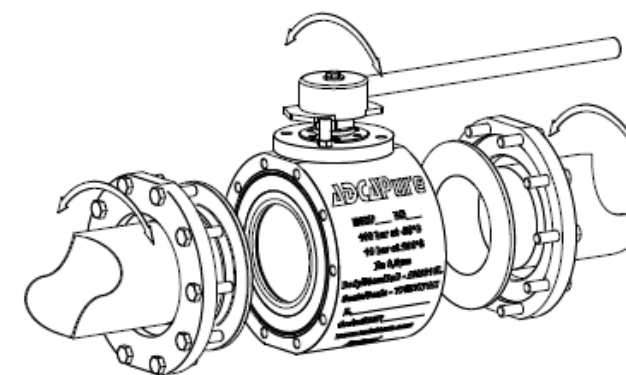


CE MARKING – GROUP 2 (PED – European Directive)	
PN16	Category
6"	1 (CE marked)



DIMENSIONS (mm) ASME BPE																					
SIZE	A1	A2	A3	A3.1	A3.2	B	C	D	D1	E	F	G	H	I	J	L	M	N	BALL PORT	ISO 5211	WGT. (kg)
6"	350	350	350	175	175	300	144	260	166	500	167	152	147	45	101	63	164	250	152,4	F14	101,6

Tube weld easy and quick installation - standard



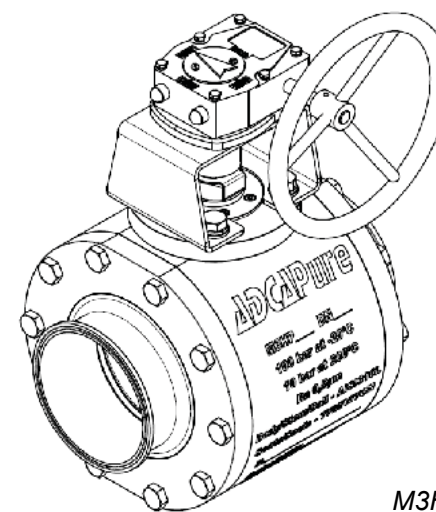
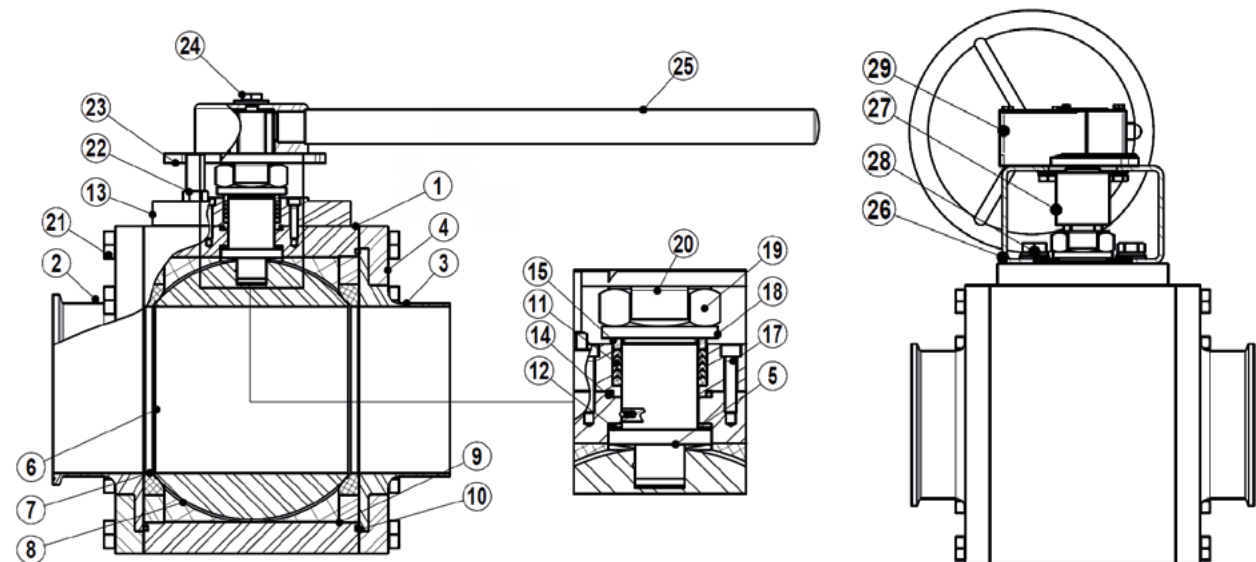
Loose body flanges make it possible to install the valve without aligning of the welded end connections.  
After installation the valve can rotate on 360° for the desired orientation.

MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Valve body	AISI 316L / 1.4404
2	TC end connection	AISI 316L / 1.4404
3	Tube weld end connection	AISI 316L / 1.4404
4	Flange	AISI 316L / 1.4404
5	Stem	AISI 316L / 1.4404
6	* Valve ball	AISI 316L / 1.4404
7	* Standard seat	TFM 1600
8	* Cavity filler seat	TFM 1600
9	Body ring	AISI 316L / 1.4404
10	* Body seal	PTFE
11	* Stem seals	TFM 1600
12	* Stem thrust seal	TFM 1600 + PEEK
13	ISO flange	AISI 316L / 1.4404
14	ISO flange seal	TFM 1600
15	* Spacer	AISI 316 / 1.4401
17	Bolts	AISI 304 / 1.4301
18	Spring washer	AISI 304 / 1.4301
19	Compression nut	AISI 304 / 1.4301
20	* Lock washer	AISI 304 / 1.4301
21	Fixing screw	AISI 304 / 1.4301
22	Handle stopper pin	AISI 304 / 1.4301
23	Handle stopper	AISI 304 / 1.4301
24	Handle fixing bolt	AISI 304 / 1.4301
25	Handle	AISI 304 / 1.4301
26	Bracket	AISI 304 / 1.4301
27	Bracket stem	AISI 304 / 1.4301
28	Bracket bolts	AISI 304 / 1.4301
29	Gear box	Cast iron

\* Available spare parts;

Remarks: FDA / USP Class VI seals certificate on request.

All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



M3HP 6" with gearbox

ORDERING CODES M3HP												
Valve model	MHP	1	X	X	F	X	X	CB	X	150		
M3HP 3 pieces ball valve - AISI 316L	MHP											
Lever handle												
Round lever handle complete stainless steel		1										
Bare stem		9										
Material												
AISI 316L / 1.4404			X									
Seat design												
Standard seats				X								
Cavity fillers					F							
Seat material												
TFM 1600					F							
Surface finish a)												
Standard surface finish						X						
Mirror mechanical polished external surfaces (SF1)							P					
Electropolished internal wetted parts (SF5)								E				
Special features												
None								X				
Oxygen cleaning									O			
End connections												
TC – Sanitary clamps ASME BPE									CB			
ETO – Extended tube orbital welding ASME BPE (360° rotation design)										TB		
TC / ETO – Combination ASME BPE (360° rotation design)										CTB		
Ball port												
True bore (standard)										X		
Full bore											NA	
Size												
6"											150	
Special valves / Extras												
Full description or additional codes have to be added in case of a non standard combination												E

a) Consult IS PV20.00 (Technical information) for further details and other surface finish options.

NA – Not available.



## HIGH PURITY BALL VALVES M3HP TRUE BORE (DN 10 – 50 DIN)

### DESCRIPTION

M3HP three piece body ball valves are isolating valves designed for use with clean steam, condensate and other gases and liquids used in high purity and aseptic processes.

The valve is not designed as a control valve and should only be used as an isolating valve, fully open or fully closed.

The product is mainly designed for the pharmaceutical, biotech, semiconductor, cosmetics, fine chemical, food and beverage industries.

### MAIN FEATURES

True bore floating ball design.

Completely made from solid bar stock material.

Can be serviced without removal from pipeline.

Bidirectional.

Antistatic device.

Anti blow out proof stem.

Tube weld with loose body flanges (360° rotation after installation).

ISO 5211 mounting (only sizes ≥ DN 20).

### STANDARD SURFACE FINISH

Internal wetted parts: ≤ 0,51 micron Ra – SF1.

External : ≤ 0,76 micron Ra – SF3.

Other surface conditions see IS PV20.00 E – Technical information.

Ultrasonic cleaning.

**OPTIONS:** Different sealing materials.  
DN 10 and DN 15 ISO mounting with adapter.  
Degreased for oxygen use.  
Cavity filler.

**USE:** Clean steam, gases and liquids compatible with the construction.

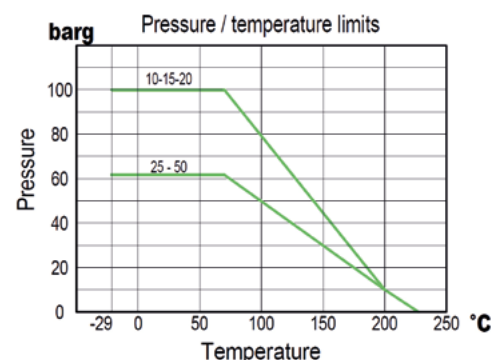
**AVAILABLE MODELS:** M3HP – Complete bar stock construction.

**SIZES:** DN 10 to DN 50.

**CONNECTIONS:** According to DIN 11850 tube.  
TC – Sanitary clamps DIN 32676.  
ETO – Extended tube orbital welding.  
TC / ETO – Combination.

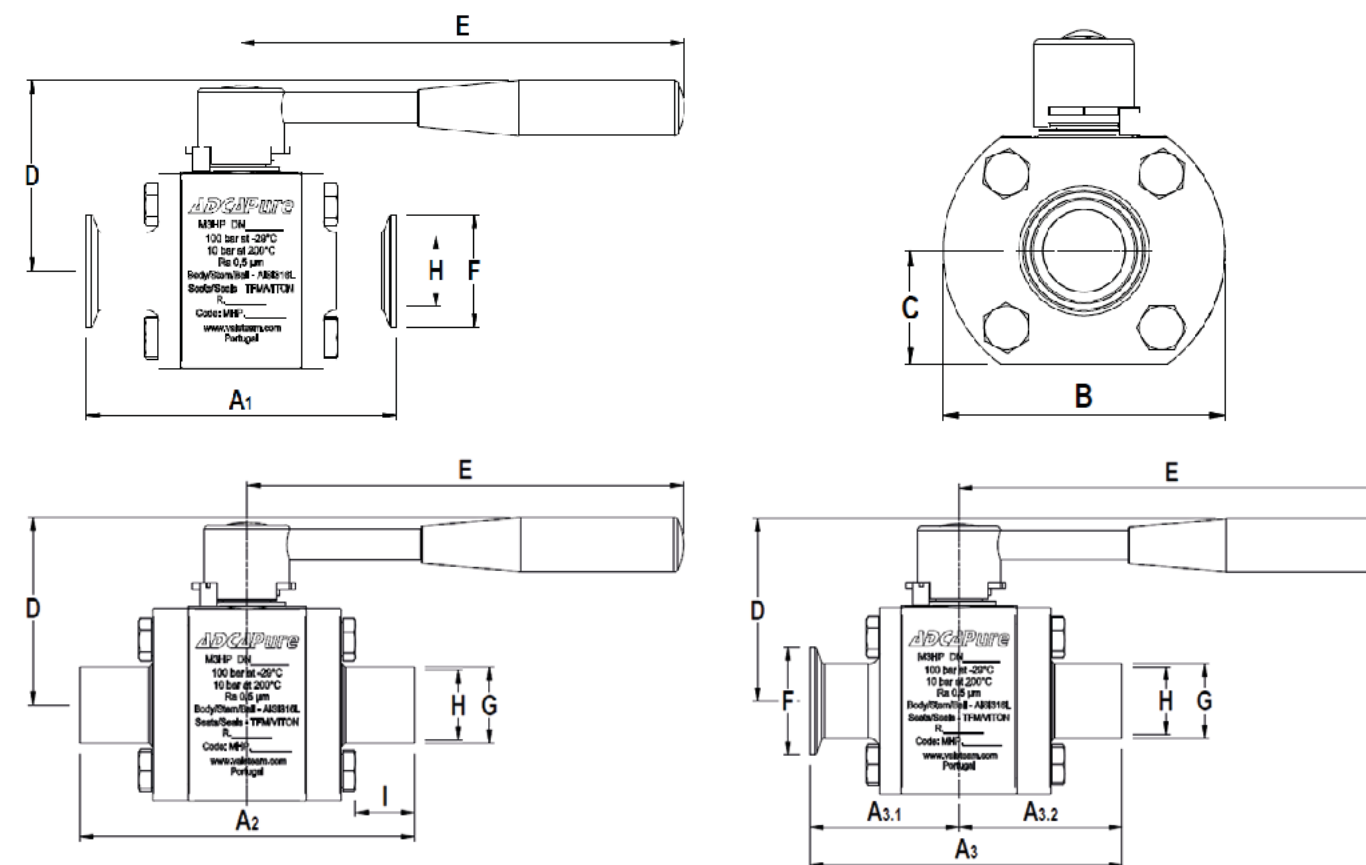
**PACKAGING:** Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

**INSTALLATION:** See IMI – Installation and maintenance instructions.



Note: Working pressure may be limited by the valve connections.

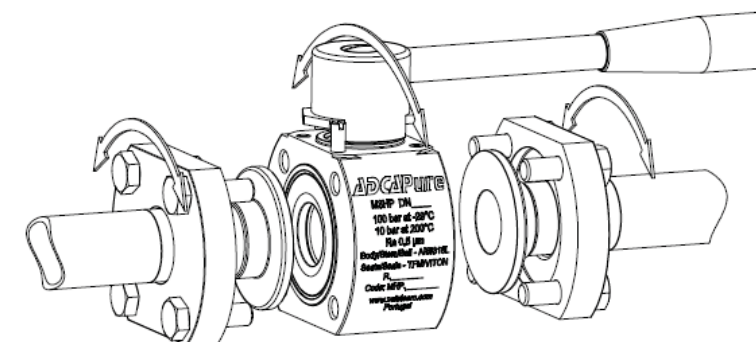
CE MARKING – GROUP 2 (PED – European Directive)		
PN63	PN100	Category
—	DN 10 to 20	SEP
DN 25 to 32	—	SEP
DN 40 to 50	—	1 (CE Marked)



DIMENSIONS (mm) DIN																
SIZE	A1	A2	A3	A3.1	A3.2	B	C	D	E	F	G	H	I	BALL PORT	ISO 5211	WG (kg)
DN 10	90	102	96	45	51	59	22	48	130	34	13	10	25	10	F03 *	0,8
DN 15	100	114	107	50	57	64	24,5	53	130	34	19	16	27	16	F03 *	1,1
DN 20	115	127	121,5	57,5	64	79	31	68	165	34	23	20	27	20	F04	2,2
DN 25	125	135	130,5	62,5	68	89	36	73	165	50,5	29	26	27	26	F04	2,9
DN 32	140	153	147	71	76	109	44	86	200	50,5	35	32	27	32	F05	5,1
DN 40	150	161	155	75	80	119	48	90	200	50,5	41	38	27	38	F05	6,3
DN 50	165	178	172	82	90	134	53	97	200	64	53	50	28	50	F05	8,4

\* Flange adapter is required, against extra price. See IS M3H.25 E Options and extras.

### Tube weld easy and quick installation - standard



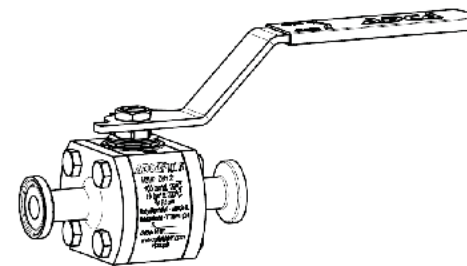
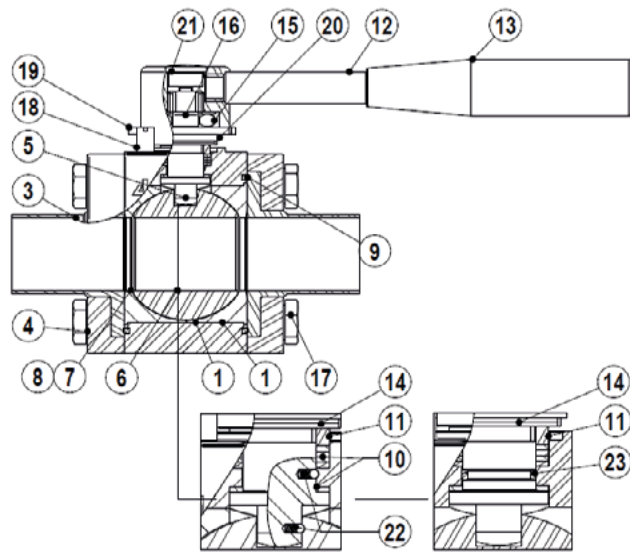
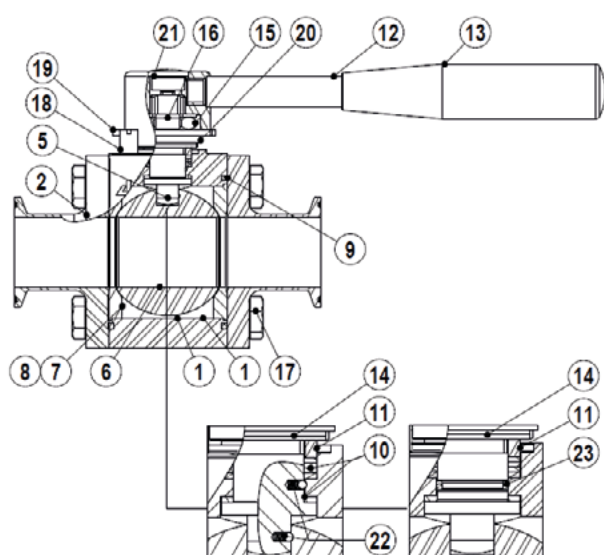
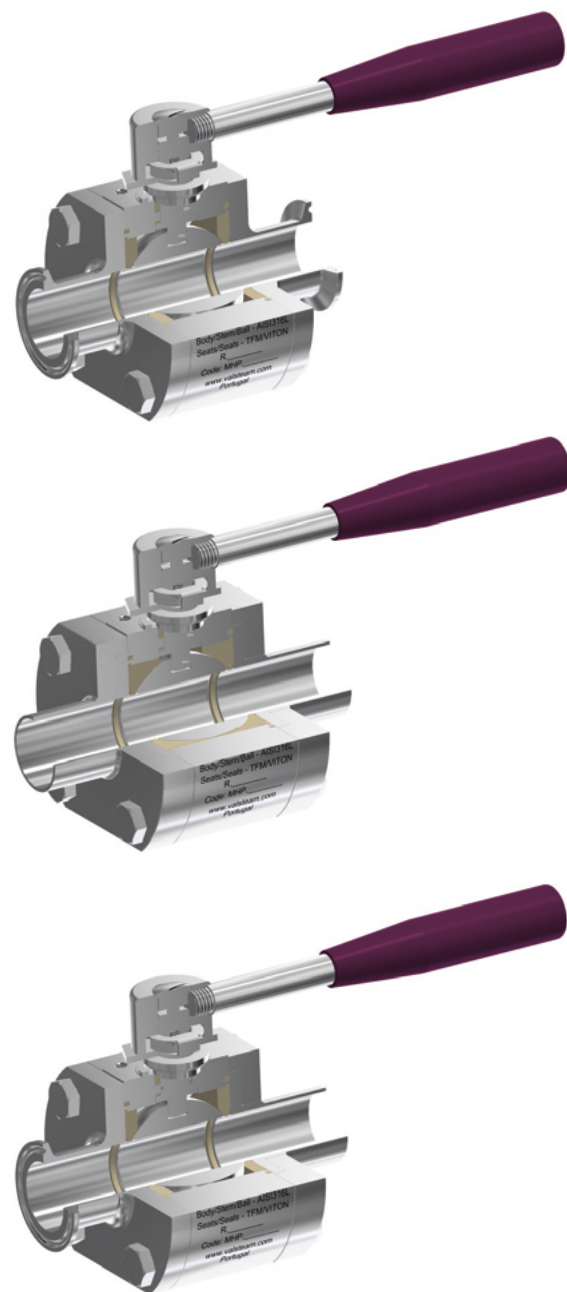
Loose body flanges make it possible to install the valve without the aligning of the welded end connections.  
After installation the valve can rotate 360° for the desired orientation.

MATERIALS		
POS. Nº	DESIGNATION	MATERIAL
1	Valve body	AISI 316L / 1.4404
2	TC end connection	AISI 316L / 1.4404
3	Tube weld end connection	AISI 316L / 1.4404
4	Flange	AISI 316L / 1.4404
5	Stem	AISI 316L / 1.4404
6	* Valve ball	AISI 316L / 1.4404
7	* Standard seat	TFM 1600
8	* Cavity filler seat	TFM 1600
9	* Body seal	PTFE
10	* Stem seals	TFM 1600
11	* Spacer	AISI 316 / 1.4401
12	Handle	AISI 304 / 1.4301
13	Handle end	Vinyl
14	* Spring washers	AISI 304 / 1.4301
15	Compression nut	AISI 304 / 1.4301
16	* Lock washer	AISI 304 / 1.4301
17	Fixing bolt	AISI 304 / 1.4301
18	Stop pin	AISI 304 / 1.4301
19	Handle stopper	AISI 304 / 1.4301
20	Washer	AISI 304 / 1.4301
21	Fixing screw	AISI 304 / 1.4301
22	Antistatic device	AISI 316 / 1.4401
23	O-ring	Viton

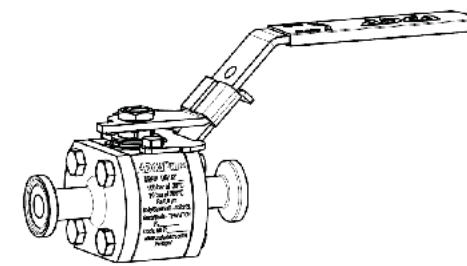
\* Available spare parts;

Remarks: FDA / USP Class VI seals certificate on request.

All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



Flat lever handle with plastic cover.



Flat lever handle with plastic cover and lockable system.

ORDERING CODES M3HP													
Valve model	MHP	X	X	X	F	X	X	CD	X	15			
M3HP 3 pieces ball valve - AISI 316L	MHP												
Lever handle													
Round lever handle stainless steel / plastic cover		X											
Round lever handle complete stainless steel		1											
Flat lever handle stainless steel / plastic cover		2											
Flat lever handle stainless steel / plastic cover w/ lockable system		3											
Bare stem		9											
Material													
AISI 316L / 1.4404			X										
Seat design													
Standard seats					X								
Cavity fillers					F								
Seat material													
TFM 1600					F								
Surface finish a)													
Standard surface finish						X							
Mirror mechanical polished external surfaces (SF1)						P							
Electropolished internal wetted parts (SF5)						E							
Special features													
None							X						
Oxygen cleaning							O						
End connections													
TC – Sanitary clamps DIN 32676								CD					
ETO – Extended tube orbital welding DIN 11850 (360° rotation)								TD					
TC / ETO – Combination DIN (360° rotation)								CTD					
Ball port													
True bore (standard)									X				
Full bore									NA				
Size													
DN 10											10		
DN 15											15		
DN 20											20		
DN 25											25		
DN 32											32		
DN 40											40		
DN 50											50		
Special valves / Extras													
Full description or additional codes have to be added in case of a non standard combination												E	

a) Consult IS PV20.00 (Technical information) for further details and other surface finish options.

NA – Not available.



## HIGH PURITY BALL VALVES M3HP FULL BORE (DN 65 – 100 DIN)

### DESCRIPTION

M3HP three piece body ball valves are isolating valves designed for use with clean steam, condensate and other gases and liquids used in high purity and aseptic processes.

The valve is not designed as a control valve and should only be used as an isolating valve, fully open or fully closed.

The product is mainly designed for the pharmaceutical, biotech, semiconductor, cosmetics, fine chemical, food and beverage industries.

### MAIN FEATURES

Full bore floating ball design.

Completely made from solid bar stock material.

Can be serviced without removal from pipeline.

Bidirectional.

Antistatic device.

Anti blow out proof stem.

Tube weld with loose body flanges (360° rotation after installation).

ISO 5211 mounting.

### STANDARD SURFACE FINISH

Internal wetted parts: ≤ 0,51 micron Ra – SF1.

External : ≤ 0,76 micron Ra – SF3.

Other surface conditions see IS PV20.00 E – Technical information.

Ultrasonic cleaning.

**OPTIONS:** Different sealing materials.  
Degreased for oxygen use.  
Cavity filler.

**USE:** Clean steam, gases and liquids compatible with the construction.

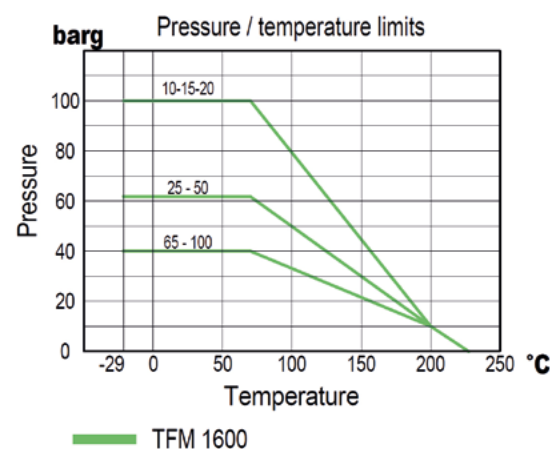
**AVAILABLE MODELS:** M3HP – Complete bar stock construction.

**SIZES:** DN 65 to DN 100.

**CONNECTIONS:** According to DIN 11850 tube.  
TC – Sanitary clamps DIN 32676.  
ETO – Extended tube orbital welding.  
TC / ETO – Combination.

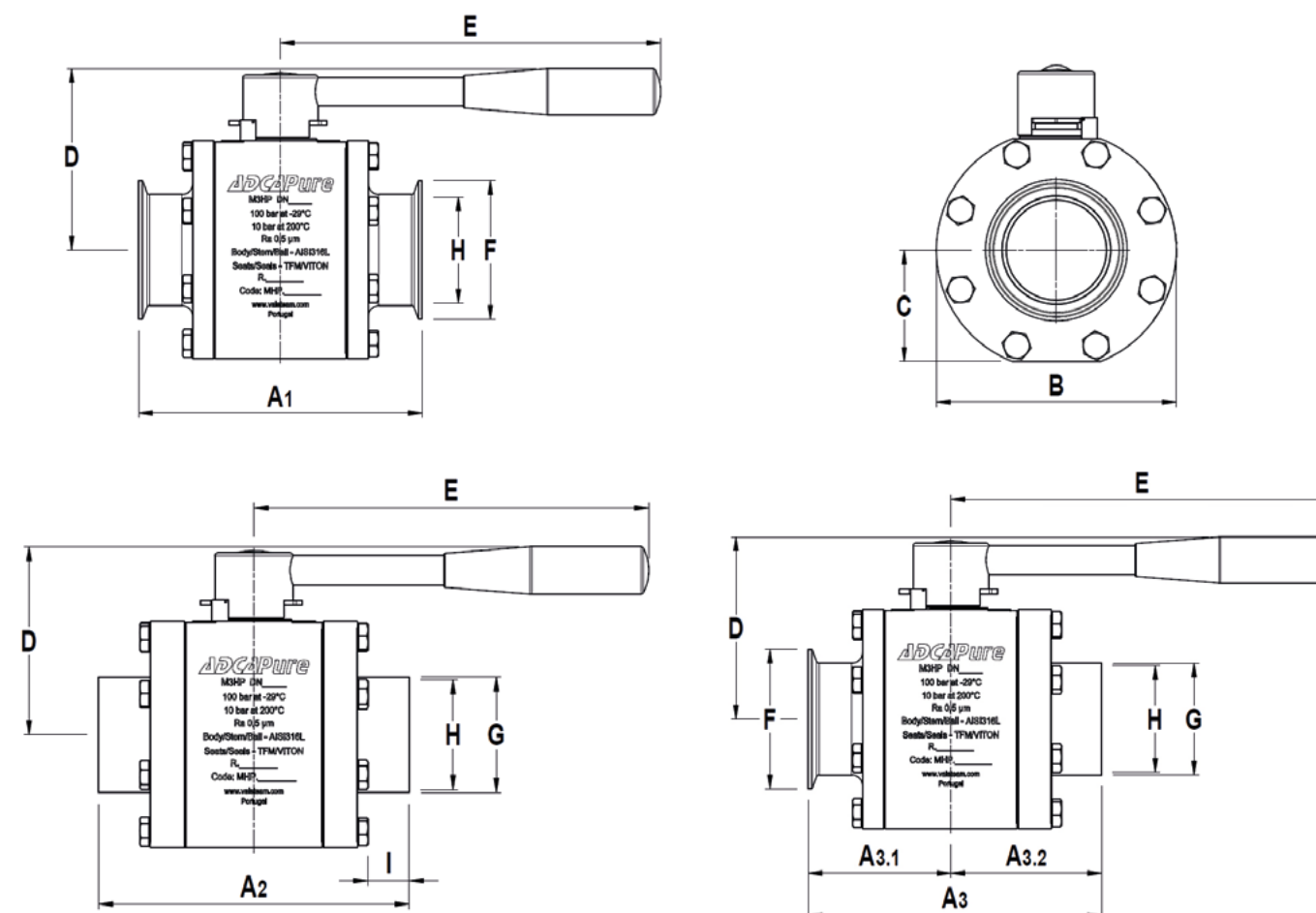
**PACKAGING:** Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

**INSTALLATION:** See IMI – Installation and maintenance instructions.



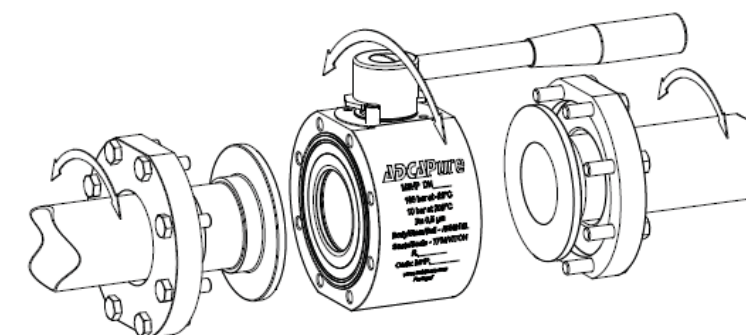
Note: Working pressure may be limited by the valve connections.

CE MARKING – GROUP 2 (PED – European Directive)	
PN40	Category
DN 65 to DN 100	1 (CE marked)



DIMENSIONS (mm) DIN																
SIZE	A1	A2	A3	A3.1	A3.2	B	C	D	E	F	G	H	I	BALL PORT	ISO 5211	WGT. (kg)
65	190	203	197	95	102	160	72,5	130	250	91	70	66	29	62	F7	15,4
80	216	228	222	108	114	180	83,5	140	290	106	85	81	30	75	F7	22,1
100	255	267	261,5	127,5	134	220	101,5	158	290	119	104	100	36	98	F10	36,4

### Tube weld easy and quick installation - standard



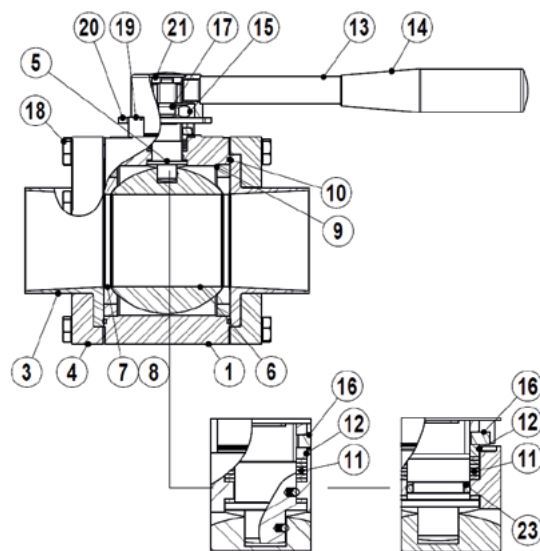
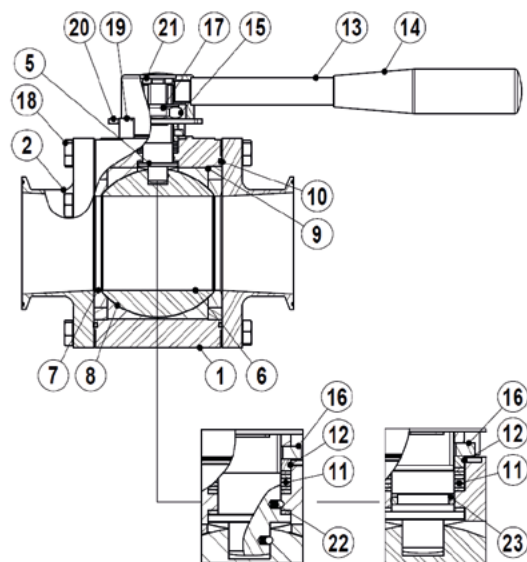
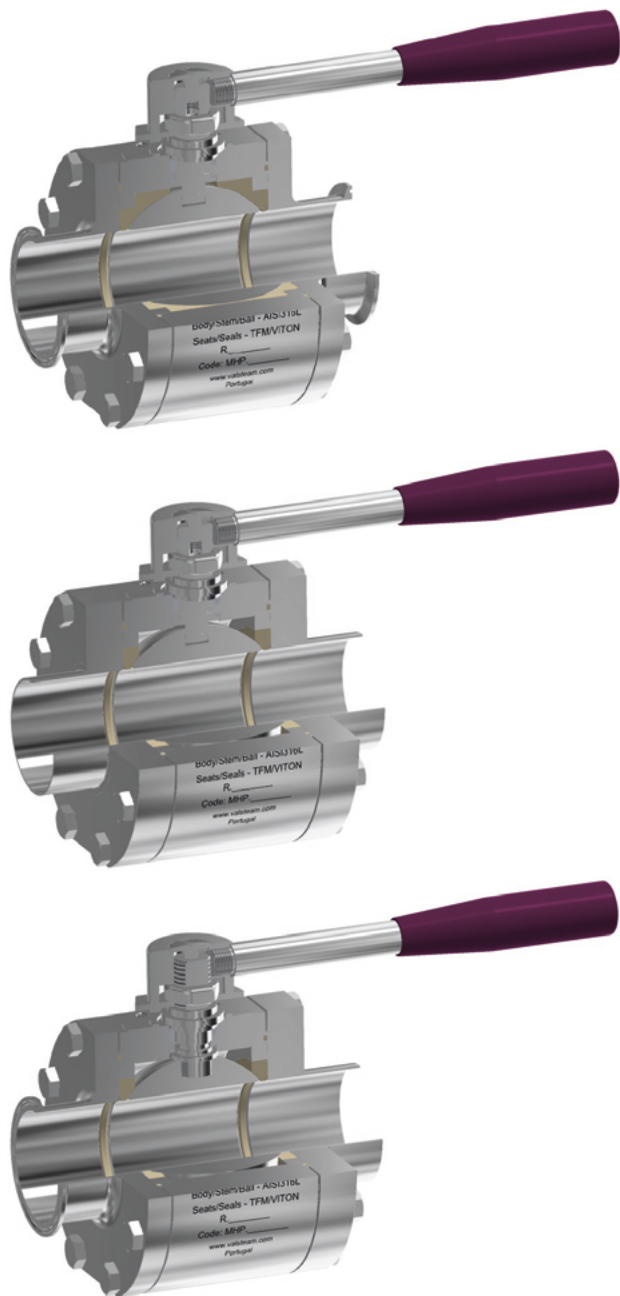
Loose body flanges make it possible to install the valve without aligning of the welded end connections.  
After installation the valve can rotate on 360° for the desired orientation.

MATERIALS		
POS. Nº	DESIGNATION	MATERIAL
1	Valve body	AISI 316L / 1.4404
2	TC end connection	AISI 316L / 1.4404
3	Tube weld end conn.	AISI 316L / 1.4404
4	Flange	AISI 316L / 1.4404
5	Stem	AISI 316L / 1.4404
6	* Valve ball	AISI 316L / 1.4404
7	* Standard seat	TFM 1600
8	* Cavity filler seat	TFM 1600
9	Body ring	AISI 316L / 1.4404
10	* Body seal	PTFE
11	* Stem seals	TFM 1600
12	* Spacer	AISI 316 / 1.4401
13	Handle	AISI 304 / 1.4301
14	Handle end	Vinyl
14	Handle end (optional)	AISI 316L / 1.4404
15	Compression nut	AISI 304 / 1.4301
16	* Spring washers	AISI 304 / 1.4301
17	* Lock washer	AISI 304 / 1.4301
18	Fixing bolt	AISI 304 / 1.4301
19	Stop pin	AISI 304 / 1.4301
20	Handle stopper	AISI 304 / 1.4301
21	Fixing screw	AISI 304 / 1.4301
22	Antistatic device	AISI 316 / 1.4401
23	O-ring	Viton

\* Available spare parts;

Remarks: FDA / USP Class VI seals certificate on request.

All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



ORDERING CODES M3HP													
Valve model	MHP	X	X	X	F	X	X	CD	X	65			
M3HP 3 pieces ball valve - AISI 316L	MHP												
Lever handle													
Round lever handle stainless steel / plastic cover		X											
Round lever handle complete stainless steel		1											
Flat lever handle stainless steel / plastic cover		2											
Flat lever handle stainless steel / plastic cover w/ lockable system		3											
Bare stem		9											
Material													
AISI 316L / 1.4404			X										
Seat design													
Standard seats				X									
Cavity fillers					F								
Seat material													
TFM 1600					F								
Surface finish a)													
Standard surface finish						X							
Mirror mechanical polished external surfaces (SF1)							P						
Electropolished internal wetted parts (SF5)								E					
Special features													
None								X					
Oxygen cleaning									O				
End connections													
TC – Sanitary clamps DIN 32676										CD			
ETO – Extended tube orbital welding DIN 11850 (360° rotation)											TD		
TC / ETO – Combination DIN (360° rotation)												CTD	
Ball port													
Full bore (standard)											X		
True bore												NA	
Size													
DN 65													65
DN 80													80
DN 100													100
Special valves / Extras													
Full description or additional codes have to be added in case of a non standard combination													E

a) Consult IS PV20.00 (Technical information) for further details and other surface finish options.

NA – Not available.

## HYGIENIC BALL VALVES M3H TRUE BORE (1/2" – 2" ASME BPE)

### DESCRIPTION

M3H three pieces body ball valves are isolating valves designed for use with clean steam, condensate and other gases and liquids used in high purity and aseptic processes.

The valve is not designed as a control valve and should only be used as an isolating valve, fully open or fully closed.

The product is mainly designed for the pharmaceutical, biotech, semiconductor, cosmetics, fine chemical, food and beverage industries.

### MAIN FEATURES

True bore floating ball design.

A351 CF3M body and ends with ferrite content of less than 2% and low sulphur between 0,005 and 0,017%.

Can be serviced without removal from pipeline.

Tube weld with loose body flanges (360° rotation after installation).

Bidirectional.

Antistatic device.

Anti blow out proof stem.

ISO 5211 mounting.

### STANDARD SURFACE FINISH

Internal wetted parts: ≤ 0,51 micron Ra – SF1.

External: as casted.

Ultrasonic cleaning.

**OPTIONS:** Different sealing materials.  
Degreased for oxygen use.  
Cavity filler.

**USE:** Clean steam, gases and liquids compatible with the construction.

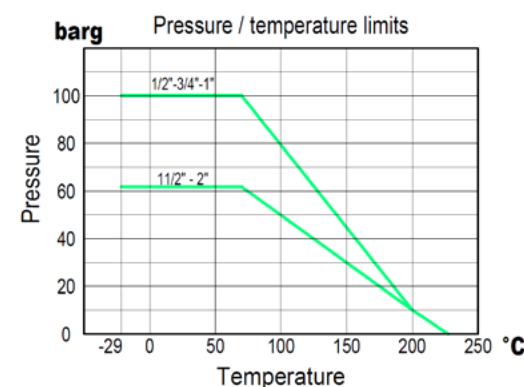
**AVAILABLE MODELS:** M3H – Investment casting.

**SIZES:** 1/2" to 2".

**CONNECTIONS:** According to ASME BPE.  
TC – Sanitary clamps.  
ETO – Extended tube orbital welding.  
TC / ETO – Combination.

**PACKAGING:** Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film to avoid contamination.

**INSTALLATION:** See IMI - Installation and maintenance instructions.

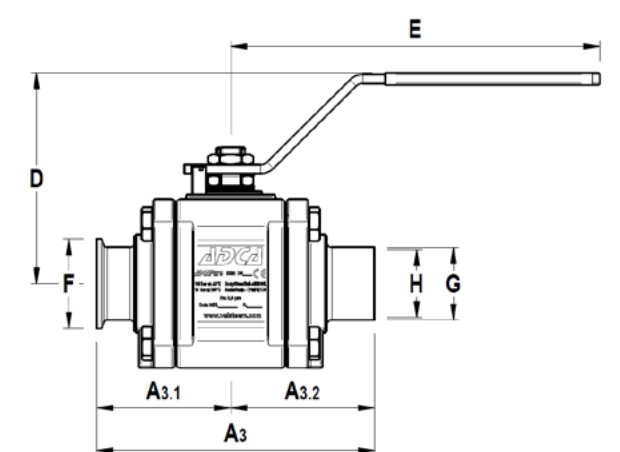
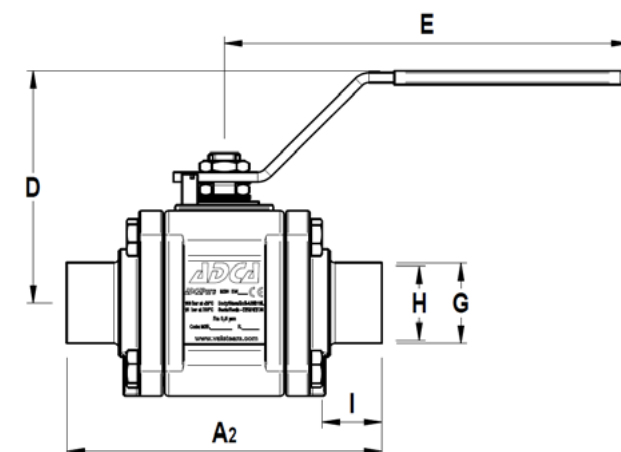
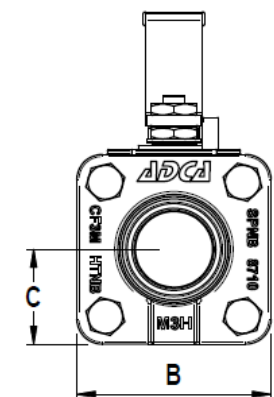
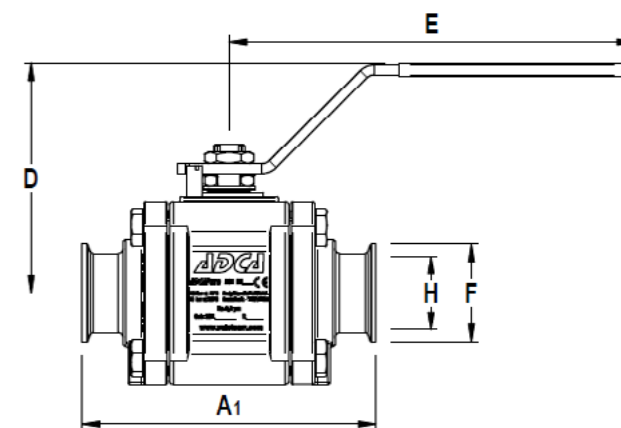


Note: Working pressure may be limited by the valve connections.

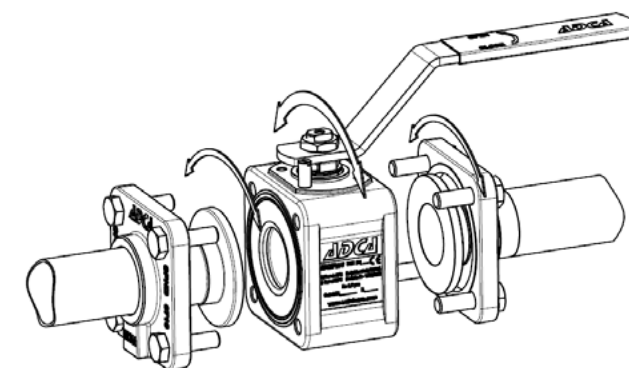
CE MARKING – GROUP 2 (PED – European Directive)		
PN63	PN100	Category
—	1/2" to 1"	SEP
1 1/2" to 2"	—	1 (CE marked)

### DIMENSIONS (mm) ASME BPE

SIZE	A1	A2	A3	A3.1	A3.2	B	C	D	E	F	G	H	I	BALL PORT	ISO 5211	WGT. (kg)
1/2"	88,9	101,6	95,5	44	51,5	42	21	65	150	25	12,7	9,4	25	9,4	F03	0,42
3/4"	101,6	114,3	108	51	57	50	25	69	150	25	19,05	15,75	27	15,8	F03	0,99
1"	114,3	127	120,5	57	63,5	62	31	87	175	50,5	25,4	22,1	27	22,1	F04	2,1
1 1/2"	139,7	152,4	146,5	70	76,5	85	42,5	114	207	50,5	38,1	34,8	27	34,8	F05	4,3
2"	165,1	177,8	171,5	82,5	89	105	52,5	124	232	64	50,8	47,5	28	47,5	F05	7,3



Tube weld easy and quick installation - standard



Loose body flanges make it possible to install the valve without the aligning of welded end connections.

After installation the valve can rotate 360° for the desired orientation.



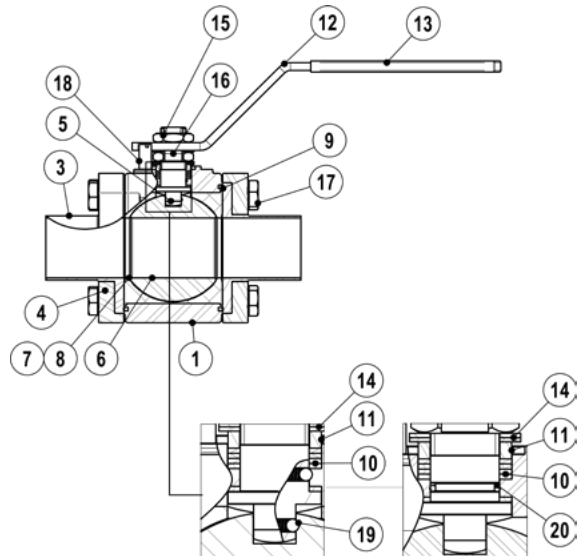
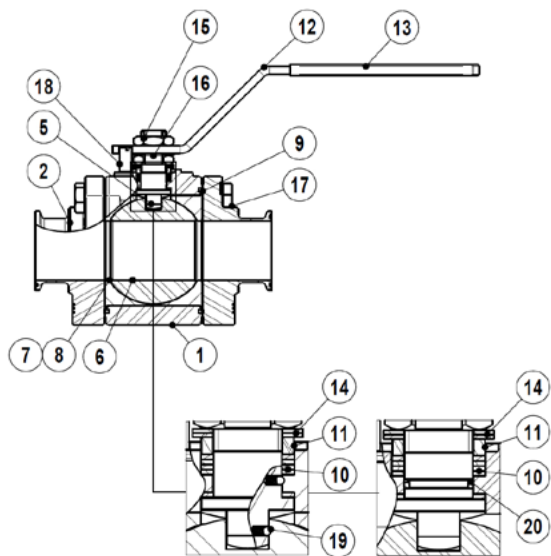
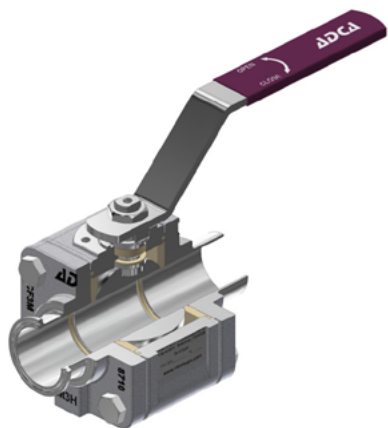
MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Valve body	CF3M / 1.4409
2	TC end connection	CF3M / 1.4409
3	Tube weld end connection	AISI 316L / 1.4404
4	** Flange	CF3M / 1.4409
5	Stem	AISI 316L / 1.4404
6	* Valve ball	AISI 316L / 1.4404
7	* Standard seat	TFM 1600
8	* Cavity filler seat	TFM 1600
9	* Body seal	PTFE
10	* Stem seals	TFM 1600
11	* Spacer	AISI 316 / 1.4401
12	Handle	AISI 304 / 1.4301
13	Handle end	Vinyl
14	* Spring washers	AISI 304 / 1.4301
15	Compression nut	AISI 304 / 1.4301
16	* Lock washer	AISI 304 / 1.4301
17	Fixing bolt	AISI 304 / 1.4301
18	Stop pin	AISI 304 / 1.4301
19	Antistatic device	AISI 316 / 1.4401
20	O-ring	Viton

\* Available spare parts;

\*\* Loose flange, allows a 360° rotation of the valve when using tube weld connections.

Remarks: FDA / USP Class VI seals certificate on request.

All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



ORDERING CODES M3H												
Valve model	MH	X	X	X	F	X	X	CB	X	15		
M3H 3 pieces ball valve CF3M	MH											
Lever handle												
Flat lever handle stainless steel / plastic cover		X										
Flat lever handle stainless steel / plastic cover w/ lockable system		3										
Bare stem		9										
Material												
CF3M / 1.4409		X										
Seat design												
Standard seats			X									
Cavity fillers			F									
Seat material												
TFM 1600				F								
Surface finish (a)												
Standard surface finish					X							
Electropolished internal wetted parts (SF5)					E							
Special features												
None						X						
Oxygen cleaning						O						
End connections												
TC – Sanitary clamps ASME BPE								CB				
ETO – Extended tube orbital welding ASME BPE (360° rotation design)								TB				
TC / ETO – Combination ASME BPE (360° rotation design)								CTB				
Ball port												
True bore (standard)									X			
Full bore									NA			
Size												
1/2"										15		
3/4"										20		
1"										25		
1 1/2"										40		
2"										50		
Special valves / Extras												
Full description or additional codes have to be added in case of a non standard combination												E

(a) Consult IS PV20.00 (Technical information) for further details and other surface finish options.

NA – Not available.



## HYGIENIC BALL VALVES M3H TRUE BORE (21/2" – 4" ASME BPE)

### DESCRIPTION

M3H three piece body ball valves are isolating valves designed for use with clean steam, condensate and other gases and liquids used in high purity and aseptic processes.

The valve is not designed as a control valve and should only be used as an isolating valve, fully open or fully closed.

The product is mainly designed for the pharmaceutical, biotech, semiconductor, cosmetics, fine chemical, food and beverage industries.

### MAIN FEATURES

True bore floating ball design.

A351 CF3M body and ends with ferrite content of less than 2% and low sulphur between 0,005 and 0,017%.

Can be serviced without removal from pipeline.

Tube weld with loose body flanges (360° rotation after installation).

Bidirectional.

Antistatic device.

Anti blow out proof stem.

ISO 5211 mounting.

### STANDARD SURFACE FINISH

Internal wetted parts:  $\leq 0,51$  micron Ra – SF1.

External: as casted.

Ultrasonic cleaning.

**OPTIONS:** Different sealing materials.  
Degreased for oxygen use.  
Cavity filler.

**USE:** Clean steam, gases and liquids compatible with the construction.

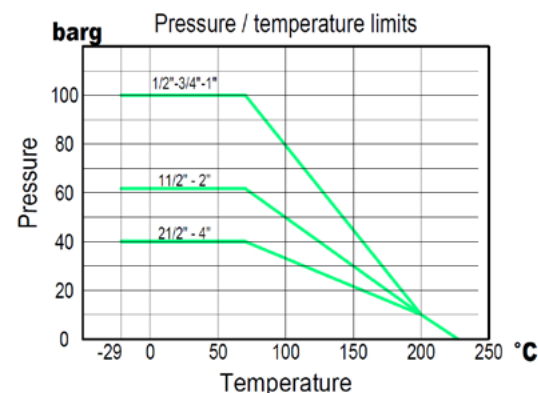
**AVAILABLE MODELS:** M3H – Investment casting.

**SIZES:** 21/2" to 4".

**CONNECTIONS:** According to ASME BPE.  
TC – Sanitary clamps.  
ETO – Extended tube orbital welding.  
TC / ETO – Combination.

**PACKAGING:** Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

**INSTALLATION:** See IMI - Installation and maintenance instructions.



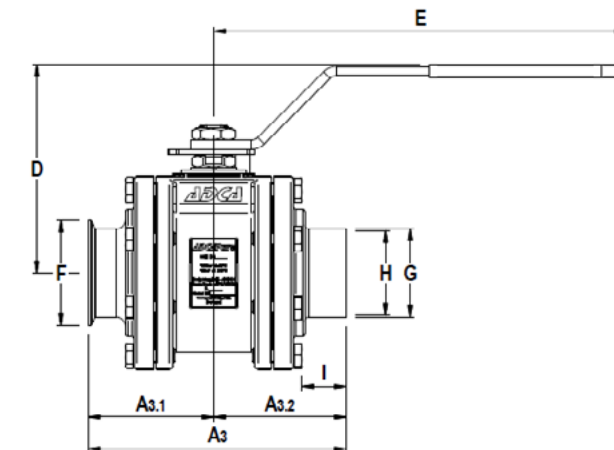
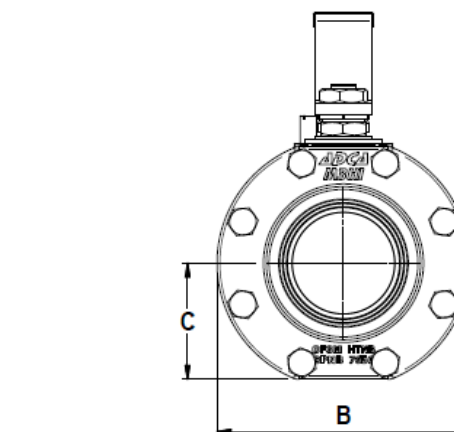
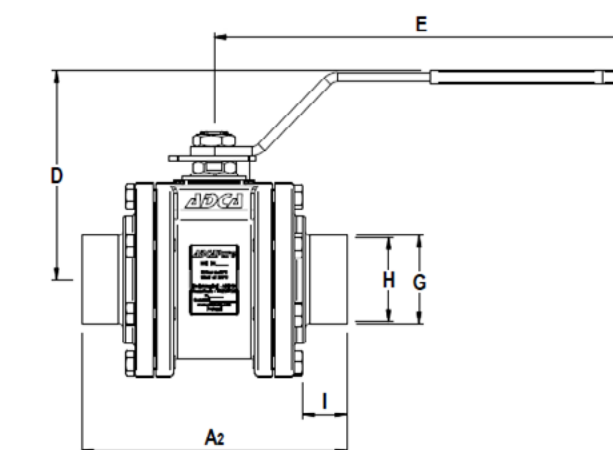
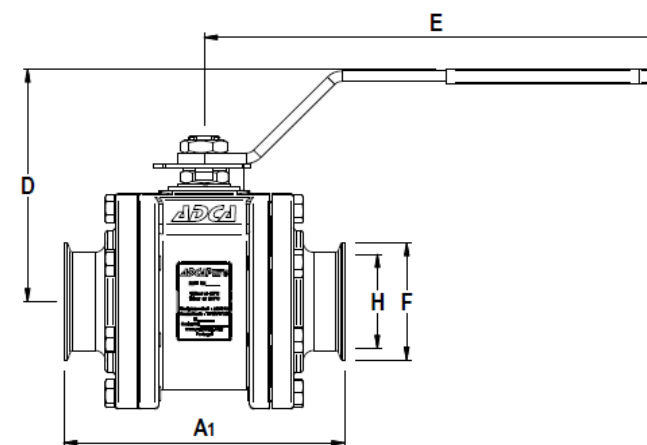
TFM 1600

Note: Working pressure may be limited by the valve connections.

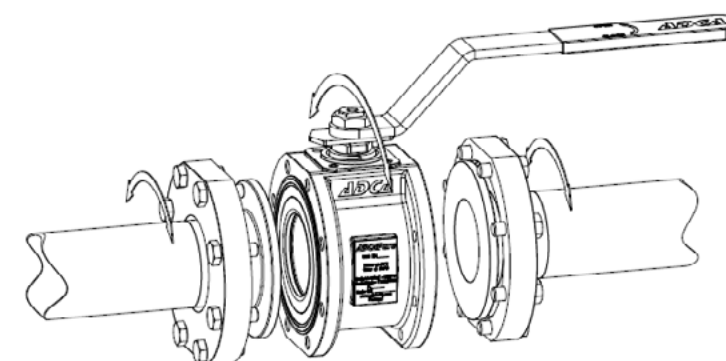
CE MARKING – GROUP 2 (PED – European Directive)	
PN40	Category
21/2" to 4"	1 (CE marked)

### DIMENSIONS (mm) ASME BPE

SIZE	A1	A2	A3	A3.1	A3.2	B	C	D	E	F	G	H	I	BALL PORT	ISO 5211	WGT. (kg)
21/2"	190	203	196,3	95	101,5	160	72,5	169	400	77,5	63,5	60,2	37	60,2	F7	13,3
3"	216	228	222	108	111	180	83,5	180	400	91	76,2	72,9	38	72,9	F7	18,6
4"	254	267	260,5	127	133,5	220	101,5	198	400	119	101,6	97,4	44	97,4	F10	29,6



Tube weld easy and quick installation - standard



Loose body flanges make it possible to install the valve without aligning of the welded end connections.

After installation the valve can rotate on 360° for the desired orientation.

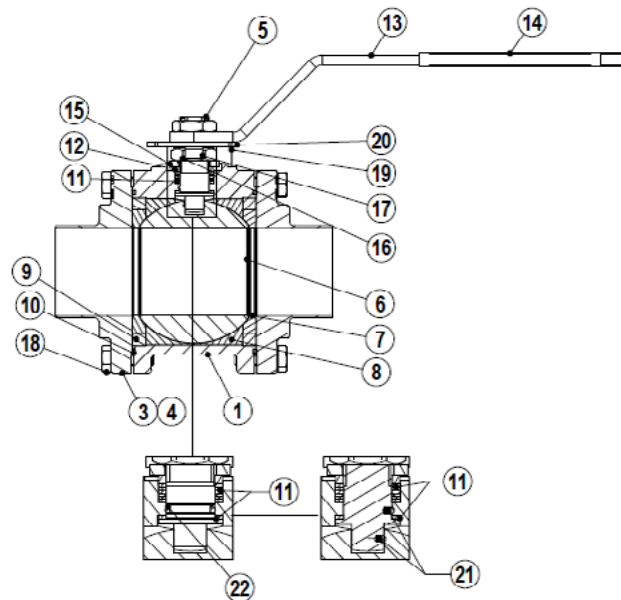
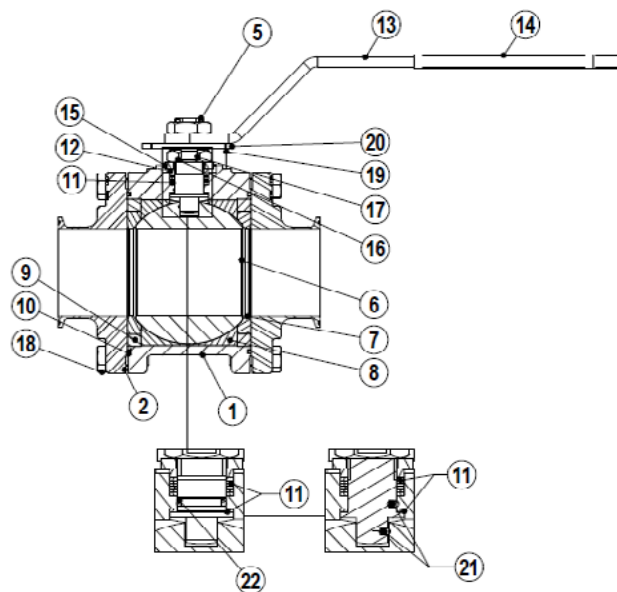
MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Valve body	CF3M / 1.4409
2	TC end connection	CF3M / 1.4409
3	Tube weld end connection	AISI 316L / 1.4404
4	** Flange	AISI 316L / 1.4404
5	Stem	AISI 316L / 1.4404
6	* Valve ball	AISI 316L / 1.4404
7	* Standard seat	TFM 1600
8	* Cavity filler seat	TFM 1600
9	Body ring	AISI 316L / 1.4404
10	* Body seal	PTFE
11	* Stem seals	TFM 1600
12	* Spacer	AISI 316 / 1.4401
13	Handle	AISI 304 / 1.4301
14	Handle end	Vinyl
15	* Spring washers	AISI 304 / 1.4301
16	Compression nut	AISI 304 / 1.4301
17	* Lock washer	AISI 304 / 1.4301
18	Fixing bolt	AISI 304 / 1.4301
19	Stop pin	AISI 304 / 1.4301
20	Handle stopper	AISI 304 / 1.4301
21	Antistatic device	AISI 316 / 1.4401
22	O-ring	Viton

\* Available spare parts;

\*\* Loose flange. Allows a 360° rotation of the valve when using tube weld connections.

Remarks: FDA / USP Class VI seals certificate on request.

All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



ORDERING CODES M3H												
Valve model	MH	X	X	X	F	X	X	CB	X	65		
M3H 3 pieces ball valve CF3M	MH											
Lever handle												
Flat lever handle stainless steel / plastic cover		X										
Flat lever handle stainless steel / plastic cover w/ lockable system		3										
Bare stem		9										
Material												
CF3M / 1.4409			X									
Seat design												
Standard seats				X								
Cavity fillers					F							
Seat material												
TFM 1600					F							
Surface finish (a)												
Standard surface finish						X						
Electropolished internal wetted parts (SF5)						E						
Special features												
None								X				
Oxygen cleaning								O				
End connections												
TC – Sanitary clamps ASME BPE									CB			
ETO – Extended tube orbital welding ASME BPE (360° rotation design)										TB		
TC / ETO – Combination ASME BPE (360° rotation design)										CTB		
Ball port												
True bore (standard)										X		
Full bore											NA	
Size												
21/2"											65	
3"											80	
4"											100	
Special valves / Extras												
Full description or additional codes have to be added in case of a non standard combination												E

(a) Consult IS PV20.00 (Technical information) for further details and other surface finish options.

NA – Not available.

## HYGIENIC BALL VALVES M3H TRUE BORE (DN 10 – 50 DIN)

### DESCRIPTION

M3H three pieces body ball valves are isolating valves designed for use with clean steam, condensate and other gases and liquids used in high purity and aseptic processes.

The valve is not designed as a control valve and should only be used as an isolating valve, fully open or fully closed.

The product is mainly designed for the pharmaceutical, biotech, semiconductor, cosmetics, fine chemical, food and beverage industries.

### MAIN FEATURES

True bore floating ball design.

A351 CF3M body and ends with ferrite content of less than 2% and low sulphur between 0,005 and 0,017%.

Can be serviced without removal from pipeline.

Tube weld with loose body flanges (360° rotation after installation).

Bidirectional.

Antistatic device.

Anti blow out proof stem.

ISO 5211 mounting.

### STANDARD SURFACE FINISH

Internal wetted parts: ≤ 0,51 micron Ra – SF1.

External: as casted.

Ultrasonic cleaning.

**OPTIONS:** Different sealing materials.  
Degreased for oxygen use.  
Cavity filler.

**USE:** Clean steam, gases and liquids compatible with the construction.

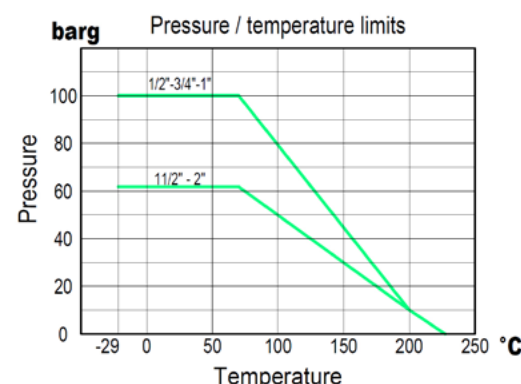
**AVAILABLE MODELS:** M3H – Investment casting.

**SIZES:** DN 10 to DN 50.

**CONNECTIONS:** According to DIN 11850 tube.  
TC – Sanitary clamps DIN 32676.  
ETO – Extended tube orbital welding.  
TC / ETO – Combination.

**PACKAGING:** Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film to avoid contamination.

**INSTALLATION:** See IMI - Installation and maintenance instructions.



TFM 1600

Note: Working pressure may be limited by the valve connections.

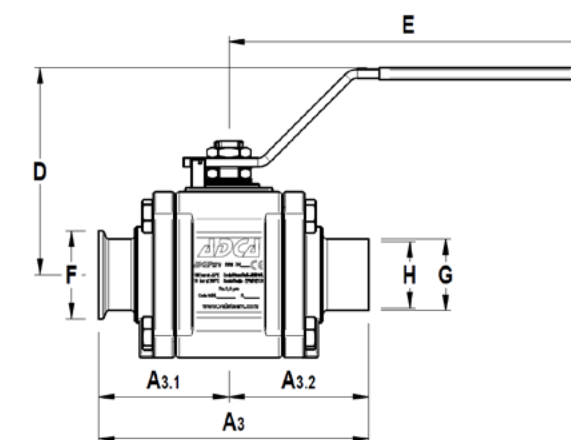
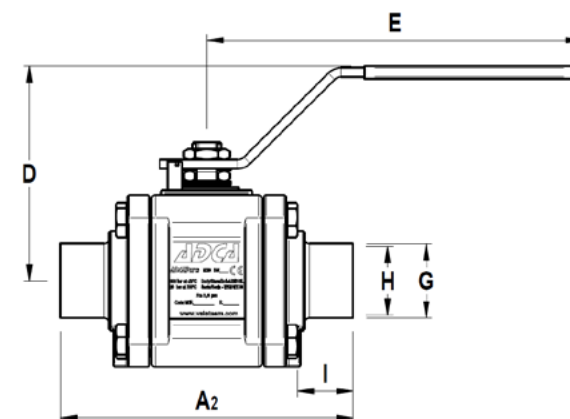
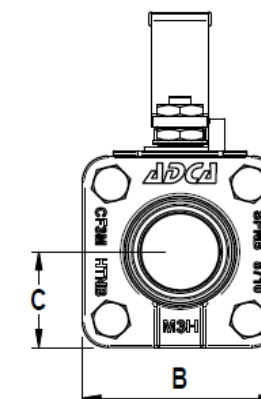
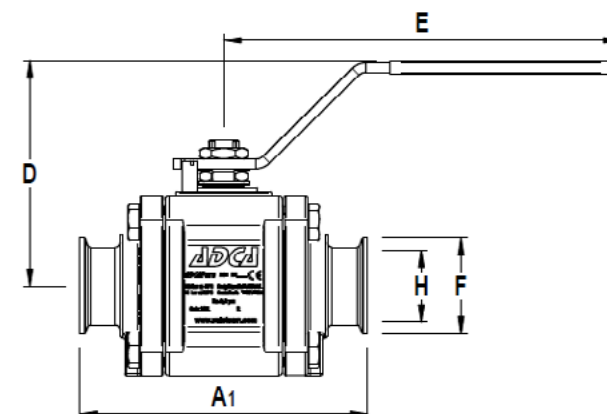
CE MARKING – GROUP 2 (PED – European Directive)		
PN63	PN100	Category
–	DN 10 to 20	SEP
DN 25 to 32	–	SEP
DN 40 to 50	–	1 (CE Marked)

We reserve the right to change the design and material of this product without notice.

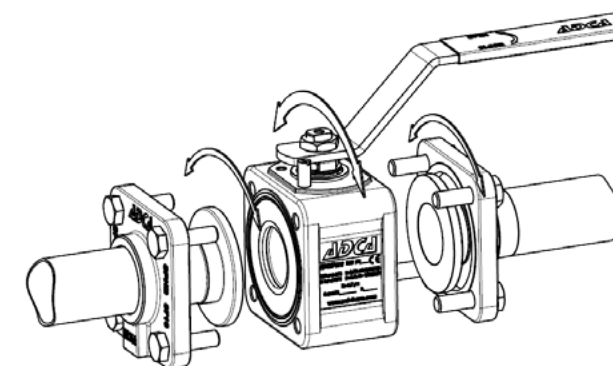
IS M3H.20 E 12.16

### DIMENSIONS (mm) DIN

SIZE	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>3.1</sub>	A <sub>3.2</sub>	B	C	D	E	F	G	H	I	BALL PORT	ISO 5211	WGT. (kg)
DN 10	90	102	96	45	51	42	21	65	150	34	13	10	25	10	F03	0,73
DN 15	100	114	107	50	57	50	25	69	150	34	19	16	27	16	F03	1,49
DN 20	115	127	121,5	57,5	64	62	31	87	175	34	23	20	27	20	F04	1,94
DN 25	125	135	130,5	62,5	68	72	36	92	175	50,5	29	26	27	26	F04	2,62
DN 32	140	153	147	71	76	85	42,5	114	207	50,5	35	32	27	32	F05	4,41
DN 40	150	161	155	75	80	95	47,5	119	207	50,5	41	38	27	38	F05	5,5
DN 50	165	178	172	82	90	105	52,5	124	232	64	53	50	28	50	F05	7



Tube weld easy and quick installation - standard



Loose body flanges make it possible to install the valve without the aligning of welded end connections.

After installation the valve can rotate 360° for the desired orientation.



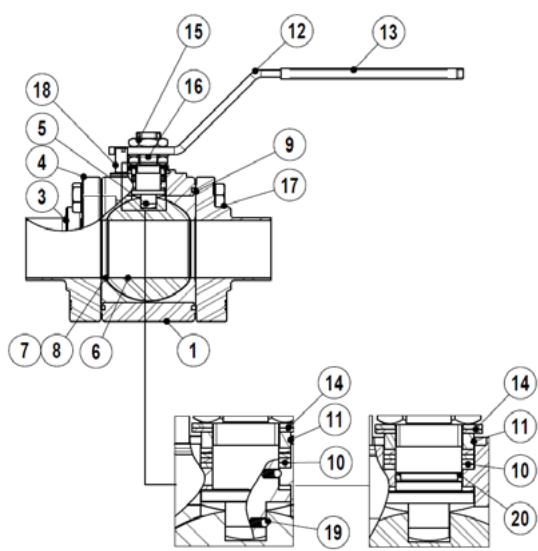
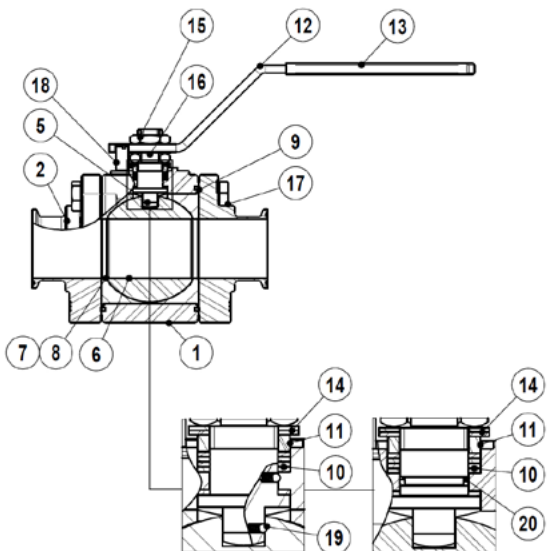
MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Valve body	CF3M / 1.4409
2	TC end connection	CF3M / 1.4409
3	Tube weld end connection	AISI 316L / 1.4404
4	** Flange	CF3M / 1.4409
5	Stem	AISI 316L / 1.4404
6	* Valve ball	AISI 316L / 1.4404
7	* Standard seat	TFM 1600
8	* Cavity filler seat	TFM 1600
9	* Body seal	PTFE
10	* Stem seals	TFM 1600
11	* Spacer	AISI 316 / 1.4401
12	Handle	AISI 304 / 1.4301
13	Handle end	Vinyl
14	* Spring washers	AISI 304 / 1.4301
15	Compression nut	AISI 304 / 1.4301
16	* Lock washer	AISI 304 / 1.4301
17	Fixing bolt	AISI 304 / 1.4301
18	Stop pin	AISI 304 / 1.4301
19	Antistatic device	AISI 316 / 1.4401
20	* O-ring	Viton

\* Available spare parts;

\*\* Loose flange. Allows a 360° rotation of the valve when using tube weld connections.

Remarks: FDA / USP Class VI seals certificate on request.

All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



ORDERING CODES M3H												
Valve model	MH	X	X	X	F	X	X	CD	X	15		
M3H 3 pieces ball valve CF3M	MH											
Lever handle												
Flat lever handle stainless steel / plastic cover		X										
Flat lever handle stainless steel / plastic cover w/ lockable system		3										
Bare stem		9										
Material												
CF3M / 1.4409		X										
Seat design												
Standard seats			X									
Cavity fillers			F									
Seat material												
TFM 1600				F								
Surface finish (a)												
Standard surface finish					X							
Electropolished internal wetted parts (SF5)					E							
Special features												
None						X						
Oxygen cleaning						O						
End connections												
TC – Sanitary clamps DIN 32676								CD				
ETO – Extended tube orbital welding DIN 11850 (360° rotation design)								TD				
TC / ETO – Combination DIN (360° rotation design)								CTD				
Ball port												
True bore (standard)									X			
Full bore									NA			
Size												
DN 10											10	
DN 15											15	
DN 20											20	
DN 25											25	
DN 32											32	
DN 40											40	
DN 50											50	
Special valves / Extras												
Full description or additional codes have to be added in case of a non standard combination												E

(a) Consult IS PV20.00 (Technical information) for further details and other surface finish options.

NA – Not available.



## HYGIENIC BALL VALVES M3H FULL BORE (DN 65 – 100 DIN)

### DESCRIPTION

M3H three piece body ball valves are isolating valves designed for use with clean steam, condensate and other gases and liquids used in high purity and aseptic processes.

The valve is not designed as a control valve and should only be used as an isolating valve, fully open or fully closed.

The product is mainly designed for the pharmaceutical, biotech, semiconductor, cosmetics, fine chemical, food and beverage industries.

### MAIN FEATURES

Full bore floating ball design.

A351 CF3M body and ends with ferrite content of less than 2% and low sulphur between 0,005 and 0,017%.

Can be serviced without removal from pipeline.

Tube weld with loose body flanges (360° rotation after installation).

Bidirectional.

Antistatic device.

Anti blow out proof stem.

ISO 5211 mounting.

### STANDARD SURFACE FINISH

Internal wetted parts: ≤ 0,51 micron Ra – SF1.

External: as casted.

Ultrasonic cleaning.

**OPTIONS:** Different sealing materials.  
Degreased for oxygen use.  
Cavity filler.

**USE:** Clean steam, gases and liquids compatible with the construction.

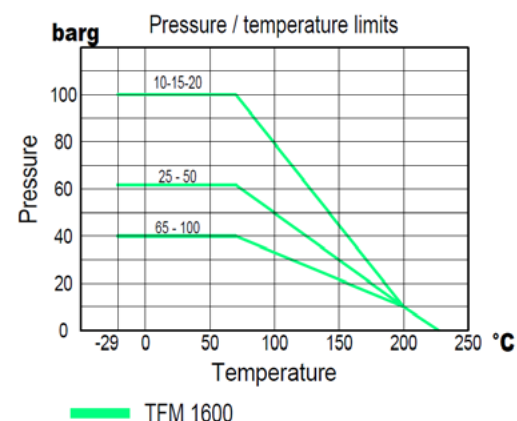
**AVAILABLE MODELS:** M3H – investment casting.

**SIZES:** DN 65 to DN 100.

**CONNECTIONS:** According to DIN 11850 tube.  
TC – Sanitary clamps DIN 32676.  
ETO – Extended tube orbital welding.  
TC / ETO – Combination.

**PACKAGING:** Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

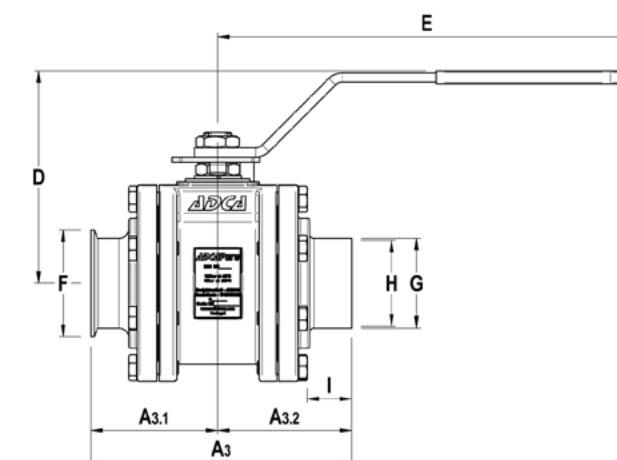
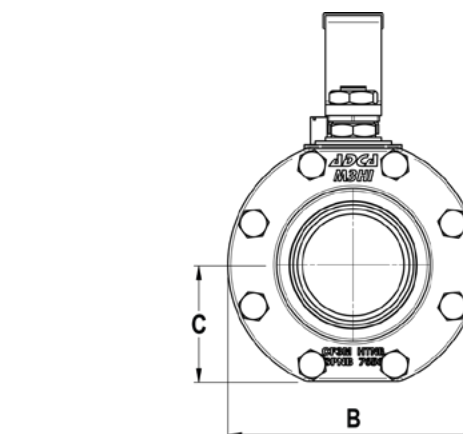
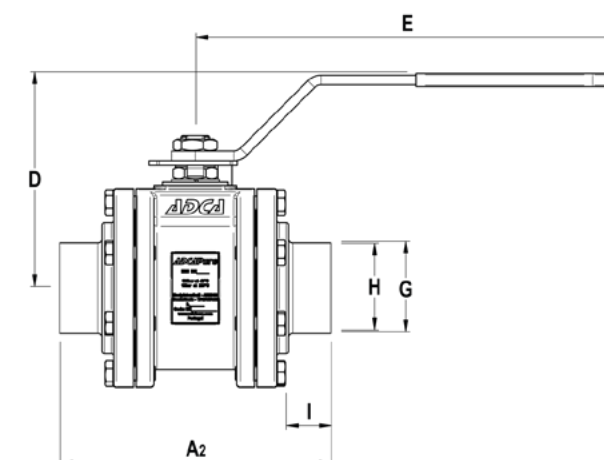
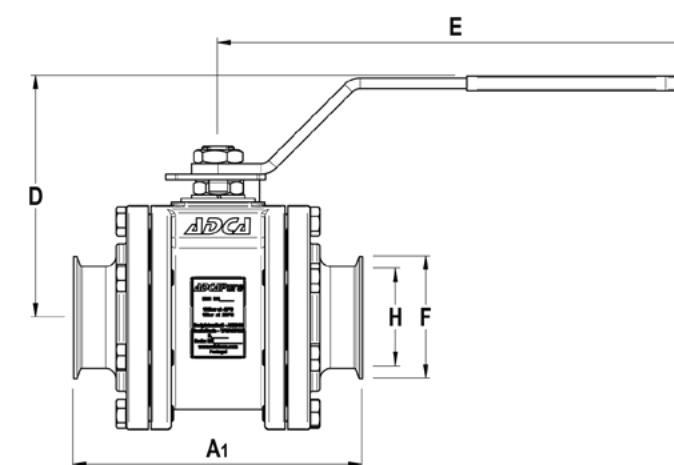
**INSTALLATION:** See IMI – Installation and maintenance instructions.



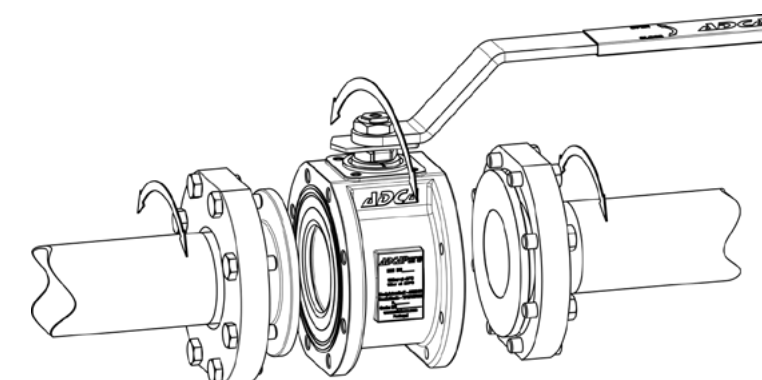
CE MARKING – GROUP 2 (PED – European Directive)	
PN 40	Category
DN 65 to DN 100	1 (CE marked)

### DIMENSIONS (mm) DIN

SIZE	A1	A2	A3	A3.1	A3.2	B	C	D	E	F	G	H	I	BALL PORT	ISO 5211	WGT. (kg)
65	190	203	197	95	98,5	160	72,5	169	400	91	70	66	37	62	F7	13,3
80	216	228	222	108	111	180	83,5	180	400	106	85	81	38	75	F7	18,6
100	255	267	261	127,5	133,5	220	101,5	198	400	119	104	100	44	98	F10	29,6



Tube weld easy and quick installation - standard

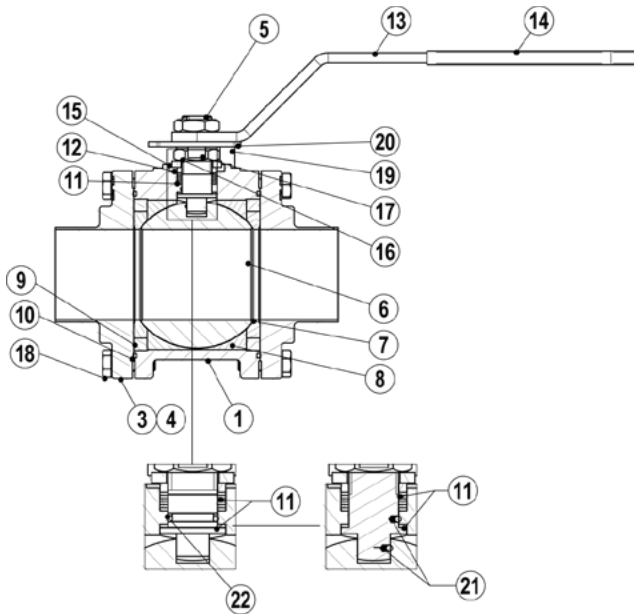
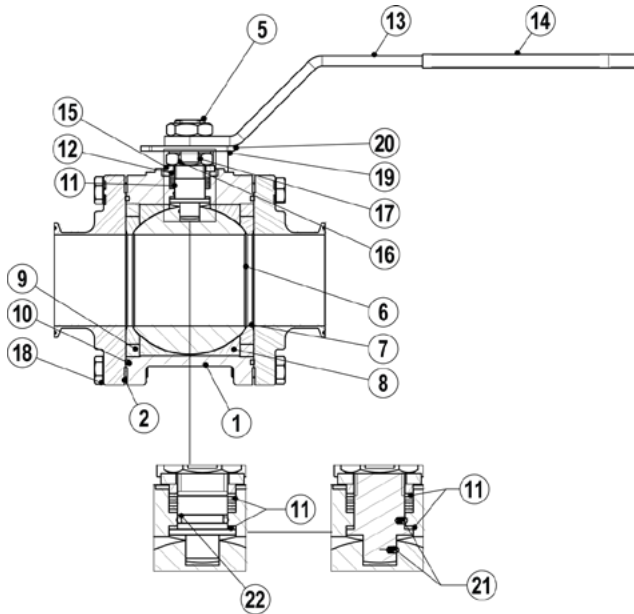


Loose body flanges make it possible to install the valve without aligning of the welded end connections.

After installation the valve can rotate on 360° for the desired orientation.

MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Valve body	A351 CF3M / 1.4409
2	TC end connection	A351 CF3M / 1.4409
3	Tube weld end connection	AISI 316L / 1.4404
4	** Flange	AISI 316L / 1.4404
5	Stem	AISI 316L / 1.4404
6	* Valve ball	AISI 316L / 1.4404
7	* Standard seat	TFM 1600
8	* Cavity filler seat	TFM 1600
9	Body ring	AISI 316L / 1.4404
10	* Body seal	PTFE
11	* Stem seals	TFM 1600
12	* Spacer	AISI 316 / 1.4401
13	Handle	AISI 304 / 1.4301
14	Handle sleeve	Vinyl
15	* Spring washers	AISI 304 / 1.4301
16	Compression nut	AISI 304 / 1.4301
17	* Lock washer	AISI 304 / 1.4301
18	Fixing bolt	AISI 304 / 1.4301
19	Stop pin	AISI 304 / 1.4301
20	Handle stopper	AISI 304 / 1.4301
21	Antistatic device	AISI 316 / 1.4401
22	O-ring	Viton

\* Available spare parts;  
 \*\* Loose flange. Allows a 360° rotation of the valve when using tube weld connections.  
 Remarks: FDA / USP Class VI seals certificate on request.  
 All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



ORDERING CODES M3H													
Valve model	MH	X	X	X	F	X	X	CD	X	65	E		
M3H – A351 CF3M / 1.4409 3 pieces ball valve	MH												
Lever handle													
Flat lever handle stainless steel / plastic cover	X												
Flat lever handle stainless steel / plastic cover w/ lockable system	3												
Bare stem	9												
Material													
A351 CF3M / 1.4409	X												
Seat design													
Standard seats	X												
Cavity fillers	F												
Seat material													
TFM 1600	F												
Surface finish (a)													
Standard surface finish	X												
Electropolished internal wetted parts (SF5)	E												
Special features													
None	X												
Oxygen cleaning	O												
End connections													
TC – Sanitary clamps DIN 32676	CD												
ETO – Extended tube orbital welding DIN 11850 (360° rotation design)	TD												
TC / ETO – Combination DIN (360° rotation design)	CTD												
Ball port													
Full bore (standard)	X												
True bore	NA												
Size													
DN 65	65												
DN 80	80												
DN 100	100												
Special valves / Extras													
Full description or additional codes have to be added in case of a non standard combination												E	

(a) Consult IS PV20.00 – Technical information – for further details and other surface finish options.  
 NA – Not available.

## HYGIENIC BALL VALVES M3H FULL BORE (6" ASME BPE)

### DESCRIPTION

M3H three piece body ball valves are isolating valves designed for use with clean steam, condensate and other gases and liquids used in high purity and aseptic processes.

The valve is not designed as a control valve and should only be used as an isolating valve, fully open or fully closed.

The product is mainly designed for the pharmaceutical, biotech, semiconductor, cosmetics, fine chemical, food and beverage industries.

### MAIN FEATURES

Full bore floating ball design.

A351 CF3M body and ends with ferrite content of less than 2% and low sulphur between 0,005 and 0,017%.

Can be serviced without removal from pipeline.

Tube weld with loose body flanges (360° rotation after installation).

Bidirectional.

Antistatic device.

Anti blow out proof stem.

ISO 5211 mounting.

### STANDARD SURFACE FINISH

Internal wetted parts:  $\leq 0,51$  micron Ra – SF1.

External: as casted.

Ultrasonic cleaning.

OPTIONS: Different sealing materials.  
Degreased for oxygen use.  
Cavity filler.

USE: Clean steam, gases and liquids compatible with the construction.

AVAILABLE MODELS: M3H – investment casting.

SIZES: 6".

CONNECTIONS: According to ASME BPE.  
TC – Sanitary clamps.  
ETO – Extended tube orbital welding.  
TC / ETO – Combination.

PACKAGING: Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

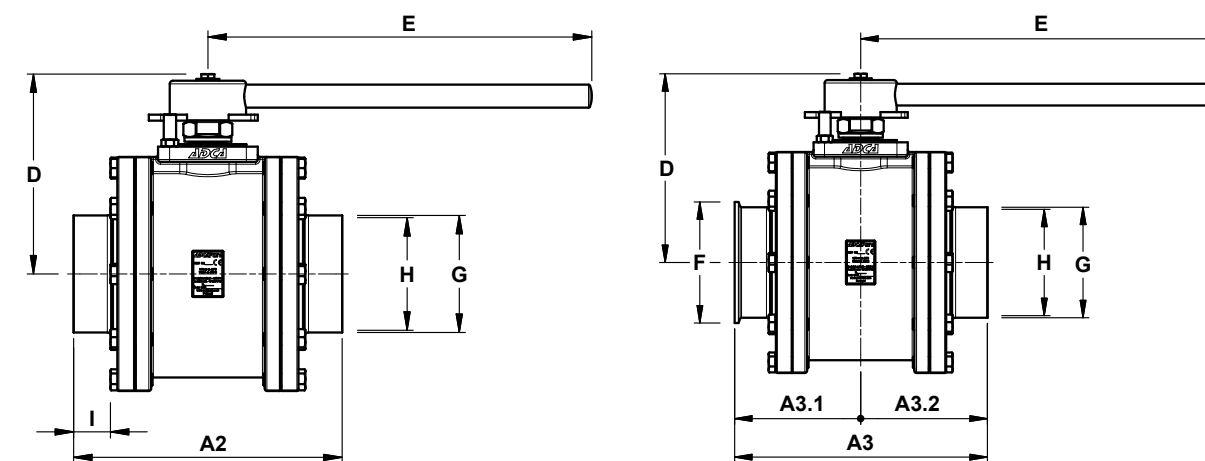
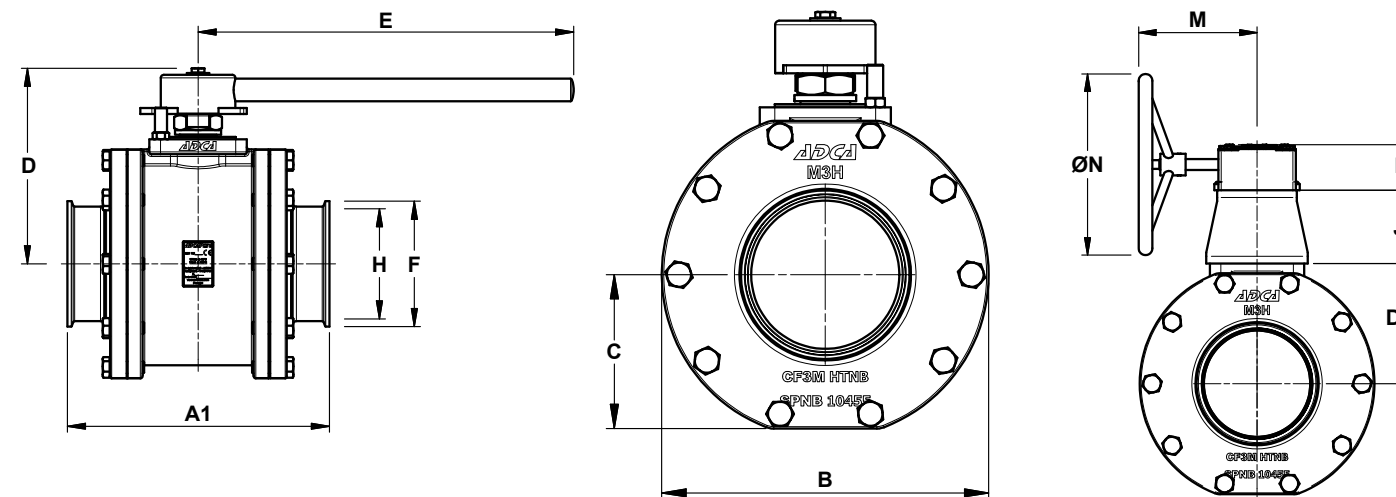
INSTALLATION: See IMI – Installation and maintenance instructions.



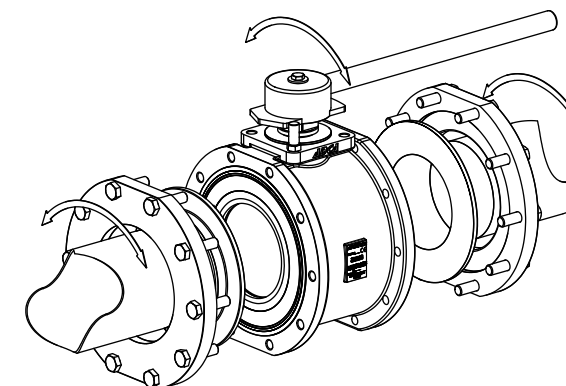
CE MARKING – GROUP 2 (PED – European Directive)	
PN 16	Category
6"	1 (CE marked)

### DIMENSIONS (mm) ASME BPE

SIZE	A1	A2	A3	A3.1	A3.2	B	C	D	D1	E	F	G	H	I	J	L	M	N	BALL PORT	ISO 5211	WGT. (kg)
6"	350	350	350	175	175	324	153	260	166	500	167	152	147	48	101	63	164	250	152,4	F14	94,9



Tube weld easy and quick installation - standard

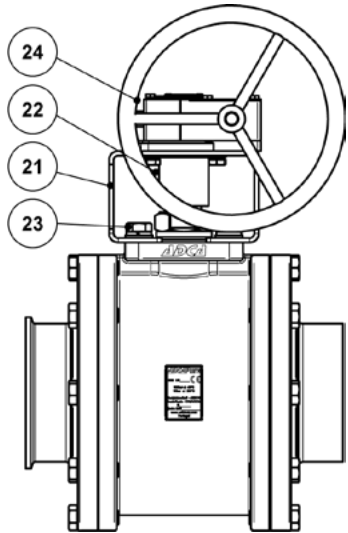
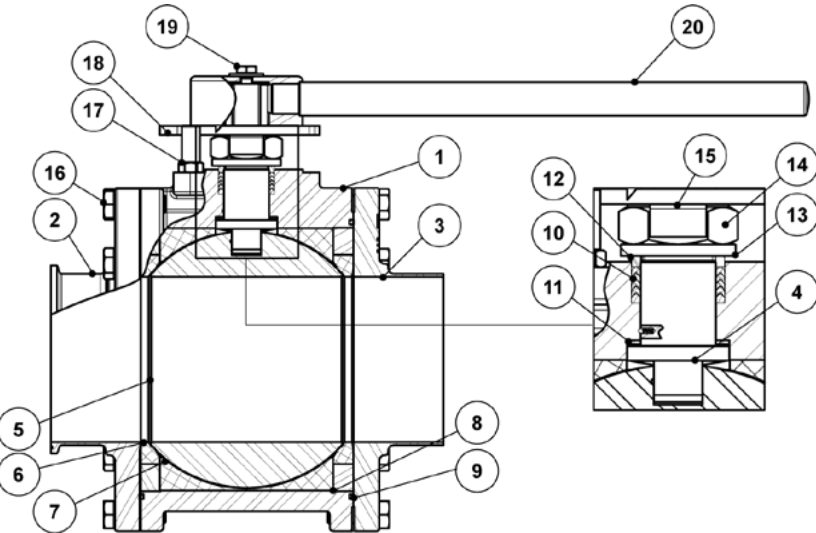
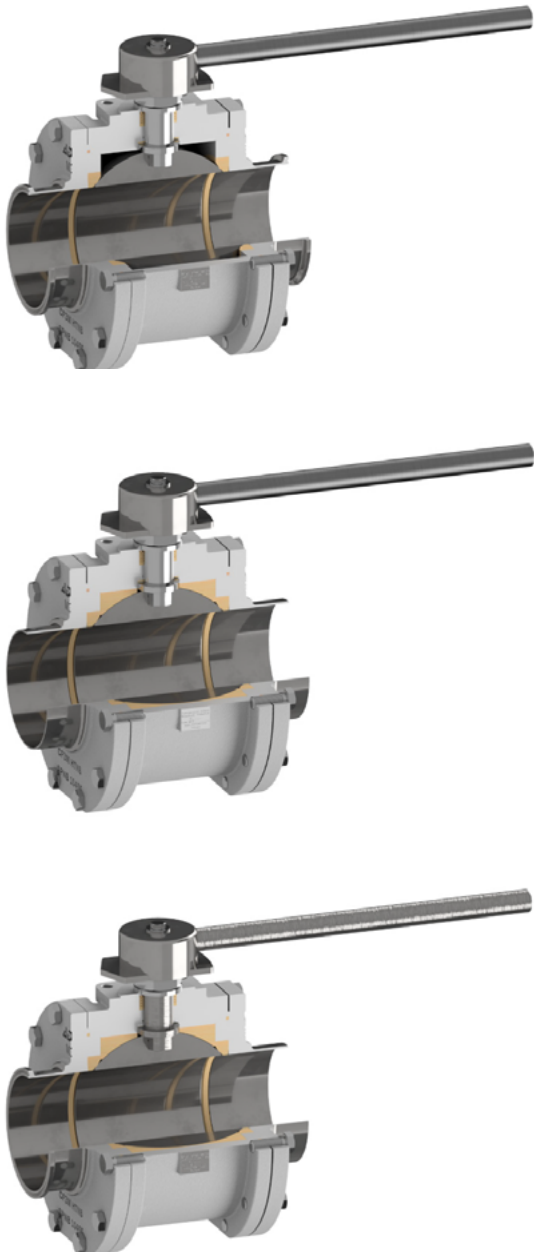


Loose body flanges make it possible to install the valve without aligning of the welded end connections.  
After installation the valve can rotate on 360° for the desired orientation.



MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Valve body	A351 CF3M / 1.4409
2	TC end connection	A351 CF3M / 1.4409
3	Tube weld end connection	A351 CF3M / 1.4409
4	Stem	AISI 316L / 1.4404
5	* Valve ball	AISI 316L / 1.4404
6	* Standard seat	TFM 1600
7	* Cavity filler seat	TFM 1600
8	Body ring	AISI 316L / 1.4404
9	* Body seal	PTFE
10	* Stem seals	TFM 1600
11	* Stem thrust seal	TFM 1600 - PEEK
12	* Spacer	AISI 316 / 1.4401
13	Spring washer	AISI 304 / 1.4301
14	Compression nut	AISI 304 / 1.4301
15	* Lock washer	AISI 304 / 1.4301
16	Fixing screw	AISI 304 / 1.4301
17	Handle stopper pin	AISI 304 / 1.4301
18	Handle stopper	AISI 304 / 1.4301
19	Handle fixing bolt	AISI 304 / 1.4301
20	Handle	AISI 304 / 1.4301
21	Bracket	AISI 304 / 1.4301
22	Bracket stem	AISI 304 / 1.4301
23	Bracket bolts	AISI 304 / 1.4301
24	Gearbox	Cast iron

\* Available spare parts.  
 Remarks: FDA / USP Class VI seals certificate on request.  
 All valves have a serial number. In case of non-standard valves, this number must be supplied if spare parts are ordered.



ORDERING CODES M3H												
Valve model	MH	1	X	X	F	X	X	CB	X	150		
M3H – A351 CF3M / 1.4409 3 pieces ball valve	MH											
Lever handle												
Round lever handle complete stainless steel		1										
Bare stem		9										
Material												
A351 CF3M / 1.4409			X									
Seat design												
Standard seats				X								
Cavity fillers					F							
Seat material												
TFM 1600						F						
Surface finish (a)												
Standard surface finish							X					
Electropolished internal wetted parts (SF5)								E				
Special features												
None								X				
Oxygen cleaning									O			
End connections												
TC – Sanitary clamps ASME BPE										CB		
ETO – Extended tube orbital welding ASME BPE (360° rotation design)											TB	
TC / ETO – Combination ASME BPE (360° rotation design)												CTB
Ball port												
Full bore (standard)											X	
True bore												NA
Size												
6"												150
Special valves / Extras												
Full description or additional codes have to be added in case of a non standard combination												E

(a) Consult IS PV20.00 – Technical information – for further details and other surface finish options.  
 NA – Not available.

## SANITARY PRESSURE GAUGES SMAN-63

### DESCRIPTION

The SMAN-63 are reliable general purpose sanitary bourdon tube pressure gauges designed for pressure measurement of liquid and gaseous media. These units have a size diameter of 63 mm, range marked in bar and are fully manufactured in stainless steel.

### MAIN FEATURES

Compact full stainless steel construction.  
Wetted parts in AISI 316L / 1.4435 – flush diaphragm.  
Designed according to EN 837-1.  
Bayonet lock case with blow-out.  
Suitable to be filled with glycerine.

USE: Gases and liquids compatible with the construction.

AVAILABLE MODELS: SMAN-63R – radial connection.  
SMAN-63A – axial connection.

SIZES: 3/4".

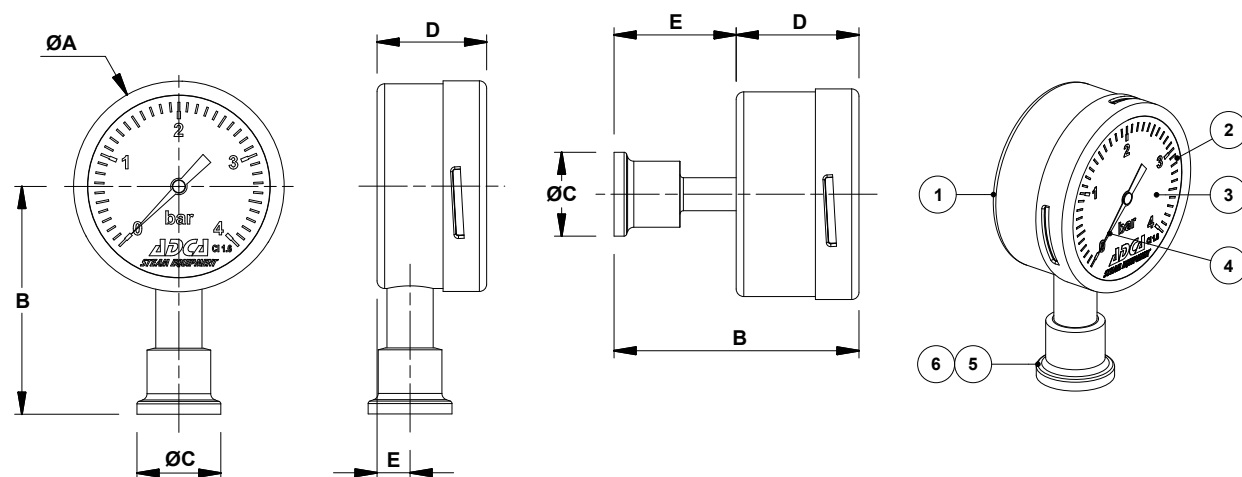
CONNECTIONS: ASME BPE clamp ferrules.  
Others on request.

MEASURING RANGES: 0 to 4 bar, 0 to 6 bar, 0 to 10 bar and 0 to 16 bar.



LIMITING CONDITIONS	
Accuracy	±2,5% FS
IP rating	IP 65
Maximum allowable pressure	Full scale reading
Maximum operating temperature *	120 °C
Minimum operating temperature	- 20 °C
Ambient temperature	- 10 °C to 60 °C

\* 150 °C for short term (cleaning).



DIMENSIONS (mm)						
MODEL	ØA	B	ØC	D	E	WEIGHT (kg)
SMAN-63R	63,8	69	25,4	33,2	10	0,2
SMAN-63A	63,8	74,2	25,4	37,2	37	0,4

MATERIALS					
POS. N°	DESIGNATION	MATERIAL	POS. N°	DESIGNATION	MATERIAL
1	Case and bezel ring	AISI 304 / 1.4301	4	Pointer	Black aluminium
2	Window	Glass	5	Connection	AISI 316L / 1.4435
3	Dial	White aluminium	6	Measuring system	AISI 316L / 1.4435

## HUMIDITY SEPARATORS CLEAN STEAM SEPARATOR S10H

### DESCRIPTION

When wet steam is used in sterilization, moisture in suspension reduces the heat transfer efficiency, and the validity of the sterilization process can be compromised.

S10H series baffle separators remove moisture from steam pipelines. Steam passes through the separator and as a result of expansion, impact and swirling effects, the particles with a heavier specific gravity are separated, such as water droplets and moisture in suspension. The condensate collected at the bottom of the separator must be automatically drained by a suitable steam trap.

### MAIN FEATURES

316L stainless steel construction.  
No moving parts.  
Self draining design.

### STANDARD SURFACE FINISH

Internal wetted parts: ≤ 0,51 micron Ra – SF1.  
External: Satin bead blast finish – 1,6 micron Ra.  
Other surface conditions see IS PV20.00 E – Technical information.

OPTIONS: Vent connection.  
Different kinds of connections and dimensions.

USE: Steam, compressed air and other gases  
(Group 2).

AVAILABLE MODELS: S10H – horizontal connections, baffle design.  
S10HA – S10H with air vent connection.

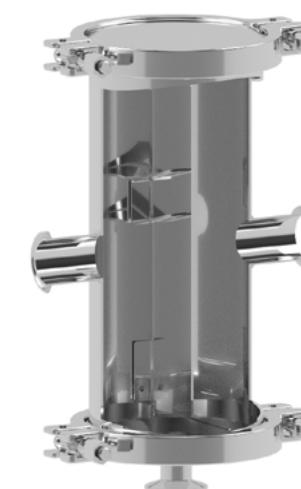
SIZES: 1/2" to 3".

CONNECTIONS: ASME BPE clamp ferrules.  
Others on request.

PACKAGING: Assembling and packaging in a clean room certified according to ISO 14644-1.  
The product is end capped and sealed with recyclable thermo-shrinkable plastic film, to avoid contamination.

INSTALLATION: Always with the condensate discharge pointing downwards.  
See IMI – Installation and maintenance instructions.

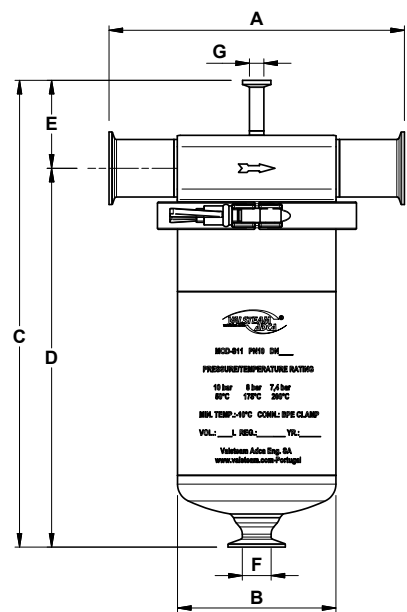
HOW TO SELECT: Generally, in an existing plant it is advisable to fit a separator with the same size of the pipe line. Pressure drop is normally negligible. For approximate pressure drop calculation, consult manufacturer.



BODY LIMITING CONDITIONS	
ALLOWABLE PRESSURE	RELATED TEMPERATURE
10 bar	50 °C
8 bar *	175 °C
7,4 bar	200 °C

\* PMO – Max. operating pressure for saturated steam.  
Minimum operating temperature: -10 °C.  
Design code: AD-Merkblatt.

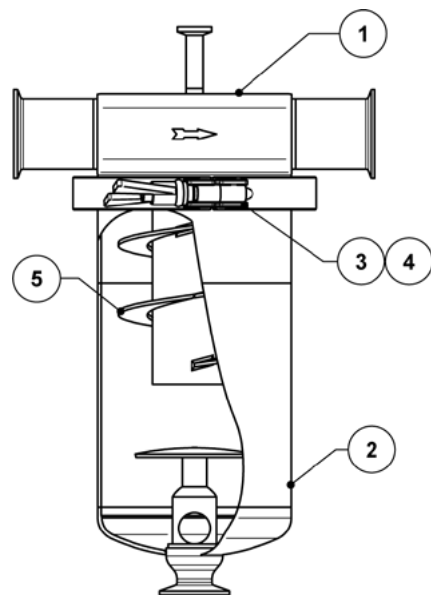
CE MARKING – GROUP 2 (PED – European Directive)	
PN 10	Category
1/2" to 2"	SEP
2 1/2" to 3"	1 (CE Marked)



DIMENSIONS (mm)													
SIZE	A	B	C	D	E	F1	F2	F3	H1	H2	H3	VOL. (dm³)	WEIGHT (kg)
1/2"	215	114	345	283,5	62,5	25	25	50,5	9,4	9,4	22,1	2,84	3,8
3/4"	215	114	345	283,5	62,5	25	25	50,5	15,75	9,4	22,1	2,87	3,9
1"	215	114	345	283,5	62,5	50,5	25	50,5	22,1	9,4	22,1	2,9	4,2
1 1/2"	235	141	416	338,5	77,5	50,5	25	50,5	34,8	9,4	22,1	5,82	7,25
2"	260	141	416	338,5	77,5	64	25	50,5	47,5	9,4	22,1	5,93	7,28

MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Body	AISI 316L / 1.4404
2	Cover	AISI 316L / 1.4404
3	* Clamp	AISI 316L / 1.4404
4	* Seal	FKM / PTFE
5	Internals	AISI 316L / 1.4404

\* Available spare parts.  
EN 10204 3.1 certificate available if requested along with the order.  
Remarks: FDA / USP Class VI seals certificate on request.  
All separators have a serial number. In case of non-standard separators,  
this number must be supplied if spare parts are ordered.



## HYGIENIC DIRECT STEAM INJECTION HUMIDIFIERS DSHS

### DESCRIPTION

The presence of chemicals used in water treatment of plant steam boilers which produce steam used in humidification systems can have toxic effects on human health. Regulations have come into force in some countries so that only clean steam is used for humidification purposes and, to meet such requirements.

The ADCAPure DSHS series of hygienic direct steam injection humidifiers are designed to ensure highly efficient and moisture free clean steam injection in air ducts and AHU for humidification purposes. These units are completely manufactured in 316L stainless steel, and are available as plug and play packaged solutions or alternatively as individual components to be incorporated into humidification systems. Each humidifier is manufactured as a bespoke solution to meet flow requirements and duct design with single or multiple injection tubes.

### MAIN FEATURES

Quiet and efficient.  
Hygienic design in 316L stainless steel.  
Bespoke injection tubes to meet flow requirements and duct design.  
Fully jacketed injection tubes providing moisture free steam injection.

### STANDARD SURFACE FINISH

Internal wetted parts: ≤ 0,51 micron Ra – SF1.  
External: Satin bead blast finish – 1,6 micron Ra.  
Other surface conditions see IS PV20.00 E – Technical information.

OPTIONS: Fully assembled in a plug and play package.

USE: Saturated steam.

AVAILABLE  
MODELS: DSHS10 and DSHS25.

INJECTION TUBE  
SIZES: 3/4" and 1".

CONNECTIONS: ASME BPE clamp ferrules.  
Others on request.

PACKAGING: Assembling and packaging in a clean room  
certified according to ISO 14644-1.  
The product is end capped and sealed with  
recyclable thermo-shrinkable plastic film, to  
avoid contamination.

INSTALLATION: Horizontal or vertical (pointing upwards)  
installation in horizontal air ducts.  
Horizontal installation in vertical air ducts. See  
IMI – Installation and maintenance instructions.



Single tube humidifier



Injection tube



S10HV  
centrifugal separator



OPERATION

Clean steam moves in the supply line passing, if necessary, through an ADCAPure pressure reducing valve to reduce it to humidification pressure (generally around 1 to 2 barg). Steam then passes through an ADCAPure S10HV centrifugal humidity separator which removes most of its moisture content. The separator special design dries the steam which is injected and also the steam which feeds the injection tube heating chamber keeping heating temperatures stable. As steam leaves the humidity separator and passes through the jacketed injection tubes it is kept at a constant temperature, preventing condensation to be carried over with the steam. Condensate collects on the bottom of the separator and is removed from the system via a ADCAPure TSS6 thermostatic steam trap. Condensate which forms inside the injection tube heating chamber is removed by means of one or multiple steam traps depending on the case. An ADCAPure hygienic control valve equipped with a fail-safe electric or pneumatic actuator provides accurate modulation of flow and, thus, precise humidity control.

ABSORPTION DISTANCE

Absorption distance is the dimension from the injection tube outlet to the downstream point where steam has been fully absorbed by the air passing through and is no longer visible as mist. The absorption distance serves as base for the calculation of the minimum distances to any obstacle (e.g. branches, filters, ventilators) installed downstream. If such obstacles would otherwise be located at a shorter distance, unabsorbed steam would hit those parts and condense, causing dripping which often results in microbial growth and, consequently, odors and an overall unhealthy air.

Absorption distance is mainly affected by:

- Air temperature: absorption distance decreases with increase in inlet air temperature.
- Inlet relative humidity: absorption distance decreases with increase in inlet relative humidity.
- Required relative humidity: absorption distance increases with increase in required relative humidity.
- Mixing homogeneity: absorption distance decreases with increase in mixing homogeneity.

SINGLE VS MULTI-TUBE HUMIDIFIERS

A single-tube humidifier is the most economically viable solution if a single injection tube respects the humidification load and the higher absorption distance (generally associated with single-tube humidifiers) is lower than the distance to any obstacle downstream – Consult Table 1 and Table 2. If on the other hand, the available distance is insufficient to accommodate the necessary absorption distance of a single-tube solution or when duct height is significant then a multi-tube humidifier should be selected. This solution will shorten the necessary absorption distance by up to 4 times as the increase in injection points will decrease flow velocity and also promote an homogenous and efficient mixing – Consult Table 3 and Table 4.

TABLE 1 – INJECTION TUBE STEAM CAPACITY – SINGLE-TUBE (kg/h)																	
MODEL	C * (mm)	STEAM PRESSURE TO HUMIDIFIER SUPPLY CONNECTION (barg)															
		0,25	0,5	0,75	1	1,25	1,5	1,75	2	2,25	2,5	2,75	3	3,25	3,5	3,75	4
DSHS10	180 – 450	17	24	30	35	38	41	45	49	51	53	56	60	61	63	67	70
	451 – 650	21	31	38	43	46	50	55	61	64	67	71	75	77	79	83	87
	651 – 1000	32	46	55	64	70	76	83	90	94	99	105	111	114	117	123	128
	≥ 1001	43	63	74	86	94	103	112	121	127	133	141	149	153	157	165	173
DSHS25	330 – 600	72	103	126	145	159	173	188	204	214	226	237	251	257	266	279	291
	601 – 900	78	114	138	158	172	187	204	221	232	248	261	274	280	288	303	319
	901 – 1250	95	139	168	192	212	232	253	273	286	301	316	332	339	349	368	386
	≥ 1251	114	166	200	230	252	275	299	324	341	359	377	397	–	–	–	–

\* Tube insertion length (see dimensions table).

TABLE 2 – MAXIMUM RECOMMENDED DUCT HEIGHT FOR SINGLE-TUBE HUMIDIFIER		
INJECTION TUBE	DSHS10	DSHS25
DUCT HEIGHT	Up to 900 mm	Up to 1100 mm

HOW TO SIZE

Example 1 – Single-tube humidifier

Installation position: Inside a horizontal air duct with 2000 mm of available downstream distance without obstacles.  
Duct size (H x W): 500 x 800 mm  
Maximum humidification load: 100 kg/h @ 1 barg

Step 1: Select the injection tube model

A single-tube humidifier is appropriate for the required absorption distance (see Note).

According to Table 1 a single DSHS25 injection tube respects the maximum humidification load as it ensures 158 kg/h for an insertion length between 601 and 900 mm.

Step 2: Select the humidity separator

The humidity separator should be of the same size as the pipeline upstream which has previously been sized accordingly, e.g. by pressure drop or velocity, not exceeding 25 m/s (recommended). For the current example, with a maximum humidification load of 100 kg/h @ 1 barg, the recommended pipe size is 11/4" and so the appropriate humidity separator is a 11/4" ADCAPure S10HV.

Step 3: Select the control valve and actuator

After calculating the required Kv for the application one can find the valve Kvs on the respective ADCAPure control valve datasheet. For the current example, the selection could be e.g. a 11/2" ADCAPure V926H with a 25 mm seat and Kvs of 10 m³/h to suit the application. The valve can be fitted with an ADCATrol ELF series electric fail-safe spring return actuator or a reverse action ADCATrol PA series pneumatic actuator.

Step 4: Steam traps, pressure reducing station and ancillaries

A suitable trapping set must be installed on the drain connection of the humidity separator and heating chamber. A pressure reducing station may be required in some situations to reduce system pressure to the desired value and different valves and ancillaries may also be necessary. Consult the manufacturer for further information.

TABLE 3 – INJECTION TUBE STEAM CAPACITY – MULTI-TUBE (kg/h)																	
MODEL	C * (mm)	STEAM PRESSURE TO HUMIDIFIER SUPPLY CONNECTION (barg)															
		0,25	0,5	0,75	1	1,25	1,5	1,75	2	2,25	2,5	2,75	3	3,25	3,5	3,75	4
DSHS10	180 – 1000	43	62	74	86	94	102	112	121	126	133	141	149	153	157	166	172
	≥ 1001	58	85	99	116	126	139	151	163	171	179	190	201	206	211	222	233
DSHS25	330 – 1250	128	187	226	259	286	313	341	368	386	406	426	448	457	471	496	521
	≥ 1251	153	224	270	310	340	371	403	437	460	484	508	535	562	589	617	645

\* Tube insertion length (see dimensions table).

TABLE 4 – MINIMUM RECOMMENDED NUMBER OF INJECTION TUBES FOR MULTI-TUBE HUMIDIFIER				
DUCT HEIGHT	Up to 1500 mm	1501 – 2000 mm	2001 – 2500 mm	above 2501 mm
Nº OF TUBES	2	3	4	5 or more

HOW TO SIZE

Example 1 – Single-tube humidifier

Installation position: Inside a horizontal air duct with 2000 mm of available downstream distance without obstacles.  
Duct size (H x W): 500 x 800 mm  
Maximum humidification load: 100 kg/h @ 1 barg

Step 1: Select the injection tube model

A single-tube humidifier is appropriate for the required absorption distance (see Note).

According to Table 1 a single DSHS25 injection tube respects the maximum humidification load as it ensures 158 kg/h for an insertion length between 601 and 900 mm.

Step 2: Select the humidity separator

The humidity separator should be of the same size as the pipeline upstream which has previously been sized accordingly, e.g. by pressure drop or velocity, not exceeding 25 m/s (recommended).  
For the current example, with a maximum humidification load of 100 kg/h @ 1 barg, the recommended pipe size is 1 1/4" and so the appropriate humidity separator is a 1 1/4" ADCAPure S10HV.

Step 3: Select the control valve and actuator

After calculating the required Kv for the application one can find the valve Kvs on the respective ADCAPure control valve datasheet. For the current example, the selection could be e.g. a 1 1/2" ADCAPure V926H with a 25 mm seat and Kvs of 10 m³/h to suit the application. The valve can be fitted with an ADCATrol ELF series electric fail-safe spring return actuator or a reverse action ADCATrol PA series pneumatic actuator.

Step 4: Steam traps, pressure reducing station and ancillaries

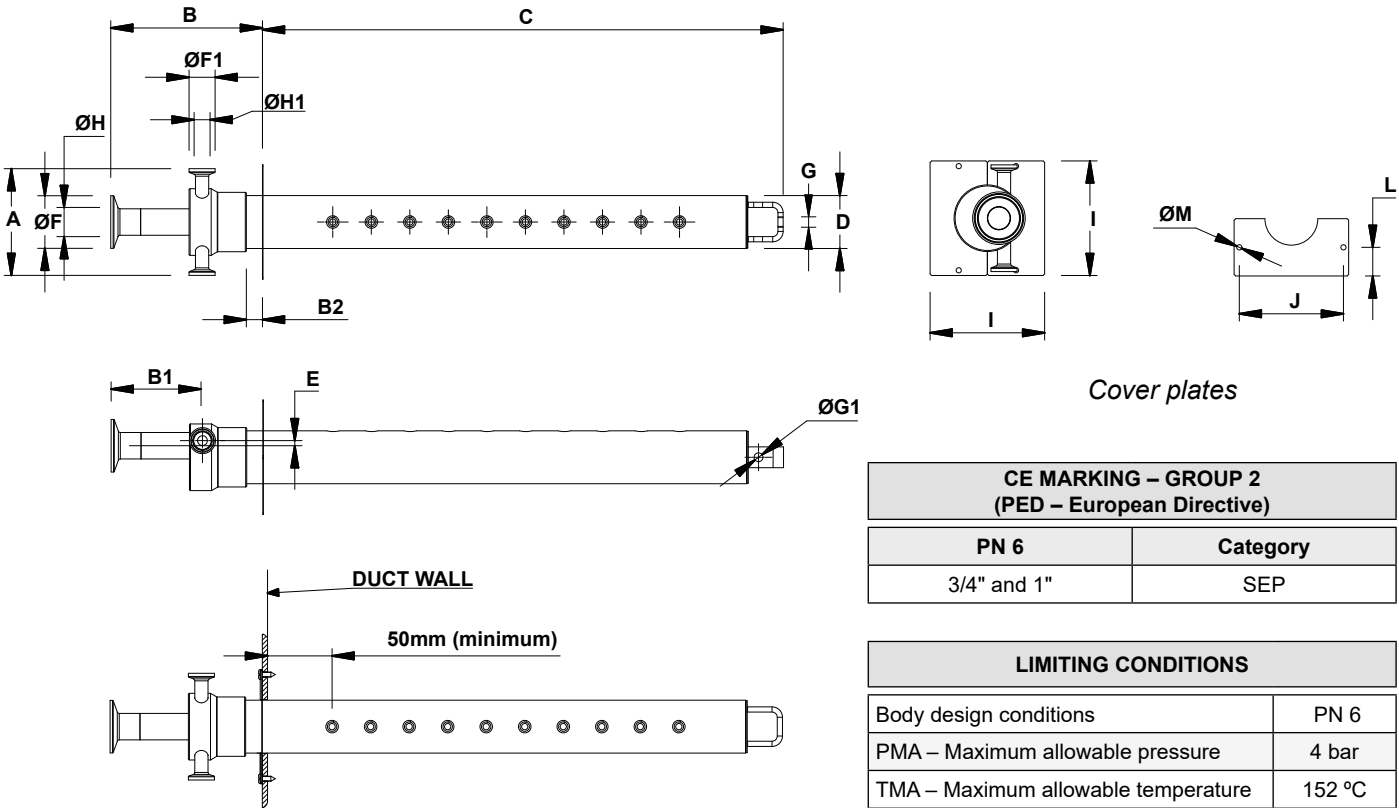
A suitable trapping set must be installed on the drain connection of the humidity separator and heating chamber. A pressure reducing station may be required in some situations to reduce system pressure to the desired value and different valves and ancillaries may also be necessary. Consult the manufacturer for further information.

TABLE 3 – INJECTION TUBE STEAM CAPACITY – MULTI-TUBE (kg/h)																	
MODEL	C * (mm)	STEAM PRESSURE TO HUMIDIFIER SUPPLY CONNECTION (barg)															
		0,25	0,5	0,75	1	1,25	1,5	1,75	2	2,25	2,5	2,75	3	3,25	3,5	3,75	4
DSHS10	180 – 1000	43	62	74	86	94	102	112	121	126	133	141	149	153	157	166	172
	≥ 1001	58	85	99	116	126	139	151	163	171	179	190	201	206	211	222	233
DSHS25	330 – 1250	128	187	226	259	286	313	341	368	386	406	426	448	457	471	496	521
	≥ 1251	153	224	270	310	340	371	403	437	460	484	508	535	562	589	617	645

\* Tube insertion length (see dimensions table).

TABLE 4 – MINIMUM RECOMMENDED NUMBER OF INJECTION TUBES FOR MULTI-TUBE HUMIDIFIER				
DUCT HEIGHT	Up to 1500 mm	1501 – 2000 mm	2001 – 2500 mm	above 2501 mm
Nº OF TUBES	2	3	4	5 or more

INJECTION TUBES

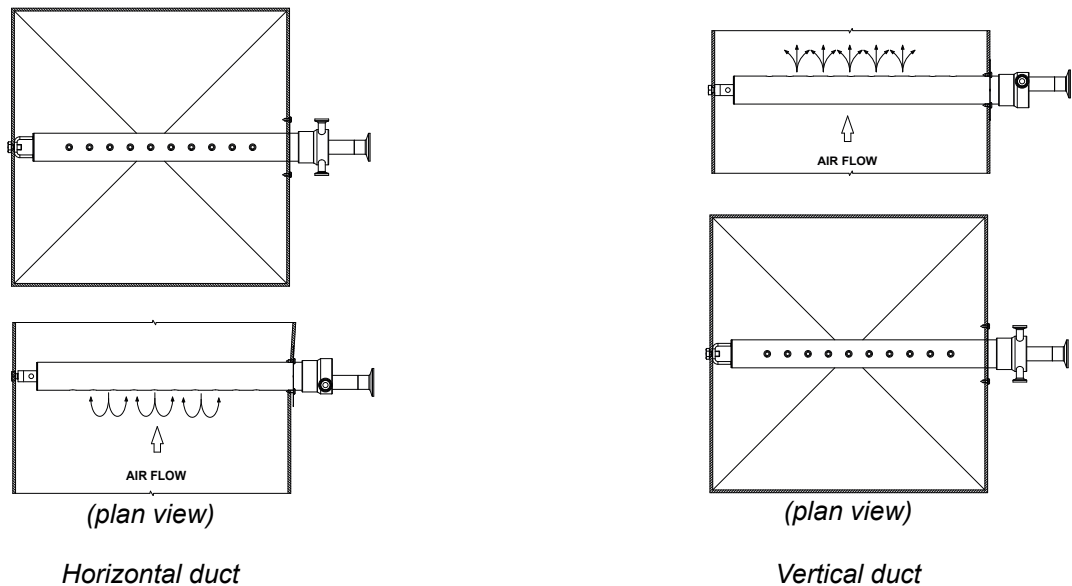


DIMENSIONS (mm)																			
MODEL	A	B	B1	B2 *	C ** Min. - Max.	D	E	ØF	ØF1	G	ØG1	ØH	ØH1	I	J	L	ØM	WGT. (kg)	
DSHS10	91	147,5	85	20	180 - 3100	38	3,1	25	25	M10	8,5	15,75	9,4	100	90	25	5	***	
DSHS25	102,5	145,7	87,7	15,5	330 - 3100	50	4,9	50,5	25	M10	8,5	22,1	9,4	110	100	25,5	5		

\* When thermal insulation is present, this dimension must be increased accordingly.  
\*\* Tube insertion length to be defined according to customer requirements (e.g. duct width).  
\*\*\* To be confirmed after exact length is defined.

STEAM EMISSION DIRECTION

Steam injection should be against the air flow. On vertical air flow applications, the steam should be injected upwards, regardless of the air flow direction.





ORDERING CODES DSHS										
Model	DHS	10	XXXX	XX	A	X	X	A	15	
DSHS Hygienic injection tube	DHS									
Type										
10		10								
25		25								
Insertion length (mm)										
Specify dimension "C"			XXXX							
Options										
None				XX						
"B2" increased by 30 mm to accommodate thermal insulation thickness				I3						
Pipe connection (d1)										
Clamp ferrule ASME BPE					D					
Surface finish a)										
Standard surface finish						X				
Mirror mechanical polished external surfaces (SF1)						P				
Electropolished internal wetted parts (SF5)						E				
Special features										
None							X			
Pipe connection (d2)										
Clamp ferrule ASME BPE								D		
Size (d1 x d2)										
3/4" x 3/4"									20	
1" x 1"									25	
Specials / Extras										
Full description or additional codes have to be added in case of non-standard combination										E

a) Consult IS PV20.00 (Technical information) for further details and other surface finish options.