



**REF. 703R**

**FIRE SAFE 3 PIECES STAINLESS STEEL BALL VALVE PN 100  
REDUCED BORE EXCELLENCE RANGE**

**Certificate 3.1**



Lloyd's  
Register

ISO 9001 : 2015



Lloyd's  
Register

PED/2014/68/EU



**Size :** DN 15 to 50 mm  
**Ends :** Threaded BSP or NPT , S.W. or B.W.  
**Min Temperature :** - 30°C  
**Max Temperature :** + 220°C  
**Max Pressure :** 100 to 140 Bars  
**Specifications :** Antistatic device  
ISO 5211 mounting pad  
Anti blow-out stem, reduced bore  
Fully encapsulated bolts  
Fire safe ISO 10497 : 2010 and API 607 V.6  
Atex

**Materials :** Stainless steel ASTM A351 CF8M



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### SPECIFICATIONS :

- Reduced bore
- Anti blow-out stem
- Special gland pack with elastic washer
- Antistatic device from DN8 to 10, double antistatic device (ball between body-stem and ball-stem) from DN15 to 50
- Fire safe according to ISO 10497:2010 and API 607 V.6
- Locking device
- Handwheel and stem extension ( optional )
- ISO 5211 mounting pad
- Fully encapsulated bolts
- Pressure class 600 lbs
- On request PEEK seat( optional ) for high temperature

### USE :

- Chemical and pharmaceutical industries, petrochemical industries, hydraulic installation, compressed air
- Steam : 18 bars maximum with PTFE filled with 25% carbon seat
- Steam : 30 bars maximum with PEEK seat
- Vacuum :  $10^{-2}$  torr
- Min and max Temperatures Ts : -30°C to + 220°C with PTFE filled with 25% carbon seat type **Ref. 703R**
- Min and max Temperatures Ts : -10°C to + 260°C for valve with PEEK seat ( optional )
- Max Pressure Ps : 100 to 140 bars ( see graph )

### FLOW COEFFICIENT Kvs ( M3 / h ) :

DN	15	20	25	32	40	50
NPS	1/2"	3/4"	1"	1"1/4	1"1/2	2"
Kvs ( m3/h )	13.4	31.3	57.86	94.25	157.9	227.9

### TORQUE VALUES WITH PTFE FILLED WITH CARBON SEAT ( in Nm without safety coefficient ) :

DN	15	20	25	32	40	50
NPS	1/2"	3/4"	1"	1"1/4	1"1/2	2"
Pressure (bar)						
Breaking torque	10	12	19.2	25	28.7	50
17	9.5	10	16	17	18	36
34	10	10	17	18	18	36
69	10	10.5	17.5	21	22	41
103	10	10.5	18	26	27.5	42
138	10	11.5	19			

### BOLT TIGHTENING TABLE ( in Nm ) :

DN	15	20	25	32	40	50
NPS	1/2"	3/4"	1"	1"1/4	1"1/2	2"
Torque (Nm)	9.8	22.07	22.07	39.2	39.2	58.8



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**RANGE :**

- 3 pieces fire safe reduced bore stainless steel ball valve Ref. **703R** from DN 15 to DN 50

**ENDS :**

- Female / female threaded BSP Ref. **703R00**
- Female / female threaded NPT Ref. **703R30**
- Welding S.W. Ref. **703R2**
- Welding B.W. Ref. **703R1**

**OPTIONS :**

- AISI 304 handwheel Ref. **9830440-9830475**
- AISI 304 stem extension Ref. **9830471-9830474**
- **PEEK** gasket kits ( including Grafoil body gasket and packing, PTFE filled 15% glass fiber stem gasket + Grafoil and PEEK seat )  
Ref. **9804380-9804386**



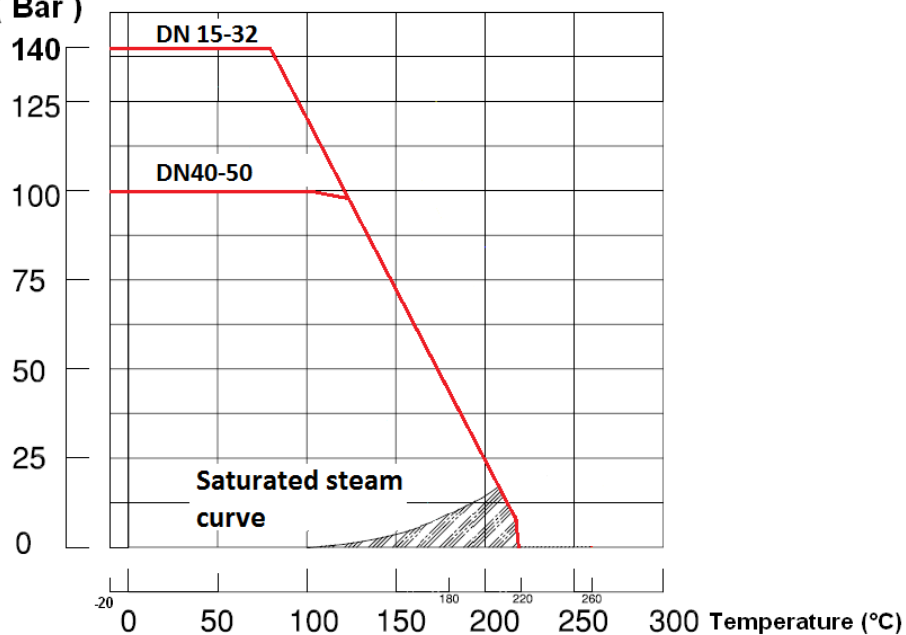
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PRESSURE / TEMPERATURE GRAPH FOR VALVES REF.703R (WITH PTFE FILLED WITH CARBON SEAT) :

**PRESSURE**

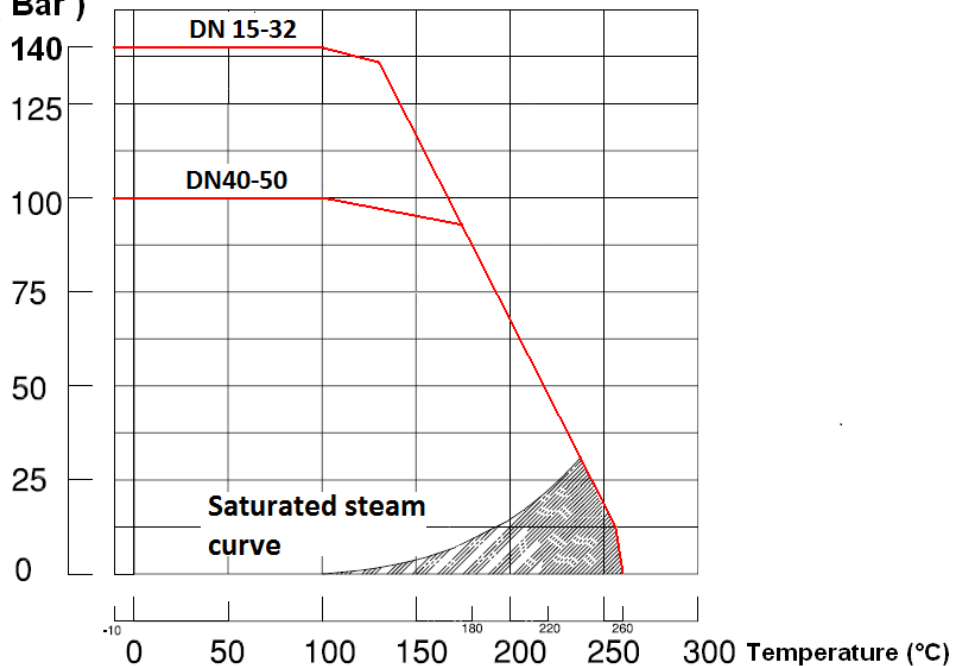
**( Bar )**



PRESSURE / TEMPERATURE GRAPH FOR VALVES REF.703R WITH OPTIONAL PEEK SEAT :

**PRESSURE**

**( Bar )**

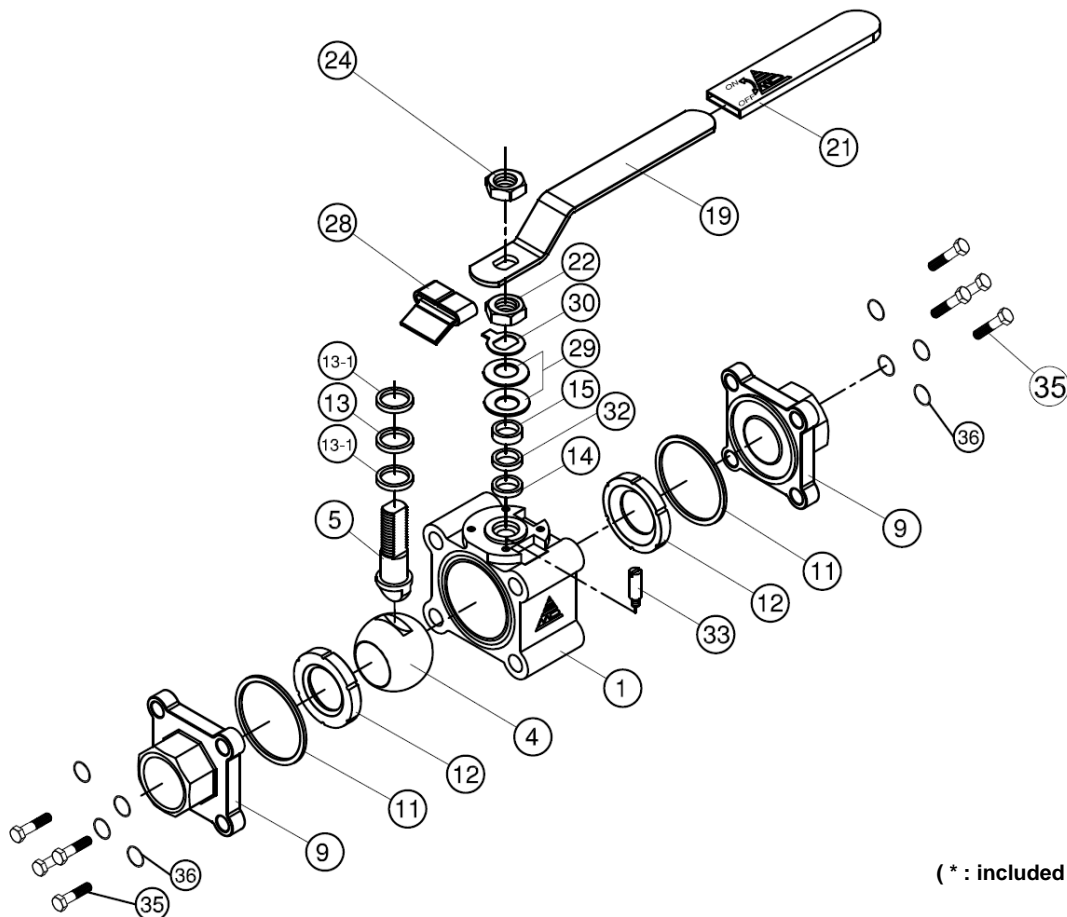




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## FIRE SAFE 3 PIECES STAINLESS STEEL BALL VALVE PN 100 REDUCED BORE EXCELLENCE RANGE

### MATERIALS :



( \* : included in gaskets kit )

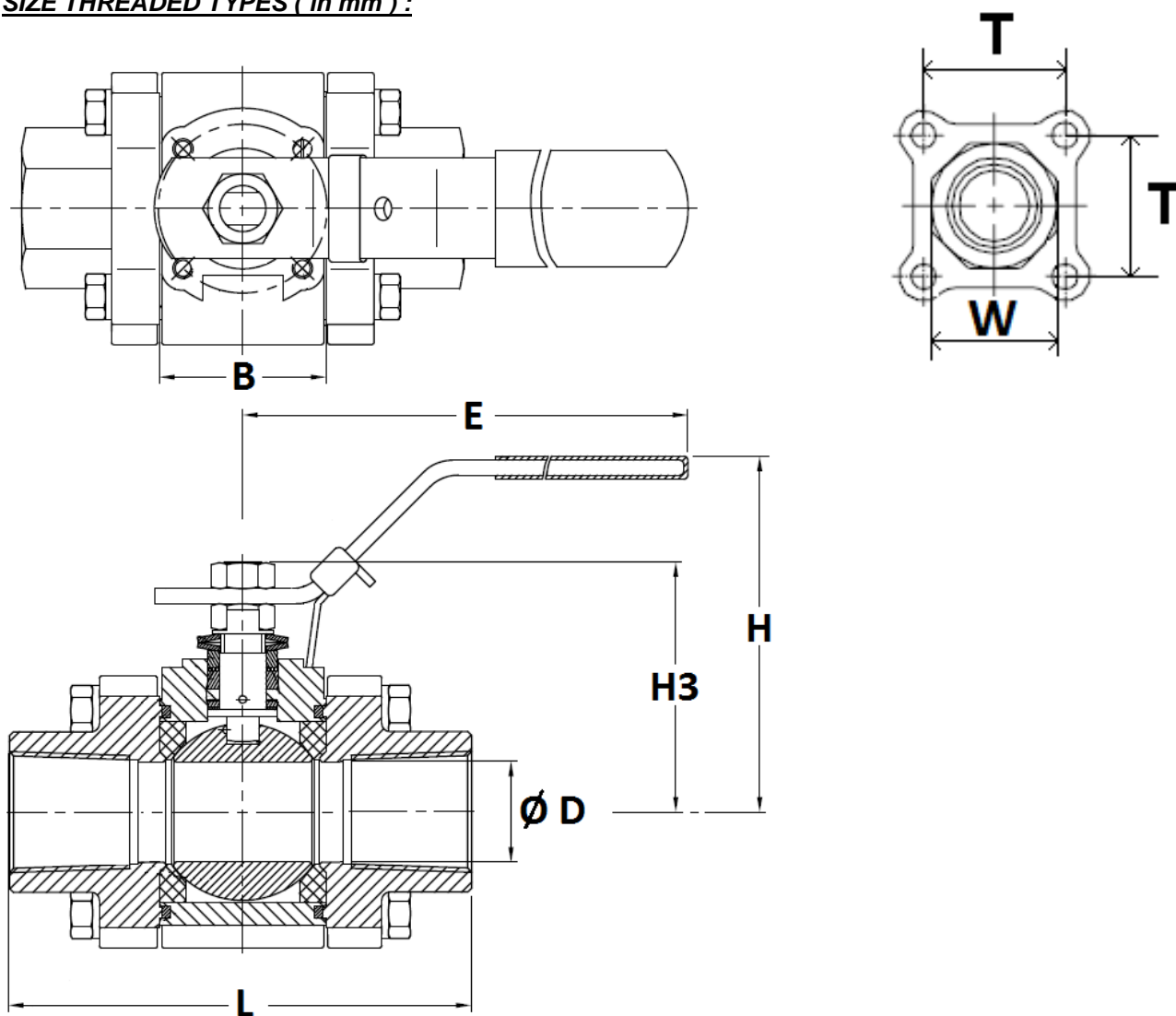
Item	Designation	Materials
1	Body	ASTM A351 CF8M
4	Ball	
5	Stem	AISI 316
9	Ends	ASTM A351 CF8M
11*	Body gasket	Graphite
12*	Seat	PTFE filled with 25% carbon
13*	Thrust washer	Graphite
13-1*	Thrust washer	PTFE filled with 15% Glass fiber
14	Packing	Graphite
15	Gland bush	AISI 304
19	Handle	AISI 304
21	Handle cover	Plastic
22	Packing nut	AISI 304
24	Handle nut	AISI 304
28	Locking device	AISI 304
29	Elastic washer	AISI 301
30	Tab washer	AISI 304
32*	Packing follower	PTFE filled with 15% Glass fiber
33	Stop pin	AISI 304
35	Screw	AISI 304
36	Washer	AISI 304



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**SIZE THREADED TYPES ( in mm ) :**



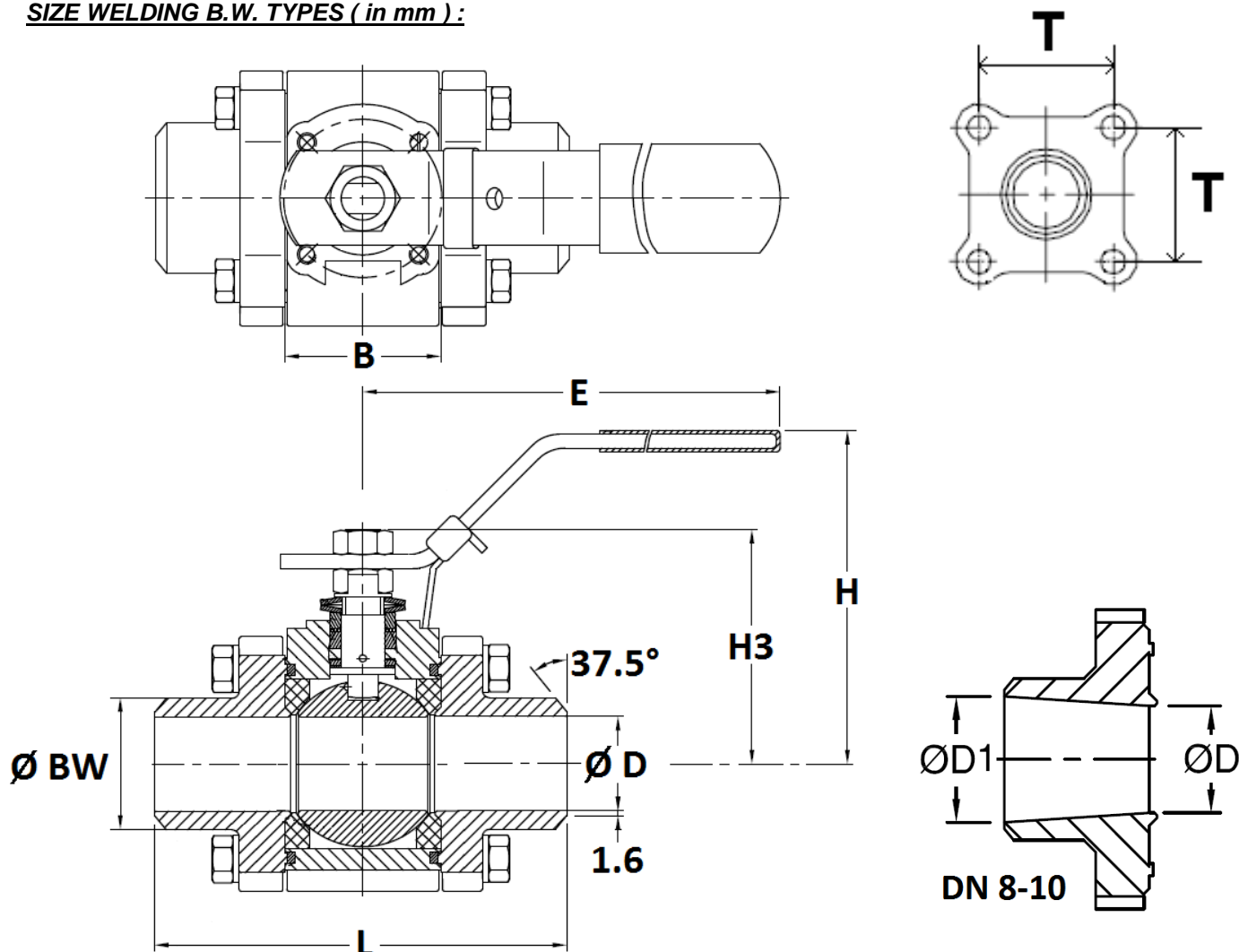
Ref.	NPS	1/2"	3/4"	1"	1"1/4	1"1/2	2"
703R00 - 703R30  Threaded	Ø D	10	15	20	25	32	38
	L	64,8	72,5	84.2	105,3	111	127,3
	B	20.5	24.5	31.4	41.3	48.4	56.3
	E	132.8	132.8	132.8	171.8	171.8	204.2
	H	63.7	65.1	73.2	83.1	87.6	98.4
	H3	37.1	46.1	50.9	61.4	66.8	80
	T	32	35	41.3	48	56.2	63.6
	W ( on flat )	29.4	30.3	36.5	44.5	54.1	60
	Weight (Kg)	0.7	0.8	1.3	2	2.9	4.1



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**SIZE WELDING B.W. TYPES ( in mm ) :**



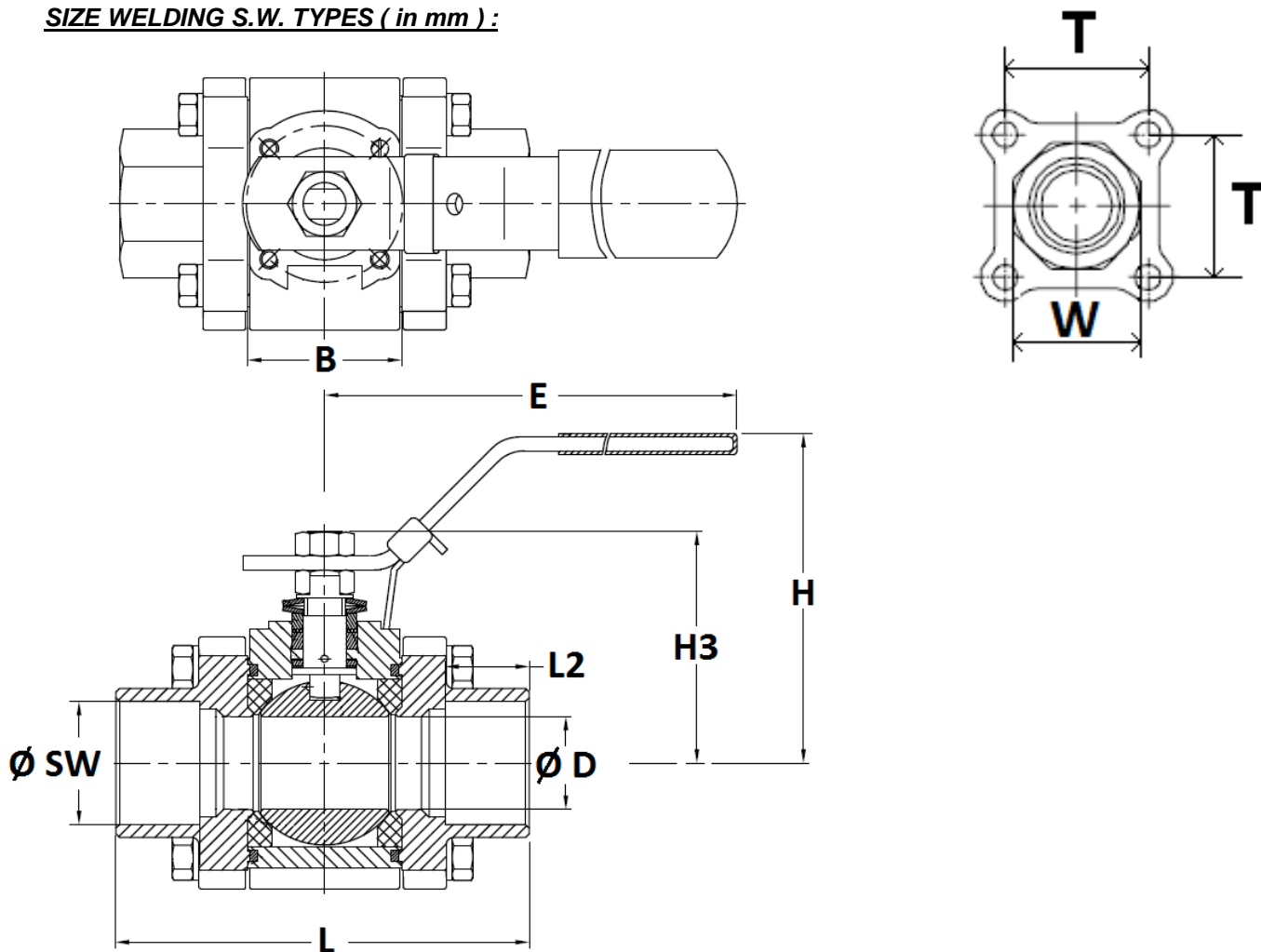
Ref.	DN	15	20	25	32	40	50
703R1  BW	Ø D	10	15	20	25	32	38
	Ø D1	12.7	-	-	-	-	-
	L	64,8	72.5	84.2	105.3	111	127.3
	B	20.5	24.5	31.4	41.3	48.4	56.3
	E	132.8	132.8	132.8	171.8	171.8	204.2
	H	63.7	65.1	73.2	83.1	87.6	98.4
	H3	37.1	46.1	50.9	61.4	66.8	80
	T	32	35	41.3	48	56.2	63.6
	Ø BW	17.7	21.9	27.3	34.7	42.8	49.1
	Weight (in Kg)	0.58	0.74	1.21	1.85	2.67	3.9



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**SIZE WELDING S.W. TYPES ( in mm ) :**



Ref.	DN	15	20	25	32	40	50
703R2  SW	Ø D	10	15	20	25	32	38
	L	64,8	72,5	84.2	105,3	111	127,3
	B	20.5	24.5	31.4	41.3	48.4	56.3
	L2	10	10	13	13	13	13
	E	132.8	132.8	132.8	171.8	171.8	204.2
	H	63.7	65.1	73.2	83.1	87.6	98.4
	H3	37.1	46.1	50.9	61.4	66.8	80
	T	32	35	41.3	48	56.2	63.6
	W ( on flat )	29.4	30.3	36.5	44.5	54.1	60
	Ø SW	17,6	21.7	27,3	33,9	42,8	48.7
	Weight (in Kg)	0.7	0.8	1.3	2	2.85	4.1

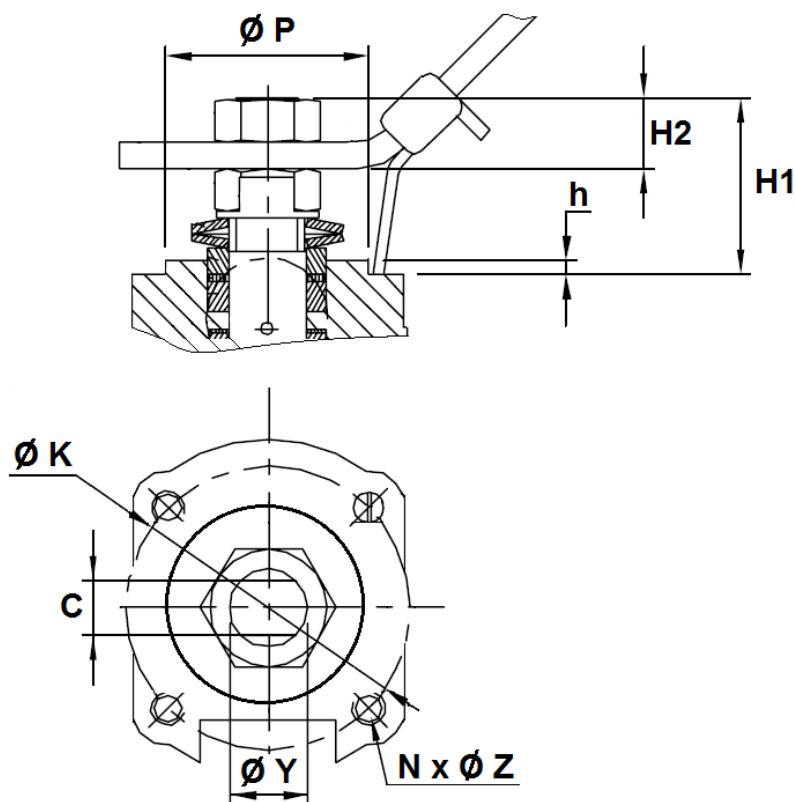




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**ISO 5211 MOUNTING PAD AND STEM SIZE ( in mm ) :**



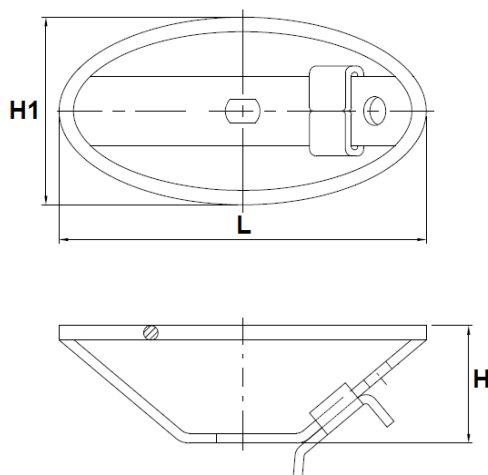
DN	15	20	25	32	40	50
NPS	1/2"	3/4"	1"	1"1/4	1"1/2	2"
H1	7.5	17.1	18.1	25.4	26.2	32.4
H2	6.6	11.1	9.1	13.1	12.6	14.9
h	0,5	2	2	2	2	2,2
C	6,5			8		9,7
Ø Y	9,5 (3/8"-24UNF)			11,1 (7/16"-20UNF)		14.2 (9/16"-18UNF)
Ø P	25	25	25	30	30	35
Ø K	36	36	36	42	42	50
ISO	F03	F03	F03	F04	F04	F05
N x Ø Z	4x M5	4x M5	4x M5	4x M5	4x M5	4 x M6



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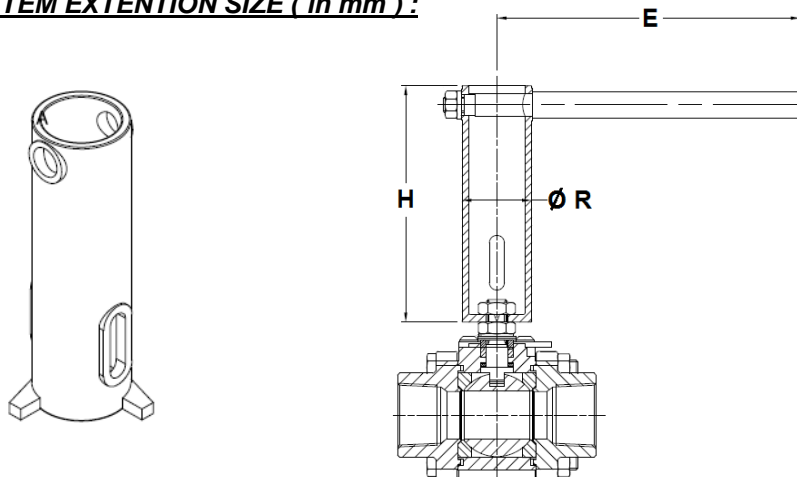
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**AISI 304 HANDWHEEL SIZE ( in mm ) :**



DN	15	20	25	32	40	50
NPS	1/2"	3/4"	1"	1"1/4	1"1/2	2"
L	102	116	116	130	130	147
H	32.5	35	35	40	40	43
H1	52	62	62	82	82	87
Weight ( Kg )	0.106	0.119	0.119	0.176	0.176	0.22
Ref.	9830440	9830441	9830441	9830442	9830442	9830443

**AISI 304 STEM EXTENTION SIZE ( in mm ) :**



DN	20	25	32	40	50
NPS	3/4"	1"	1"1/4	1"1/2	2"
H	125.5	125.5	125.5	125.5	127.5
E	126.5	126.5	161	161	194
Ø R	31	31	37	37	43
Ref.	9830471	9830471	9830472	9830472	9830473



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**STANDARDS :**

- Fabrication according to ISO 9001 : 2015
- DIRECTIVE 2014/68/EU : CE N° 0038  
Risk category III module H
- Certificate 3.1 on request
- Construction according to EN 12516-1 Class 600
- Designing according to ASME B16.34
- Pressure tests according to EN12266-1, rate A
- Fire safe according to ISO 10497:2010 and API 607 6<sup>th</sup> (only with PTFE filled with 25% carbon seats)
- ABS type Approval Marine certificate
- Threaded cylindrical BSPP ends according to ISO 228-1
- Threaded NPT ends according to ANSI B1.20.1
- S.W. ends according to ASME B16.11 Schedule 40
- B.W. ends according to ASME B36.10 Schedule 40
- ISO 5211 mounting pad
- ATEX Group II Category 2 G/2D Zone 1 & 21 Zone 2 & 22 ( optional marking ) according directive 2014/34/EU

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## **FIRE SAFE 3 PIECES STAINLESS STEEL BALL VALVE PN 100 REDUCED BORE EXCELLENCE RANGE**

### **INSTALLATION AND MAINTENANCE**

#### **BEFORE INSTALLATION :**

Pipe-line must be cleaned and free from residual of weldings, rubbish, shaving and every kind of extraneous materials.  
Pipe-line must be perfectly aligned and their support properly dimensioned so that there's no external constraint.

Check to use a produce compatible to the services conditions for the sealing of the threaded types.  
To tighten the ends, use the appropriate tool.  
Use the right bolt tightening so that the ends won't be damaged.

The welding of the ends for the SW and the BW types, must be done with the central part removed.  
A gauge can be used to have the good length and alignment between the ends.

#### **INSTALLATION OF THE CENTRAL PART**

During the installation of the central part, tighten bolts according to the table below. Tighten bolts in cross.

#### **BOLT TIGHTENING TABLE ( in Nm) :**

DN	15	20	25	32	40	50
NPS	1/2"	3/4"	1"	1"1/4	1"1/2	2"
Torque (Nm)	9.8	9.8	22.07	22.07	39.2	39.2

#### **CLEANING AND TESTS**

Keep opened the valves during the cleaning operation so that there are no impurities between the ball and the body.

Tests under pressure must be done with a cleaned pipe-line.

Open partially the valve for tests. Pressure test do not exceed the valve specifications according to EN 12266-1.

#### **MAINTENANCE**

It's recommended to operate the valve twice ( open and close ) 1 to 2 times per year.

When intervention on the valve, be sure there's no pressure in the pipe-line, there's no fluid in it, and that it is isolated.  
The temperature must be low enough to operate without risks.  
If there's a corrosive fluid, inert installation before intervention.

When the valve is under pressure :

If there's a leakage between the body and the ends, tighten bolts according to the above table

If there's a leakage at the packing, tighten it slightly so that the leakage disappears.

#### **MAINTENANCE OPERATION IN WORKSHOP**

##### **REPLACEMENT OF SEAT GASKETS AND PACKING.**

The central part must be removed.

Turn the ball at 45° and removed the seat gaskets.

Operate the valve in closed position to removed the ball. Verify the surface of the ball has no impacts and no scores.

If there are important scores or impacts, replace the ball.

Clean inside the body valve and remove the impurities.

To replace the packing, remove the handle, unscrew the gland nut, extract the stem by the inside of the valve.

Clean the packing seat.

Reassemble thrust washer on stem, introduce stem by the inside of the valve, reassemble packing with packing nut, reassemble hand washer, hand nut and the handle.

Turn stem in closed position and insert the ball.

Then turn the ball in opened position and reassemble the seat.

Place the valve on the installation, tighten bolts according to the above table.

Then proceed to the tests in the same way that the first installation.