Process to Instrument Valves

API 6A Christmas Tree and Wellhead Valves

Parker

ENGINEERING YOUR SUCCESS.

API 6A Christmas Tree and Wellhead Valves

Introduction

Offshore and Onshore Safety Measures

API valves are lightweight and compact, which is essential for both offshore and onshore installations. They can be easily installed to exisiting designs and offer low cost fabrication.

One concern on platforms, is the pressure in the voids between the anulas casing strings of a well – any sudden increase or change could indicate leaks in the casing strings or cement bonding.

There is consequently now a growing trend to monitor the pressure in each void, so that operators can gain early warning of impending problems and implement emergency shutdown procedures to avoid disaster.

The need for improved annular casing pressure management is becoming more acute as operators of onshore and offshore oil and gas platforms move into deeper environments and encounter higher reservoir pressures and temperatures – and it is one of the reasons why the UK's Health and Safety Executive is urging operators to adopt its guidelines for well integrity.

The issue is not just confined to the offshore sector. Energy companies are being forced to drill to greater depths at many onshore exploration sites now that the shallow layers of oil and gas reservoirs have been substantially exploited, which again involves higher operating pressures.

Testing

Parker's double block and bleed valves have been tested for conformance to API 6A specifications by an independent test house, as well as by the internal test laboratory that Parker operates at its European design and manufacturing facility in Barnstaple, UK.

Applications

- Christmas tree and wellhead (see illustration on opposite page)
- HIPPS (High Integrity Pressure Protection System) for use in wellhead flowline pressure protection

Technical Support Helpdesk

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API 6A Codes and Practises

Ball Valve Design Compliance

- Single piece, close to shape forging - API 6A minimum yield material compliance - PSL 3/3G tested
- Hub ended single piece forged body - API 6A minimum yield material compliance - PSL 3/3G tested
- Body and enclosure items NDE tested to API 6A - PSL 3/3G
- Valve assemblies tested to PSL 3/3G with serialization
- Firesafe designed and tested to API 6FA / API 607 at 15,000 psi
- Anti-static design

Needle Valve Design Compliance

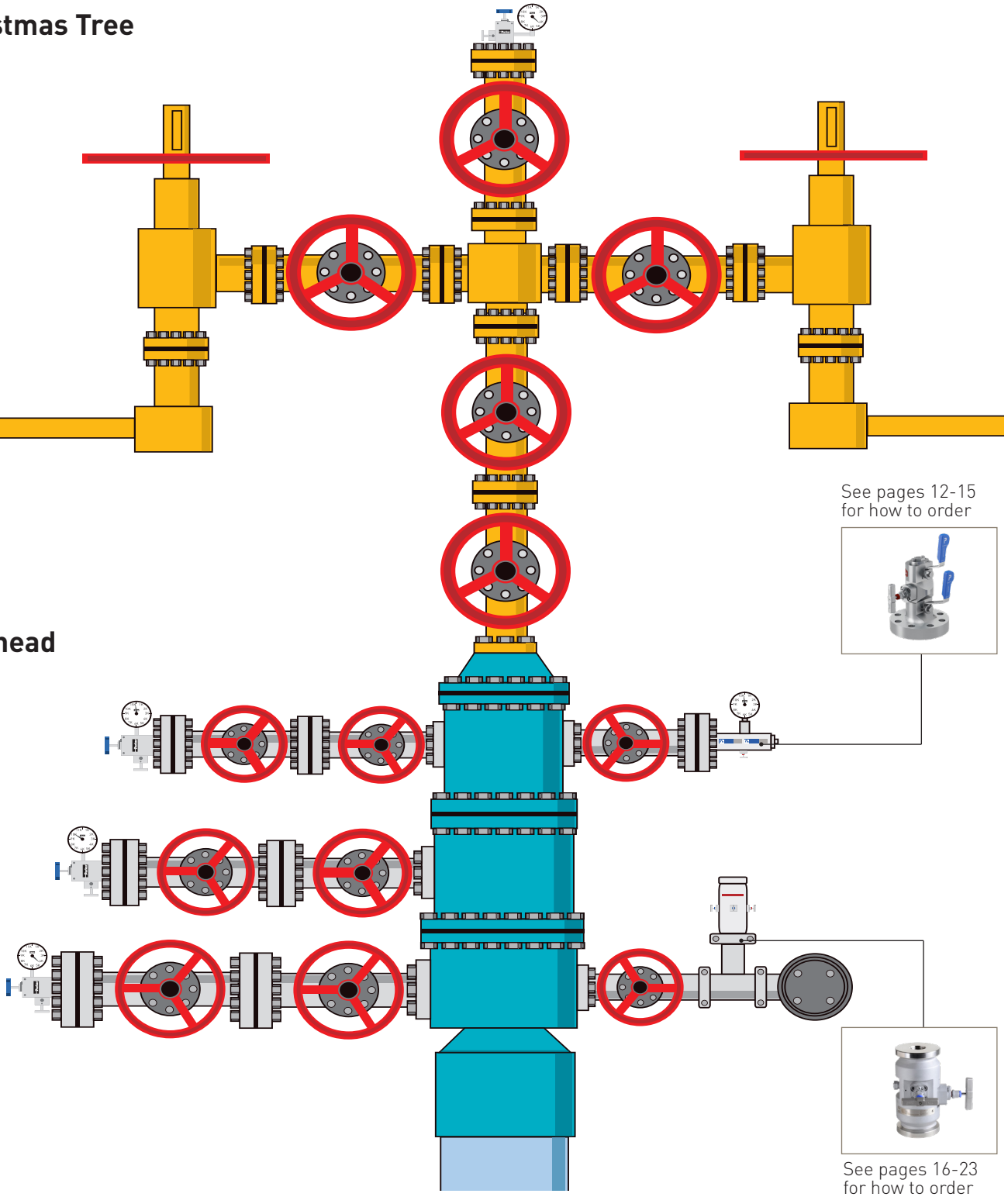
- Bolted bonnet [enclosures] with anti-blow out stem. API 6A- 60K minimum yield material compliance - PSL 3/3G tested
- Body and enclosure items NDE tested to API 6A - PSL 3/3G
- PTFE - Primary packing with firesafe backup graphite packing
- Firesafe designed and tested to API 6FA at 10,000 psi. Qualified up to 15,000 psi

Design Codes

- API 6A / ISO 10423 - Allowable stress Sm= 2/3Sy where Sy is the material minimum yield strength
- API 6A / ISO 10423 - (Flange Dimensions)
- ISO 17292
- Firesafe designed and tested to API 6FA / API 607 at 10,000 psi - (10K Ball Valve)
- Firesafe designed and tested to API 6FA at 10,000 psi. Qualified up to 15,000 psi - (Needle Valves)
- Firesafe designed and tested to API 6FA / API 607 at 15,000 psi - (15K Ball Valve)
- ANSI/ASME B1.20.1 (Threads)

Christmas Tree

Wellhead



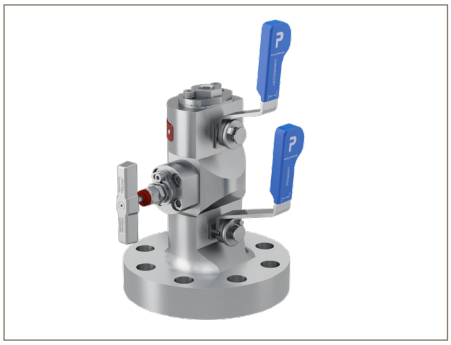
See pages 12-15 for how to order

See pages 16-23 for how to order

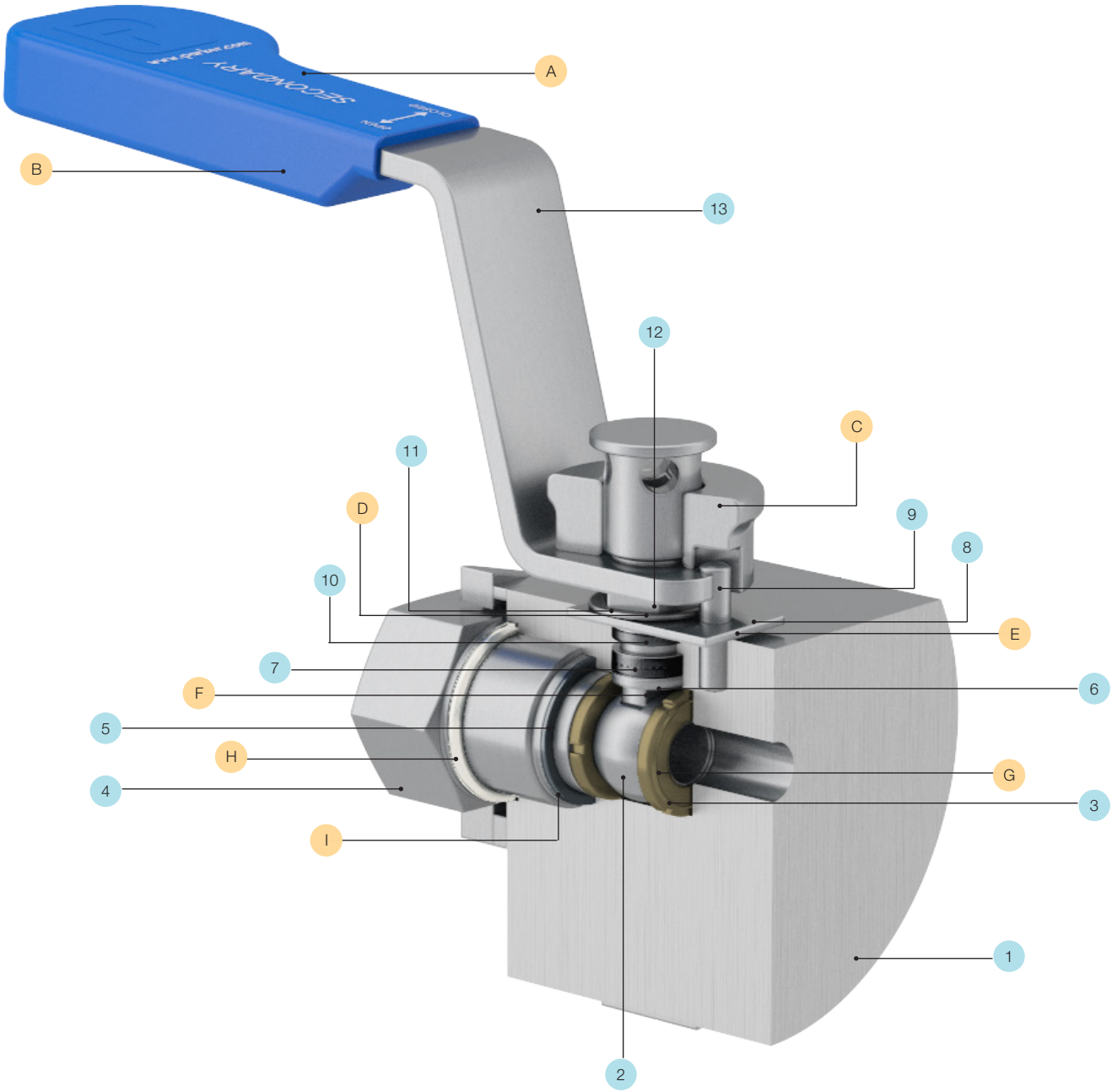
Ball Valve Design - 5K and 10K

Overview

Parker's uni directional quarter turn ball valve anti-static design is based on the Hi-Pro® ball valves series which has been used in the field on many services over a twenty-year time span. Just like the Hi-Pro®, the API 6A design incorporates slotted seats. This gives inherent cavity relief preventing over pressure occurring within the ball/seat cavity when the valve is in the closed position. The stem itself is a blow-out proof design. The valves are a straight through bore that helps to prevent "plugging" of the bore.



For pressure and temperature chart please see page 24



Bill of Materials

Reference	Description	Duplex	Super Duplex	625	PSL 3/3G
1	Body	A182-F51	A182-F53/F55	ASTM B564 Gr. N06625	YES
2	Ball	A479-UNS S31803	A479-UNS S32750/S32760	ASTM B446 Gr. N06625	YES
3	Seats	PEEK	PEEK	PEEK	
4	End Adaptor	A479-UNS S31803	A479-UNS S32750/S32760	ASTM B446 Gr. N06625	YES
5	Joint Seal	6mo	ASTM B446 Gr. N06625	ASTM B446 Gr. N06625	
6	Stem	A479-UNS S31803	A479-UNS S32750/S32760	ASTM B446 Gr. N06625	YES
7	Packing	Graphite	Graphite	Graphite	
8	Ant-torque plate	316 St.Stl	316 St.Stl	316 St.Stl	
9	Stop Pin	316 St.Stl	316 St.Stl	316 St.Stl	
10	Thrust Bush	316 St.Stl	316 St.Stl	316 St.Stl	
11	Spring Washer	X12CrNi17 7 (DIN 1.4310)	X12CrNi17 7 (DIN 1.4310)	X12CrNi17 7 (DIN 1.4310)	
12	Spindle Nuts	A4. St.Stl	A4. St.Stl	A4. St.Stl	
13	Handle	316 St.Stl	316 St.Stl	316 St.Stl	

Notes: NPT & Autoclave plugs/glands are not PSL3 tested as standard.

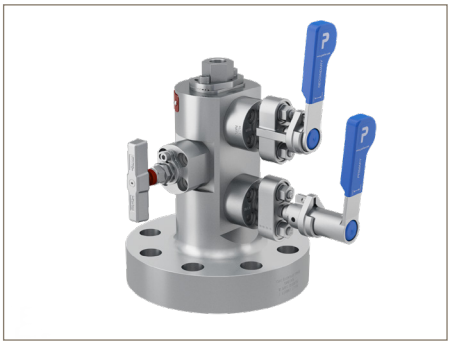
Features, Benefits and Values

Reference	Feature	Benefit	Value
A	Identification of primary and secondary valves	Removes possibility of operating error	Safety
B	Ergonomic vinyl sleeve	Easy to grip	Ease of operation
C	Handle locking mechanism	Enables the valve to be locked in either the open or closed position	Safety
D	EEMUA 182 Locking Nut	Ensures packing integrity if handle needs to be removed	Performance and reliability
E	Torque plate	Reduces operational torque on packing	Ease of operation
F	Anti blow out stem	Prevents stem blow out	Safety
G	Slotted seats	Inherent cavity relief	Safety
H	Environmental seal	Preventing aggressive dirt and moisture	Performance and reliability
I	Primary metallic atmospheric seal	No elastomers, therefore no seal deterioration	Performance and reliability

Ball Valve Design - 15K

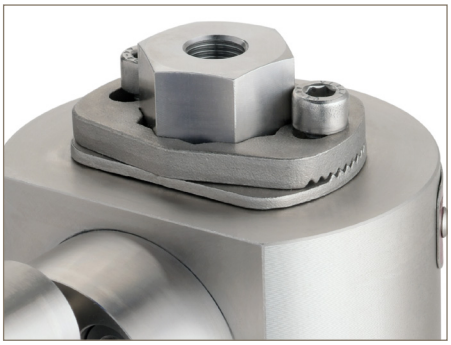
Overview

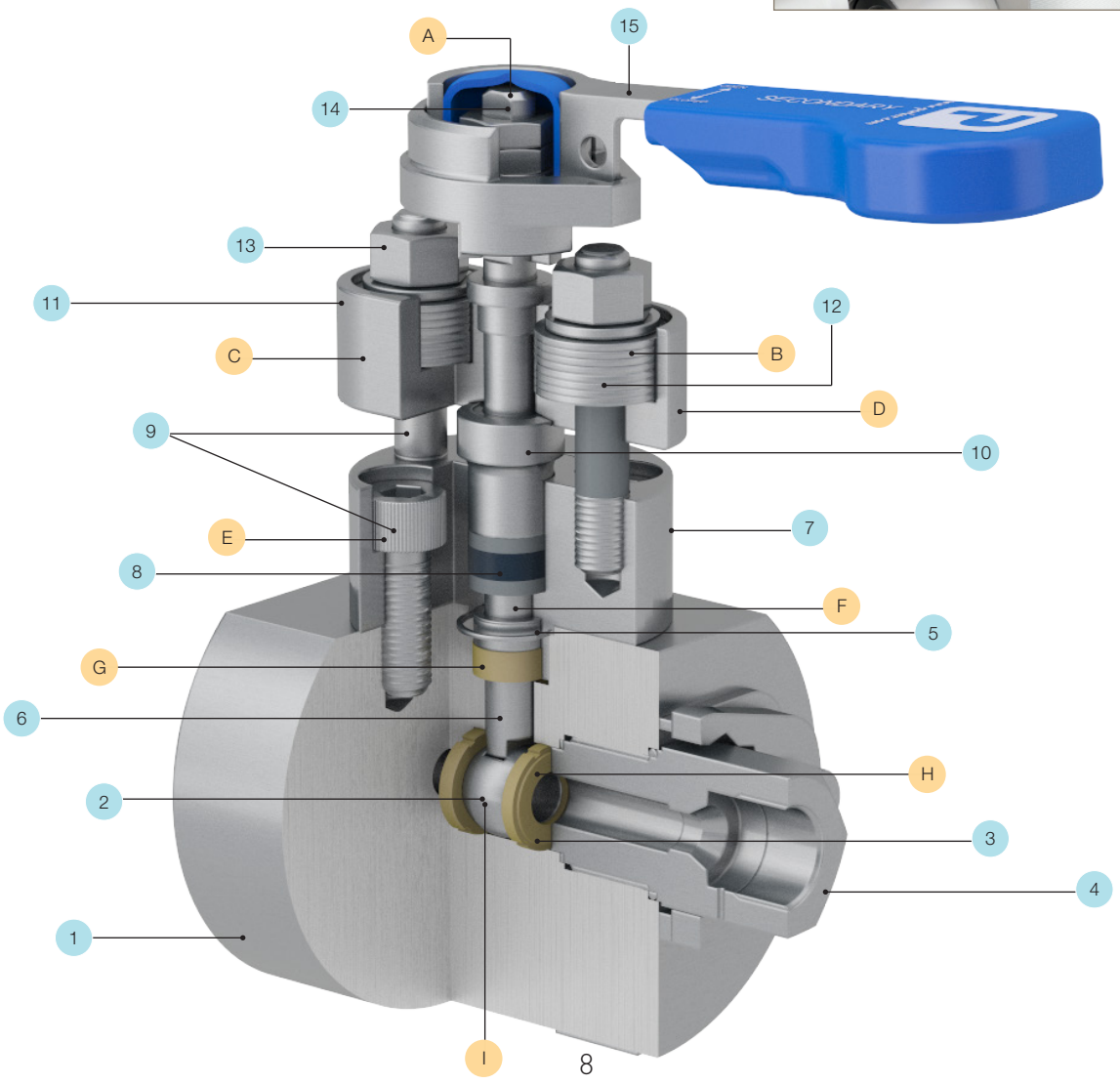
In addition to the features mentioned for the 5,000 and 10,000 ball valve design, the stem packing is live loaded graphite. The live loading assists the packing to compensate for any wear during the service life of the valve. This in turn reduces the need for any maintenance and prolongs the up-time of the valve. The live loaded packing is compressed by an Outside Screw and Yoke design, commonly used in piping valves as it is both strong and reliable. The stem itself is a blow-out proof design.



Tru-Loc® Mechanical Sealed End Connection

Designed specifically for Pro-Bloc end connection security. Extensive tests have proved that end connections locked with the Tru-Loc® end connector locking mechanism give 100% security and prevent end connector movement when disconnecting instruments or connectors. This ensures that the ball seat is securely positioned at all times.





Bill of Materials

Reference	Description	Duplex	Super Duplex	625	PSL 3/3G
1	Body	A182-F51	A182-F53/F55	ASTM B564 Gr. N06625	YES
2	Ball	A479-UNS S32750/S32760	A479-UNS S32750/S32760	Alloy 718 API	YES
3	Seats	PAI	PAI	PAI	
4	End Adaptor	A479-UNS S31803	A479-UNS S32750/S32760	ASTM B446 Gr. N06625	YES
5	Joint Seal	6mo	Alloy 625	Alloy 625	
6	Stem	A479-UNS S32750/S32760	A479-UNS S32750/S32760	Alloy 718 API	YES
7	Bonnet	A479-UNS S31803	A479-UNS S32750/S32760	ASTM B446 Gr. N06625	YES
8	Packing	Graphite	Graphite	Graphite	
9	Studs	ASTM A453 GR.660A	ASTM A453 GR.660A	ASTM A453 GR.660A	
10	Thrust Bush	A479-UNS S31803	A479-UNS S32750/S32760	ASTM B446 Gr. N06625	
11	OSY Bridge	Super Duplex ASTM A995 Gr. 6A	Super Duplex ASTM A995 Gr. 6A	Super Duplex ASTM A995 Gr. 6A	
12	Spring Washer	X12CrNi17 7 (DIN 1.4310)	X12CrNi17 7 (DIN 1.4310)	X12CrNi17 7 (DIN 1.4310)	
13	OSY Nuts	ASTM A453 GR.660A	ASTM A453 GR.660A	ASTM A453 GR.660A	
14	Spindle Nuts	A4. St.Stl	A4. St.Stl	A4. St.Stl	
15	Handle	316 St.Stl	316 St.Stl	316 St.Stl	

Notes: NPT & Autoclave plugs/glands are not PSL3 tested as standard.

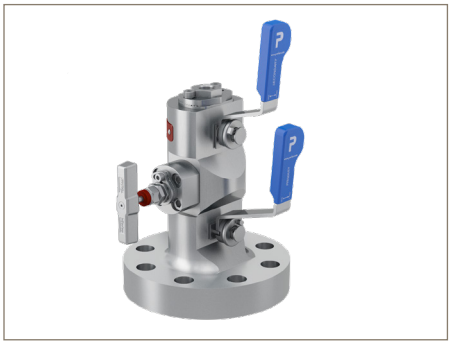
Features, Benefits and Values

Reference	Feature	Benefit	Value
A	Handle locking mechanism	Enables the valve to be locked in either the open or closed position	Safety
B	Bevel washers (coned disk spring) for live loading of packing	Compensates for wear of the packing, preventing stem leakage	Safety
C	Yoke (bridge) is manufactured from Super Duplex casting as standard	API 6A material compliant	Safety
D	Proprietary high pressure graphite packing with corrosion inhibitor	Fire safe	Safety
E	Bolted bonnet	Removes mechanical hold threads from the process media	Performance and reliability
F	Anti blow out stem	Prevents stem blow out	Safety
G	Primary metallic atmospheric seal	No elastomers, therefore no seal deterioration	Performance and reliability
H	Slotted seats	Provides equalization of cavity pressure	Performance and reliability
I	Vented ball	Ensures body cavity relief is achieved	Safety

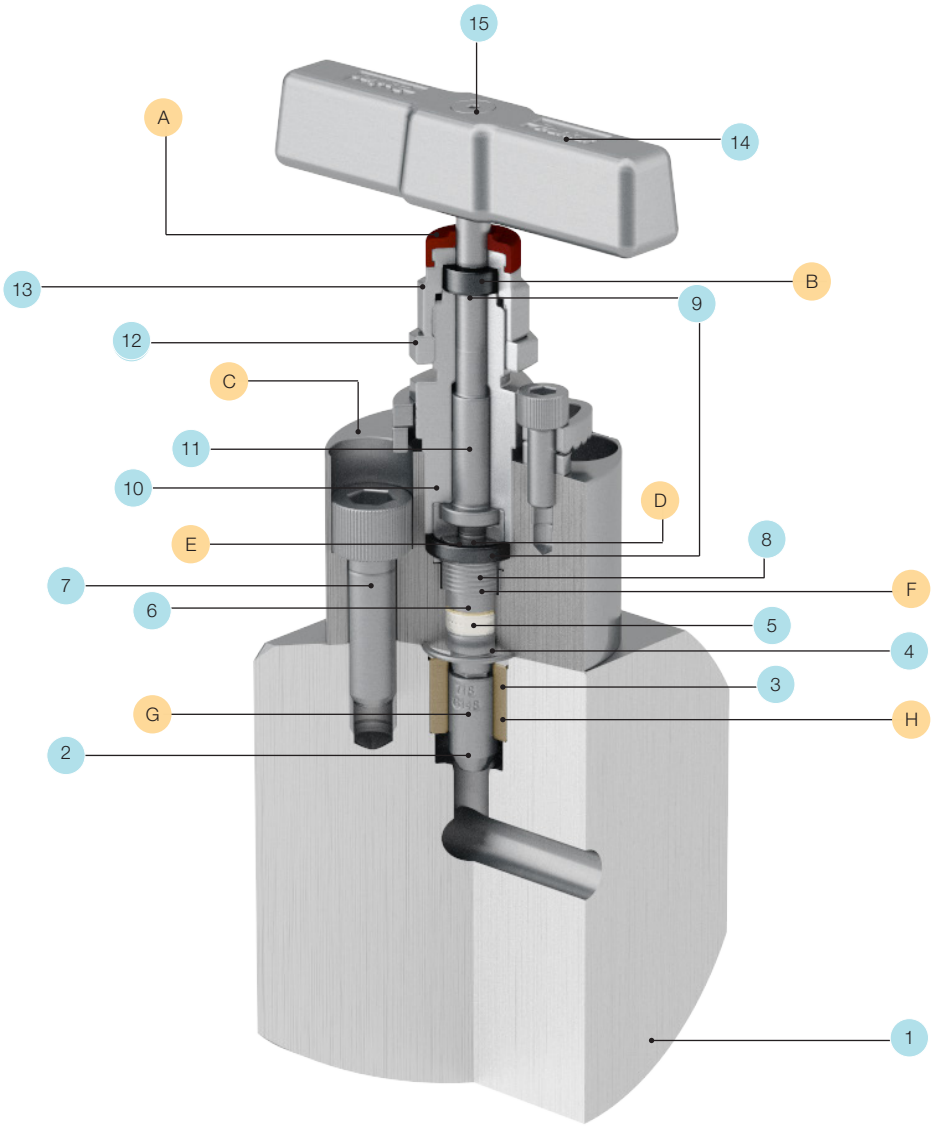
Needle Valve Design - 5K, 10K and 15K

Overview

The Parker heavy duty needle valve has been extensively used both offshore and onshore, including sour gas fields. The two piece stem ensures the tip does not rotate on closure ensuring a gas tight shut off with no opportunity for seat damage or galling. The packing itself is below the stem threads protecting them from the media and ensuring the thread lubricant is not "washed out".



The stem packing is a combination of PTFE and high purity graphite which is live loaded to reduce the need for packing adjustment. A protective cap is secured above the threads to prevent ingress of moisture or dirt. The valve has a bolted bonnet construction which is stronger, safer and more reliable than a screwed bonnet design. The sealing between bonnet and head unit is a metal seal for increased durability and increased operating life. The handle is held firmly into the top of the stem with an anti-vibration design to prevent the handle becoming loose in operation.



Bill of Materials

Reference	Description	Duplex	Super Duplex	625	PSL 3/3G
1	Body	A182-F51	A182-F53/F55	ASTM B564 Gr. N06625	YES
2	Lower Stem	A479-UNS S32750/ S32760	ASTM B446 Gr. N06625	Alloy 718 API	YES
3	Stem Guide	PEEK	PEEK	PEEK	
4	Joint Seal	6mo	ASTM B446 Gr. N06625	ASTM B446 Gr. N06625	
5	Packing	P.T.F.E	P.T.F.E	P.T.F.E	
6	Thrust Bush	A479-UNS S31803	A479-UNS S32750/S32760	ASTM B446 Gr. N06625	
7	Bonnet Studs	ASTM A453 GR.660A	ASTM A453 GR.660A	ASTM A453 GR.660A	
8	Spring Washer	X12CrNi17 7 (DIN 1.4310)	X12CrNi17 7 (DIN 1.4310)	X12CrNi17 7 (DIN 1.4310)	
9	Firesafe Packing	Graphite	Graphite	Graphite	
10	Gland Adjuster	A479-UNS S31803	A479-UNS S32750/S32760	ASTM B446 Gr. N06625	YES
11	Upper Stem	A479-UNS S31803	A479-UNS S32750/S32760	ASTM B446 Gr. N06625	YES
12	Bolted Bonnet	A479-UNS S31803	A479-UNS S32750/S32760	ASTM B446 Gr. N06625	YES
13	Firesafe Gland	A479-UNS S31803	A479-UNS S32750/S32760	ASTM B446 Gr. N06625	YES
14	Handle	316 St.Stl	316 St.Stl	316 St.Stl	
15	Handle Screw	316 St.Stl	316 St.Stl	316 St.Stl	

Notes: NPT & Autoclave plugs/glands are not PSL3 tested as standard.

Features, Benefits and Values

Reference	Feature	Benefit	Value
A	Protective cap	Secured above the threads to prevent ingress of moisture or dirt	Durability
B	Fire safe / environmental seal	Fire safe	Safety
C	Bolted bonnet	Removes mechanical hold threads from the process media	Performance and reliability
D	Anti blow out stem	Prevents stem blow out	Safety
E	Two piece stem	Lower stem non rotational for increased cycle life and improved seal ability, preventing damage to seat	Safety, performance and reliability
F	Bevel washers (coned disk spring) for live loading of packing	Compensates for wear of the packing, preventing stem leakage and compensates for temperature cycling	Performance and reliability
G	PEEK guide bush	Aides with centering of tip	Performance
H	Primary metallic atmospheric seal	No elastomers, therefore no seal deterioration	Performance and reliability

Flanged Ball Valves

Part Number Builder 5K and 10K

APB	Y	1	00	E33T10K	9C		L1	FN

Series	
API Pro-Bloc	APB

Ball Valve Bore Size	
10 mm	Y

Style	
Flange x Screw	1
Flange x Flange	2

Arrangement	
Block Bleed Block 1st Isolate: Ball Vent: Needle 2nd Isolate: Ball	00
Block and Bleed 1st Isolate: Ball Vent: Needle	30

Outlet / Vent Connection	
1/2" FNPT	-
9/16" MP Autoclave	9C
3/8" MP Autoclave	6C

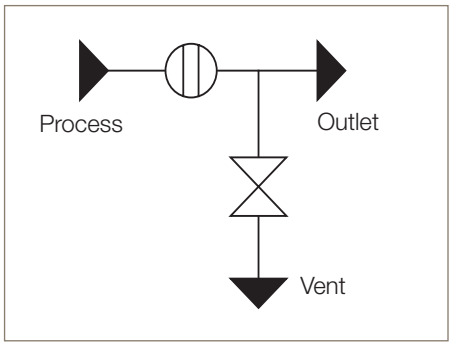
Valve Handle Options	
Padlock Handle Locking Primary Ball Valve Only	L1
Padlock Handle Locking Secondary Ball Valve	L2
Padlock Handle Locking Primary and Secondary Ball Valve	L12

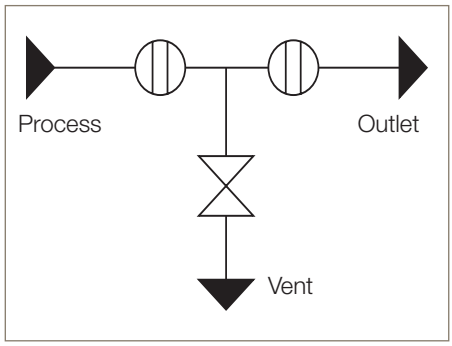
Condition	
Fire Safe	F
NACE	N
Fire Safe & NACE	FN

Process / Instrument Connection[1]							
Material		Flange Size		Face Style		Flange Class	
Duplex	E	2 - 1/6"	33	Ring Type Joint	T	5,000 PSI (6B)	5K
		1 - 13/16"	29			10,000 PSI (6BX)	10K
		2 - 1/6"	33				
		2 - 9/16"	41				
Super Duplex	F	2 - 1/6"	33			5,000 PSI (6B)	5K
		1 - 13/16"	29			10,000 PSI (6BX)	10K
		2 - 1/6"	33				
		2 - 9/16"	41				
625	M	2 - 1/6"	33			5,000 PSI (6B)	5K
		1 - 13/16"	29			10,000 PSI (6BX)	10K
		2 - 1/6"	33				
		2 - 9/16"	41				

Notes:

- PEEK seat as standard
- If 1/2" NPT (F) outlet is selected then vent connection is 1/2"NPT (F) only. No connection designator required





Flanged Ball Valves

Example Part Numbers 5K and 10K

Example 1 - APBY100E33T5KFN

Pro-Bloc 10mm Bore
Flange x Screw
Block-Bleed-Block (Ball-Needle-Ball)
Duplex A182-F51
Process Flange: API 6A - 2 1/16" x 5,000 PSI 6B
M.C.W.P: 5,000 psig [344 barg]
Outlet/Vent connections: 1/2-14 NPT (FEM)
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Example 2 - APBY230F33T10K9CL1FN

Pro-Bloc 10mm Bore
Flange x Flange
Block-Bleed (Ball-Needle)
Super Duplex A182-F53/F55
Process Flange: API 6A - 2 1/16" x 10,000 PSI 6BX
Instrument Flange: API 6A - 2 1/16" x 10,000 PSI 6BX
M.C.W.P: 10,000 psig [689 barg]
Vent connections: 9/16" Medium Pressure Autoclave
Valve locking – Primary ball valve
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Example 3 - APBY100F33T10K9CL12FN

Pro-Bloc 10mm Bore
Flange x Screw
Block-Bleed-Block (Ball-Needle-Ball)
Super Duplex A182-F53/F55
Process Flange: API 6A - 2 1/16" x 10,000 PSI 6BX
M.C.W.P: 10,000 psig [689 barg]
Outlet connection: 9/16" Medium Pressure Autoclave
Vent connection: 1/2-14 NPT (FEM)
Valve locking – Primary & secondary ball valves
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Example 4 - APBY100M33T10K9C6CL12FN

Pro-Bloc 10mm Bore
Flange x Screw
Block-Bleed-Block (Ball-Needle-Ball)
Alloy 625 ASTM B564 Gr. N06625
Process Flange: API 6A - 2 1/16" x 10,000 PSI 6BX
M.C.W.P: 10,000 psig [689 barg]
Outlet connection: 9/16" Medium Pressure Autoclave
Vent connection: 3/8" Medium Pressure Autoclave
Valve locking – Primary & secondary ball valves
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Flanged Ball Valves

Part Number Builder 15K

APB	Y	1	00	F29T15K	9C	L1	FN

Series

API Pro-Bloc	APB

Ball Valve Bore Size

10 mm	Y

Style

Flange x Screw	1
Flange x Flange	2

Arrangement

Block Bleed Block 1st Isolate: Ball Vent: Needle 2nd Isolate: Ball	00
Block and Bleed 1st Isolate: Ball Vent: Needle	30

Process / Instrument Connection

Material		Flange Size		Face Style		Flange Class	
Super Duplex	F	1 - 13/16”	29	Ring Type Joint	T	15,000 PSI (6BX)	15K
		2 - 1/6”	33				

Outlet / Vent Connection

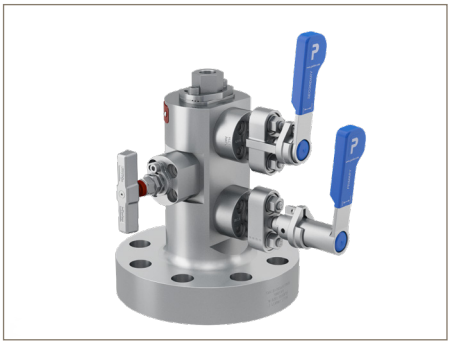
9/16” MP Autoclave	9C
3/8” MP Autoclave	6C

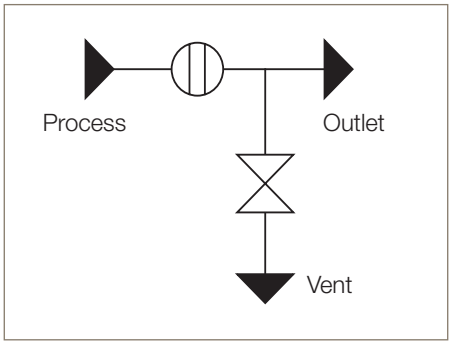
Valve Handle Options

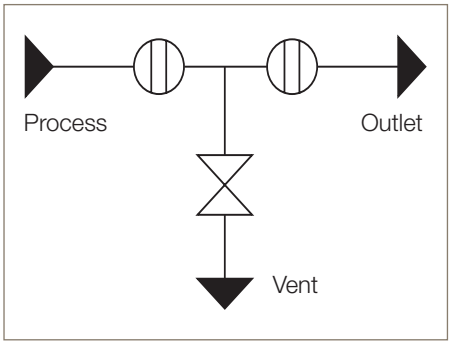
Padlock Handle Locking Primary Ball Valve Only	L1
Padlock Handle Locking Secondary Ball Valve	L2
Padlock Handle Locking Primary and Secondary Ball Valve	L12

Condition

Fire Safe	F
NACE	N
Fire Safe & NACE	FN







Flanged Ball Valves

Example Part Numbers15K

Example 1 - APBY100F29T15K9C9CL12FN

Pro-Bloc 10mm Bore
Flange x Screw
Block-Bleed-Block (Ball-Needle-Ball)
Super Duplex A182-F53/F55
Process Flange: API 6A - 1 13/16" x 15,000 PSI 6BX
M.C.W.P: 15,000 psig [1034 barg]
Outlet/Vent connection: 9/16" Medium Pressure Autoclave
Valve locking – Primary & secondary ball valves
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Example 2 - APBY230F29T15K9CL12FN

Pro-Bloc 10mm Bore
Flange x Flange
Block-Bleed (Ball-Needle)
Super Duplex A182-F53/F55
Process Flange: API 6A - 1 13/16" x 15,000 PSI 6BX
Instrument Flange: API 6A - 1 13/16" x 15,000 PSI 6BX
M.C.W.P: 15,000 psig [1034 barg]
Vent connection: 9/16" Medium Pressure Autoclave
Valve locking – Primary & secondary ball valves
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Example 3 - APBY130F29T15K9C6CL1FN

Pro-Bloc 10mm Bore
Flange x Screw
Block-Bleed (Ball-Needle)
Super Duplex A182-F53/F55
Process Flange: API 6A - 1 13/16" x 15,000 PSI 6BX
M.C.W.P: 15,000 psig [1034 barg]
Outlet connection: 9/16" Medium Pressure Autoclave
Vent connection: 3/8" Medium Pressure Autoclave
Valve locking – Primary ball valve
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Grayloc® Hub Ball Valves

Part Number Builder 10K

APB **Y** **1** **00** **E24G11** **10K** **9C** **L1** **FN**

Series	
API Pro-Bloc	APB

Ball Valve Bore Size	
10 mm	Y

Style	
Hub x Screw	1
Hub x Hub	2

Arrangement	
Block Bleed Block 1st Isolate: Ball Vent: Needle 2nd Isolate: Ball	00
Block and Bleed[1] 1st Isolate: Ball Vent: Needle	30

1. The hub x hub outlet end will also include a female 9/16 MP Autoclave Connection

Pressure Rating	
10K PSI	10K

Outlet / Vent Connection[2]	
1/2" FNPT	-
9/16" MP Autoclave	9C
3/8" MP Autoclave	6C

2. The female medium pressure vent is supplied with a plug.

Valve Handle Options	
Padlock Handle Locking Primary Ball Valve Only	L1
Padlock Handle Locking Secondary Ball Valve	L2
Padlock Handle Locking Primary and Secondary Ball Valve	L12

Condition	
Fire Safe	F
NACE	N
Fire Safe & NACE	FN

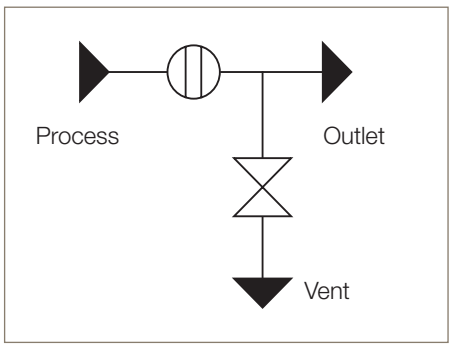
Process / Instrument Connection[1]

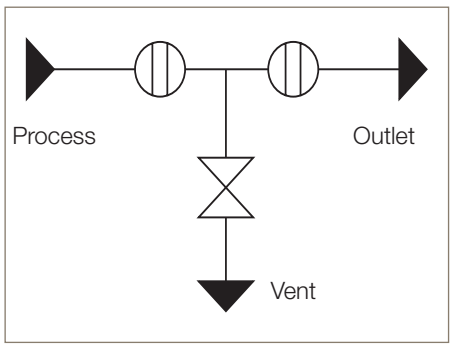
*Clamp & Bolt Material	Material		Hub Size					
AISI 4140 Clamp & A320-L7 Bolting	Duplex	E	1 - 1/2"	24	Hub	G	Seal 11	11
			1 - 1/2"	24			Seal 14	14
			2"	32			Seal 11	11
			2"	32			Seal 13	13
			2"	32			Seal 14	14
			2"				Seal 16	16
			2"	32	Heavy Duty Hub	B	Seal 14	14
AISI 4140 Clamp & A320-L7 Bolting	Super Duplex	F	1 - 1/2"	24	Hub	G	Seal 11	11
			1 - 1/2"	24			Seal 11	14
			2"	32			Seal 11	11
			2"	32			Seal 13	13
			2"	32			Seal 14	14
			2"	32			Seal 16	16
			2"	32			Seal 20	20
			2"	32	Heavy Duty Hub	B	Seal 14	14
A182-F304 Clamp & A320-B8 Bolting	625	M	1 - 1/2"	24	Hub	G	Seal 11	11
			2"	32			Seal 11	11
			2"	32			Seal 13	13
			2"	32	Heavy Duty Hub	B	Seal 14	14

Notes:

- If 1/2" NPT (F) outlet is selected then vent connection is 1/2"NPT (F) only. No connection designator required
- Hub/Seal size selection shown is based on the overall combined pressure capability of base material with the clamp and bolt materials as listed

* Hub ended valves are NOT supplied with seals, clamps and bolts as standard





Grayloc® Hub Ball Valves

Example Part Numbers 10K

Example 1 - APBY100F32G1410K9C6CL12FN

Pro-Bloc 10mm Bore
Hub x Screw
Block-Bleed-Block (Ball-Needle-Ball)
Super Duplex A182-F53/F55
Process hub: 2" GR 14
Outlet connection: 9/16" Medium Pressure Autoclave
Vent connection: 3/8" Medium Pressure Autoclave
M.C.W.P: 10,000 psig [689 barg]
Valve locking – Primary & secondary ball valves
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Example 2 - APBY100M24G1110K9C9CL12FN

Pro-Bloc 10mm Bore
Hub x Screw
Block-Bleed-Block (Ball-Needle-Ball)
Alloy 625
Process hub: 1 1/2" GR 11
Outlet connection: 9/16" Medium Pressure Autoclave
Vent connection: 9/16" Medium Pressure Autoclave
M.C.W.P: 10,000 psig [689 barg]
Valve locking – Primary & secondary ball valves
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Example 3 – APBY200F32G1410K6CL12FN

Pro-Bloc 10mm Bore
Hub x Hub
Block-Bleed-Block (Ball-Needle-Ball)
Super Duplex A182-F53/F55
Process hub: 2" GR 14
Outlet connection: 2" GR 14
Vent connection: 3/8" Medium Pressure Autoclave
M.C.W.P: 10,000 psig [689 barg]
Valve locking – Primary & secondary ball valves
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Grayloc® Hub Ball Valves

Part Number Builder 15K

APB	Y	1	00	E24G11	15K	9C	L1	FN

Series

API Pro-Bloc	APB

Ball Valve Bore Size

10 mm	Y

Style

Hub x Screw	1
Hub x Hub	2

Arrangement

Block Bleed Block 1st Isolate: Ball Vent: Needle 2nd Isolate: Ball	00
Block and Bleed[1] 1st Isolate: Ball Vent: Needle	30

1. The hub x hub outlet end will also include a female 9/16 MP Autoclave Connection

Pressure Rating

15K PSI	15K

Outlet / Vent Connection[2]

9/16" MP Autoclave	9C
3/8" MP Autoclave	6C

2. The female medium pressure vent is supplied with a plug.

Valve Handle Options

Padlock Handle Locking Primary Ball Valve Only	L1
Padlock Handle Locking Secondary Ball Valve	L2
Padlock Handle Locking Primary and Secondary Ball Valve	L12

Condition

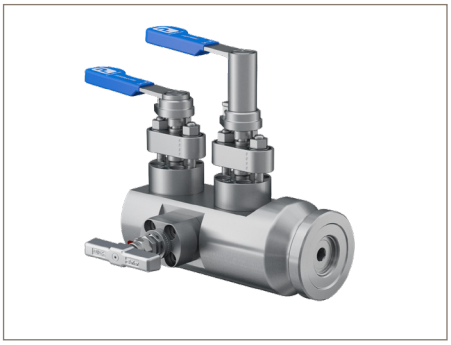
Fire Safe	F
NACE	N
Fire Safe & NACE	FN

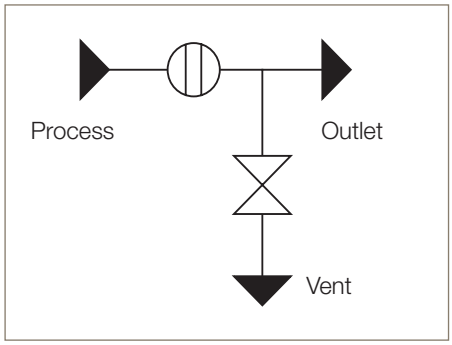
Process / Instrument Connection

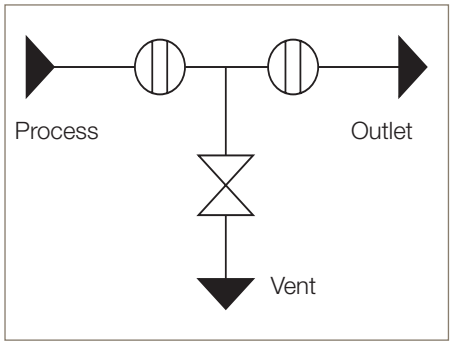
*Clamp & Bolt Material	Material		Hub Size						
AISI 4140 Clamp & A320-L7 Bolting	Duplex	E	1 - 1/2"	24	Hub	G	Seal 11	11
			2"	32			Seal 11	11
			2"	32			Seal 13	13
			2"	32			Seal 14	14
			2"	32	Heavy Duty Hub	B	Seal 14	14
AISI 4140 Clamp & A320-L7 Bolting	Super Duplex	F	1 - 1/2"	24	Hub	G	Seal 11	11
			2"	32			Seal 14	14
			2"	32			Seal 13	13
			2"	32			Seal 14	14
			2"	32			Seal 16	16
			2"	32	Heavy Duty Hub	B	Seal 14	14
A182-F304 Clamp & A320-B8 Bolting	625	M	1 - 1/2"	24	Hub	G	Seal 11	11
			2"	32			Seal 11	11
			2"	32	Heavy Duty Hub	B	Seal 14	14

Notes:

- Hub/Seal size selection shown is based on the overall combined pressure capability of base material with the clamp and bolt materials as listed
- * Hub ended valves are NOT supplied with seals, clamps and bolts as standard







Grayloc® Hub Ball Valves

Example Part Numbers 15K

Example 1 - APBY100E32G1415K9C6CL12FN
Pro-Bloc 10mm Bore
Hub x Screw
Block-Bleed-Block (Ball-Needle-Ball)
Duplex A182-F51
Process hub: 2" GR 14
Outlet connection: 9/16" Medium Pressure Autoclave
Vent connection: 3/8" Medium Pressure Autoclave
M.C.W.P: 15,000 psig [1034 barg]
Valve locking – Primary & secondary ball valves
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Example 2 – APBY230M32B1415K9CL1FN
Pro-Bloc 10mm Bore
Hub x Screw
Block-Bleed (Ball-Needle)
Alloy 625
Process hub: 2" B14
Outlet hub: 2" B14
Vent connection: 9/16" Medium Pressure Autoclave
M.C.W.P: 15,000 psig [1034 barg]
Valve locking – Primary ball valve
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Grayloc® Hub Needle Valves

Part Number Builder 10K

APB	1	NN	E24G11	10K	9C	FN

Series

Hub to Hub	APB

Style

Hub x Screw	1
Hub x Hub	2

Arrangement[1]

Block Bleed Block 1st Isolate: Needle Vent: Needle 2nd Isolate: Needle	NNN
Block and Bleed 1st Isolate: Needle Vent: Needle	NN

1. The hub x hub outlet end will also include a female 9/16 MP Autoclave Connection

Pressure Rating

10K PSI	10K

Outlet / Vent Connection[2]

1/2" FNPT	
9/16" MP Autoclave	9C
3/8" MP Autoclave	6C

2. The female medium pressure vent is supplied with a plug.

Condition

Fire Safe	F
NACE	N
Fire Safe & NACE	FN

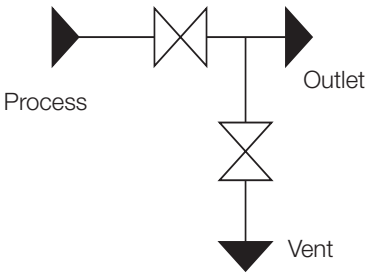
Process / Instrument Connection

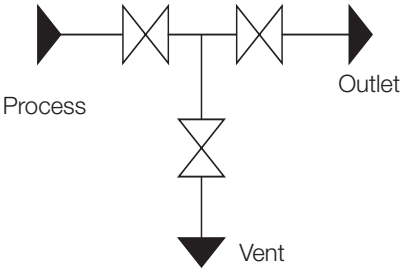
*Clamp & Bolt Material	Material		Hub Size					
AISI 4140 Clamp & A320-L7 Bolting	Duplex	E	1 - 1/2"	24	Hub	G	Seal 11	11
			1 - 1/2"	24			Seal 14	14
			2"	32			Seal 11	11
			2"	32			Seal 13	13
			2"	32			Seal 14	14
			2"	32			Seal 16	16
			2"	32	Heavy Duty Hub	B	Seal 14	14
AISI 4140 Clamp & A320-L7 Bolting	Super Duplex	F	1 - 1/2"	24	Hub	G	Seal 11	11
			1 - 1/2"	24			Seal 11	14
			2"	32			Seal 11	11
			2"	32			Seal 13	13
			2"	32			Seal 14	14
			2"	32			Seal 16	16
			2"	32			Seal 20	20
			2"	32	Heavy Duty Hub	B	Seal 14	14
A182-F304 Clamp & A320-B8 Bolting	625	M	1 - 1/2"	24	Hub	G	Seal 11	11
			2"	32			Seal 11	11
			2"	32			Seal 13	13
			2"	32	Heavy Duty Hub	B	Seal 14	14

Notes:

- Needle Valve bore size 8mm
- Hub/Seal size selection shown is based on the overall combined pressure capability of base material with the clamp and bolt materials as listed

* Hub ended valves are NOT supplied with seals, clamps and bolts as standard





Grayloc® Hub Needle Valves

Example Part Numbers 10K

Example 1 – APB2NNNF24G1110K9CFN
Pro-Bloc 8mm Bore
Hub x Hub
Block-Bleed-Block (Needle-Needle-Needle)
Super Duplex A182-F53/F55
Process hub: 1 1/2" GR 11
Outlet hub: 1 1/2" GR 11
M.C.W.P: 10,000 psig [689 barg]
Vent connection: 9/16" Medium Pressure Autoclave
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Example 2 – APB1NNE32G1310KFN
Pro-Bloc 8mm Bore
Hub x Screw
Block-Bleed (Needle-Needle)
Duplex A182-F51
Process hub: 2" GR 13
M.C.W.P: 10,000 psig [689 barg]
Outlet/Vent: 1/2" NPT (FEM)
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Grayloc® Hub Needle Valves

Part Number Builder 15K

APB	2	NN	F32B14	15K	9C	FN

Series

Hub to Hub	APB

Style[1]

Hub x Screw	1
Hub x Hub	2

Arrangement[1]

Block Bleed Block 1st Isolate: Needle Vent: Needle 2nd Isolate: Needle	NNN
Block and Bleed 1st Isolate: Needle Vent: Needle	NN

1. The hub x hub outlet end will also include a female 9/16 MP Autoclave Connection

Pressure Rating

15K PSI	15K

Outlet / Vent Connection[2]

9/16" MP Autoclave	9C
3/8" MP Autoclave	6C

2. The female medium pressure vent is supplied with a plug.

Condition

Fire Safe	F
NACE	N
Fire Safe & NACE	FN

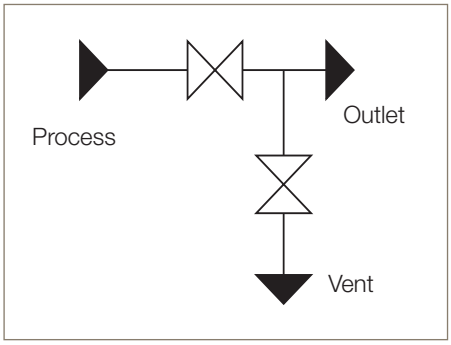
Process / Instrument Connection

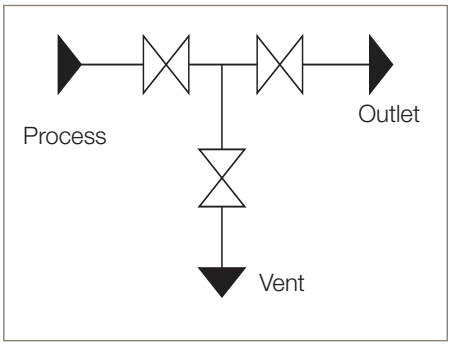
*Clamp & Bolt Material	Material		Hub Size					
AISI 4140 Clamp & A320-L7 Bolting	Duplex	E	1 - 1/2"	24	Hub	G	Seal 11	11
			2"	32			Seal 11	11
			2"	32			Seal 13	13
			2"	32			Seal 14	14
			2"	32	Heavy Duty Hub	B	Seal 14	14
AISI 4140 Clamp & A320-L7 Bolting	Super Duplex	F	1 - 1/2"	24	Hub	G	Seal 11	11
			2"	32			Seal 11	11
			2"	32			Seal 13	13
			2"	32			Seal 14	14
			2"	32			Seal 16	16
			2"	32			Seal 20	20
			2"	32	Heavy Duty Hub	B	Seal 14	14
A182-F304 Clamp & A320-B8 Bolting	625	M	1 - 1/2"	24	Hub	G	Seal 11	11
			2"	32			Seal 11	11
			2"	32	Heavy Duty Hub	B	Seal 14	14

Notes:

- Needle Valve bore size 8mm
- Hub/Seal size selection shown is based on the overall combined pressure capability of base material with the clamp and bolt materials as listed

* Hub ended valves are NOT supplied with seals, clamps and bolts as standard





Grayloc® Hub Needle Valves

Example Part Numbers 15K

Example 1 – APB2NNNF32B1415K9CFN

Pro-Bloc 8mm Bore
Hub x Hub
Block-Bleed-Block (Needle-Needle-Needle)
Super Duplex A182-F53/F55
Process hub: 2" B14
Outlet hub: 2" B14
M.C.W.P: 15,000 psig [1034 barg]
Vent connection: 9/16" Medium Pressure Autoclave
Firesafe to API 6FA/API 607
NACE MR0175 compliance

Example 2 – APB1NNE32G1415K9C9CFN

Pro-Bloc 8mm Bore
Hub x Screw
Block-Bleed (Needle-Needle)
Duplex A182-F51
Process hub: 2" GR 14
Outlet connection: 9/16" Medium Pressure Autoclave
Vent connection: 9/16" Medium Pressure Autoclave
M.C.W.P: 15,000 psig [1034 barg]
Firesafe to API 6FA/API 607
NACE MR0175 compliance

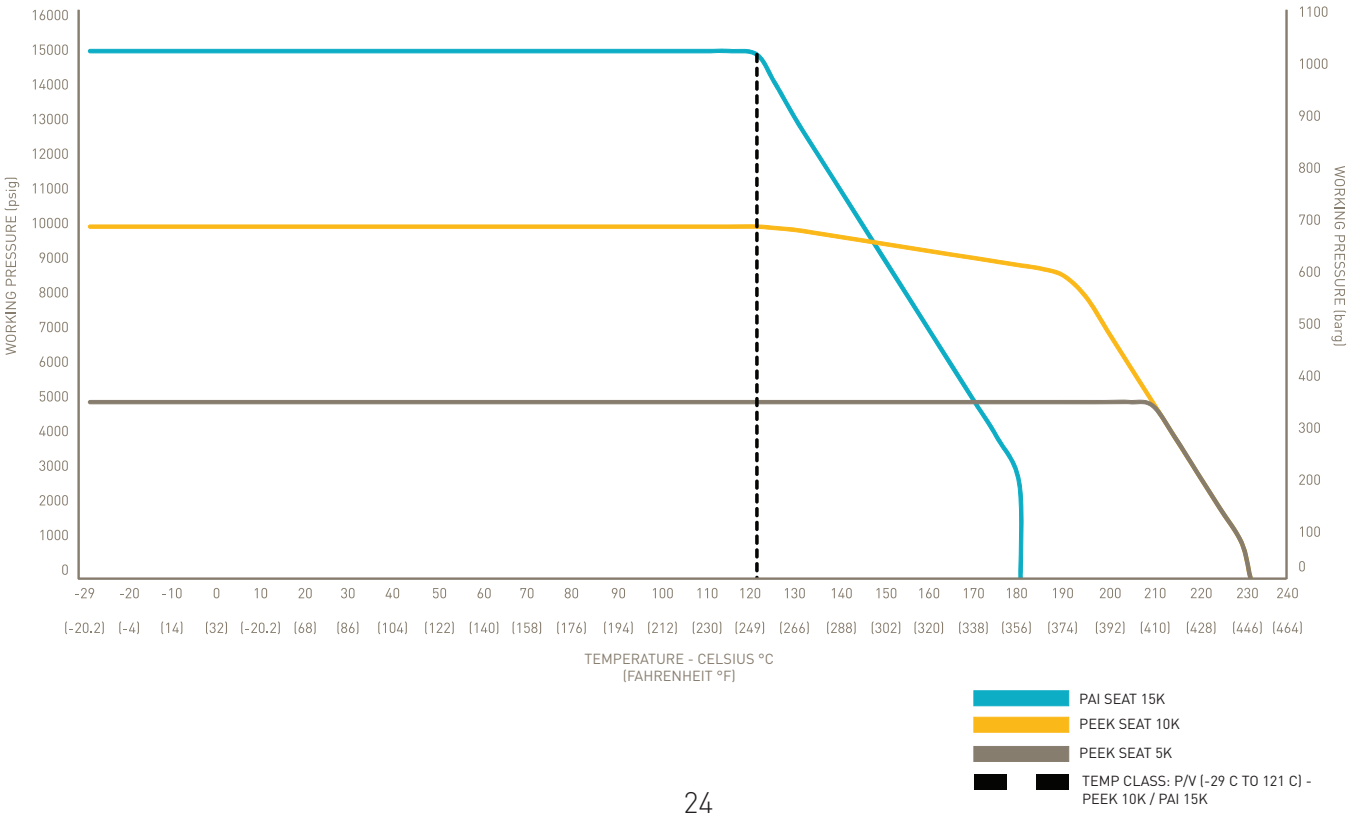
Commonly used terms when conducting business with Parker

Acronym	Title	Description
API	American Petroleum Institute	The American Petroleum Institute (API) is the largest U.S. trade association for the oil and natural gas industry.
PSL	Product Specification Level	Material compliance and factory acceptance testing
NDE	Non Destructive Examination	Volumetric and surface non destructive testing
FAT	Factory Acceptance Test	Pressure testing
	Serialization	An assignment of a unique code to individual parts and / or pieces of equipment to maintain records
	Tru-Loc®	Patented locking mechanism from Parker Hannifin Corporation




Parker's API valves have been designed in partnership with many of the world's leading energy companies. Pictured here, are just a few of the designs that we have innovated for projects around the world.

Ball Valve Pressure / Temperature Chart



Typical Raw Material Specifications					
Material	**Product**	**Industry Codes**	**NORSOK**	**NACE**	**API Product Specification Level**
Duplex	Close Shape Flanged Design	ASTM A182 Grade F51	NORSOK M650/M630	NACE MR0175	PSL3
	Hubbed Design	ASTM A182 Grade F51	NORSOK M650/M630	NACE MR0175	PSL3
	Trims such as Bonnets, end and outlet connections	ASTM A479/A276 UNS S31803	NORSOK M650/M630	NACE MR0175	PSL3
Super Duplex	Close Shape Flanged Design	ASTM A182 Grades F53/F55		NACE MR0175	PSL3
	Hubbed Design	ASTM A182 Grades F53/F55	NORSOK M650/M630	NACE MR0175	PSL3
	Trims such as Bonnets, end and outlet connections	ASTM A479/A276 UNS S32750/ S32760	NORSOK M650/M630	NACE MR0175	PSL3
	15K Ball Valve OSY Bridge	ASTM A995 Grade 6A – UNS J93380		NACE MR0175	PSL3
Alloy 625	Close Shape Flanged Design	ASTM B564 Grade UNS N06625		NACE MR0175	PSL3
	Hubbed Design	ASTM B564 Grade UNS N06625		NACE MR0175	PSL3
	Trims such as Bonnets, end and outlet connections	ASTM B564 Grade UNS N06625		NACE MR0175	PSL3
Alloy 718	Trims such as Bonnets, end and outlet connections	API 6A UNS N07718		NACE MR0175	PSL3

API 6A - Quality control for bodies, bonnets, end and outlet connections - PSL 3/3G - Parker Compliance				
		API Product Specification Level	**API Sub-Clause**	**Additional Industry Codes**
PSL3/3G material testing includes:	Tensile testing	PSL 3/3G	7.4.2.2.1	ASTM A370
	Impact testing	PSL 3/3G	7.4.2.3.2	ASTM A370
PSL3/3G NDE includes:	Dimensional inspection	to Parker standard		
	Traceability	PSL 3/3G	7.4.2.3.5	
	Chemical analysis	PSL 3/3G	7.4.2.3.6	ASTM A388
	Volumetric NDE	PSL 3/3G	7.4.2.3.15	ASTM E165 / ASTM E709
	Surface NDE	PSL 3/3G	7.4.2.3.8	
	Serialization	PSL 3/3G	7.4.2.3.14	
Ferritoscope:	On request	to Parker standard		
NORSOK M630 Additional testing includes*:	Corrosion testing			
	Micrographic examination			ASTM G48
	Ferrite counting			ASTM A923
	* (Duplex and Super Duplex materials only)			ASTM E562

API 6A - Quality control requirements for regular and Venturi bore valves - PSL3/3G - Parker Compliance				
		Product Specification Level		**Parker Comments**
Factory Acceptance testing:		**PSL3**	**PSL 3G**	
Hydrostatic test (extended)	Body	7.4.9.5.4	7.4.9.5.4	
	Seat	7.4.9.5.6	7.4.9.5.6	
Gas test	Body	-	7.4.9.57	
	Seat	-	7.4.9.5.8	
Traceability		7.4.9.2.2 b)	7.4.9.2.2 b)	Providing HCT 3.1B is selected
Serialization		7.4.9.2.1 b)	7.4.9.2.1 b)	Each tested assembly will have serial number against works order no.

Notes

Notes

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4190-API

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