

The Perfect Value of **SMI**



- Manufacturing Oil & Gas Industry Products
- Forging Production
- Precision Machining
- Flow Line Products
- Treating Iron



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**Sandong Metal Industry Co.,Ltd.**



“  
**To the world and To the future,  
To face the competition  
with our innovation!**  
”

#### Management Principle

Enhanced Quality and On-Time Delivery Offering the Utmost Customer Satisfaction

#### Quality Principle

Customer Satisfaction is the Top Priority. Supply the World Best Quality.

#### Quality Goal

100% Customer Satisfaction Achieving 100 ppm Process



Sandong Metal Industry Co.,Ltd.

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# The Perfect value of



## Best Interchangeability

SMI Products are very interchangeable with all major brand products which are manufactured in accordance with API regulations.

## Best Lead Time and Optimized Stock System

SMI assures the shortest lead time in the world based on the optimized stock system. We need only 2-week lead time from Purchase Order to shipment for standard products.

## Accumulation of Advanced Technologies and safety

We have our own bending solution for high pressure Swivel Joint, and Advanced production system for Integral Pup Joint. We do 100% Pressure Test and provide Test Certificates in accordance with API and customer's requirements.

## Certified Quality Management

SMI manages quality in accordance with API Q1 and ISO 9001:2008 and educates all staffs according to SMI's own training plan. SMI used only the best quality material supplied by the certified steel manufacturer and the manufacturing process for each product is completed in one place so that SMI can easily trace the product manufacturing history, prove and show the traceability by documents that we offer.

## For Better Quality

Through all our effort to continuous quality improvement, we gave and give and will give the utmost satisfaction to our customers.

## > CERTIFICATE



API 6A-1064



API 16A-0497



ISO 9001:2008



ABS Type Approval



ABS Manufacturing Assessment



ISO 14001 : 2004



RINA Type Approval



Achilles JQS



AEO



# New product launch!



**Plug Valve**

- Size : 4"
- Pressure Rating : 1502, 1002
- Service : STD / H2S



**Relief Valve**

- Size : 2"
- Pressure Rating : 1502, 1002 (Available for custom order)
- Service : STD / H2S



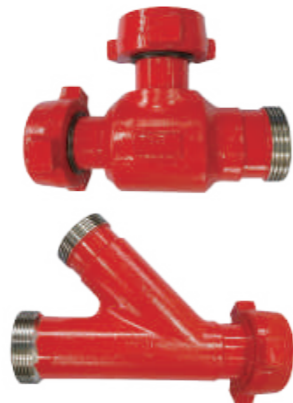
**Pup Joint**

- Size : 4"
- Pressure Rating : 1502, 1002
- Service : STD / H2S



**Trash Catcher**

- Size: 3"x2", 3"x3"
- Pressure Rating : 1502
- Service : STD / H2S



**Integral Fitting**

- Size : 4"
- Pressure Rating : 1502, 1002
- Service : STD / H2S



**Swivel Joint**

- Size : 4"
- Pressure Rating : 1502, 1002
- Service : STD / H2S

**SMI offer a wide range of hammer union ended equipment**

- Plug Valves, Adjustable Chokes, Positive Chokes, Forged Tees, Crosses, Laterals, Crossovers, etc.
- API 6A flanged end equipment

- Pressure Tested Assembly
- Individually Pressure Tested Fittings and Valves
- Full Material Traceability
- Standard and H2S service
- API 6A PSL 1, 2 and 3
- ALL API 6A Material Class Available
- Temperature Rating P to U (L to U)
- Third Party Approval and Certificates on Design and Manufacturing Available
- Skid Mounted if required

# MANIFOLD



Manifold - 5 Valves and, 2 Adjustable Choke Valves



2 1/16" Choke & Kill Manifold(10,000psi)

- Cement Manifolds
- Choke Manifolds
- Choke and Kill Manifolds
- Flowback Manifolds
- Well Testing Manifolds

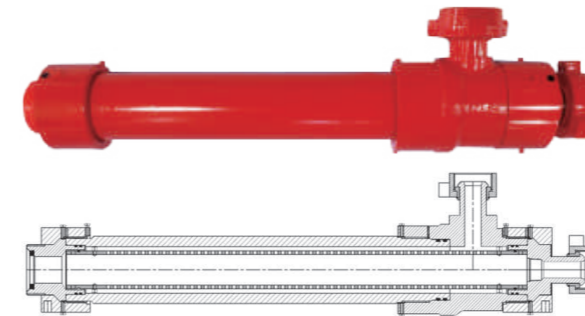
SMI Manifolds are designed and manufactured to meet customer's requirements such as 4, 7, 8 or 9 Valve Manifold.

# Trash Catcher Manifold

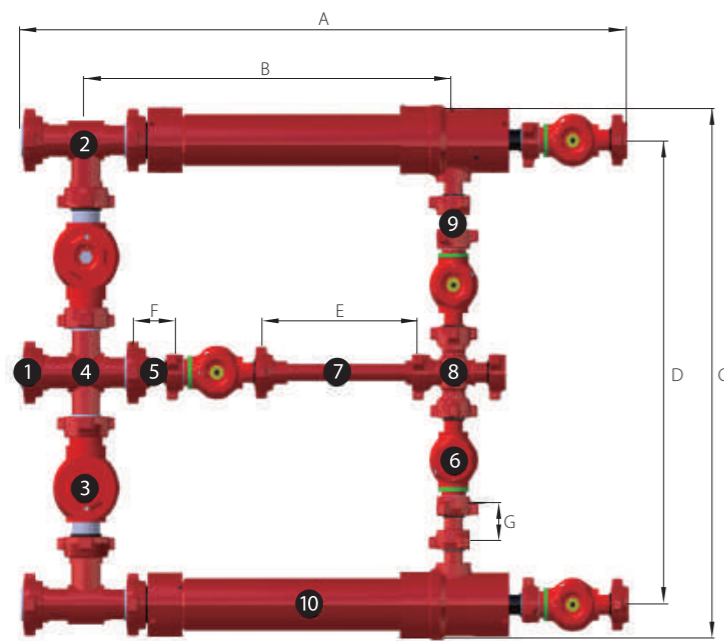


- Standard service is used up to 15,000psi and tested at 22,500psi.
- H2S Service is used up to 10,000psi and tested at 15,000psi.
- Reliable Performance at high working pressure.
- Trash catcher Manifold is available single & dual manifold type
- ※ Other combination are also available by customer requirements
- Available Size : 2x2" / 3x2" / 3x3"
- MTR and Test Reports are available at any time.

# Trash Catcher



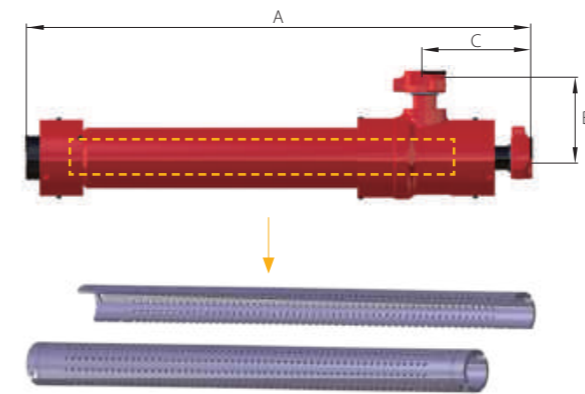
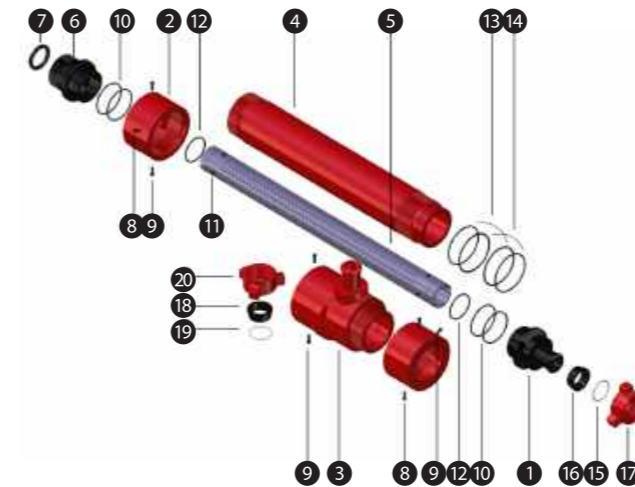
- Standard service is used up to 15,000psi and tested at 22,500psi.
- H2S Service is used up to 10,000psi and tested at 15,000psi.
- Reliable Performance at high working pressure.
- Trash Catcher is based on easily Handling designs and manufactured from the highest quality material.
- Screen size is 4" pipe SCH XH x 4.13 FT (660-Ø 3/8" Hole) [P110]
- Vessel size is O.D 7.2" / I.D 5.0" pipe [P110]
- All part are applied to the black oxide coating.
- MTR and Test Reports are available at any time.



[3"x2" Dual Trash Catcher, 7 Valve Manifold]

## > 3" x 2" Trash Catcher Manifold

NO	Item	Q'ty
Ass'y	DualTrash Catcher Manifold	1
1	3" Fig1502 Blind Male & Nut	2
2	3" Fig1502 Tee (FFM)	2
3	3" Fig1502 Plug Valve	2
4	3" Fig1502 Cross (FMMM)	1
5	3"x2" Fig1502 Crossover	1
6	2" Fig1502 Plug Valve	5
7	2" Fig1502 Pup Joint (24inch)	1
8	2" Fig1502 Cross (MFFF)	1
9	2" Fig1502 Blast Joint	2
10	3"x2" Fig1502 Trash Catcher	2



[4"XH Screen]

## > 3" x 2" / 3" x 3" Trash Catcher

NO	Item	Part No.		Q'ty
		3"x2"	3"x3"	
Ass'y	Trash Catcher	TC03F21012	TC03F21013	1
1	1502 Plug Male	TC02FRK102	TC03FRK102	1
2	Plug Nut	TC03FRK103	TC03FRK103	2
3	Outlet Tee	TC02FRK104	TC03FRK104	1
4	Vessel Body	TC03FRK106	TC03FRK106	1
5	Strainer (Screen)	TC03FRK107	TC03FRK107	1
6	3" 1502 Plug Female	TC03FRK108	TC03FRK108	1
7	Lip Seal	HU03JRK115	HU03JRK115	1
8	Dog Screw	TC03FRK109	TC03FRK109	4
9	Lock Screw	TC03FRK110	TC03FRK110	2
10	O-ring	TC03FRK111	TC03FRK111	4
11	Balance Screw	TC03FRK112	TC03FRK112	8
12	O-ring	TC03FRK113	TC03FRK113	2
13	Back up Ring-Rubber	TC03FRK114	TC03FRK114	2
14	O-ring	TC03FRK115	TC03FRK115	2
15	Segments	HU02JRK113	HU03JRK113	3
16	Retainer Ring	HU02JRK114	HU03JRK114	1
17	Wing Nut	HU02JRK104	HU03JRK104	1
18	Segments	HU02JRK113	HU03JRK113	3
19	Retainer Ring	HU02JRK114	HU03JRK114	1
20	Wing Nut	HU02JRK104	HU03JRK104	1

[mm(inch)]

Size	Service	Working Pressure	Test Pressure	End Connection	A	B	C	Part Number
3" x 2"	Standard/Sour	15,000	22,500	1502 MxF	1540.51 (60.65")	239.014 (9.41")	305.816 (12.04")	TC03F21012
3" x 3"	Standard/Sour	15,000	22,500	1502 MxF	1540.51 (60.65")	231.902 (9.13")	319.024 (12.56")	TC03F21013

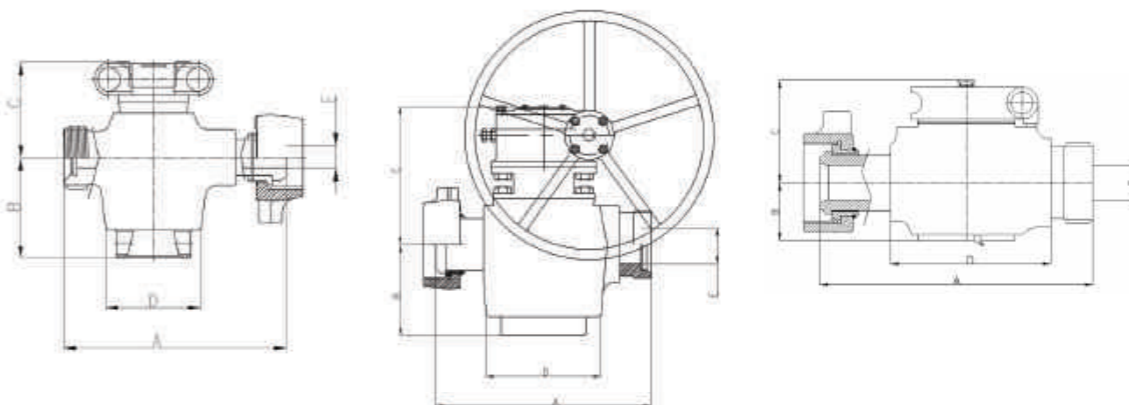
[mm(inch)]

Nominal Size	Dimensions								Remarks
	Working Pressure	A	B	C	D	E	F	G	
3" x 2"	15,000 (Standard Service)	2,354 (92.7")	1,415 (55.72")	1,887 (74.28")	1,639 (64.54")	610 (24")	159 (6.25")	127 (5")	

# PLUG VALVE



- Standard service is used up to 15,000psi and tested at 22,500psi
- H2S service is used up to 10,000psi and tested at 15,000psi
- Rugged Construction with Forged Alloy Steel Body
- Reliable Performance at high working pressure
- Bottom Entry design, Top Entry design, Easy Maintenance
- Valve Parts are Interchangeable with most major designs
- Suitable for variety of high pressure applications such as fracturing, cementing, acidizing and etc.
- Each valve is serialized
- MTR and Test Report are available at any time.
- Fig 1002 / Fig 1502 both available for 4" plug Valve



## > Plug Valve Composition

NO	Item	Part No.				Q'ty
		2"×1"	2"×2"	3"×3"	4"×4"	
Ass'y	PlugValve 1502 Handle Type	P21F1101	P22F1101	P33F1101	P44F1101G (Gear Box)	-
1	Cap Screw	P21FRK108	P22FRK108	P22FRK108	P44FRK108	1
2	Flat Washer 1	P21FRK112	P22FRK112	P22FRK112	P44FRK112	1
3	Flat Washer 2	P21FRK107	P22FRK107	P22FRK107	P44FRK107	1
4	Handle Adapter	P21FRK109	P22FRK109	P22FRK109	-	-
5	Stop Bolt	P21FRK114	P22FRK114	P22FRK114	-	-
6	Stop Collar	-	P22FRK111	P22FRK111	-	-
7	Grease Fitting	3/8" NPT	GF031101	GF031101	GF031101	*GF031101
		3/4" (safetap)	-	GF06E02101	GF06E02101	*GF06E02101
8	Body	P21FRK106	P22FRK106	P33FRK106	P44FRK106	1
9	Wing Nut	HU02JRK104	HU02JRK104	HU03JRK104	HU04JRK104	1
10	Segment	HU02JRK113	HU02JRK113	HU03JRK113	HU04JRK113	3
11	Retainer Ring	HU02JRK114	HU02JRK114	HU03JRK114	HU04JRK114	1
12	Lip Seal	HU02JRK115	HU02JRK115	HU03JRK115	HU04JRK115	1
13	Plug Seal	P21FRK118	P22FRK118	P22FRK118	P44FRK118	2
14	Plug	P21FRK116	P22FRK116	P33FRK116	P44FRK116	1
15	Roll Pin	P22FRK119	P22FRK119	P22FRK119	P44FRK119	2
16	Insert	P21FRK120	P22FRK120	P33FRK120	P44FRK120	2
17	Insert O-ring	P21FRK115	P22FRK115	P33FRK115	P44FRK115	2
18	Adjusting Nut O-ring	P21FRK117	P22FRK117	P33FRK117	P44FRK117	1
19	Adjusting Nut	P21FRK113	P22FRK113	P33FRK113	P44FRK113	1

\* Two(2) grease fitting for 4" Plug Valve [ 3/4" Safetap grease fitting : Option]

## > Plug Valve Repair Kit Composition

NO	Item	Part No.				Q'ty
		2"×1"	2"×2"	3"×3"	4"×4"	
-	Repair kit Set	P21FRK130	P22FRK130	P33FRK130	P44FRK130	-
13	Plug Seal	P21FRK118	P22FRK118	P22FRK118	P44FRK118	2
14	Plug	P21FRK116	P22FRK116	P33FRK116	P44FRK116	1
16	Insert	P21FRK120	P22FRK120	P33FRK120	P44FRK120	2
17	Insert O-ring	P21FRK115	P22FRK115	P33FRK115	P44FRK115	2
18	Adjusting Nut O-ring	P21FRK117	P22FRK117	P33FRK117	P44FRK117	1

· Seal Kit Contains No. 13, 17 and 18.

### > Plug Valve Handle type

- Union End Connection
- 2"x1", 2"x2", 3"x3"
- Line Pipe Connection
- 2"x1", 2"x2", 3"x3"

### > Plug Valve Gear Type

- Union End Connection
- 2"x2", 3"x3", 4"x4"
- Integral 1502 Union MXF
- CWP 15,000psi
- Test Pressure 22,500psi
- Standard Service
- \* 4" 1002 available

### > Top Entry Plug Valve

- Union End Connection
- 2"x1", 2"x2"
- Integral 1502 Union MXF
- CWP 15,000psi
- Test Pressure 22,500psi
- Standard Service

Type	Size (Inch)	End Connection	Service	Working Pressure	Test Pressure	Operation type	Dimensions (Inch)				
							A	B	C	D	E
BE	2x1	1502 MxF	Standard	15,000	22,500	Handle	10.53	4.74	4.50	4.50	1.00
			H <sub>2</sub> S	10,000	15,000						
	2x2	LP Thread	Standard	10,000	15,000	Handle	8.50	5.41	5.25	6.85	2.05
		1502 MxF	Standard	15,000	22,500						
	3x3	1502 MxF	Standard	15,000	22,500	Gear	17.00	7.20	-	9.06	3.05
			H <sub>2</sub> S	10,000	15,000						
	4x4	1002 MxF	Standard	10,000	15,000	Gear	21.0	7.69	13.24	11.04	3.15
			H <sub>2</sub> S	7,500	10,000						
4x4	1502 MxF	Standard	15,000	22,500	Gear	21.0	7.69	13.24	11.04	3.75	
		H <sub>2</sub> S	10,000	15,000							
TE	2x1	1502 MxF	Standard	15,000	22,500	Handle	10.58	2.40	4.82	-	0.87
			H <sub>2</sub> S	10,000	15,000						
	2x2	1502 MxF	Standard	15,000	22,500	Handle	13.89	2.95	5.24	8.23	1.75
			H <sub>2</sub> S	10,000	15,000						

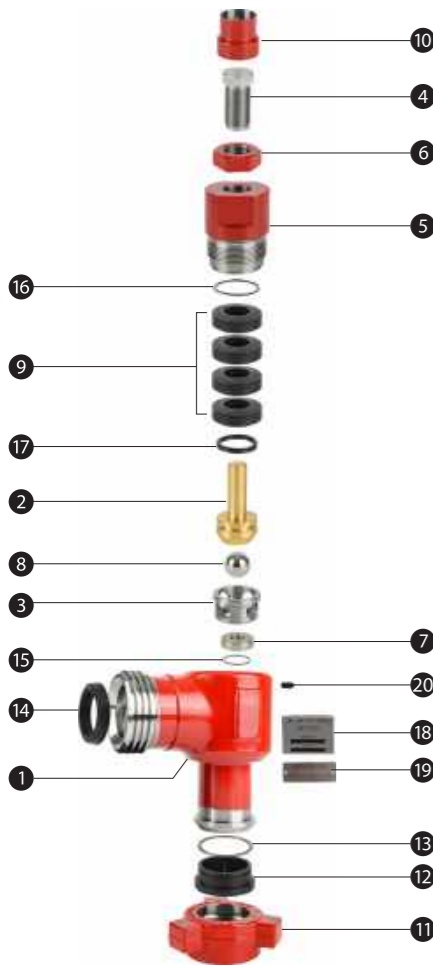
· Each size can be changed as customer's requirements.



# RELIEF VALVE



- Standard service is used up to 15,000psi and tested.
- H2S service is used up to 10,000psi and tested.
- Rugged Construction with Forged Alloy Steel Body
- Reliable Performance at high working pressure
- Each valve is serialized.
- MTR and Test Reports are available at any time.
- Pressure rating : available for custom order



### > 2" Relief Valve Composition

NO	Item	Part No.		Q'ty
		2"		
Ass'y	Relief Valve 2"1502	RE02F1101		1
1	Body	RE02FRK102		1
2	Stem	RE02FRK103		1
3	Spider	RE02FRK104		1
4	Adjustable Screw	RE02FRK105		1
5	Cap	RE02FRK106		1
6	Hex Nut	RE02FRK107		1
7	Seat	RE02FRK108		1
8	Ball	RE02FRK109		1
9	Disk Spring	RE02FRK110		16
10	Adjustable Screw Cover	RE02FRK111		1
11	Wing Nut	HU02FRK104		1
12	Segments	HU02FRK113		3
13	Retainer Ring	HU02FRK114		1
14	Lip Seal	HU02FRK115		1
15	Body O-ring	RE02FRK112		1
16	Cap O-ring	RE02FRK113		1
17	Keeper Seal	RE02FRK114		1
18	Data Band	RE02FRK115		1
19	Warning Band	RE02FRK116		1
20	Set Screw	RE02FRK117		1

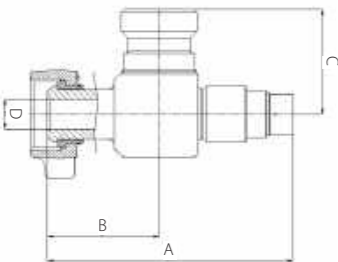
### > 2" Repair Kit Annual Parts

NO	Item	Part No.		Q'ty
		2"		
Ass'y				
2	Stem	RE02FRK103		1
3	Spider	RE02FRK104		1
4	Adjustable screw	RE02FRK105		1
6	Hex nut	RE02FRK107		1
7	Seat	RE02FRK108		1
8	Ball	RE02FRK109		1
9	Disk spring	RE02FRK110		16
15	Body o-ring	RE02FRK112		1
16	Cap o-ring	RE02FRK113		1
17	Keeper Seal	RE02FRK114		1

### > 2" Repair Kit Regular Parts

NO	Item	Part No.		Q'ty
		2"		
Ass'y				
7	Seat	RE02FRK108		1
8	Ball	RE02FRK109		1
15	Body o-ring	RE02FRK112		1

\* It may vary depending on the operating environment.



Size	Service	Working Pressure	OperationType	A	B	C	D	Weight(kg)	Part Number
2"	Standard	2,000 ~15,000	Spring	13.33	6.06	6.06	1.75	24.5	RE02F1101
	H2S							24.5	RE02F1201

# SWIVEL JOINT

## High Pressure



- Size : 2", 3", 4"
- End Type : MxM, MxF
- Service : Standard(15,000psi), H<sub>2</sub>S(10,000psi)

### > Swivel Joint / Long Radius Repair Kit Composition

NO	Item	Part No.			Q'ty		
		2"	3"	4"	2"	3"	4"
-	Repair Kit Set	S02FRK130	S03FRK130	S04FRK130	-	-	-
1	Ball	S02FRK111	S02FRK111	S04FRK111	72	93	78
2	Ball Plug	S02FRK114	S02FRK114	S04FRK114	3	3	3
3	Ball Plug O-ring	S02FRK113	S02FRK113	S04FRK113	3	3	3
4	Ball Plug Cover	S02FRK112	S02FRK112	S04FRK112	3	3	3
5	Snap Ring	S02FRK115	S02FRK115	S04FRK115	3	3	3
6	Pressure Seal	S02FRK116	S03FRK116	S04FRK116	1	1	1
7	Grease O-ring (B)	S02FRK117	S03FRK117	S04FRK117	1	1	*1
8	Grease O-ring (M)	S02FRK118	S03FRK118	S04FRK118	1	1	1

· Seal Kit Contains No. 6, 7 and 8  
\* 7 : Dust seal type

# SWIVEL JOINT

High Pressure



Style 10 MM(MF)



Style 20 MF(MM)



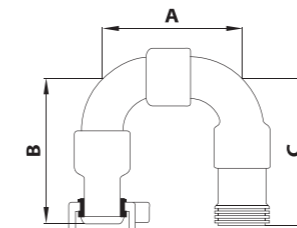
- Standard service is used up to 15,000psi and tested at 22,500psi.
- H<sub>2</sub>S Service is used up to 10,000psi and tested at 15,000psi.
- Forged Alloy Steel Elbows with Heat Treatment
- All Styles are available in nominal size 2", 3" and 4" with 1502 Union End
- For High Pressure Applications - Fracturing, Cementing and Circulating Hoses, Acidizing, Choke and Kill Lines and Test Lines, etc.
- Each product is serialized MTR and Test Report are available at any time.



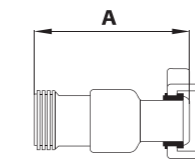
Style 30 MF



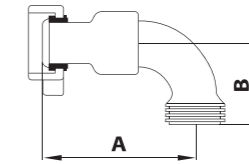
Style 50 MF



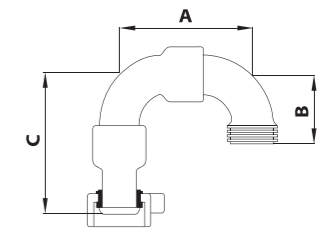
Style 10 MxF



Style 20 MxF



Style 30 MxF



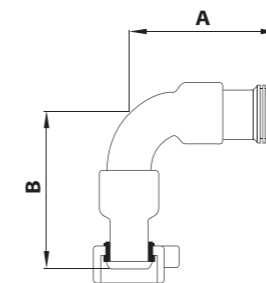
Style 50 MxF



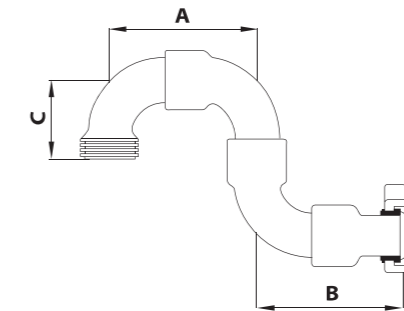
Style 60 MM(MF)



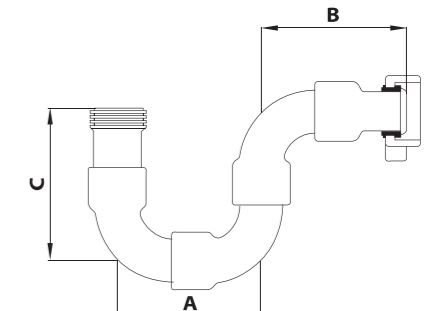
Style 80 MF



Style 60 MxF



Style 80 MxF



Style 100 MxF



Style 100 MF(MM)

NO	Item	2 (Inch)				3 (Inch)				4 (Inch)			
		A	B	C	Part No.	A	B	C	Part No.	A	B	C	Part No.
10	MxF	10.95	10.95	10.95	S02F011011	16.4	14.4	14.4	S03F011011	21.20	20.41	20.41	S04F011011
	MxM	10.95	10.95	10.95	S02F011012	16.4	14.4	14.4	S03F011012	21.20	20.41	20.41	S04F011012
20	MxF	10.95	-	-	S02F021011	12.4	-	-	S03F021011	-	-	-	S04F021011
30	MxF	10.95	5.5	-	S02F031011	14.4	7.9	-	S03F031011	20.41	9.7	-	S04F031011
50	MxF	10.95	5.5	10.95	S02F051011	16.4	7.9	14.4	S03F051011	21.20	9.7	20.41	S04F051011
60	MxF	10.95	10.86	-	S02F061011	14.4	14.4	-	S03F061011	-	-	-	S04F061011
80	MxF	10.95	5.5	10.95	S02F081011	16.4	14.4	14.4	S03F081011	21.20	20.41	9.7	S04F081011
100	MxF	10.95	10.95	10.86	S02F101011	16.4	14.4	14.4	S03F101011	-	-	-	S04F101011

· Each size can be changed as customer's requirements.





# SWIVEL JOINT

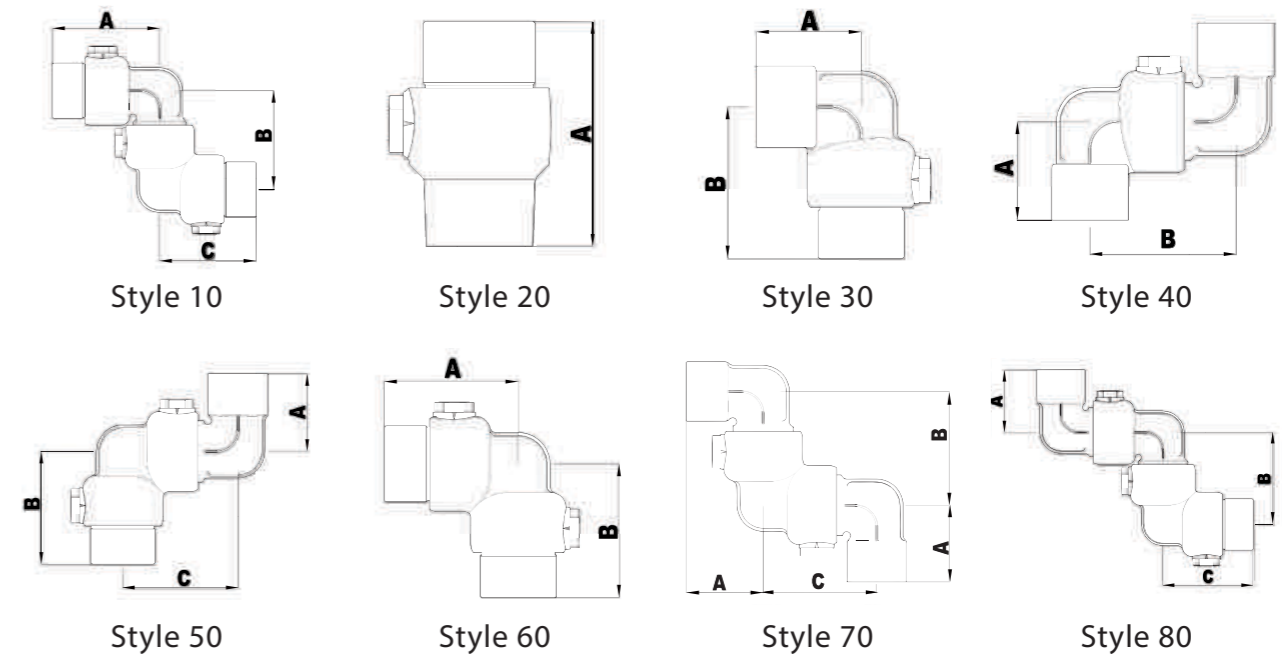
Code Silver



- Size : 2"
- End Type : customized
- Test Pressure : 9,000psi
- CWP : 6,000psi (413.68 bar)
- Service : Standard, H2S
- Used for Cementing, Drill Mud, Fracturing fluids, Well Servicing
- MTR and Test Report are offered at any time



- 2" upto CWP 6,000psi with API Line Pipe Thread
- Suitable for Water Lines, Cementing Hoses
- Mud Lines, Choke and Kill Lines, Test Lines, etc.
- Female Thread End Connection
- Each product is serialized and pressure tested at 1.5 times of NSCWP.
- MTR and Test Report are available at any time.



## > Swivel Joint Code Silver Repair Kit Composition

NO	Item	Part No.	Q'ty
-	Repair Kit Set	S02DRK130	-
1	O-ring	S02DRK117	1
2	Pressure Seal	S02DRK116	1
3	Ball	S02DRK111	52
4	Nipple Nut O-ring	S02DRK120	1
5	Nipple Nut	S02DRK121	1
6	Grease Fitting	P22FRK36	1

Style	CWP (psi)	End Connection	2 (Inch)			WT IB	Part No.
			A	B	C		
10	6,000	Threaded	6.45	5.98	5.98	33.0	S02D011014
20	6,000	Threaded	6.65	-	-	11.9	S02D021014
30	6,000	Threaded	4	5.82	-	15.2	S02D031014
40	6,000	Threaded	4	5.98	-	19.7	S02D041014
50	6,000	Threaded	4	5.98	5.82	25.6	S02D051014
60	6,000	Threaded	5.82	5.82	-	21.1	S02D061014
70	6,000	Threaded	4	5.98	5.98	29.8	S02D071014
80	6,000	Threaded	4	5.98	5.82	37.1	S02D081014

· Each size can be changed as customer's requirements.

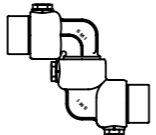
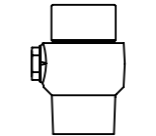
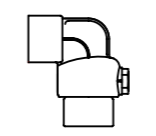
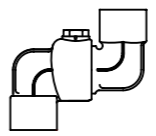
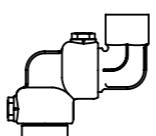
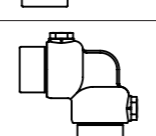
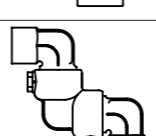
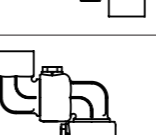
# SWIVEL JOINT

Code Blue & Code Green



- Standard Service is used up to CWP 1000psi (Code Blue) & 600psi (Code Green)
- Casting Iron(Ductile) with Heat Treatment
- Low Pressure
- All Styles are available in nominal pipe size 2" and 3"
- Each product is serialized and Pressure Tested at 1.5times of NSCWP
- MTR and Test Report are available at any time

- 2" and 3" up to CWP 1000psi (Code Blue) & 600psi (Code Green)
- Suitable for Water Lines
- Female Thread End Connection
- Each Product is Serialized and Pressure Tested at 1.5times of NSCWP.
- MTR and Test Report are available at any time.

Style CWP (psi)	Part No.			
	Code Blue		Code Green	
	2"	3"	2"	3"
 10	S02A011014	S03A011014	S02G011014	S03G011014
 20	S02A021014	S03A021014	S02G021014	S03G021014
 30	S02A031014	S03A031014	S02G031014	S03G031014
 40	S02A041014	S03A041014	S02G041014	S03G041014
 50	S02A051014	S03A051014	S02G051014	S03G051014
 60	S02A061014	S03A061014	S02G061014	S03G061014
 70	S02A071014	S03A071014	S02G071014	S03G071014
 80	S02A081014	S03A081014	S02G081014	S03G081014

# CHOKE VALVE



Choke Valve 2" 1502 Positive



Choke Valve 2" 1502 Adjustable



Choke Valve 3" 1502 Adjustable

- 2" Fig 1502 MxF with 3/4" or 1" Orifice and 3" Fig 1502 MxF with 2" Orifice
- Standard service is used up to 15,000psi and tested at 22,500psi
- H<sub>2</sub>S service is used up to 10,000psi and tested at 15,000psi
- Hammer Union End Connection
- Forged alloy steel body, stainless steel and tungsten carbide parts
- Parts are interchangeable with major brands.
- Suitable for a broad range of applications including wellheads, well testing, stream injection, choke and kill manifolds and well clean operations, etc.



Positive Choke Valve



### > 2" Positive Choke Valve Composition

NO	Item	Part No.	Q'ty
		2"×2"	
Ass'y	Positive Choke Valve 1502	CV02F2101	1
14	Wing Nut	HU02JRK104	3
15	Lip Seal	HU02JRK115	3
16	Choke Body	CV02FRK181	1
17	Plug Stem	CV02FRK147	1
18	Stem Cap	CV02FRK120	1
19	Retainer Ring	HU02JRK114	2
20	Segment	HU02JRK113	6
24	Choke Bean	CV02FRK151	1
22	Choke Saver	CV02FRK122	1
25	Blind Male Sub	HU02JRK109	1

### > 2" Positive Choke Valve Repair Kit Composition

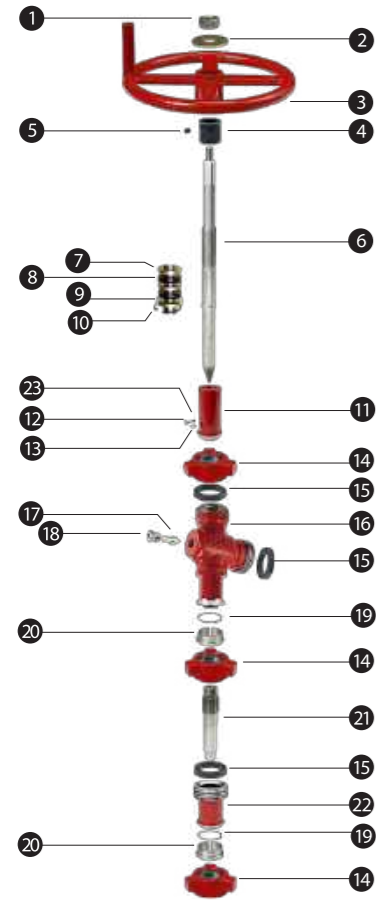
NO	Item	Part No.	Q'ty
		2"×2"	
24	Choke Bean	CV02FRK151	1



# 2" CHOKE VALVE



Adjustable Choke Valve



### > 2" Adjustable Choke Valve Composition

NO	Item	Part No.	Q'ty
		2"×2"	
Ass'y	Adjustable Choke Valve	CV02F11011	1
1	Stem Nut	CV02FRK106	1
2	Washer	CV02FRK107	1
3	Hand Wheel	CV02FRK108	1
4	Indicator	CV02FRK109	1
5	Lock Screw	CV02FRK110	1
6	Choke Stem	CV02FRK111	1
7	Stem Guide	CV02FRK112	2
8	Stem Seal	CV02FRK113	2
9	Junk Ring	CV02FRK114	1
10	Snap Ring	CV02FRK115	1
11	Choke Bonnet	CV02FRK116	1
12	Thumb Screw	CV02FRK117	1
13	Grease Fitting	CV02FRK129	1
14	Wing Nut	HU02JRK104	3
15	Lip Seal	HU02JRK115	3
16	Choke Body	CV02FRK118	1
17	Plug Stem	CV02FRK147	1
18	Stem Cap	CV02FRK120	1
19	Retainer Ring	HU02JRK114	2
20	Segment	HU02JRK113	6
21	Choke Seat 3/4" HL	CV02FRK130	1
22	Choke Saver	CV02FRK122	1
23	Lock Plug	CV02FRK134	1

### > 2" Adjustable Choke Valve Repair Kit Composition

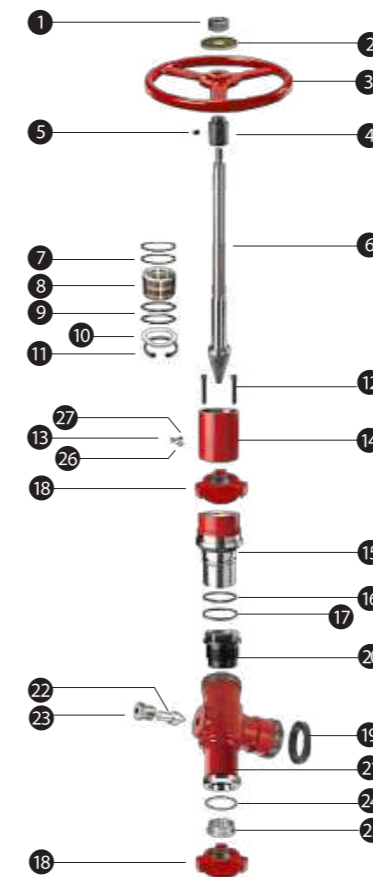
NO	Item	Part No.	Q'ty
		2"×2"	
-	Repair Kit Set	CV02FRK1521	-
6	Choke Stem	CV02FRK111	1
7	Stem Guide	CV02FRK112	2
8	Stem Seal	CV02FRK113	2
9	Junk Ring	CV02FRK114	1
10	Snap Ring	CV02FRK115	1
21	Choke Seat 3/4" HL	CV02FRK130	1

· Seat size can be changed as customer's requirements.

# 3" CHOKE VALVE



Adjustable Choke Valve



### > 3" Adjustable Choke Valve Composition

NO	Item	Part No.	Q'ty
		2"×2"	
Ass'y	Adjustable Choke Valve 1502	CV03F1101	1
1	Stem Nut	CV03FRK106	1
2	Washer	CV03FRK107	1
3	Hand Wheel	CV03FRK108	1
4	Indicator	CV03FRK146	1
5	Lock Screw	CV03FRK110	1
6	Choke Stem	CV03FRK111	1
7	Outsider O-ring	CV03FRK123	2
8	Seal Piston	CV03FRK125	1
9	Inside O-ring	CV03FRK124	2
10	Stem Seal	CV03FRK113	1
11	Snap Ring	CV03FRK115	1
12	Bonnet Bolt	CV03FRK144	2
13	Thumb Screw	CV03FRK117	1
14	Bonnet Extension	CV03FRK126	1
15	Choke Bonnet	CV03FRK116	1
16	Bonnet O-ring	CV03FRK127	1
17	Bonnet Back Up Ring	CV03FRK145	1
18	Wing Nut	HU03JRK104	2
19	Lip Seal	HU03JRK115	1
20	Choke Seat	CV03FRK135	1
21	Choke Body	CV03FRK118	1
22	Plug Stem	CV03FRK147	1
23	Stem Cap	CV03FRK120	1
24	Retainer Ring	HU03JRK114	1
25	Segment	HU03JRK113	3
26	Grease Fitting	CV02FRK129	1
27	Lock Plug	CV02FRK134	1

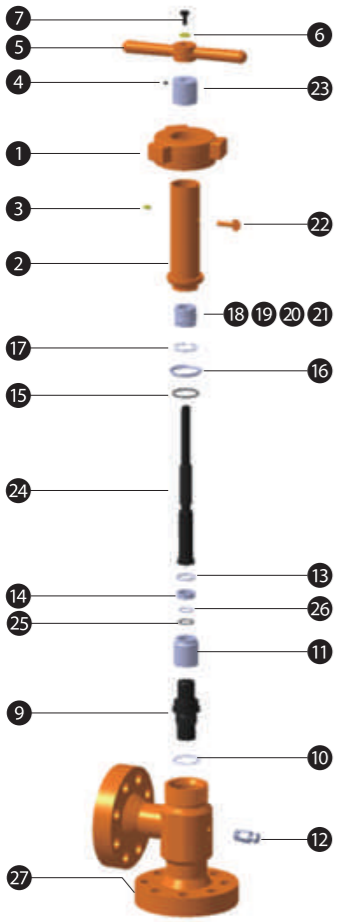
### > 3" Adjustable Choke Valve Repair Kit Composition

NO	Item	Part No.	Q'ty
		3"×3"	
-	Repair Kit Set	CV03FRK152	-
6	Chock Stem	CV03FRK111	1
7	Outsider O-ring	CV03FRK123	2
8	Seal Piston	CV03FRK125	1
9	Inside O-ring	CV03FRK124	2
10	Stem Seal	CV03FRK113	1
11	Snap Ring	CV03FRK115	1
16	Bonnet O-ring	CV03FRK127	1
17	Bonnet Back Up Ring	CV03FRK145	1
20	Choke Seat	CV03FRK135	1

# PRODUCTION CHOKE

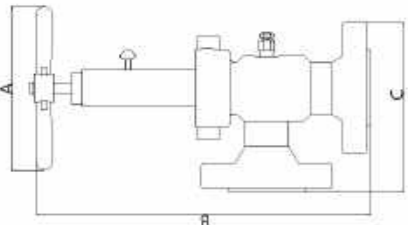


- Production chokes including our high performance cage and sleeve and needle and seat designs.
- Field Convertable from positive to adjustable.
- A variety of configurations, trim and sizing options.
- Options for materials, bolting dimensions, end connections.
- Valve Parts are Interchangeable with most major designs.
- MTR and Test Reports are available at any time.



### > 2 1/16" Flange Choke Valve

NO	Item	Part No.	Q'ty
		2 1/16"	
Ass'y	Flange Choke Valve	FC11D12A1	-
1	Wing Nut	FC11DRK101	1
2	Bonnet	FC11DRK102	1
3	Grease Fittings	FC11DRK103	1
4	Set Screw	FC11DRK104	1
5	Handle	FC11DRK105	1
6	Washer	FC11DRK106	1
7	Bolt	FC11DRK107	1
8	Cap	FC11DRK108	1
9	Seat	FC11DRK109	1
10	Washer	FC11DRK110	1
11	Seat Cap	FC11DRK111	1
12	Drain Valve	FC11DRK112	1
13	Retainer Ring	FC11DRK113	2
14	Stem Insert	FC11DRK114	2
15	Spring Ring	FC11DRK115	1
16	Joint Ring	FC11DRK116	1
17	Sanp Ring	FC11DRK117	1
18	Seal Cover 2	FC11DRK118	1
19	Seal	FC11DRK119	1
20	Seal Bracket	FC11DRK120	1
21	Seal Cover 1	FC11DRK121	1
22	Lock Bolt	FC11DRK122	1
23	Indicator	FC11DRK123	1
24	Stem	FC11DRK124	1
25	O-Ring	FC11DRK125	1
26	Back-UP-O-Ring	FC11DRK126	1
27	Body	FC11DRK127	1



Size	Service	Working Pressure	Pressure Class	End Connection	A	B	C	Weight(kg)	Part Number
2 1/16"	Standard / H2S	3,750	# 1,500	5K 2 1/16 Flange	267.8	547.4	277.4	41.7	FC11D12A1

# CHECK VALVE



Top Entry Check Valve



Dart Check Valve



In-Line Flapper Check Valve

### Features / Benefits

- Check Valves are flow control devices that permit flow in one direction but stop flow in the opposite direction.
- Generally used in well service applications, the check valve is placed in the treating line to allow flow to the well but isolates any back flow upstream of the valve. This provides a safety device at various locations in the flow line and assures that pressure and fluid cannot backup into the manifold area or into the pumps, causing damage to equipment.
- The simplified Seat Cover and seat assembly has a minimum number of parts.
- For the sealing at Low Pressure, All Type Valves are consist of Stainless Steel Springs.
- API 6A Materials Classes and Temperature Classes are available.



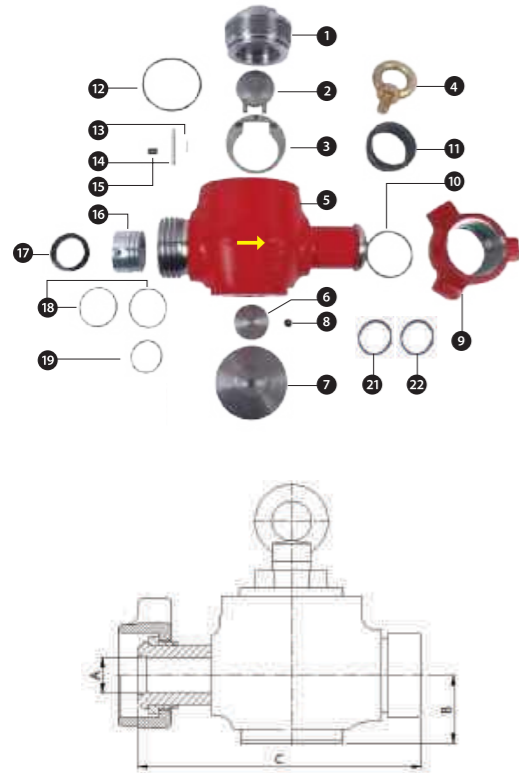
# CHECK VALVE



- Standard Service is used up to 15,000psi and tested at 22,500psi.
- H2S Service is used up to 10,000psi and tested at 15,000psi.
- Reliable Performance at high working pressure.
- Valve Parts are Interchangeable with most major designs.
- Suitable for variety of high pressure applications such as fracturing, cementing, acidizing and etc.
- MTR and Test Reports are available at any time.



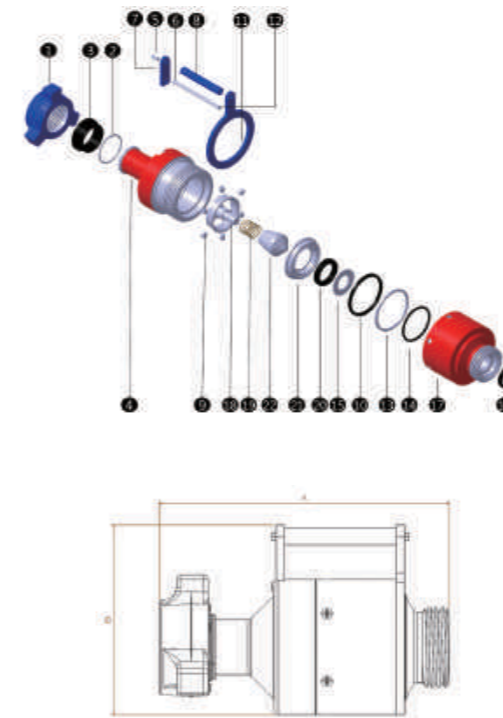
- Standard service is used up to 15,000psi and tested at 22,500psi.
- H2S Service is used up to 10,000psi and tested at 15,000psi.
- Reliable Performance at high working pressure.
- Valve Parts are Interchangeable with most major designs.
- Suitable for variety of high pressure applications such as fracturing, cementing, acidizing and etc.
- MTR and Test Reports are available at any time.



## > Top Entry Check Valve

NO	Item	Part No.		Q'ty
		2"		
Ass'y	Check Valve 1502 Swing Type	CH02F1101		1
1	Body Cap	CH02FRK106		1
2	Seat Cover	CH02FRK108		1
3	Seat Cover Body	CH02FRK107		1
4	I-Bolt	CH02FRK109		1
5	Body	CH02FRK110		1
6	Plug	CH02FRK111		1
7	Plug Cap	CH02FRK112		1
8	Cap Screw	CH02FRK113		1
9	Wing Nut	HU02JRK104		1
10	Retainer Ring	HU02JRK114		1
11	Segment	HU02JRK113		3
12	Body Cap O-ring	CH02FRK114		1
13	Seat Pin	CH02FRK115		1
14	Seat Cover Pin	CH02FRK116		1
15	Set Screw	CH02FRK117		1
16	Seat	CH02FRK118		1
17	Lip Seal	HU02JRK115		1
18	Seat O-ring A	CH02FRK119		2
19	Seat O-ring B	CH02FRK120		1
20	Plug O-ring A	CH02FRK122		1
21	Plug O-ring B	CH02FRK123		1

## > 2" Dart Check Valve



NO	Item	Part No.		Q'ty
		2"	3"	
Ass'y	Check Valve 1502 Dart Type	CD02F1101	CD03F1101	1
1	Wing Nut	HU02JRK104	HU03JRK104	1
2	Retainer Ring	HU02JRK114	HU03JRK114	1
3	Segments	HU02JRK113	HU03JRK113	3
4	Male Body	CD02FRK106	CD03FRK106	1
5	Bolt	CD02FRK108	CD03FRK108	1
6	Handle Nut	CD02FRK109	CD03FRK109	2
7	Plate, Male Body	CD02FRK110	CD03FRK110	1
8	Handle	CD02FRK107	CD03FRK107	1
9	Set Screw	CD02FRK111	CD03FRK111	6
10	Seal Male Body	CD02FRK112	CD03FRK112	1
11	Female Bracket	CD02FRK113	CD03FRK113	1
12	Handle Bolt	CD02FRK114	CD03FRK114	1
13	Spacer	CD02FRK115	CD03FRK115	1
14	O-ring Seat	CD02FRK116	CD03FRK116	1
15	Seat Retainer Ring	CD02FRK117	CD03FRK117	1
16	Lip Seal	HU02JRK115	HU03JRK115	1
17	Female Body	CD02FRK118	CD03FRK118	1
18	Stem	CD02FRK121	CD03FRK121	1
19	Spring	CD02FRK123	CD03FRK123	1
20	Molded Seal	CD02FRK124	CD03FRK124	1
21	Seat	CD02FRK125	CD03FRK125	1
22	Dart Head	CD02FRK126	CD03FRK126	1

Size	Service	Working Pressure	Test Pressure	Type	A	B	Weight(kg)	Part Number
2"	Standard	15,000	22,500	Top Entry	1.75	3.327	38	CH02F1101
	H2S	10,000	15,000		1.75	3.327	38	CH02F1201
3"	Standard	15,000	22,500	Top Entry	2.75	4.05	-	CH03F1101
	H2S	10,000	15,000		2.75	4.05	-	CH03F1201

· Each size can be changed as customer's requirements.

Size	Service	Working Pressure	Test Pressure	Type	A	B	Weight(kg)	Part Number
2"	Standard	15,000	22,500	1502 MxF	14.04"	9.813"	37.5	CD02F1101
3"	Standard	15,000	22,500	1502 MxF	15.67"	10.95"	55	CD03F1101

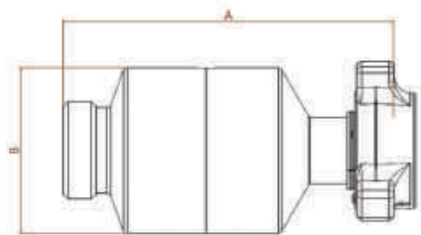
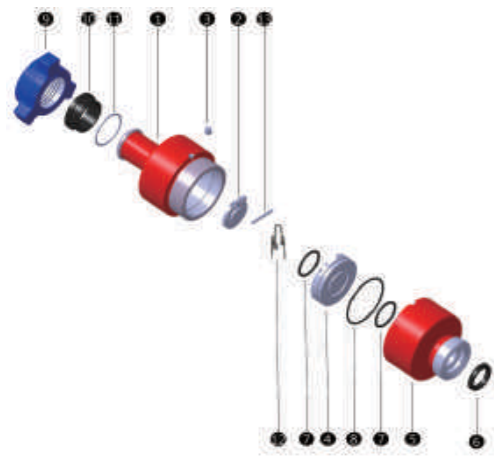


# CHECK VALVE



- Standard service is used up to 15,000psi and tested at 22,500psi.
- H2S Service is used up to 10,000psi and tested at 15,000psi.
- Reliable Performance at high working pressure.
- Valve Parts are Interchangeable with most major designs.
- Suitable for variety of high pressure applications such as fracturing, cementing, acidizing and etc.
- MTR and Test Reports are available at any time.

## > In-Line Flapper Check Valve



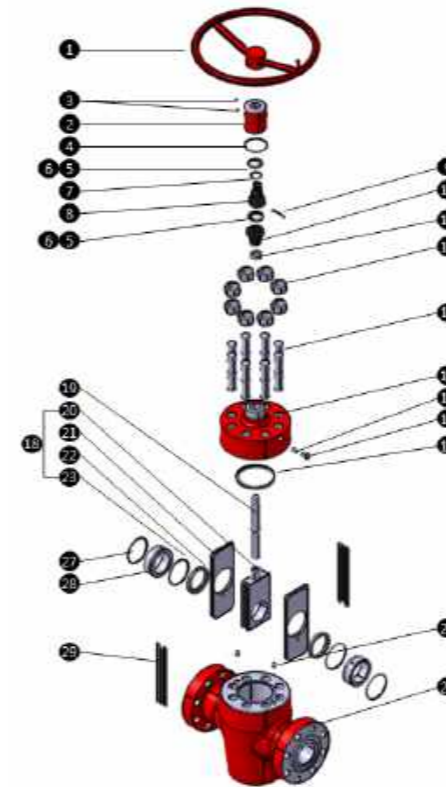
NO	Item	Part No.		Q'ty
		2"	3"	
Ass'y	Check Valve 1502 Flapper Type	CF02F1101	CF03F1101	1
1	Male Body	CF02FRK111	CF03FRK111	1
2	Seat Cover	CF02FRK102	CF03FRK102	1
3	Flush Bolt	CF02FRK103	CF03FRK103	2
4	Seat	CF02FRK104	CF03FRK104	1
5	Female Body	CF02FRK105	CF03FRK105	1
6	Lip Seal	HU02JRK115	HU03JRK115	1
7	O-Ring-1(2-332)	CF02FRK106	CF03FRK106	2
8	O-Ring-2(2-350)	CF02FRK107	CF03FRK107	1
9	Wing Nut	HU02JRK101	HU03JRK101	1
10	Segments	HU02JRK113	HU03JRK113	3
11	Retainer Ring	HU02JRK114	HU03JRK114	1
12	Torsion Spring	CF02FRK108	CF03FRK108	1
13	Seat Cover Pin	CF02FRK109	CF03FRK109	1
14	Seat Pin	CF02FRK110	CF03FRK110	1

Size	Service	Working Pressure	Test Pressure	Type	A	B	Weight(kg)	Part Number
2"	Standard	15,000	22,500	1502 MxF	14.04"	7"	37	CF02F1101
3"	Standard	15,000	22,500	1502 MxF	15.67"	8.11"	57.76	CF03F1101

# GATE VALVE



FC Gate Valve



## > FC Type Gate Valve

NO	Item	Q'ty
1	Handle Wheel	1
2	Bearing Cap	1
3	Cap Grease Fitting	2
4	Cap O-Ring	1
5	Bearing Race	4
6	Thrust Bearing	2
7	Adapter O-Ring	1
8	Stem Adapter	1
9	Stem Pin	1
10	Packing Grand	1
11	Stem Packing	1
12	Bonnet Nut	8
13	Bonnet Stud	8
14	Bonnet	1
15	Check Valve	1
16	Body Grease Fitting	1
17	Bonnet Seal	1
18	Gate / Seat Assembly	1
19	Stem	1
20	Gate	1
21	Retainer Plate	2
22	Seat Ring(Frant Seal)	2
23	Seat Seal Ring	2
24	Locating pin	2
25	Body	1
26	Name Plate	1
27	Body Bushing Seal	2
28	Body Bushing(Vear Seal)	2
29	Guide	2

## > Flanged 5,000 psi Working Pressure

Unit : (inch)

Valve Size	A	B	C	D	E	Weight(kg)
2 1/16"	2.09	14.06	4.23	19.0	11.81	80.0
4 1/16"	4.28	21.61	6.10	22.39	18.50	256.0

## > Flanged 10,000 psi Working Pressure

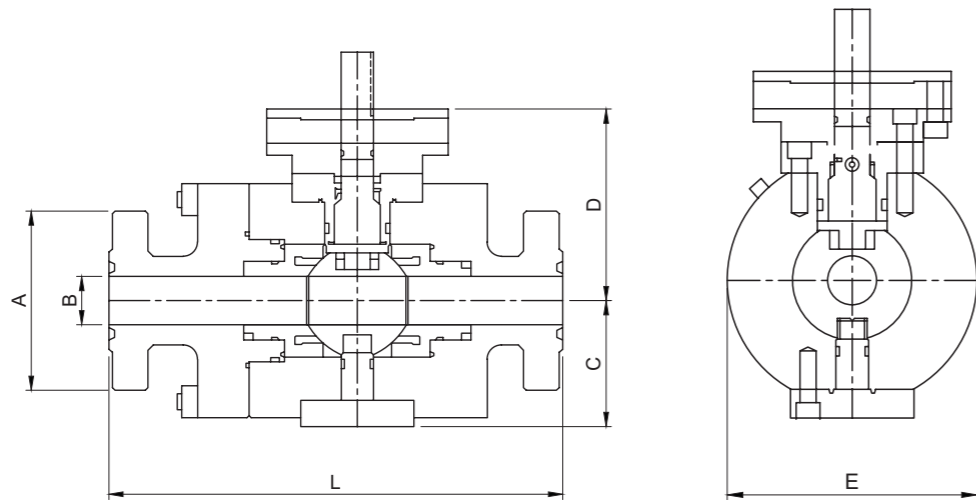
Unit : (inch)

Valve Size	A	B	C	D	E	Weight(kg)
2 1/16"	2.09	20.51	3.94	19.0	11.81	119.0
3 1/16"	3.09	24.37	5.31	20.72	15.75	223.0
4 1/16"	4.09	26.38	6.20	23.71	18.5	378.0

# TRUNNION BALL VALVE



- API 6A Trunnion mounted ball valves made by AISI 4140
- Lip seals for high pressure sealing
- Metal rings for efficient fire safety



## > 5,000psi

Size (inch/mm)	A (inch/mm)	B (inch/mm)	C (inch/mm)	D (inch/mm)	E (inch/mm)	L (inch/mm)	Weight (lb/kg)	Ring Number RX
2 1/16(52)	8.50/216	2.06/52.4	5.22/132.5	5.69/145	8.50/216	14.6/371	340(154)	24
3 1/8(84)	10.5/267	3.12/79.3	8.74/222	6.22/158	10.5/267	10.5/267	571(259)	35

## > 10,000psi

Size (inch/mm)	A (inch/mm)	B (inch/mm)	C (inch/mm)	D (inch/mm)	E (inch/mm)	L (inch/mm)	Weight (lb/kg)	Ring Number RX
1 13/16(45)	7.4/188	1.82/46.2	5.00/127	6.77/172	7.68/195	18.27/464	209(95)	151
2 1/16(52)	7.9/200	2.06/52.4	5.75/146	8.62/219	10.47/266	20.51/521	437(198)	152

· Each size can be changed as customer's requirements.

# STEEL HOSE LOOP



10,000psi & 15,000psi Hose



6,000psi Hose

- SMI Cementing Steel Hose Loops are available for 2" and 3" of nominal pipe sizes.
- Suitable for Cementing lines, Water lines, Well Testing Lines, etc.
- SMI Cementing Steel Hose Loops are available for Standard and H2S Service.
- Long Radius Cementing Steel Hose Loops are suitable for Pressures up to 15,000psi.
- Short Radius Cementing Steel Hose Loops are suitable for Pressures up to 6,000psi.
- Styles of SMI Cementing Steel Hose Loops are customized.



# STEEL HOSE LOOP



10,000psi & 15,000psi Hose

Size	CWP (psi)	Swivel Joint Styles	Part No.		
			8 ft	10 ft	12 ft
2"	15,000	High Pressure Style 50 & Style 10	ST2F110108	ST2F110110	ST2F110112
		High Pressure Style 50 & Style 50	ST2F210108	ST2F210110	ST2F210112
3"	15,000	High Pressure Style 50 & Style 10	ST3F110108	ST3F110110	ST3F110112
		High Pressure Style 50 & Style 50	ST3F210108	ST3F210110	ST3F210112

· Each size can be changed as customer's requirements.



6,000psi Hose

Size	CWP (psi)	Swivel Joint Styles	Part No.		
			8 ft	10 ft	12 ft
2"	6,000	Code Silver Style 50 & Style 10	ST2D110108	ST2D110110	ST2D110112
		Code Silver Style 50 & Style 50	ST2D210108	ST2D210110	ST2D210112

· Each size can be changed as customer's requirements.

# PUP JOINT



4" Fig 1502 2ft NPST

- SMI Pup Joints are available for 2", 3" and 4" of nominal pipe sizes for CWP 15,000psi
- 4" of nominal pipe size is available upon customer's request
- 15,000psi for Standard Service, 10,000psi for H<sup>2</sup>S Service

Size	Union End	CWP (psi)	Length							
			1ft	2ft	3ft	4ft	5ft	6ft	8ft	10ft
2"	1502 MxF	15,000	1ft	2ft	3ft	4ft	5ft	6ft	8ft	10ft
	<b>Part No.</b>		PJ2F110101	PJ2F110102	PJ2F110103	PJ2F110104	PJ2F110105	PJ2F110106	PJ2F110108	PJ2F110110
	1502 MxF	15,000	12ft	15ft	20ft	-	-	-	-	-
3"	1502 MxF	15,000	1ft	2ft	3ft	4ft	5ft	6ft	8ft	10ft
	<b>Part No.</b>		PJ3F110101	PJ3F110102	PJ3F110103	PJ3F110104	PJ3F110105	PJ3F110106	PJ3F110108	PJ3F110110
	1502 MxF	15,000	12ft	15ft	20ft	-	-	-	-	-
4"	1002 MxF	10,000	1ft	2ft	3ft	4ft	5ft	6ft	8ft	10ft
	<b>Part No.</b>		PJ4E110101	PJ4E110102	PJ4E110103	PJ4E110104	PJ4E110105	PJ4E110106	PJ4E110108	PJ4E110110
	1002 MxF	10,000	12ft	15ft	20ft	-	-	-	-	-
4"	1502 MxF	15,000	1ft	2ft	3ft	4ft	5ft	6ft	8ft	10ft
	<b>Part No.</b>		PJ4F110101	PJ4F110102	PJ4F110103	PJ4F110104	PJ4F110105	PJ4F110106	PJ4F110108	PJ4F110110
	1502 MxF	15,000	12ft	15ft	20ft	-	-	-	-	-
<b>Part No.</b>		PJ4F110112	PJ4F110115	PJ4F110120	-	-	-	-	-	

· Each size can be changed as customer's requirements.



2" Fig 1502 Integral

Size	Union End	CWP (psi)	Length							
			1ft	2ft	3ft	4ft	5ft	6ft	8ft	10ft
2"	1502 MxF	15,000	1ft	2ft	3ft	4ft	5ft	6ft	8ft	10ft
	<b>Part No.</b>		PJ2F210101	PJ2F210102	PJ2F210103	PJ2F210104	PJ2F210105	PJ2F210106	PJ2F210108	PJ2F210110
3"	1502 MxF	15,000	1ft	2ft	3ft	4ft	5ft	7ft	8ft	10ft
	<b>Part No.</b>		PJ3F210101	PJ3F210102	PJ3F210103	PJ3F210104	PJ3F210105	PJ3F210106	PJ3F210108	PJ3F210110

· Each size can be changed as customer's requirements.

# INTEGRAL FITTINGS

Integral Fittings / Adapter / Frac Adapter / Hammer Union / Hub Clamp



4" Line Integral Fittings



- SMI Fittings are available 2", 3" and 4" nominal pipe sizes.
- All Fittings are available for Standard and H2S service.

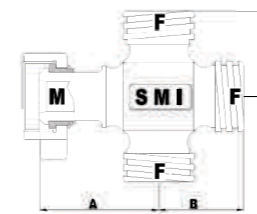


Elbow

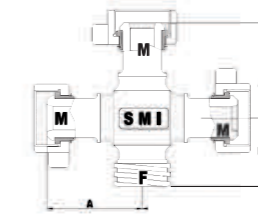
Tee

Cross

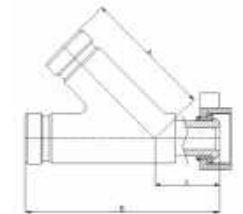
- Wide range of fittings from Elbows to Swages with integral 1502 union end
- Standard CWP 15,000psi/TP 22,500psi and H2S service CWP 10,000psi/TP 15,000psi



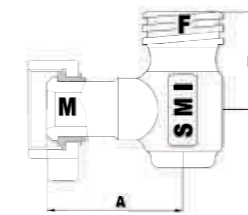
Cross - MFFF



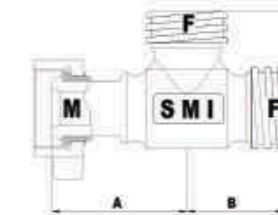
Cross - MMMF



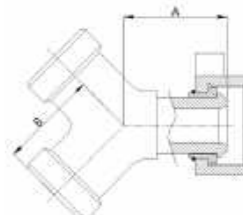
LATERAL 45°



Elbow - MF



Tee - MFF



WYE

## > End Connections Information

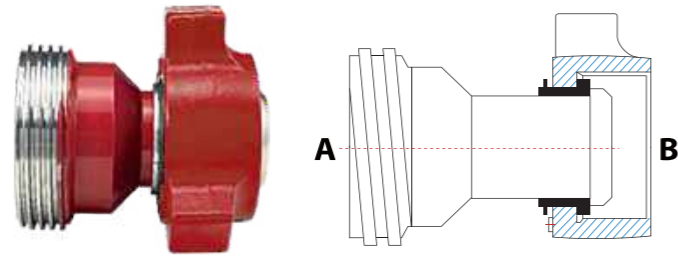
Unit : (inch)

WT.	End Connection	Size	A	B	C	Part No.
Elbow	Straight MF	2"	7	5	-	L02F11011
		3"	8	8	-	L03F11011
		4"	10.5	10.5	-	L04F11011
	Cushion MF	2"	7	5	-	L02F21011
		3"	8	8	-	L03F21011
		4"	10.5	10.5	-	L04F21011
	Double Cushion MF	2"	7	5	-	L02F31011
		3"	8	8	-	L03F31011
		4"	10.5	10.5	-	L04F31011
Tee	MFF	2"	7	5	-	TE02F1101
	MMF	2"	7	5	-	TE02F2101
	MFF	3"	8	8	-	TE03F1101
	MMF	3"	8	8	-	TE03F2101
	MFF	4"	10.5	10.5	-	TE04F1101
	MMF	4"	10.5	10.5	-	TE04F2101
Cross	MMMF	2"	7	5	-	CR02F1101
	FFFM	2"	7	5	-	CR02F2101
	MMMF	3"	8	8	-	CR03F1101
	FFFM	3"	8	8	-	CR03F2101
	MMMF	4"	10.5	10.5	-	CR04F1101
	FFFM	4"	10.5	10.5	-	CR04F2101
Lateral 45 degree	MFF	2"	10.5	15.75	5.25	LT02F1101
		3"	13.88	20.88	7	LT03F1101
WYE	MFF	2"	5.25	5	-	WY02F1101
		3"	7.75	7.75	-	WY03F1101

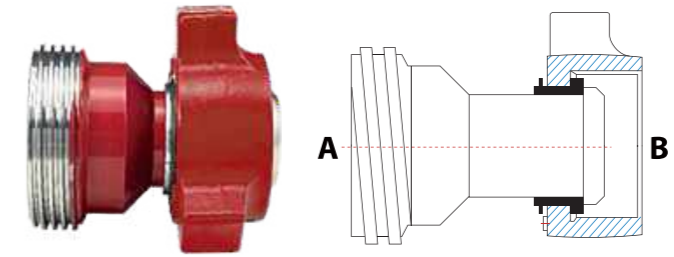
· Each size can be changed as customer's requirements.

# ADAPTER

## Crossover



Union Thread x Union Nut



Union Thread x Union Nut

NO.	End Connections		Working Pressure (psi)	Length (In)	ID (In)	Service
	A	B				
1	1"-1002	2"-1502	10,000	6.00	1.00	STD
2	1"-1502	2"-1502	15,000	7.00	1.00	STD
3	1 1/2"-1002	2"-1002	10,000	7.00	1.31	STD
4	1 1/2"-1502	1 1/2"-1502	10,000	5.75	1.34	STD
5	1 1/2"-1502	1 1/2"-1502	15,000	6.62	1.31	STD
6	1 1/2"-1502	2"-1502	15,000	5.25	1.31	STD
7	2"-1502	1 1/2"-1002	10,000	9.40	1.31	STD
8	2"-1502	1 1/2"-1002	15,000	7.00	1.31	STD
9	2"-1502	2"-1502	15,000	6.62	1.87	STD
10	2"-1502	2"-2002	15,000	6.87	1.30	STD
11	2"-1502	2"-2202	10,000	6.87	1.30	H2S
12	2"-1502	3"-602	6,000	8.00	2.00	STD
13	2"-1502	3"-1502	10,000	8.00	2.00	H2S
14	2"-1502	3"-1502	15,000	8.00	2.00	STD
15	2"-1502	4"-602	6,000	7.00	2.00	STD
16	2"-1502	4"-1002	10,000	7.00	2.00	STD
17	2"-2002	2"-1502	15,000	8.00	1.30	STD
18	2"-2002	2"-2002	20,000	7.00	1.30	STD
19	2"-2002	3"-1502	15,000	5.00	1.30	STD
20	2"-2202	3"-1502	10,000	7.00	1.30	H2S
21	2"-2002	3"-1502	15,000	7.00	1.30	STD

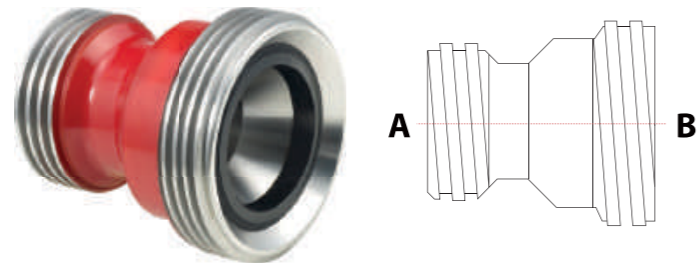
· Each size can be changed as customer's requirements.

NO.	End Connections		Working Pressure (psi)	Length (In)	ID (In)	Service
	A	B				
1	3"-602	4"-602	6,000	8.00	3.00	STD
2	3"-602	3"-1502	6,000	6.00	3.00	STD
3	3"-1002	2"-1502	7,500	7.62	1.87	H2S
4	3"-1502	2"-1502	10,000	6.94	1.87	H2S
5	3"-1502	2"-1502	15,000	6.94	1.87	STD
6	3"-1502	3"-602	6,000	7.62	3.00	STD
7	3"-1502	2"-2002	15,000	7.75	1.30	STD
8	3"-1502	2"-2202	10,000	7.75	1.30	H2S
9	3"-1502	3"-1502	15,000	7.62	3.00	STD
10	3"-1502	4"-602	6,000	8.00	3.00	STD
11	3"-1502	4"-1002	10,000	8.00	3.00	STD
12	4"-602	3"-602	6,000	7.00	2.75	STD
13	4"-602	3"-1502	6,000	7.00	2.75	STD
14	4"-1002	3"-1502	10,000	6.75	3.00	STD
15	4"-1002	4"-602	6,000	12.00	4.00	STD
16	4"-1002	4"-1002	10,000	12.00	4.00	STD

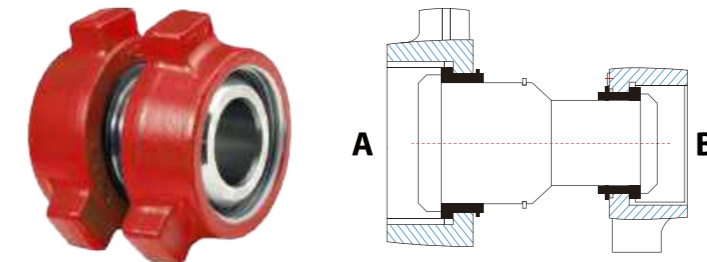
· Each size can be changed as customer's requirements.

# ADAPTER

## Crossover



Union Thread x Union Thread



Union Nut x Union Nut

NO.	End Connections		Working Pressure (psi)	Length (In)	ID (In)	Service
	A	B				
1	1"-1502	1 1/2"-1502	15,000	5.62	1.00	STD
2	1 1/2"-1502	1 1/2"-1502	15,000	5.62	1.31	STD
3	2"-1502	2"-1502	15,000	5.75	2.00	STD
4	2"-1502	2"-2002	15,000	6.00	1.30	STD
5	2"-1502	3"-1502	15,000	6.00	2.06	STD
6	2"-1502	3"-2202	10,000	6.00	2.00	H2S
7	2"-2002	2"-2002	20,000	8.20	1.30	STD
8	2"-2002	3"-1502	15,000	6.00	1.30	STD
9	2"-2202	2"-2202	15,000	8.20	1.30	H2S
10	3"-1502	3"-1502	15,000	5.75	3.00	STD
11	4"-602	4"-602	6,000	8.18	4.00	STD
12	4"-1002	4"-1002	10,000	5.75	4.00	STD

· Each size can be changed as customer's requirements.

NO.	End Connections		Working Pressure (psi)	Length (In)	ID (In)	Service
	A	B				
1	1 1/2"-1502	2"-1502	15,000	6.75	1.50	STD
2	2"-1002	2"-1502	10,000	6.75	1.87	STD
3	2"-1502	2"-1502	15,000	6.75	1.94	STD
4	2"-1502	2"-1502	10,000	6.75	1.94	H2S
5	2"-1502	2"-2002	15,000	8.00	1.30	STD
6	2"-1502	3"-1502	15,000	8.00	1.87	STD
7	2"-1502	3"-1502	10,000	8.00	1.87	H2S
8	2"-2002	2"-2002	20,000	7.50	1.30	STD
9	2"-2002	3"-1502	15,000	8.00	1.30	STD
10	2"-2202	2"-2202	15,000	7.50	1.30	H2S
11	3"-602	3"-602	6,000	6.0	3.00	STD
12	3"-1502	3"-1502	15,000	6.0	3.00	STD
13	3"-1502	3"-1502	10,000	12.00	2.75	H2S
14	4"-602	4"-602	6,000	12.00	4.00	STD
15	4"-1002	4"-1002	10,000	12.00	4.00	STD

· Each size can be changed as customer's requirements.

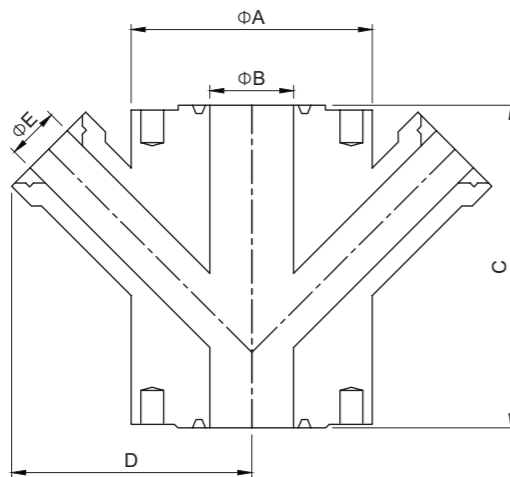
# FRAC ADAPTER

## Goat Head

Integral Fittings / Frac Adapter / Hammer Union / Hub Clamp



- 5 1/8" CWP 10,000psi, Tested at 15,000psi with Four 4"1002 Female Inlets
- Material : AISI 4135
- Hard faced on critical area
- 7 1/16" CWP 10,000psi, Tested at 15,000psi with Four 4"1002 Female Inlets
- Material : AISI 4135
- Hard faced on critical area



Item	A	B	C	D	E
5 1/8"	14.06	5.125	20	14.17	3.07
7 1/16"	18.88	7.063	22	16.54	3.07

· Each size can be changed as customer's requirements.

# HAMMER UNION



Fig 100

Fig 200 / 206



Fig 400

Fig 602



Fig 1002

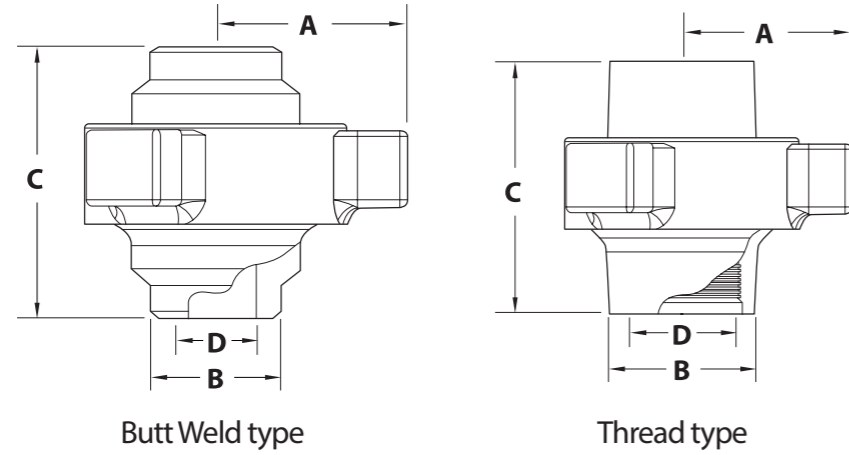
Fig 1502



Fig 2202

- SMI Hammer unions are manufactured by steel forgings using appropriate materials to specific pressure ratings.
- SMI Hammer unions are available in a choice of end connections. API line pipe threads are standard.
- Butt Weld End is available. Customer needs to specify schedule of pipe while ordering.
- H2S service is available and all H2S service parts of SMI unions conform to the latest NACE specifications.
- All SMI Hammer union components can be interchangeable with WECO on the same size and figure.
- All SMI Hammer union nuts have three hammer lugs.

# HAMMER UNION



Butt Weld type

Thread type



Fig 100

Dim	2"	3"	4"	6"	8"	10"
WT.	THD	THD	THD	THD	THD	B/W
A	2 29/32	4	4 23/64	6 57/64	7 3/4	10 5/16
B	2 53/64	4 1/16	5 13/64	7 13/32	9 15/32	11 3/4
C	3 13/32	4 7/8	5 3/4	6 23/32	7 3/16	9 3/16
D	2 5/32	3 13/64	4 3/16	6 9/32	8 1/4	10
WT(lb)	5.73	14.2	19.36	45.06	71.56	105.82
P/N	HU02A1101	HU03A1101	HU04A1101	HU06A1101	HU08A1101	HU10A1101



Fig 200 / 206

Dim	1"	2"	3"	4"	6"	8"	10"
WT.	THD	THD	B/W	THD	B/W	THD	B/W
A	1 29/32	2 7/8	2 7/8	4	4	4 17/32	4 17/32
B	1 19/32	2 53/64	2 3/8	4 1/16	3 1/2	5 13/64	4 1/2
C	2 13/32	3 13/32	3 17/64	4 35/64	4 41/64	4 15/16	5
D	1 1/8	2 5/32	2 5/64	3 13/64	3 5/64	4 3/16	4 1/32
WT(lb)	1.23	5.32	5.86	14.4	15.39	19.3	20.42
P/N	HU01B1101	HU02B1101	HU02B5101	HU03B1101	HU03B5101	HU04B1101	HU04B5101



Fig 400

Dim	2"	3"	4"
WT.	THD	THD	THD
A	2 29/32	4	4 23/64
B	2 53/64	4 1/16	5 13/64
C	3 5/8	4 7/8	5 3/4
D	2 5/32	3 13/64	4 3/16
WT(lb)	11.2	20.15	29.59
P/N	HU02D1101	HU03D1101	HU04D1101

· Each size can be changed as customer's requirements.



Fig 602

Dim	1"		2"		3"		4"	
WT.	THD	B/W	THD	B/W	THD	B/W	THD	B/W
A	2 1/4	2 1/4	3 17/32	3 17/32	4 1/2	4 1/2	5 5/16	5 5/16
B	1 3/4	1 5/16	3	2 25/64	4 1/4	3 1/2	5 5/16	4 1/2
C	3 17/32	3 17/32	5 1/4	5 1/16	6 1/4	5 7/16	8 7/32	5 43/64
D	1 7/64	19/32	2 1/16	1 1/2	3 3/16	3 5/64	4 1/64	3 5/32
WT(lb)	3.8	3.57	12.6	13.9	25	26.4	37	35
P/N	HU01E1101	HU01E5101	HU02E1101	HU02E5101	HU03E1101	HU03E5101	HU04E1101	HU04E5101



Fig 1002

Dim	1"		2"		3"		4"		5"
WT.	THD	B/W	THD	B/W	THD	B/W	THD	B/W	B/W
A	2 1/4	2 29/32	3 17/32	3 17/32	4 1/2	4 1/2	5 5/16	6 3/16	6 3/16
B	1 3/4	2 53/64	3	2 25/64	4 1/4	3 1/2	5 5/16	5 7/64	4 7/64
C	3 17/32	2 29/32	5 1/4	5 1/16	6 1/4	5 7/16	8 7/32	6 3/16	6 3/16
D	1 7/64	2 53/64	2 1/16	1 15/16	3 3/16	3 5/64	4 1/64	4 13/16	4 13/16
WT(lb)	3.8	3.57	12.6	10.47	25.8	26.8	37.04	34.97	62.5
P/N	HU01F1101	HU01F5101	HU02F1101	HU02F5101	HU03F1101	HU03F5101	HU04F1101	HU04F5101	HU05F5101



Fig 1502

Dim	1"		2"		3"		4"		5"	6"
WT.	THD	B/W	THD	B/W	THD	B/W	THD	B/W	B/W	B/W
A	3 1/16	3 1/16	3 47/64	3 47/64	4 1/2	4 1/2	6 5/64	6 5/64	9	11
B	2 3/16	1 21/64	3 11/64	2 25/64	4 13/32	3 1/2	5 3/4	4 1/2	5 1/2	6 1/2
C	4 21/64	4 23/64	7 1/32	6 1/4	7 5/8	5 1/4	8 1/2	8 1/2	9	9 1/4
D	1 7/64	3/7	2 1/16	1 1/2	3 3/16	2 9/32	4 1/64	3 11/64	4 1/64	4 1/4
WT(lb)	9.5	9.26	19.5	20	32.1	30.42	74.52	78.1	50	67.8
P/N	HU01J1101	HU01J1101	HU01J1101	HU01J1101	HU03J1101	HU03J5101	HU04J1101	HU04J5101	HU05J5101	HU06J5101



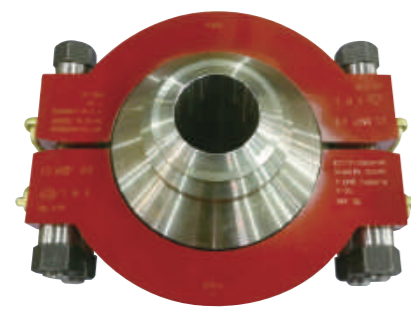
Fig 2202

Dim	2"	3"	5"	6"
WT.	B/W	B/W	B/W	B/W
A	3 3/4	6 3/32	9 1/4	11 1/4
B	2 19/32	5 1/2	5 1/2	6 1/2
C	7 13/32	10 1/2	10 3/4	10
D	1 5/16	3	4 1/64	4 1/4
WT(lb)	25.53	91.27	55.2	74.7
P/N	HU02L5101	HU03L5101	HU05L5101	HU06L5101

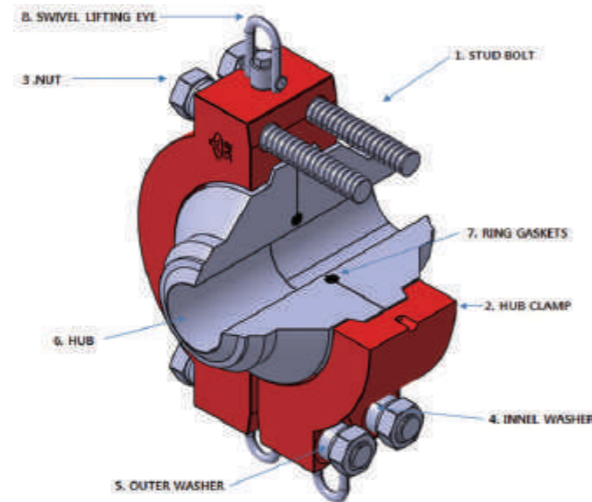
· Each size can be changed as customer's requirements.



# HUB CLAMP



API 16A CLAMP



### Specification

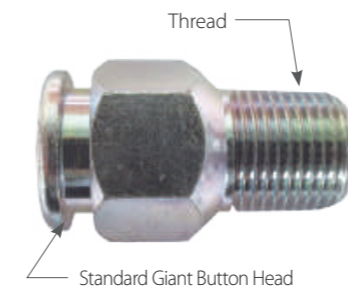
- Hubs & clamps are designed & manufactured in accordance with below specific requirements
- Temperature rating - K to Y
- Material class - AA to EE
- Bolt & Nut : API 20E/20F

### > Composition

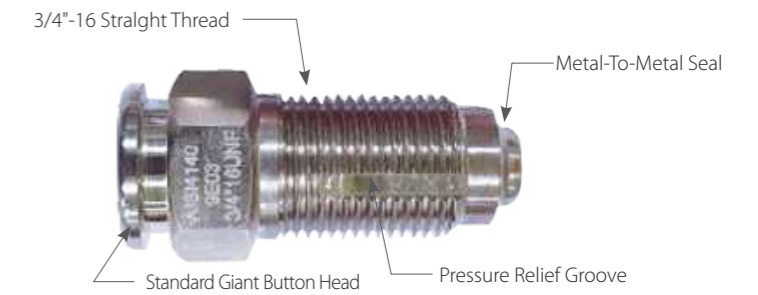
NO.	Item	Q'ty
1	Stud Bolt	4
2	Hub Clamp	2
3	Nut	8
4	Inner Washer	8
5	Outer Washer	8
6	Hub	2
7	Ring Type Joint Gasket	1
8	Swivel Lifting Eye	6

- The complete range of Clamps & Hubs in accordance to API 16A.
- Clamps allow fast and easy make up even in limited space.
- All clamps have 360° infinite adjustability
- Clamps reliable to connect hubs and other API connections
- Hubs & clamps up to pressure range from 2,000 psi to 20,000 psi
- Hubs & clamps are designed & manufactured in accordance with below specific

# GREASE FITTING



3/8" Grease fitting  
[GF31101]



3/4" Safetap Grease fitting  
[GF06E02101]

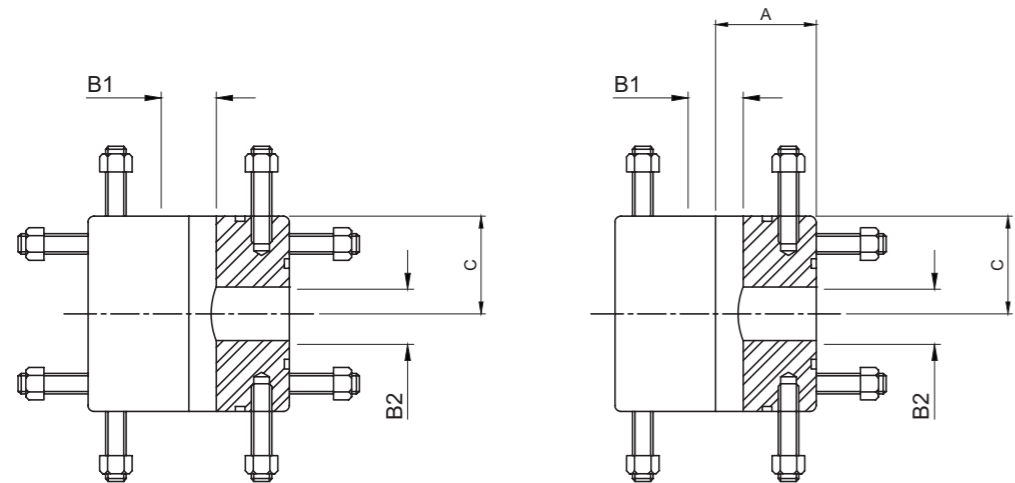
### > Safetap grease fitting

- The unique metal-to-metal seal eliminates wetted threads and pipe taps. Since the threads do not perform a sealing function they do not require Teflon tape or other sealing aids.
- The heavier cross section stands up better to impacts.
- Each fitting has a slot machined through the threads which serves as a pressure relief path in the event of a leak.
- The metal-to-metal seal and the pressure relief slot of the SafeTap grease fitting also allow a means to safely bleed off any residual internal pressure.



# STUDDED CROSS / TEE

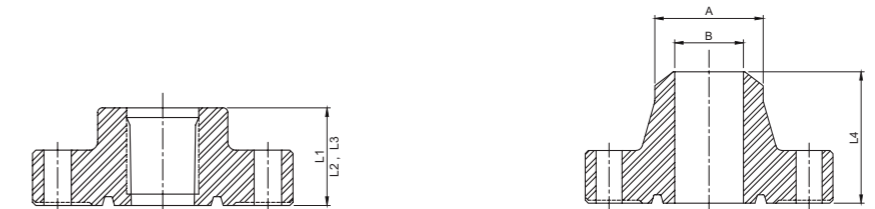
STUDDED CROSS · TEE / API FLANGE



Rated Working Pressure (psi)	Nominal Size and Bore		Centre to Face Vertical Run C (inches)±.03	Centre to Face Horizontal Run A (inches)±.03
	Vertical B1	Vertical B2		
	(inches)+.03,-0	(inches)+.03,-0		
5,000psi	2 1/16	2 1/16	4.5	4.5
	2 9/16	2 9/16	5.0	5.0
	3 1/8	3 1/8	5.5	5.5
	4 1/16	4 1/16	6.5	6.5
10,000psi	1 13/16	1 13/16	4.38	4.38
	2 1/16	2 1/16	4.38	4.38
	2 9/16	2 9/16	5.12	5.12
	3 1/16	3 1/16	5.88	5.88
15,000psi	4 1/16	4 1/16	6.88	6.88
	1 13/16	1 13/16	5.0	5.0
	2 1/16	2 1/16	5.0	5.0
	2 9/16	2 9/16	5.5	5.5
20,000psi	3 1/16	3 1/16	6.31	6.31
	4 1/16	4 1/16	7.62	7.62
	1 13/16	1 13/16	6.47	6.47
	2 1/16	2 1/16	6.47	6.47
20,000psi	2 9/16	2 9/16	7.28	7.28
	3 1/16	3 1/16	7.97	7.97
	4 1/16	4 1/16	9.91	9.91
	4 1/16	4 1/16	9.91	9.91

· Each size can be changed as customer's requirements.

# API FLANGE

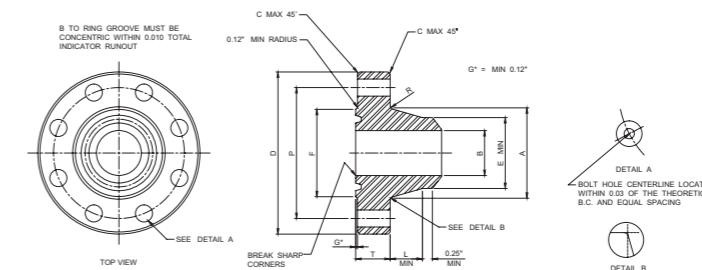


Threaded Flange

Weld Neck Line Pipe Flange

Nominal Size and Bore of Flange	Nominal Size and Bore of Flange	Hub Length Threaded Line-Pipe Flange	Hub Length Threaded Casing Pipe	Hub Length Tubing Flange	Hub Length Welding Neck Line-Pipe Flange	Maximum Bore of Welding Neck Flange
2,000psi	-	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4±0.06</sub>	B
	2 1/16	2.56	-	2.56	4.31	1.97
	2 9/16	2.81	-	2.81	4.44	2.35
	3 1/8	2.44	-	2.94	4.31	2.93
3,000psi	4 1/16	3.06	3.50	3.50	4.81	3.86
	=	L <sub>1</sub>	L <sub>2</sub>	-	L <sub>3±0.06</sub>	B
	2 1/16	1.75	-	-	3.19	2.10
	2 9/16	1.94	-	-	3.44	2.50
5,000psi	3 1/8	2.12	-	-	3.56	3.10
	4 1/16	2.44	3.50	-	4.31	4.06
	-	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4±0.08</sub>	B
	2 1/16	2.56	-	2.56	4.31	1.72
5,000psi	2 9/16	2.81	-	2.81	4.44	2.16
	3 1/8	3.19	-	3.19	4.94	2.65
	4 1/16	3.88	3.88	3.88	5.19	3.47

· Each size can be changed as customer's requirements.



API 6A-TYPE 6BX Welding Neck Flanges

Working Pressure (psi)	Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Total Thickness of Flange	Length of Hub	Diameter of bolt circle	Number of Bolts	Diameter of Bolts	Diameter of Bolt Holes	Ring Number
-	-	B	D	T	L	P	-	-	-	BX
10,000psi	2 1/16	2.09	7.88	1.73	2.03	6.25	8	3/4	0.88	152
	2 9/16	2.59	9.12	2.02	2.25	7.25	8	7/8	1.00	153
	3 1/16	3.09	10.62	2.30	2.50	8.50	8	1	1.12	154
	4 1/16	4.09	12.44	2.77	2.50	10.19	8	1 1/8	1.25	155
15,000psi	2 1/16	2.09	8.75	2.00	2.12	6.88	8	7/8	1.00	152
	2 9/16	2.59	10.00	2.25	2.25	7.88	8	1	1.12	153
	3 1/16	3.09	11.31	2.53	2.50	9.06	8	1 1/8	1.25	154
	4 1/16	4.09	14.19	3.09	2.88	11.44	8	1 3/8	1.50	155
20,000psi	2 1/16	2.09	11.31	2.81	2.06	9.06	8	1 1/8	1.25	152
	2 9/16	2.59	12.81	3.12	2.31	10.31	8	1 1/4	1.38	153
	3 1/16	3.09	14.06	3.38	2.50	11.31	8	1 3/8	1.50	154
	4 1/16	4.09	17.56	4.19	2.88	14.06	8	1 3/4	1.88	155

· Each size can be changed as customer's requirements.