

American Completion Tools

Global Partners for Oilfield Equipment

**Choke and Kill Manifolds, Standpipe Pipe Manifolds,
Cement Manifolds, Gate Valves, Swivel Joints, Integral Fittings,
Unions and Rig Refurbishment Equipment**

(Oilfield Rig Equipment)

American Completion Tools

American Completion Tools (ACT) is a joint venture, started by acquiring Allco Services Inc., at Burleson, Texas, to manufacture high quality oilfield equipment in the USA. In 2010, American Completion Tools, Houston, was set up to serve customers more closely the complete line of American Completion Tools products for stock-n-sale.

The Houston office with a warehouse helps in providing quality customer service to their clients by enabling prompt delivery, easy billing and after sales service. Since its inception, American Completion Tools has been providing high quality products worldwide to distributors and service companies.

At American Completion Tools, quality and customer service are given utmost importance.



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Houston, TX Office



State Of The Art Plant, at Houston



Burleson, TX Office

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Note: Elder, Baker, Alpha, Viton, Aflas, Otis, Go, and/or any other trade name mentioned in this catalogue are for reference purpose only.

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CHOKE AND KILL MANIFOLDS



ACT fabricates custom designed Manifolds :

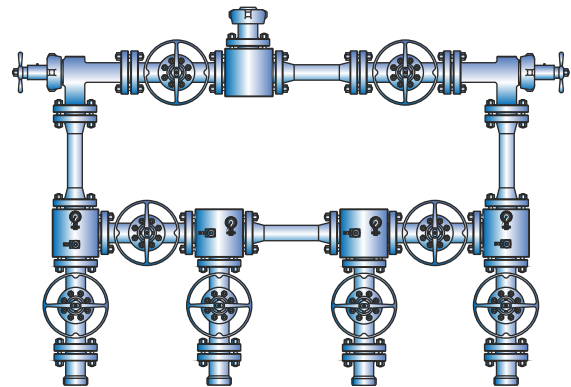
For Well Testing / Completion / Intervention, industry uses various configuration of Manifold, as per requirement of Service / Operating Companies, ACT designs and fabricates custom made Manifold in sizes of 2" to 4" up to 15,000 PSI for standard and sour services for the following applications:

- (a) Choke Manifold for flow back/work over
- (b) Production Manifold for diverting flow through test separator or vent or burner
- (c) Gas Manifold for diverting gas through orifice meter or burner
- (d) Data Recorder for recording flowing pressure and temperature
- (e) Stimulation/Treatment for Well stimulation / treatment service.

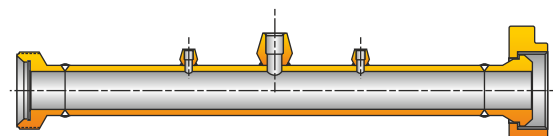
2" / 3" / 4" / 5" / 6" 5000 PSI & 10000 PSI WP 3' to 8' Length

Material :

Suitable for H₂S Service as per NACE MR-01-75. With Union / Gray Lock End Connections. Supplied with multiple ports, Plugged or Flanged at specified intervals and degrees. Supplied with Thermowell, Pressure Gauges as required by customer.



Eruption Manifold



Data Header

CEMENT MANIFOLD

ACT's high pressure cement manifolds are designed and manufactured to customer requirements. The ACT product line offers the widest range of hammer union ended equipment available from any one manufacturer. Purpose forged tees, crosses, "Y"s, laterals, plug valves (two types), crossovers; the list is endless. This allows ACT to supply very competitively priced cement manifolds in a wide variety of sizes and configurations. Manifolds with pressure ratings up to 15,000 psi are available.

ACT cement manifolds are designed and supplied fully certified in accordance with the recognized oilfield equipment standards.

CHOKE AND KILL MANIFOLD

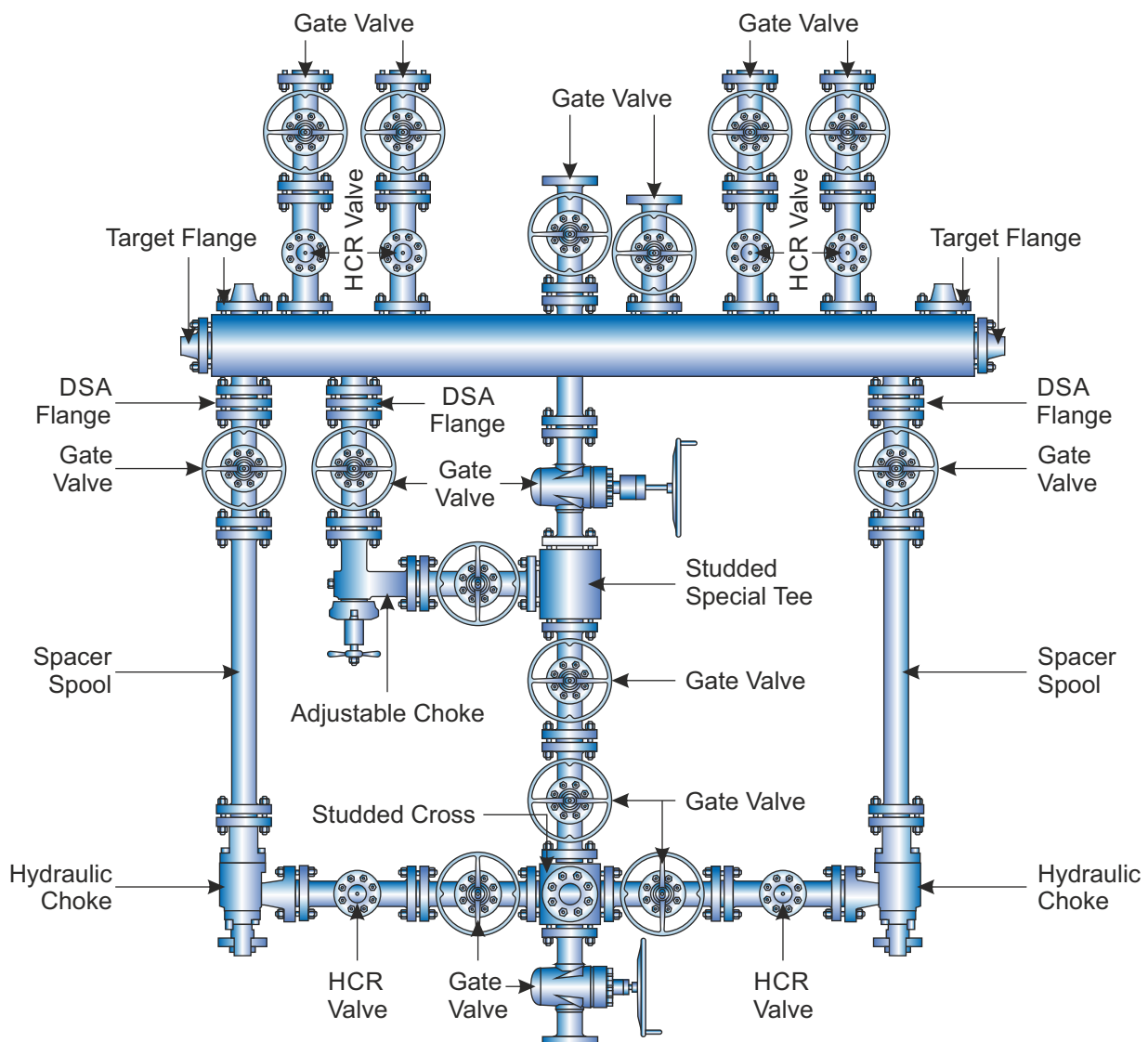
Choke and Kill Manifold:

In oil / gas well drilling operation, drilling fluids (Muds) of designed gravity are used to overcome sub-surface pressure or the influx of formation fluid. On some occasions, kicks are experienced with change in pressure of formation while drilling. This is necessary to build up drilling fluid density to prevent influx of formation fluid. The Choke and Kill Manifold allows the driller to regulate back-pressure on the formation while gradually density of the drilling fluid is built up by circulation with closed B.O.P., till the well is stabilized and drilling is resumed. The Choke and Kill Manifold are available up to 15,000 PSI in sizes of 2" to 4" for standard and sour services. Other types of Manifold (Choke Manifold, Cementing etc.) can also be made available.

For Well Testing / Completion / Intervention, industry uses varies configuration of Manifold, as per requirement of Service / Operating Companies, ACT designs and fabricates custom made Manifold.

Specifications:

- PSL-2 (or better) or customer to specify.
- PR-1 (or better) or customer to specify.
- Material: DD-NL (or better) or customer to specify
- Temperature Rating 'U' or customer to specify.
- Alloy 625/ SS 316 Inlaid Ring Grooves or Customer to Specify.
- Gates and seats shall be hard-faced.
- Hydraulic actuated components allow for remote operation.
- Recertification available at ACT's facility.
- Global Aftermarket Presence.



Choke And Kill Manifold

CHOKE AND KILL MANIFOLD

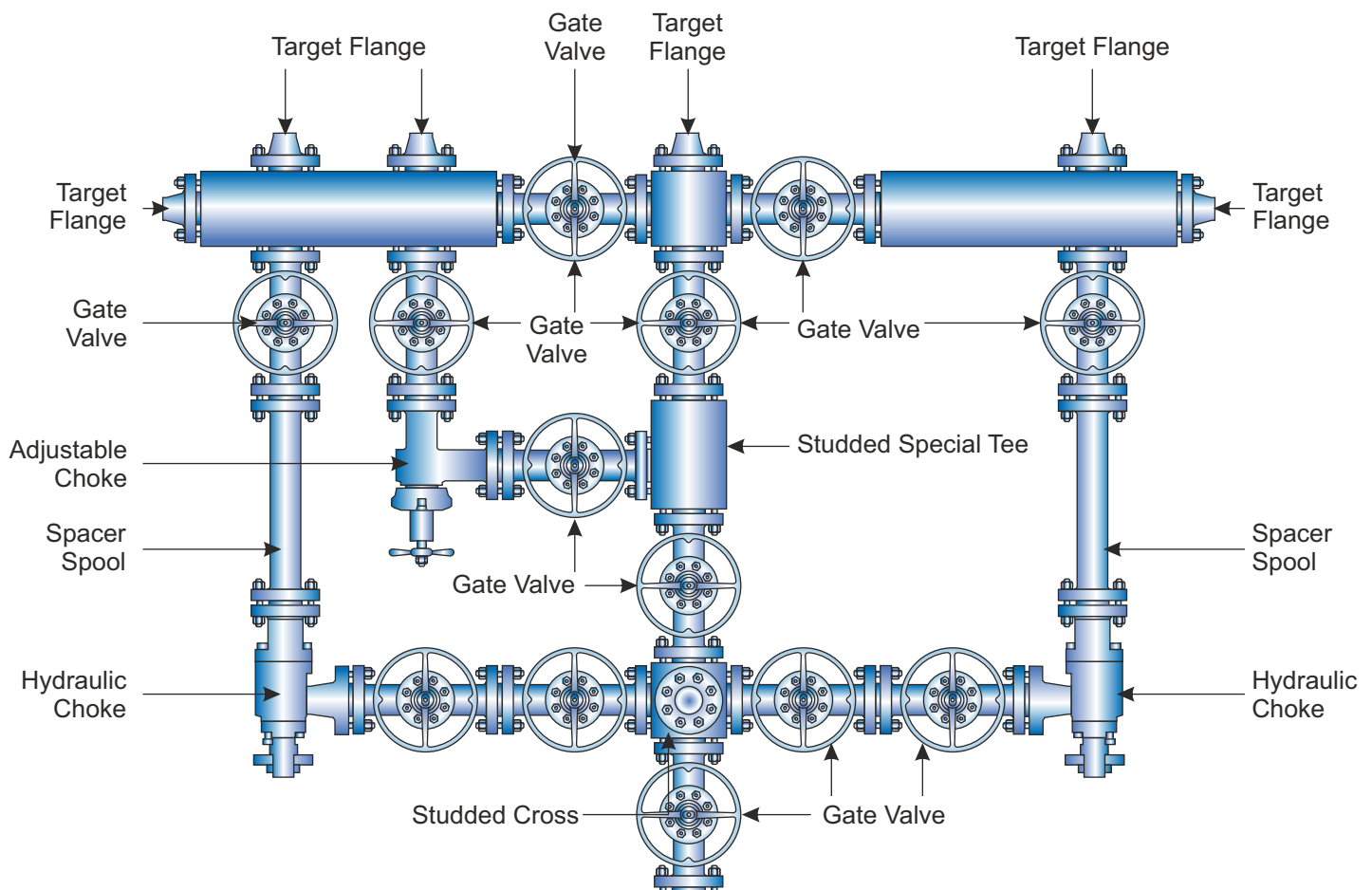
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- Temperature Rating 'U' or customer to specify.
- Alloy 625/ SS 316 Inlaid Ring Grooves or Customer to Specify.
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- Hydraulic actuated components allow for remote operation.
- Recertification available at ACT's facility.
- Global After market Presence.



Choke And Kill Manifold

STANDPIPE MANIFOLD

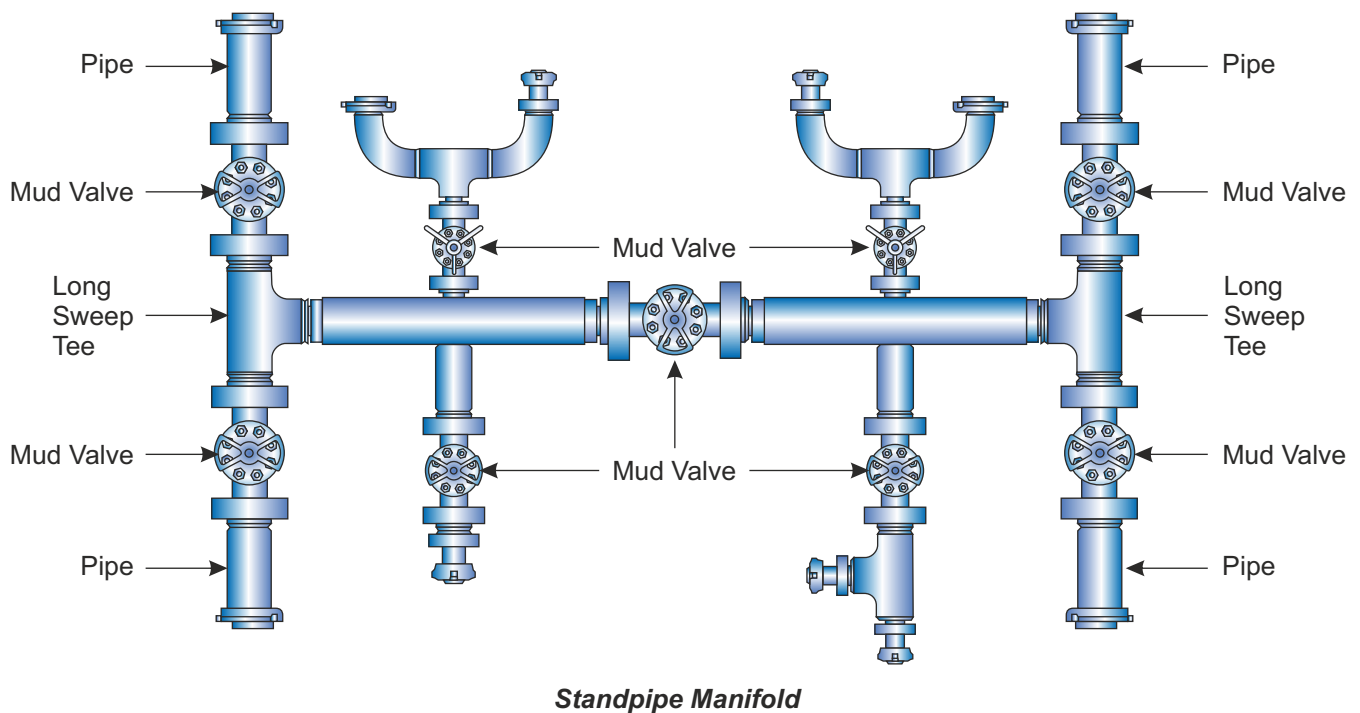
Standpipe Manifold:

ACT's Standpipe Manifold systems are used to conduct drilling fluid from the mud pumps with the purpose of diverting the flow of drilling fluids towards the drill line or dill string.

ACT's Standpipe Manifolds are designed and manufactured to customer requirements. An adjustable choke can be installed to bleed pressure off the drillpipe, to reduce shock when breaking circulation in wells where loss of circulation is problem, and to bleed off pressure between BOPs during stripping operations. Pressure Rating up to 7,500 PSI using standard mud valves can be accommodated. Welded, Flanged, hubbed or hammer union connection is available.

Specifications:

- PSL-2 (or better) (5,000 PSI and lower) or customer to specify.
- PR-1 (or better) or customer to specify.
- Material: DD-NL (or better) or customer to specify
- Temperature Rating 'U' (5,000 PSI working pressure or lower) or customer to specify.
- Alloy 625/ SS 316 Inlaid Ring Grooves or Customer to Specify.
- Gates and seats shall be hard-faced.



TRASH/DEBRIS CATCHER WITH SIDE OUTLET ASSEMBLY

Product Description

The debris catcher is designed to recover large solid pieces. Debris/Trash catchers are normally positioned upstream of the choke manifold to prevent erosion damage to downstream equipment. This piece of equipment is usually placed just downstream of the well head and just upstream of the choke manifold so it is the first piece of equipment that the well effluent is passed through. This piece of equipment is vital in prolonging downstream equipment such as choke manifold, line heaters, sand separators and test separators. Our standard trash catcher design flows in at 3" Fig 1502 and flows out at 2" Fig 1502 or 3" fig 1502 to handle normal flowback operations. Customizable design options are available upon request.



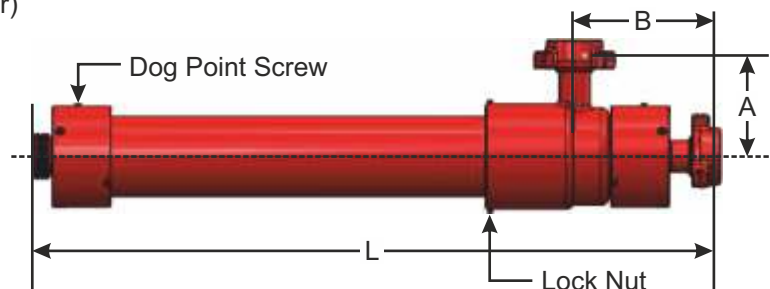
Trash/Debris Catcher With Side Outlet Assembly

Features Of Debris/Trash Catcher

- Various sizes of screens available.
- Dual catcher screen allows for continuous screening.
- Bypass line available
- Offers the convenience of being able to change screens without interrupting flow back.
- With customizable options, our debris catchers are rated for 10,000 or 15,000 CWP. Depending on your requirements we can use different styles of crossovers and pup joints to get the solution you need.
- Our trash catchers have zero welding on all of the high pressure iron. This safety feature prevents micro cracking that is often found in welding heat treated metals.
- All parts are manufactured from the highest quality material with stringent quality control checks. All parts undergo NDT testing as per API standards and Internal Quality procedures.
- Trash catcher assembly is tested at 1.5 times the max. CWP pressure.
- Rated for both Sweet and sour conditions
- Plug valve or/and gate valve based design

Operating Specifications

Temperature Range	-20° F to +250° F(P+U)
Working Pressure	15,000 psi (standard), 10,000 psi (SOUR)
Code	API, ASME, NACE MR-0175 (SOUR)
Inlet	2" fig.1502, 3" fig.1502
Outlet	2" fig.1502, 3" fig.1502
Barrel	5" id
Screen	3-1/2" SCH.80 4.12 Ft lg
Screen Hole Dia.	0.37 (or as per customer)



NORMAL SIZE	A (in)	B (in)	L (in)
2" fig. 1502	60.65	9.41	12.04
3" fig. 1502	60.65	9.13	12.56

PHDC 01 HYDRAULIC DRILLING CHOKE WITH CONTROL PANEL

Features: The Hydraulic Choke is a hydraulically operated variable choke providing any opening from a maximum of 1.93 square inches (1 9/16" equivalent bean diameter) to full shut off. Working pressure rating of the choke is 10,000 PSI. Two Tungsten Carbide discs, each with a semi-circular opening, form the choke. Various openings are obtained by rotating the upstream disc against the stationary downstream disc.

Operator Control Panel: The operator console is built with stainless steel machine engraved English letters, coded and is equipped with following controls:

The main choke operating lever marked OPEN, HOLD and CLOSE, controls the movement of the upstream disc. Speed of operation is controlled by the HYDRAULIC REGULATOR valve in the lower right corner of the panel.

The AIR SUPPLY valve on the left side of the control panel controls the flow of rig air to the air-powered hydraulic pump and to the position indicator. (A minimum of 100 PSI air pressure required.)

Moving the choke control lever to the CLOSE position directs hydraulic pressure to the hydraulic pistons which rotate the choke towards "closed" and moving the lever to the OPEN position reverses the operation. When the control lever is released, it will return to the HOLD position and the upstream disc will remain where it is.

The POSITION INDICATOR gauge located on the right side of the control panel shows the approximate position of the choke in terms of degree of closure.

Advantages

- Multiple pressure-sensitive applications
 - Well kicks
 - Well testing
 - Well clean-up operations
- High pressure rating
 - 5,000 psi (345 bar)
 - 10,000 psi (689 bar)
 - 15,000 psi (1,034 bar)
- Dependable choke-disc design
 - Heavy-duty, diamond-lapped tungsten- carbide discs honed to near-perfect flatness. Rotation of actuator fork allows finite regulation of the opening size from full-open to full-close
- Positive closure
 - A 17° dead band overlap beyond the full-close position ensures closure even if the plates become worn from extended exposure to abrasives-laden fluid flow. Quality of the seal is not affected by pressure drops and surges. In fact, the seal improves under pressure
- Tungsten-carbide sleeves
 - Increase in-service life. Extended wear sleeves reduce the effects of abrasive solids and protects the API ring gasket
- Versatility
 - Ideal for offshore and on shore applications
- Certifications
 - Designed, manufactured, in accordance with API 6A (latest edition) and NACE Mr0175 (latest edition)
 - Optional configurations available to P-X Temperature rating (-20F to 350F), PR2, PSL3G, and Material Class EE-NL for H2S service

Painting: All steel materials are sandblasted and organic zinc primer coated and painted to customer supplied color code.



**Hydraulic
Drilling Choke
(Super Choke Type)**

**Control
Panel**



Hydraulic Choke

CHOKE VALVE



H2 TYPE CHOKE VALVE

ACT manufactures both Positive and Adjustable Chokes in pressure rating up to 15,000 PSI WP., with different styles of end connection.

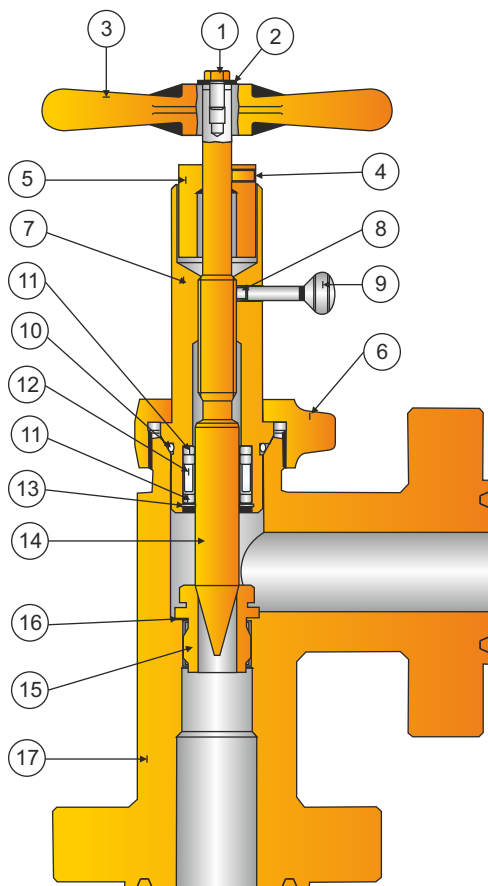
Adjustable Chokes are meant for variable flow. They have externally controlled indicator showing orifice size in the increment of 1/64th inch. The variation in choke size is achieved by rotating hand wheel to obtain desired flow rate at down stream side



ACT Adjustable Chokes contain the following features:

- Interchangeability of parts to construct a positive, adjustable, or combination choke
- Bonnet nut has rugged, integrally forged lugs for hammering nut loose
- Built-in safety feature which releases residual pressure in the choke body before the nut is fully removed. The inside of the choke body is vented to atmosphere after the bonnet nut is partially removed
- Interchangeability of component parts for a particular pressure range. For example, the same blanking plugs and bonnet assemblies are used in nominal 2" 2000 through 10,000 PSI WP.
- Stainless steel adjustable choke needle and seat (Tungsten Carbide/ Ceramic lining needle and seat also available for severe service applications)

Different end connections (API / ANSI, Flanged / Threaded) are available upon request.



Adjustable Choke

Size & WP	Max Orifice Dia
2 1/16 x 2000	25.4 MM
2 9/16 x 2000	50.8 MM
3 1/8 x 2000	50.8 MM
4 1/16 x 2000	76.2 MM
2 1/16 x 3000	25.4 MM
2 9/16 x 3000	50.8 MM
3 1/8 x 3000	50.8 MM
4 1/16 x 3000	76.2 MM
2 1/16 x 5000	25.4 MM
2 9/16 x 5000	50.8 MM
3 1/8 x 5000	50.8 MM
4 1/16 x 5000	76.2 MM
2 1/16 x 10000	25.4 MM
2 9/16 x 10000	50.8 MM
3 1/16 x 10000	50.8 MM
2 1/16 x 15000	25.4 MM
3 1/16 x 15000	50.8 MM

Part List		
ITEM	DESCRIPTION	QTY.
1	HEX BOLT	1
2	WASHER	1
3	HANDLE	1
4	HEX. SOC.	
	SET SOCIETY	1
5	INDICATOR	1
6	BONNET NUT	1
7	BONNET	1
8	NYLON PLUG	1
9	THUMB SCREW	1
10	O-RING - BONNET	1
11	JUNK RING	2
12	'J' PACKING +	
	BACK-UP RING	1
13	INT. RETAINER RING	1
14	NEEDLE	1
15	SEAT	1
16	GASKET	1
17	BODY	1

EXTERNAL SLEEVE CHOKE VALVE

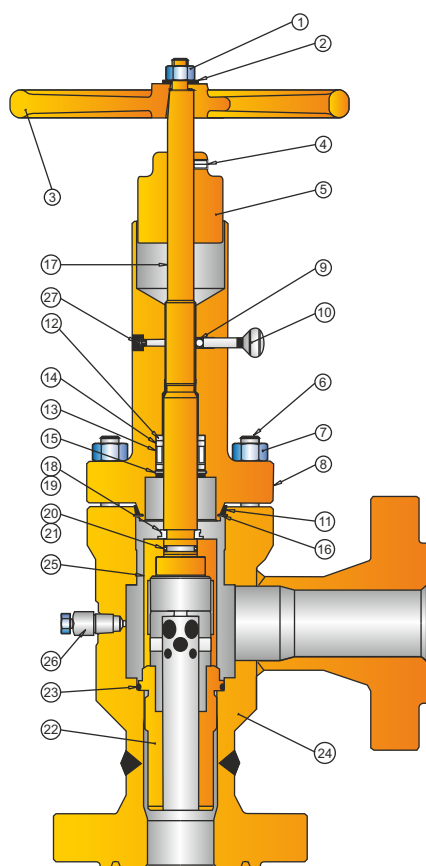


ACT External sleeve control choke, (Model-ES)

ACT External Sleeve Control Chokes minimize erosion and improve flow characteristics suitably for erosive service and under high pressure drop, with sand concentration. It applies the principle of "Flow Impingement" to dissipate and contain the destructive forces of cavitation, within the heavy duty thick walled cage of Tungsten Carbide .

Other features :

- Spring loaded pressure energized stem seal
- Field proven metal bonnet seal
- Dependable positive shut-off



External Sleeve Control Choke

Part List		
ITEM	DESCRIPTION	QTY.
1	HEX NUT	1
2	WASHER	1
3	HANDWHEEL	1
4	HEX, SOC. SET SCREW	1
5	INDICATOR	1
6	STUD	8
7	NUT	8
8	BONNET	1
9	NYLON BALL	1
10	THUMB SCREW	1
11	RING-BONNET	1
12	JUNK RING	2
13	SEAL	1
14	BACK - UP RING - SEAL	1
15	INT. RETAINER RING	1
16	RETAINER RING - COIL TYPE	1
17	STEM	1
18	RING (2 HALVES) - STEM	1
19	INT. RETAINER RING	1
20	O-RING	1
21	BACK-UP RING (SCARF CUT)	1
22	SEAT	1
23	SEAT SEAL	1
24	BODY	1
25	FLOW RING	1
26	BODY VENT FITTING	1
27	GREASE NIPPLE	1
28	RIVET TAG (NOT SHOWN)	4
29	NAME PLATE (NOT SHOWN)	1
30	FLANGE PROTECTOR (NOT SHOWN)	2

Size & WP	Max Orifice Dia
2.1/16 x 2000	25.4 mm
2.9/16 x 2000	50.8 mm
3.1/8 x 2000	50.8 mm
4.1/16 x 2000	76.2 mm
2.1/16 x 3000	25.4 mm
2.9/16 x 3000	50.8 mm
3.1/8 x 3000	50.8 mm
4.1/16 x 3000	76.2 mm
2.1/16 x 5000	25.4 mm
2.9/16 x 5000	50.8 mm
3.1/8 x 5000	50.8 mm
4.1/16 x 5000	76.2 mm
2.1/16 x 10000	25.4 mm
2.9/16 x 10000	50.8 mm
3.1/16 x 10000	50.8 mm
2.1/16 x 15000	25.4 mm
3.1/16 x 15000	50.8 mm

POSITIVE CHOKE VALVE

Positive Chokes & Beans

Positive Chokes accommodate fixed orifice dimensions. All ACT Adjustable Chokes can be converted into Positive Chokes by replacing the bonnet assembly with an appropriate blanking plug assembly and choke bean . These are manufactured up to 7", 15,000 PSI with all types of end connections.

CHOKE BEANS:

- ACT Choke Beans are suitably hardened to maintain accuracy level for longer period
- Tungsten Carbide lined Choke Beans are available for high pressure drop and severe application

BEAN WRENCH:

ACT Bean Wrench comes with Hexagonal Socket Box for Bean Adapter and Bean separately. The Adjustable Choke Seat and Bean Adapter are accommodated in same wrench for a particular size .



Bean Adaptor (HJC Type)



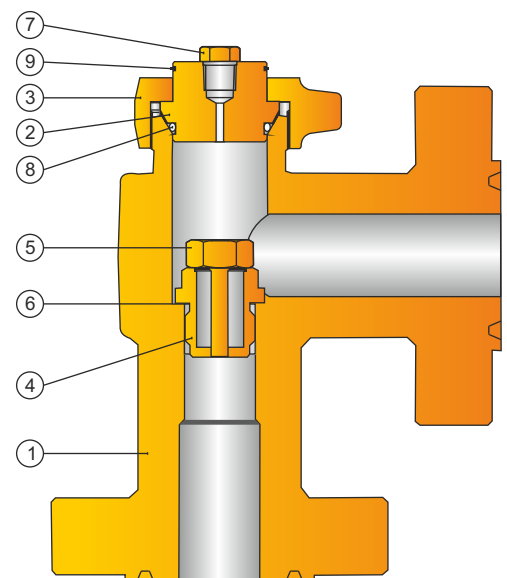
Bean Adaptor Positive (CH Type)



Flow Bean



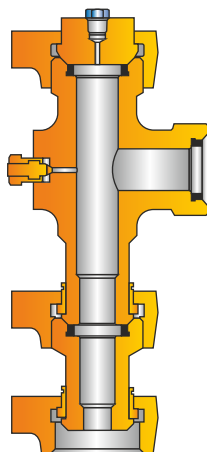
Choke Bean



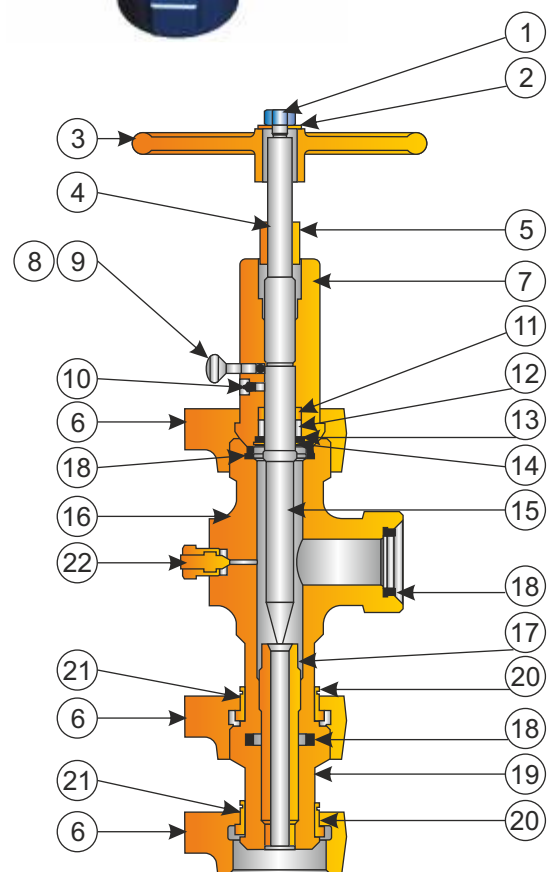
Positive Choke

Part List		
ITEM	DESCRIPTION	QTY.
1	BODY	1
2	BONNET	1
3	BONNET NUT	1
4	BEAN ADAPTER	1
5	CHOKE BEAN	1
6	GASKET	1
7	PLUG (½" NPT)	1
8	O-RING-BONNET	1
9	EXT. RETAINER RING	1

TYPE TARGET CHOKE VALVE



Type Target Positive Choke



Type Target Choke Assembly

These are used in many oilfield applications to control the rate of flow. Usually an adjustable choke is used as part of a manifold installed downstream of the wellhead. The choke is adjusted during flow back of the well to control downstream pressure and flow rates. The ACT adjustable choke is comprised of three main sub-assemblies. These sub-assemblies are the bonnet, tee, and nipple assemblies.

ACT chokes are available in 3/4", 1", and 2" maximum orifice sizes with Fig. 602-1502 hammer union connection. The components that comprise the choke are made from various materials. The bonnet, tee, and nipple are made from forged alloy steel. The stem is manufactured from stainless steel and utilizes a solid carbide tip. The choke seat is also made from stainless steel that has been fitted with a carbide liner.

Part List		
ITEM	DESCRIPTION	QTY.
0	ASSEMBLY	1
1	HEX NUT	1
2	WASHER	1
3	HANDLE	1
4	HEX, SOC. SET SCREW	1
5	INDICATOR	1
6	HAMMER UNION NUT	3
7	BONNET	1
8	NYLON PLUG	1
9	THUMB SCREW	1
10	GREASE FITTING	1
11	PACKING STEM GUIDE	1
12	PACKING ASSLY.	1
13	PACKING RETAINER	1
14	INT. RETAINER RING	1
15	CHOKE STEM	1
16	CHOKE BODY	1
17	SEAT	1
18	SEAL RING	3
19	CHOKE NIPPLE BODY	1
20	EXT. RETAINER RING (CIRCLIP)	2
21	SPLIT RING	2
22	BODY VENT FITTING	1
23	NAME PLATE (NOT SHOWN)	1
24	RIVET TAG (NOT SHOWN)	4
25	THRD. PROTECTOR FOR BOX	1
26	THRD. PROTECTOR FOR PIN	1
27	5/32" HEX. ALLEN KEY (NOT SHOWN)	1

PNEUMATIC ACTUATOR OPERATED CHOKE VALVE (CAGE AND SLEEVE TYPE.)

The most commonly applied actuator is the pneumatically driven actuator, because the power source – compressed air – is relatively cheap as compared to a human resource or electric or hydraulic power sources. From a maintenance point of view, pneumatic actuators are more easily service and calibrated than other types of actuator. Pneumatic actuators can generate substantial thrust to handle a majority of applications, including high-pressure and high-pressure-drop situations. Pneumatic actuators also bleed compressed air to atmosphere, which is environmentally safe, when compared to hydraulics. The main disadvantage of pneumatic actuators is that some response and stiffness are lost because of the compressibility of gases. Pneumatic actuators are available in two main forms; piston actuator and diaphragm actuator. They are available in single acting and double acting features. Smart positioner is available. Orifice size available 2" to 4" with different flange and pressure rating

Features and Benefits:

- Quick-Disconnect feature – permits removal of actuator without depressurizing the valve. This greatly reduces downtime and lost production.
- Rising stem – provides visual indication of valve position.
- External safety relief device – protects the actuator from over pressurization.
- Compact design – permits easy maintenance in restricted areas.



***Pneumatic Actuator
Operated
Choke Valve***

ELECTRIC ACTUATOR OPERATED CHOKE VALVE (CAGE AND SLEEVE TYPE.)

Electric actuators are more cost-effective than their hydraulic and pneumatic counter parts. Electric actuators benefit from cleaner, simpler and more energy-efficient power transmission. Electric actuator's integration is easier with programmable controls. Maintenance is minimized with no parts replacement or lubrication needed except in extreme conditions. Choke valve available with 2" to 4" orifice size with different flange and pressure rating

Industrial Linear Actuators Electric actuator products that operate in typical open loop applications powered by 12, 24, 36 VDC or 115, 230, 400 VAC, single phase, three phase.

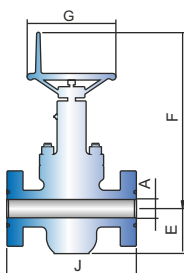
Digital communication options including HART, Profibus, Foundation Fieldbus and Modbus are available.



***Electric Actuator Operated
Choke Valve***

GATE VALVES

Expanding Style Gate Valve



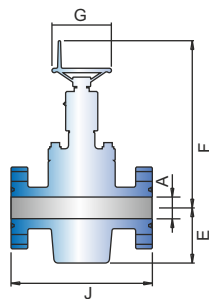
**Flanged
Gate Valves
(Model - M)**

FLANGED GATE VALVES OVERALL DIMENSIONS (As per API-6A Standard)								
Size	Working Pressure (PSI)	A	E	F	G	J	N	Wt (lbsf)
2 1/16	2000	2 1/16	4 13/16	19 1/4	11	11 5/8	13	91
	3000/5000		5 1/16	19 7/16	13	14 5/8		150
2 9/16	2000	2 9/16	5 5/8	20 3/16	13	13 1/8	15 1/2	125
	3000/5000		5 15/16	20 7/16	16	16 5/8		205
3 1/8	2000	3 1/8	6 15/16	22 1/2	13	14 1/8	20	181
	3000		7 5/16	22 3/4	16	17 1/8		265
	5000		7 5/16	22 3/4	16	18 5/8		296
4 1/16	2000	4 1/16	8 5/8	25 15/16	16	17 1/8	24 1/2	345
	3000		9 1/16	26 3/8	20	20 1/8		515
	5000		9 1/16	26 3/8	20	21 5/8		530
5 1/8"	2000	5 1/8	11 1/4	28	19 1/2	22 1/8	30 1/4	965
	3000		11 1/2		24	24 1/8		990
	5000		11 3/4		24	28 5/8		1056
7 1/16"	5000	7 1/16	14	29	24	32	-	1342

Slab Style Gate Valve



**Flanged
Gate Valve**



**Slab Flanged
Gate Valve
(Model - S)**

FLANGED GATE VALVE OVERALL DIMENSIONS (As per API. 6A Standard)								
Size	Working Pressure (PSI)	A	E	F	G	J	N	Wt (lbsf)
2 1/16	2000	2 1/16	5 5/8	21 1/8	14	11 5/8	12 1/2	110
	3000/5000					14 5/8		182
2 9/16	2000	2 9/16	6 1/2	21 7/8	14	13 1/8	15 1/4	137
	3000/5000					16 5/8		255
3 1/8	2000	3 1/8	7 3/8	22 13/16	14	14 1/8	18 1/4	193
	3000				14	17 1/8		282
	5000				18 1/2	18 5/8		360
4 1/16	2000	4 1/16	9 1/8	24 7/16	16	17 1/8	23 1/2	395
	3000				18 1/2	20 1/8		450
	5000					21 5/8		545
1 13/16	10,000	1 13/16	5 3/4	21 1/8	14	18 1/4	12 1/2	270
2 1/16	10,000	2 1/16	5 7/8	21 1/8	18 1/2	20 1/2	12 1/2	275
2 9/16	10,000	2 9/16	6 13/16	21 7/8	18 1/2	22 1/4	15 1/4	485
3 1/16	10,000	3 1/16	8 1/16	21 13/16	24	24 3/8	18 1/4	680
4 1/16	10,000	4 1/16	10 1/16	24 11/16	24	26 3/8	23 1/2	1050
5.1/8"	5000	5 1/8	11 3/8	33.9	24	28 5/8	-	1350
7.1/16"	5000	7 1/16	15.00	37 5/8	24	32.00	-	-

MANUAL GATE VALVE (MODEL: FC TYPE)

ACT's Gate Valves -FC Type are field proven valves which provides reliability and interchangeability. The valve is a new kind of non-rising stem valve (without lift stem), whole height will not Change during operation, and has integrated gate which can be used in bi-direction making it ideally suited for X-mas trees, Wellhead assembly, Choke manifolds and severe services.

It is a forged valve available in pressure rating 2,000 to 15,000 psi and bore sizes from 1.13/16" to 4.1/16".

Features and Benefits:

- Full bore through conduit.
- Block and Bleed Mechanism.
- Floating Seat with self relief function.
- Metal to metal seal is used between Bonnet and body, gate and seat rising.
- Metal to metal stem back seat.
- In-line maintenance.
- Forged Body and Bonnet Construction.
- The stem pin protects the stem internal parts from failure by shearing, if the handwheel is over torqued.
- Single gate Slab and Seat.
- Retainer plate fix seat ring insuring good stability.

Specifications:

- PSL-2 (or better) (5,000 PSI and lower) or customer to specify.
- PR-1 (or better) or customer to specify.
- Material: DD-NL (or better) or customer to specify
- Temperature Rating U (5,000 PSI working pressure or lower) or customer to specify.
- Alloy 625/ SS 316 Inlaid Ring Grooves or customer to specify.
- Gates and seats shall be hard-faced or TC coated
- Gate valves meeting GOST STD. with open and closed position indicator and temp -70F to 350F are available upon special request.
- Corrosion resistant design : non corrosive K1 and K2



Manual Gate Valve (Model: FC Type)

HYD. GATE VALVE (HCR) (MODEL: FC TYPE)

ACT's Gate Valves -FC Type are field proven valves which provides reliability and interchangeability. The valve is a new kind of non-rising stem valve (without lift stem), whole height will not Change during operation, and has integrated gate which can be used in bi-direction making it ideally suited for X-mas trees, Wellhead assembly, Choke manifolds and severe services.

It is a forged valve available in pressure rating 2,000 to 15,000 psi and bore sizes from 1.13/16" to 4.1/16".

Features and Benefits:

- Full bore through conduit.
- Block and Bleed Mechanism.
- Floating Seat with self relief function.
- Metal to metal seal is used between Bonnet and body, gate and seat rising.
- Metal to metal stem back seat.
- In-line maintenance.
- Forged Body and Bonnet Construction.
- The stem pin protects the stem internal parts from failure by shearing, if the handwheel is over torqued.
- Single gate Slab and Seat.
- Retainer plate fix seat ring insuring good stability.

Specifications:

- PSL-2 (or better) (5,000 PSI and lower) or customer to specify.
- PR-1 (or better) or customer to specify.
- Material: DD-NL (or better) or customer to specify
- Temperature Rating U (5,000 PSI working pressure or lower) or customer to specify.
- Alloy 625/ SS 316 Inlaid Ring Grooves or customer to specify.
- Gates and seats shall be hard-faced TC coated



Hyd. Gate Valve (HCR) (Model: FC Type)

MANUAL GATE VALVE (MODEL: FLS TYPE)

Praveen's FLS type gate valve is all forged valve and developed to provide wide range of sizes with Manual & Hydraulic Actuations. It's unique metal to metal sealing technology and dual ring pre-energized seal makes this our standard valve for critical applications such as Choke and Kill Manifolds & FRAC Equipments. In addition it can be fitted with a wide range of our actuators.

The FLS type is a full-bore, through-conduit valve available in standard double-flange, threaded end, and special block configurations. It is a forged valve available in pressure rating 2,000 to 20,000 psi and bore sizes from 1.13/16" to 11".

Features and Benefits:

- Design is Bi-directional giving longer service life & versatility.
- Includes positive metal to metal sealing (gate to seat and seat to body).
- Tungsten Carbide Coating is standards on Trims.
- Pre-energized seals give excellent low pressure Stem sealing.
- Valve has back seating stem to allow replacement of Stem Seal whilst under pressure.
- Easy closing and sealing with reduced torque.
- Single Gate Slab & Seat.

Specifications:

- PSL-2 (or better) (5,000 PSI and lower) or customer to specify.
- PR-1 (or better) or customer to specify.
- Material: DD-NL (or better) or customer to specify
- Temperature Rating U (5,000 PSI working pressure or lower) or customer to specify.
- Alloy 625/ SS 316 Inlaid Ring Grooves or Customer to Specify.
- Gates and seats shall be hard-faced or TC coated.
- Gate valves meeting GOST STD. with open and closed position indicator and temp -70F to 350F are available upon special request.
- Corrosion resistant design : non corrosive K1 and K2



Manual Gate Valve (Model: FLS Type)

HYD. GATE VALVE (HCR) (MODEL: FLS TYPE, DOUBLE BONNET)

Praveen's FLS type gate valve is all forged valve and developed to provide wide range of sizes with Manual & Hydraulic Actuations. It's unique metal to metal sealing technology and dual ring pre-energized seal makes this our standard valve for critical applications such as Choke and Kill Manifolds & FRAC Equipments. In addition it can be fitted with a wide range of our actuators.

The FLS type is a full-bore, through-conduit valve available in standard double-flange, threaded end, and special block configurations. It is a forged valve available in pressure rating 2,000 to 20,000 psi and bore sizes from 1.13/16" to 11".

Features and Benefits:

- Design is Bi-directional giving longer service life & versatility.
- Includes positive metal to metal sealing (gate to seat and seat to body).
- Tungsten Carbide Coating is standards on Trims.
- Pre-energized seals give excellent low pressure Stem sealing
- Valve has back seating stem to allow replacement of Stem Seal whilst under pressure.
- Easy closing and sealing with reduced torque.
- Single Gate Slab & Seat.

Specifications:

- PSL-2 (or better) (5,000 PSI and lower) or customer to specify.
- PR-1 (or better) or customer to specify.
- Material: DD-NL (or better) or customer to specify
- Temperature Rating U (5,000 PSI working pressure or lower) or customer to specify.
- Alloy 625/ SS 316 Inlaid Ring Grooves or Customer to Specify.
- Gates and seats shall be hard-faced or TC coated.



Hyd. Gate Valve (HCR) (Model: FLS Type, Double Bonnet)

SURFACE SAFETY VALVE (MODEL: FLS TYPE)

Praveen's FLS type gate valve is all forged valve and developed to provide wide range of sizes with Manual & Hydraulic Actuators. It's unique metal to metal sealing technology and dual ring pre-energized seal makes this our standard valve for critical applications such as Choke and Kill Manifolds & FRAC Equipments. In addition it can be fitted with a wide range of our actuators.

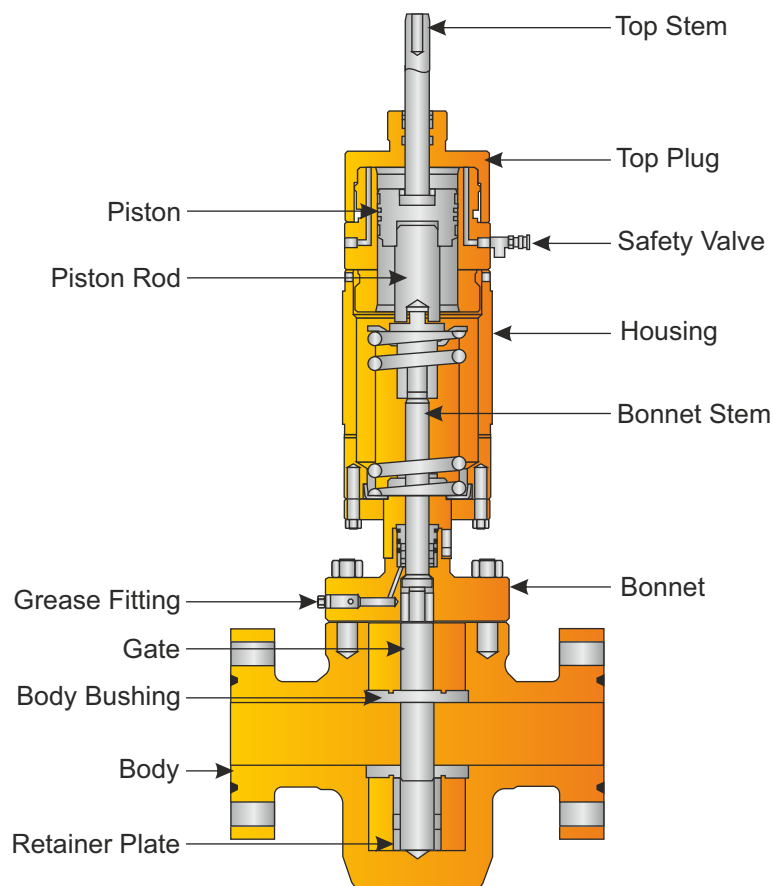
The FLS type is a full-bore, through-conduit valve available in standard double-flange, threaded end, and special block configurations. It is a forged valve available in pressure rating 2,000 to 20,000 psi and bore sizes from 1.13/16" to 11".

Features and Benefits:

- Design is Bi-directional giving longer service life & versatility.
- Includes positive metal to metal sealing (gate to seat and seat to body).
- Tungsten Carbide Coating is standards on Trims.
- Pre-energized seals give excellent low pressure Stem sealing
- Valve has back seating stem to allow replacement of Stem Seal whilst under pressure.
- Easy closing and sealing with reduced torque.
- Single Gate Slab & Seat.

Specifications:

- PSL-2 (or better) (5,000 PSI and lower) or customer to specify.
- PR-1 (or better) or customer to specify.
- Material: DD-NL (or better) or customer to specify
- Temperature Rating U (5,000 PSI working pressure or lower) or customer to specify.
- Alloy 625/ SS 316 Inlaid Ring Grooves or Customer to Specify.
- Gates and seats shall be hard-faced.
- Limit Switch Position Indicator can be provided on request



Surface Safety Valve (Model: FLS Type)

RELIEF VALVE

ACT relief valves are compact and simple to operate, providing over pressure protection for typical applications such as reciprocating pumps and treating lines. Compact and simple to operate, the valves are direct acting, relying on the system's hydraulic pressure to overcome a preset spring force to relieve. They are externally adjustable from zero pressure to maximum setting.

Manufactured to ACT Oil & Gas stringent Quality Assurance System, all pressure bearing components are made from high quality material. The forged body features an integral wing union male inlet, suitable for the pressure rating of the component.

The operation of the ACT's back pressure relief valve is a simple balance between the spring loaded keeper which holds the ball in the seat and the inlet liquid pressure acting on the ball.

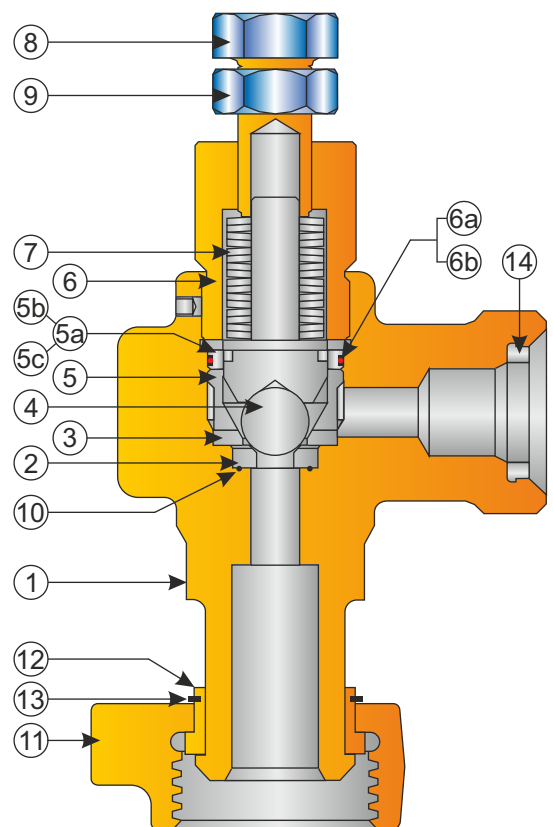
The spring pressure is set by tightening the hex bolt on top which pushes on the keeper. This in turn compresses the springs that forces the keeper on the Ball. When the inlet fluid pressure rises and overcomes the set spring pressure, the ball is lifted off its seat thereby discharging fluid to the outlet end. Once the pressure of the inlet fluid falls below the set spring pressure, the ball will be pushed back on to its seat and the fluid can pass downstream.

- End connections are standard Fig. 1502 union ends
- Opens when a pre-set pressure is exceeded and automatically snaps shut when pressure drops
- Comes standard with Material Test Reports (MTR)
- Suitable for standard service applications up to 15,000 psi working pressure and sour gas service up to 10,000 psi working pressure

Note: Valves are set at 15,000 psi unless otherwise specified by the customer

ACT manufacture high pressure relief valve in sizes 1" fig.1502, 1 1/2" fig.1002, 1 1/2" fig.1502, 2" fig.1502, 2 1/2" fig.1002, 3" fig.602, 3" fig.1502, fig.602, 4" fig.1002 etc.

ITEM NO.	DESCRIPTION	MATERIAL	QTY.
1.	Body	AISI - 4130/4140	1 No.
2.	Seat	INCONEL - 718	1 No.
3.	Stopper	N - 14080UN or ASTM A753 (Alloy 4)	1 No.
4.	Ball	SS429 / SS430	1 No.
5.	Dart	AL Bronze UN C-63000 ASTM B124/B150/B171	1 No.
5a.	Dart Seal & O Ring Assy.	-	1 No.
5b.	O Ring for Dart (2134)	Viton	1 No.
5c.	Seal Ring for Dart	Viton	1 No.
6	Nipple	AISI - 4130 / 4140	1 No.
6a.	O Ring for Nipple (2230)	Viton	1 No.
6b.	Backup Ring for Nipple	Viton	1 No.
7	Disk Spring	AIAI-4130 / 4140	16 Nos.
8	Hex Bolt	ASTM A 193 GR.B7	1 No.
9	Hex Nut	ASTM A 194 GR.2H	1 No.
10	O Ring for Body (2-028)	Viton	1 No.
11	2" Nut Fig-1502	AISI-4140/EN-19	1 No.
12	Split Bush	AISI-4140/4130	1 No.
13	Circlip	SAE 1070-1090	1 No.
14	Seal Ring	Viton	1 No.
15	Screw	ASTM A 193 GR.B7	1 No.



Relief Valve

MUD VALVES

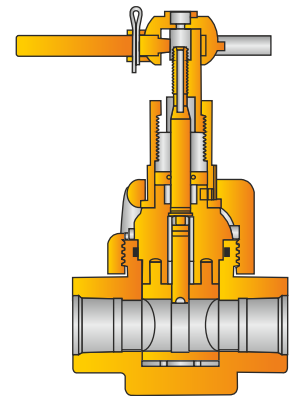
ACT Mud Valves are Forged/Cast exclusively made for mud, cement, fracturing water and steam abrasive applications. All valves are hydrostatic shell and seat tested in accordance with the API 6A /API 6D specifications. Valves are specially designed for oil-field applications like Manifolds, Pipe Line, Crude Oil and Sour Gas Line, Well Treating Chemical, Drilling Chemical, Water Flood Lines, Abrasive Drilling Mud etc.

Model - I

Features

- Designed specifically for abrasive and erosive use
- Non directional seating and positive sealing between gate and seat
- Easily replaceable parts without any use of accessories
- Can be supplied with Flanged End, Hammer Union End, Threaded or Butt Weld End
- Stainless and carbon steel insert with Nitrite/Viton elastomer in seat
- Protected raising stem
- Available from 2" to 6" with all temperature and pressure rating, up to 10,000 PSI, services as per API - 6A

Part No. & Weight						
FULL PORT		2"	3"	4"	5"	6"
FLANGED END	PART NO.	412-2065-00	412-3125-00	412-4065-00	412-5125-00	-N.A.-
	WT (LBS)	70	100	110	330	-N.A.-
SCREWED END	PART NO.	412-4385-02	412-4805-02	412-4795-02	-N.A.-	-N.A.-
	WT (LBS)	48	53	61	-N.A.-	-N.A.-
WELD END	PART NO.	412-0025-03	412-0035-03	412-0045-03	412-0055-03	412-0065-03
	WT (LBS)	48	53	61	265	221



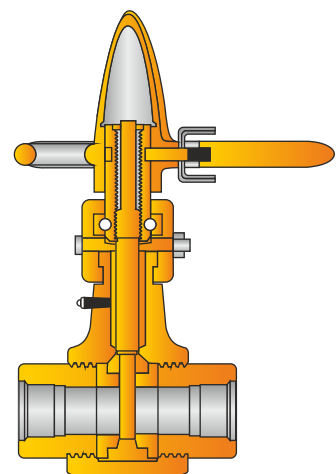
Mud Valve (Model - I)

Model - S

Features

- Designed for rigorous oil field services
- Different end connection can be obtained without changing the main body or assembly
- Through conduit with wear plate, both sizes provide longer services
- Heavy duty bearing at stem provides easy operation
- Single gate stem
- Available with all pressure and temperature class and services as per API-6A

Part No. & Weight				
FULL PORT		2"	3"	4"
FLANGED END	PART NO.	412-2065-00	413-3125-00	413-4065-00
	WT (LBS)	125	254	384
SCREWED END	PART NO.	413-4385-02	413-4805-02	413-4795-02
	WT (LBS)	85	168	250
WELD END	PART NO.	413-0025-03	413-0035-03	413-0045-03
	WT (LBS)	87	170	252



Mud Valve (Model - S)

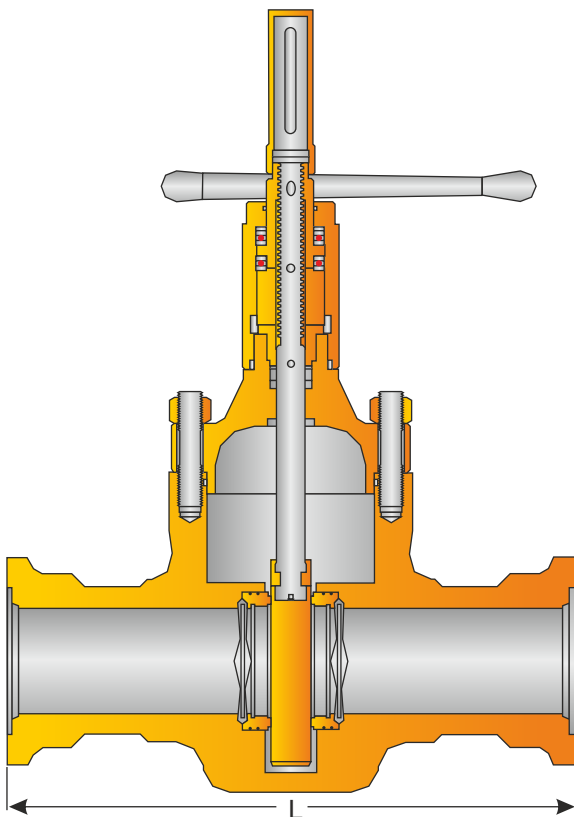
MUD GATE VALVES

ACT Mud Gate Valves are Forged exclusively made for mud, cement, fracturing, water & steam abrasive and shipyard applications. All valves are hydrostatic shell and seat tested in accordance with the API 6A specifications. Valves are specially designed for oil-field applications like Well heads, Manifolds, Pipe Line, Crude oil and Sour gas line, Well treating chemical, Drilling Chemical, Water flood lines, Abrasive drilling mud & shipyard etc. Valves are available up to 10,000 PSI WP.

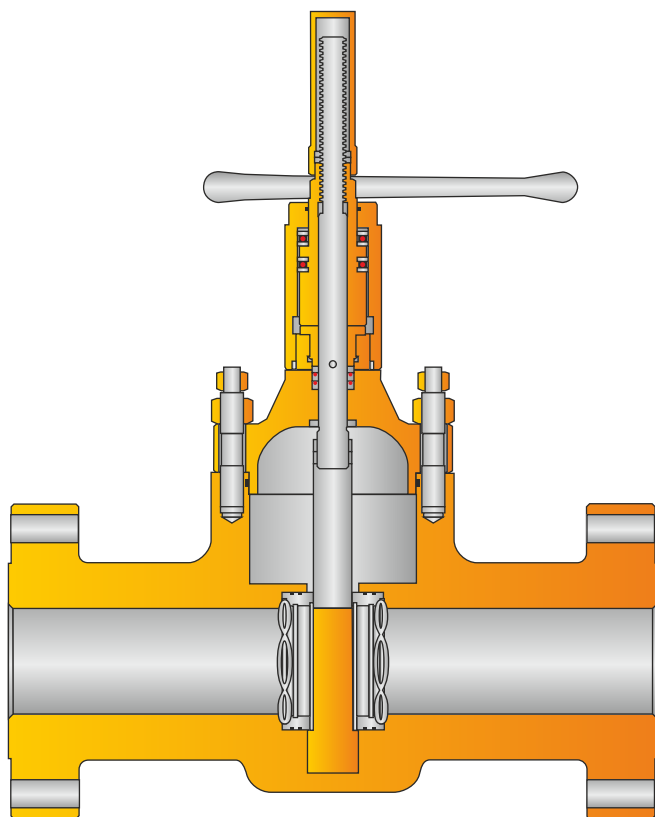
These can be certified by ABS / DNV offshore or any other third party inspection.

Features

- Designed specifically for abrasive and erosive use
- Positive sealing between gate and seat
- Easily replaceable parts without any use of accessories
- Can be supplied with Flanged End, Hammer Union End, Threaded, Butt Weld End & Gray Lock Hub / Clamp or API 16A Hub / Clamp Type end connection
- Protected rising stem
- Available from 2" to 6" with all temperature and pressure rating, service as per API 6A
- Single gate stem
- Low Torque Bearing
- Long Life Seat



Clamp Hub Mud Gate Valve

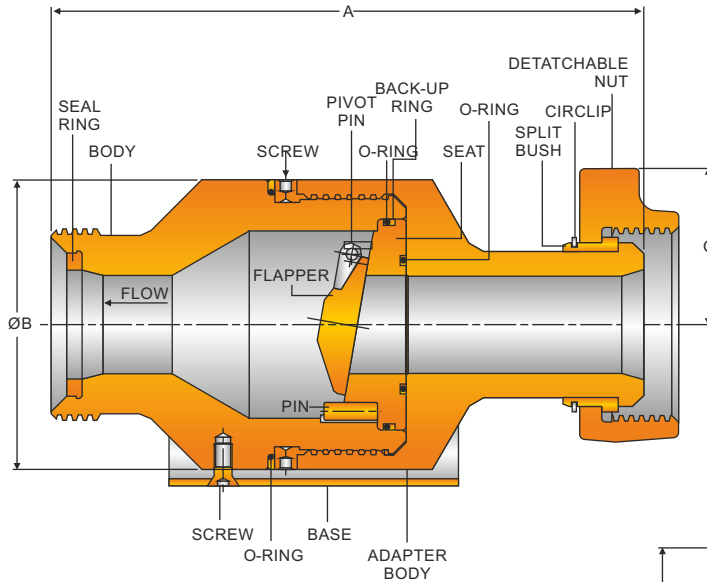


Flange X Flange Mud Gate Valve

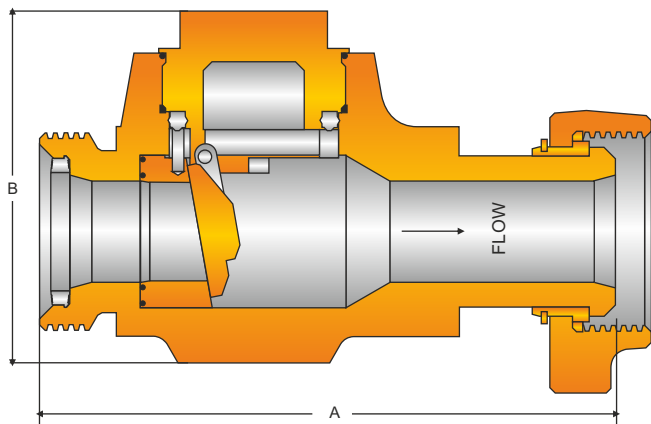
Part No.					
	2"	3"	4"	5"	6"
PART NO.	412-1.5X85-GL	412-2X85-GL	412-3X85-GL	412-4X65-GL	412-5127-GL
LENGTH (L ^{±4"}) (inch)	14.5"	15.5"	18.25"	21.75"	25.5"

CHECK VALVES

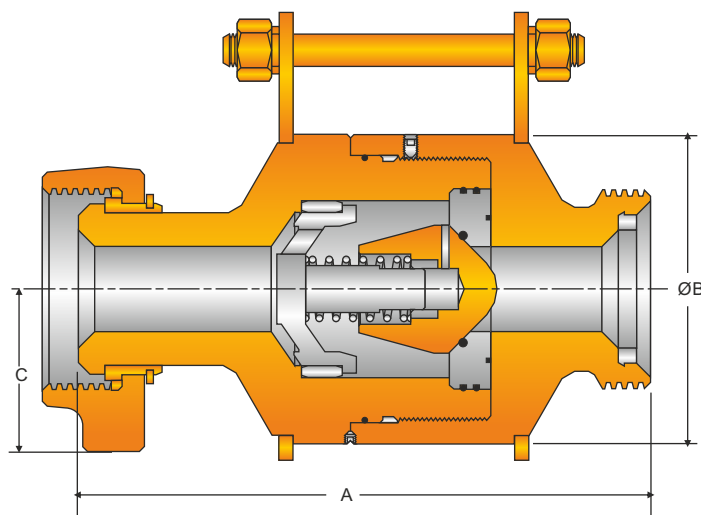
ACT Check Valves are flow control devices that permit flow in one direction, but stop flow in the opposite direction. These valves are used generally in well service applications and are placed in the treating line to allow flow to the well, but isolate any back flow.



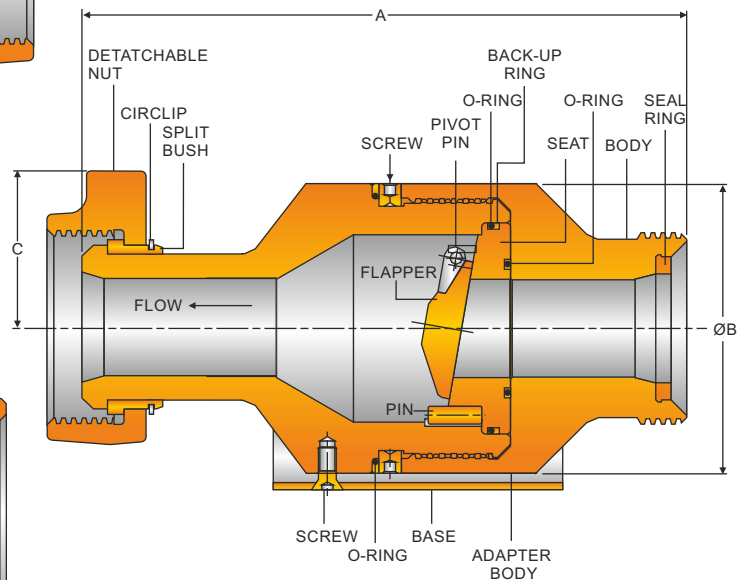
Flapper Type Check Valve (Reverse)



Top Entry Check Valve



Dart Type Check Valve



Flapper Type Check Valve (Standard)

Flapper Type Check Valve

NOMINAL SIZE	A (INCH)	ØB (INCH)	C (INCH)	WEIGHT(LBSF)	
				STANDARD	REVERSE
2" x Fig. 1502 (MxF)	10.1	7.0	3.8	88	88
3" x Fig. 1502 (MxF)	15.6	8.1	4.4	121	121
4" x Fig. 1502 (MxF)	22.7	12.2	-	385	385

Top Entry Check Valve

NOMINAL SIZE	A (INCH)	B (INCH)	WEIGHT (LBS)
2" x Fig. 1502 (MxF)	29.16	7.125	90.2
3" x Fig. 1502 (MxF)	15.66	9.60	115
4" x Fig. 1502 (MxF)	19.76	12.00	275

Dart Type Check Valve

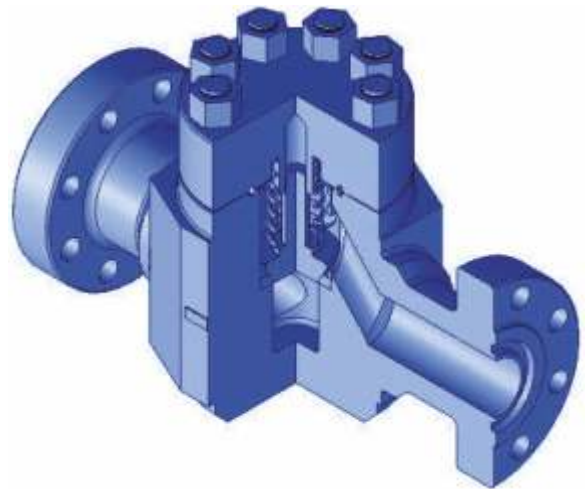
NOMINAL SIZE	A (INCH)	ØB (INCH)	C (INCH)	WEIGHT (in LBS)
2" x Fig. 1502 (MxF)	14.0	6.9	3.74	112.5
3" x Fig. 1502 (MxF)	15.4	8.3	4.5	144.8

'MS' TYPE CHECK VALVE

The MS API 6A check valve incorporates a metal-to-metal seal for high-pressure, high-temperature environments where elastomer seals cannot be used. Primary applications for the MS check valve are high-pressure mud choke manifolds and high pressure Christmas tree injection and kill lines. The MS Check Valve can be used with oil, gas, water, or drilling fluids and are available in all temperature and material classes as well as product specification levels (PSL) as specified in API 6A. It is available in standard pressure ratings from 3,000 to 20,000 psi and bore sizes from 1-13/16 to 7-1/16 in.

Advantages

- Metal-to-metal seals, offering advantages over elastomeric seals in applications where chemical and well fluids contact the sealing areas and extreme temperatures are a factor
- Streamlined valve seat for low turbulence and improved body longevity
- Forged steel construction leveraging Cameron quality
- Uniformity through conformance to API 6A requirements for end-to-end measurements and available flanged connections, butt weld connections, or both
- Low-maintenance operation - no lubricated parts and no routine maintenance required

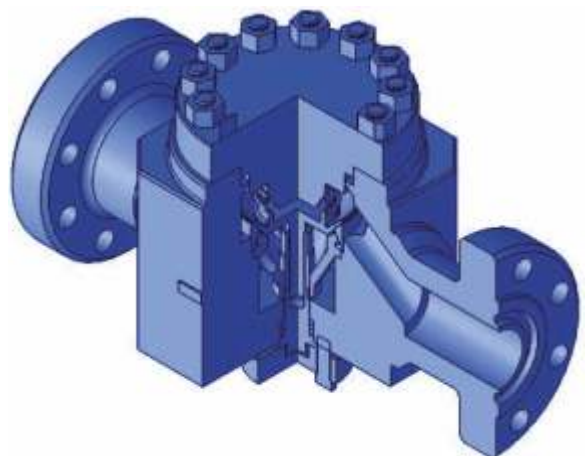


'MS' Type Check Valve Assy.

'R' TYPE CHECK VALVE

The ACT 'R' check valve is a field proven valve which provides reliability and interchangeability. It is available in a wide range of trim material to meet various operating conditions and meets or exceeds API 6Astd. And NACE Mr0175

Application for the 'R' check valve are high pressure mud choke manifolds and high pressure Christmas tree injection and kill lines. The 'R' check valve can be used with oil, gas, water or drilling fluids and are available in all temperature and material classes as well as product specification level as specified in API 6A. It is available in standard pressure rating from 3000psi to 15000psi and bore size 2.1/16" through 4.1/16"



PLUG VALVES

Special Design Features

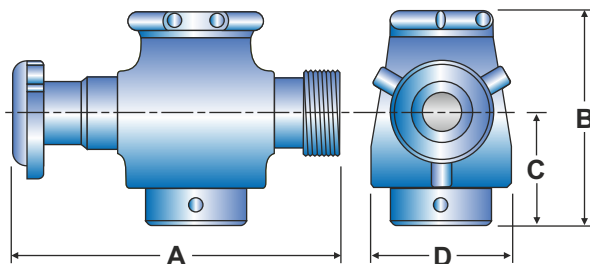
1. ACT valve bodies are made from alloy steel forgings which are designed to variety of end connections to be integrally machined
2. ACT plug and inserts are designed to resist abrasion and corrosion
3. ACT valves can be easily adopted for hydraulic or pneumatic actuation. These configurations are designed for integration with complete manifold systems
4. We manufacture in compliance with API-6A&API-Q1
5. Our range is up to 15000 PSI WP.
6. 3" & 4" Fig-1502 Plug Valves can be supplied with gear operated handel



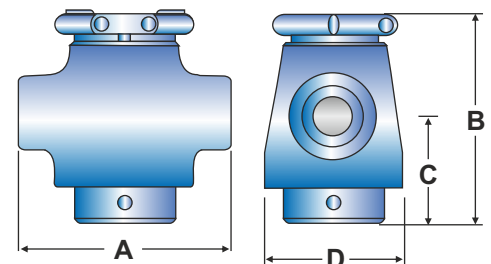
LOW TORQUE

Operating Principle

1. The plug rotates 90° (1/4 turn) for rapid full open or close operation. This reduces erosion due to throttling action
2. To ensure a uniform clamping action for the initial pressure seal, the valve body is tapered
3. To ensure a continuous seal becomes more effective as differential pressure increases, the plug and inserts float downstream with pressure differential caused by the initial seal
4. The relationship between the seal and the bearing areas is such that the torque required to operate the valve is minimized
5. To eliminate the need for thrust bearing to reduce friction, the plug is balanced by identical stem seals

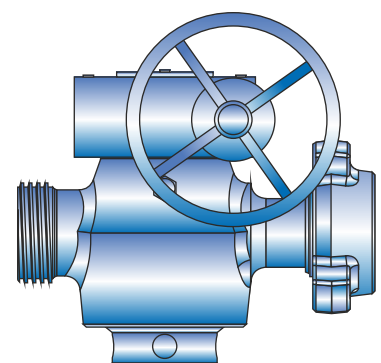


M X F Union End Type

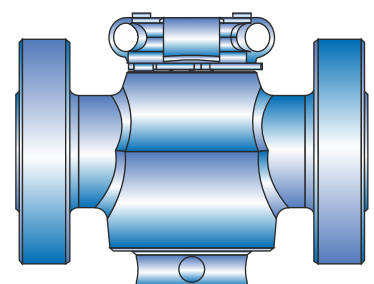


L.P. Female Type (threaded)

VALVE DESCRIPTION	PART NOS	DIMENSION				W.P. PSIG	APPROXIMATE WEIGHT (lbs)
		A	B	C	D		
1" x 2" LP FEMALE	40000500	8.1/2	9.1/4	4.9/16	5.3/8	6000 10000	39
1" x 2" 1502 UNION	40000300	10.9/16	9.1/4	4.9/16	5.3/8	6000 10000 15000	60
2" x 2" LP FEMALE	40000200	8.1/2	10.5/8	5.1/2	5.3/8	6000 10000	61
2" x 2" 1502 UNION	40000100	13.7/8	10.5/8	5.1/2	7.1/8	6000 10000 15000	90
3" x 3" LP FEMALE	40000600	11.1/8	13.0	7.1/8	9.3/8	6000 10000	148
3" x 3" 1502 UNION	40000700	17.0	13.0	7.1/8	9.3/8	6000 10000 15000	188
4" x 4" 1502 UNION	40000800	25.0	16.59/64	7.43/64	10.11/16	10000 15000	352



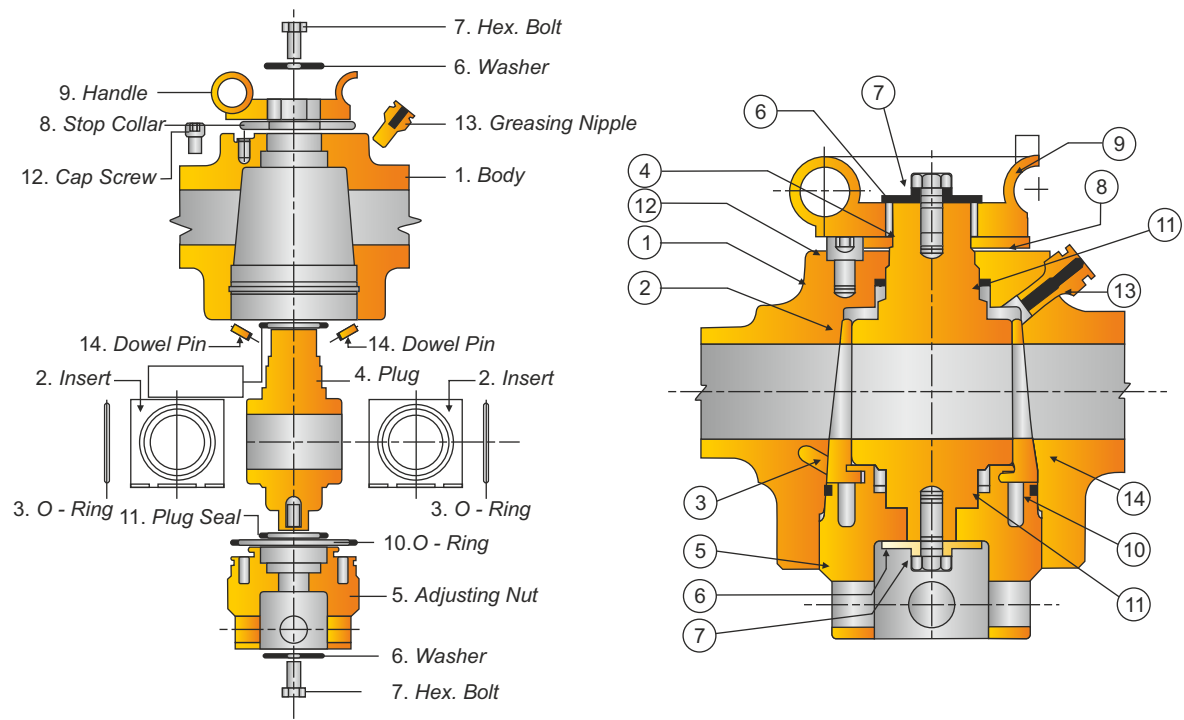
M X F Gear Operated



Flange End Type

- All dimensions are in inches
- Special plug valve can be provided to suit customer requirements

PLUG VALVES

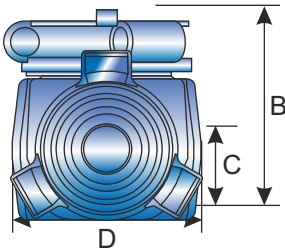
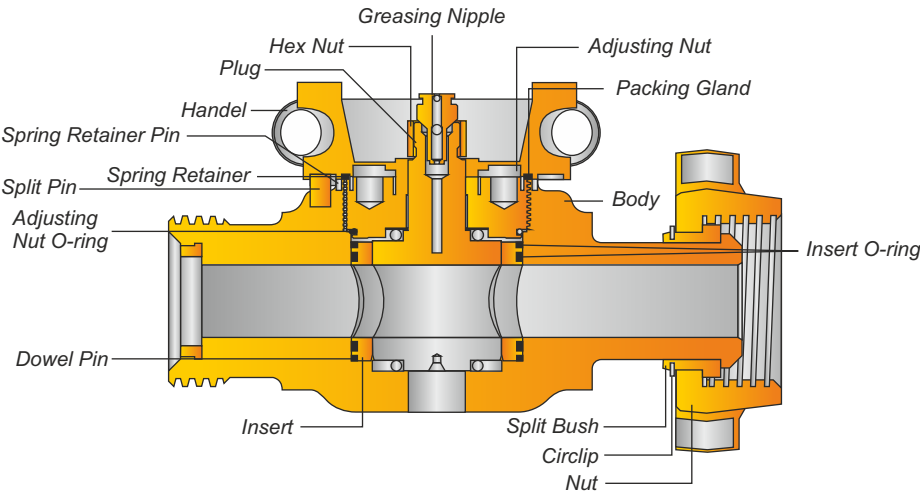
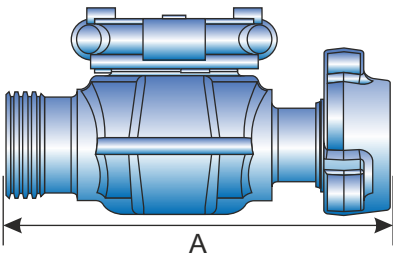


TOP ENTRY

Operating Principle

The ACT TE Plug Valve is a lubricated, straight pocket, quarter-turn plug valve for rapid full open or close operation. The valve cavity is straight to ensure low-torque operation and uniform sealing of the components at the full range of pressures. Inserts are provided with dual seal. The ACT TE Plug Valve and replacement parts are engineered to provide low operating torque and resistance to the toughest abrasive and corrosive conditions.

VALVE DESCRIPTION	PART NOS	DIMENSION				W.P. PSIG	APPROXIMATE WEIGHT (lbs)
		A	B	C	D		
1" x 2" 1502 UNION	PIK/PLV/1/TP-A	10.1/2	6.35	1.9	4.3/4	10000 15000	60
2" x 2" 1502 UNION	PIK/PLV/2/TP-A	14	8	2.5/8	7.1/5	10000 15000	90
3" x 3" 1502 UNION	PIK/PLV/3/TP-A	15.67	12	4.97	9.92	10000 15000	288



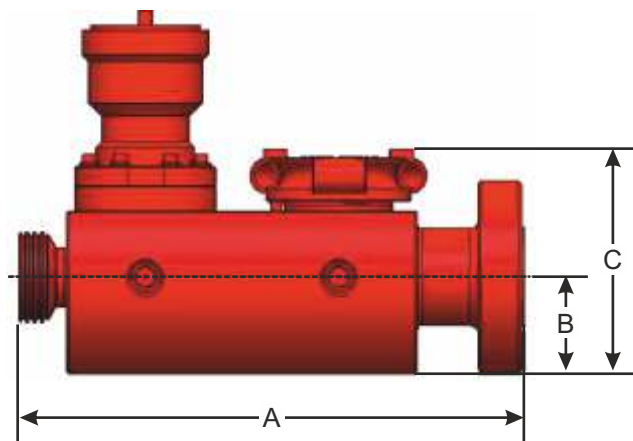
DUAL PLUG VALVE (TOP ENTRY) UNION X FLANGE END CONNECTIONS

Special Design Feature

1. Can be provided with union connection or flange connection
2. Manual or Hydraulic both available
3. proprietary floating plug and dual-seal design
4. The flow path between the plug interface and seat segment eliminates body erosion and limits any potential wear to replaceable components.
5. Dual seals direct flow between the seal segment and plug to provide long, trouble-free service life.
6. Available in Standard and sour service
7. Connection fig.602,1002 and 1502



*Dual Plug Valve (Top Entry)
Union X Flange End Connections*



Size	A	B	C	WEIGHT (lbs)	PRESSURE (psi)
2" 1502 Female X 2-1/16" 15M Flange with 1" Bore	22.65	4.33	8.91	301	15,000 / 10,000
2" 1502 Female X 2-1/16" 15M Flange with 2" Bore	22.65	4.33	10.05	396	15,000 / 10,000

CIRCULATING HEAD

Description

ACT Circulating Head basically consists of

- i. Tee (having swivels at two ends & female line pipe connection at the upper end)
- ii. 45° angle connection with male line pipe thread for Circulating Hose at one end & Swivel for Tee on the other
- iii. Lower adapter connection having one end is suitable for Connecting Tubing, Casing, Drill Pipe, or Tool Joints and other end is Swivel for Tee



At 6,000 PSI test pressure rotating in both vertical & horizontal planes is possible through the provision of Swivel in Tee and this head is supplied with an opening (female line pipe thread) in the top through which wire line instruments may be run. It is compact & light in weight and thus an ideal standby tool. Circulating Head with other types of connections and other pressure ratings can also be supplied as per customer's request, either with this type of design or with any other type of design.

Application

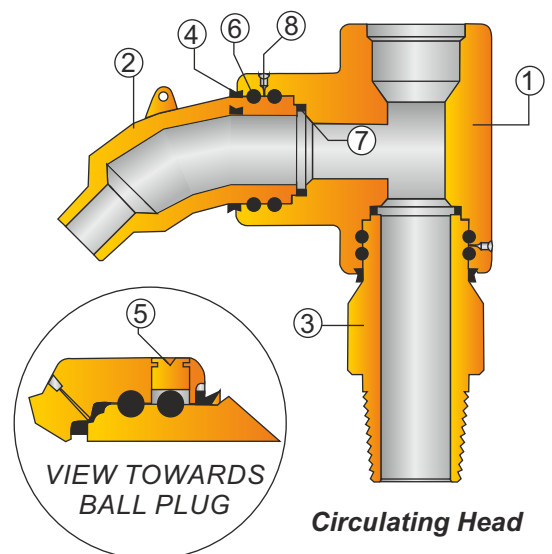
Helps to eliminate stuck drill pipe by making it possible to maintain pressure and circulation in the hole and to rotate drill pipe with the rotary table while conducting wireline coring operations, fishing jobs or directional testing.

How to Order

When order please specify:

1. Pipe Size
2. Pressure Rating (i.e. working & test pressure)
3. Type of Connection i.e. - Upper Connection in Tee (Male or Female line Pipe Threads)
 - Lower Connection (Pin & Box) for Tubing, Casing, Drill Pipe & Tool Joint
 - Circulating Hose Connections (Male or Female Line Pipe Threads)

ITEM NO.	DESCRIPTION	QTY.
1.	TEE	1
2.	45 ANGLE ELBOW	1
3.	LOWER ADAPTOR	1
4.	GREASE RETAINER	2
5.	BALL PLUG	4
6.	BALLS	4 SETS
7.	SEAL & METAL SEAL	2
8.	GREASING SCREW	2



HAMMER UNION CHART WITH PRESSURE RATING

Fig No.	Assly. Colour Key Std. Service	Pressure Rating (PSI)				Normal Pipe size (inch)											
		Standard Service		Sour Service													
		CWP	TEST	CWP	TEST	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6	8	10	12
50		500	750	NA	NA							✓	✓				
100		1000	1500	1000	1500	✓			✓	✓	✓	✓	✓	✓	✓		
200		2000	3000	2000	3000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
206		2000	3000	2000	3000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
207		2000	3000	2000	3000						✓	✓		✓	✓	✓	
211		2000	3000	2000	3000				✓								
400		4000	6000	4000	6000	✓			✓	✓	✓	✓	✓*	✓*	✓*	✓*	✓*
600		6000	9000	NA	NA			✓	✓		✓						
602		6000	9000	6000	9000	✓	✓	✓	✓	✓	✓	✓					
1002		10000	15000	7500	11250	✓	✓	✓	✓	✓	✓	✓	✓*	✓*			
1003		10000	15000	7500	11250	✓			✓		✓	✓*	✓*				
1004		10000	15000	7500	11250								✓	✓			
1502		15000	22500	10000	15000	✓		✓	✓	✓	✓	✓	✓	✓			
2002		20000	30000	NA	NA				✓	✓	✓	✓	✓				
2202		NA	NA	15000	22500				✓	✓	✓	✓	✓				

All above unions are available with threaded (LP, EUE), welded or blind connection. Fig.2202 only available in welded conn.
Deviations where pressure is derated as per current manufacturing standards are marked with asterix(*) and mentioned as below:
Fig.400 : sizes 5" and above are rated at CWP 2500 psi with TP 3750 psi for standard service.
For sour service the pressure ratings are same as standard service.
Fig.1002 : sizes 5" and 6" are rated at CWP 7500 psi with TP 11250 psi for standard service.
For sour service CWP is 5000 psi with TP 7500 psi.
Fig.1003 : sizes 4" and 5" are rated at CWP 7500 psi with TP 11250 psi for standard service.
For sour service CWP is 5000 psi with TP 7500 psi.
For sour service unions colour code is always olive green. Color can also be provided as per customer requirement.

HAMMER UNIONS



General

ACT manufactures Hammer Unions from raw materials in the form of forgings or castings, in accordance with service requirements in sizes 1 to 12", with ratings up to 20,000 psi cold working pressure. Unions for sour gas service are manufactured in accordance with NACE MR-01-75 & API RP-14E.

Interchangeability

ACT's Hammer Unions are interchangeable with WECO or other manufacturers adhering to the industry standards.

Thread Gauging

Acme thread and line pipe threads are gauged by standard plug & ring gauges.

Sealing Design

The conical and spherical surfaces of the female and male subs respectively; form an effective metal-to-metal seal in case of low pressure services.

For medium pressure mostly; an 'O' ring is provided in the male sub; in addition to the metal to metal seal. For high pressure, a lip type seal ring is provided for primary seal in the female sub. The seal protects the secondary metal to metal seal from corrosion and limits fluid flow turbulence. For sour service applications, viton seals are provided.

Coating

As a special case ACT can also provide Unions with zinc galvanized coating. Unions are also supplied with special materials such as stainless steel, SS-304, SS-316, Duplex etc.

Quality Control

ACT unions are manufactured using modern manufacturing techniques to attain first class workmanship and dimensional control. Correctly chosen raw materials for a particular service together with correct heat-treatment process are used to ensure better service and longer life in extreme conditions.

Notes

1. Line pipe threads in Fig-1002, Fig-1502 for pipe diameters above 4" are not recommended for sour service application.
2. For Fig-1003, 4" & 5" sizes are rated at 7500 PSI cold working pressure and 12000 PSI test pressure.
3. Sour gas service unions are painted OLIVE GREEN and stamped NACE.
4. For other types of threading like casing, tubing or NPS thread seal configuration, consult factory.

HAMMER UNIONS

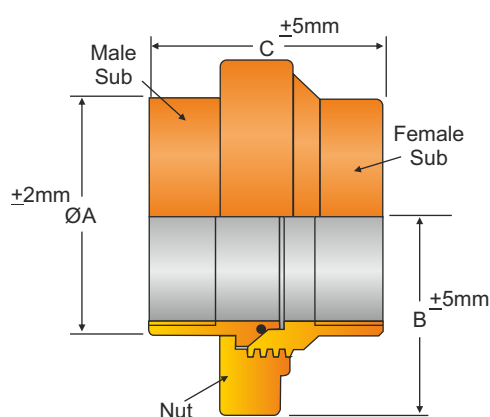
Quick Reference Table

The following table giving figures of unions, end connections and pressure rating is given for quick reference.

Union Fig.	End Connections	Pressure Rating (PSI)			
		Standard Service		Sour Service	
		C.W.P.	T.P.	C.W.P.	T.P.
50	LINE PIPE	500	750	-	-
100	LINE PIPE	1000	1500	-	-
200	LINE PIPE /BUTT WELD	2000	3000	-	-
206	LINE PIPE /BUTT WELD	2000	3000	-	-
207	LINE PIPE /BUTT WELD	2000	3000	-	-
211	LINE PIPE	2000	3000	-	-
400	LINE PIPE /BUTT WELD	2500	3750	2500	3750
400	LINE PIPE /BUTT WELD	4000	6000	4000	6000
600	LINE PIPE /BUTT WELD	6000	9000	-	-
602	LINE PIPE /BUTT WELD /NPTS	6000	9000	6000	9000
1002	LINE PIPE /BUTT WELD /NPTS	10000	15000	7500	12000
1003	LINE PIPE /BUTT WELD	10000	15000	7500	12000
1004	LINE PIPE /BUTT WELD	10000	15000	7500	12000
1502	LINE PIPE /BUTT WELD /NPTS	15000	22500	10000	15000
2002	BUTT WELD	20000	30000	-	-
2202	BUTT WELD	-	-	15000	22500

Fig 50. Orange Nut - Orange Subs

These low pressure and suction unions of Fig-50 are made from carbon steel. The nut and O-ring are common in both sizes. Available in 4" or 5" sizes in threaded & socket welded connection. These unions are suitable for 500 psi wp.



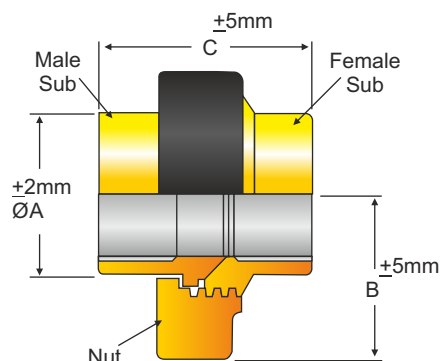
500 psi CWP (Fig. - 50)

Size (Inch)	A		B		C				ACME (TPI)	Union		Weight	
	Inch	mm	Inch	mm	Threaded		Socket Welded End			Threaded		Socket Welded End	
					Inch	mm	Inch	mm		lbsf	kgf	lbsf	kgf
4"	6.0	152.5	5.07	129.0	6.15	156.21	4.12	104.64	3MOD	28.0	12.7	27.0	12.24
5"	6.0	152.5	5.07	129.0	5.77	146.74	4.12	104.64	3MOD	23.0	10.43	21.5	9.75

HAMMER UNIONS

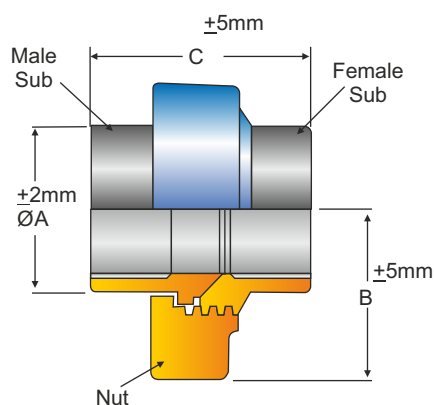
Fig 100. Black Nut - Yellow Subs

These low pressure unions are ideal for manifold and applications where CWP does not exceed 1,000 psi



1,000 psi CWP (Fig. - 100)

SIZE (INCH)	A		B		C		ACME (TPI)	UNION LBSF	WEIGHT KGF
	INCH	MM	INCH	MM	INCH	MM			
1	1.60	40.5	1.95	50	2.57	65	6STD	1.75	0.79
2	2.74	69.5	2.91	74	3.66	93	3MOD	5.73	2.60
2 1/2	3.30	84	3.81	97	4.29	109	3MOD	9.47	4.30
3	4.09	104	4.09	104	4.88	124	3MOD	1.33	6.05
4	5.19	132	5.00	127	5.78	136	3MOD	19.84	9.00
5	6.37	162	5.75	146	6.03	153	4STD	33.00	15.0
6	7.36	187	6.92	176	6.71	170.5	3STD	46.0	20.90
8	9.52	242	8.00	203	7.20	183	3STD	61.72	28.0



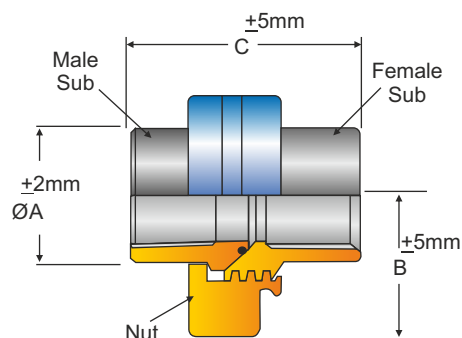
2,000 psi CWP (Fig. - 200)

Fig 200. Blue Nut - Grey Subs

These unions are best suited for medium pressure ranges involving air, water, oil & gas service for cold working pressure upto 2,000 psi (For dimensions see Fig-206). Upto 4" no O-ring is used on the male sub. Beyond 4" size, an O-ring is used on the male sub for sealing.

Fig 206. Blue Nut - Grey Subs

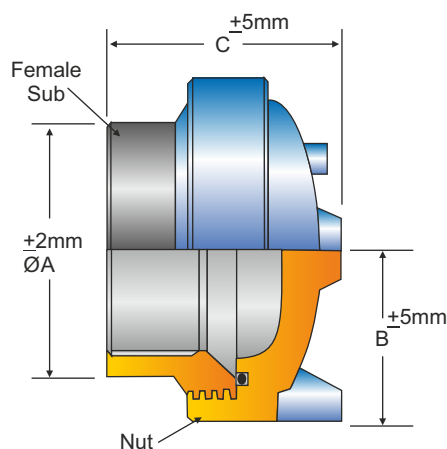
These unions have an additional O-ring on the spherical surface of the male sub providing a leak proof seal. All dimensions of Fig- 200 & Fig-206 are identical.



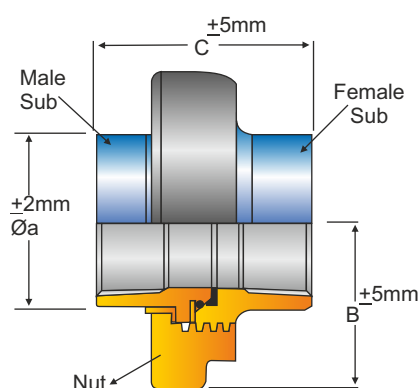
2,000 psi CWP (Fig. - 206)

SIZE (INCH)	A		B		C		ACME (TPI)	UNION LBSF	WEIGHT KGF
	INCH	MM	INCH	MM	INCH	MM			
1	1.59	40.5	1.96	50	2.55	65	6STD	1.76	0.80
1 1/4"	2.00	51	2.11	53.6	2.79	71	6STD	2.20	1.00
1 1/2"	2.28	58	2.52	64	2.73	69.5	6STD	2.42	1.10
2	2.79	71	2.91	74	3.54	90	4STD	5.00	2.30
2 1/2	3.30	84	3.87	98.5	4.25	108	4STD	9.25	4.20
3	4.17	106	3.89	99	4.52	115	4STD	13.67	6.20
4	5.23	133	4.52	115	4.96	126	3MOD	18.52	8.40
5	6.32	162	5.75	146	6.03	153	4STD	33.0	15.0
6	7.50	190.5	6.06	154	6.65	169	3STD	42.50	19.30
8	9.56	243	7.18	182.5	7.15	181.5	3STD	61.70	28.0
10	11.49	292	9.01	220.7	9.09	231	3STD	90.39	41.00

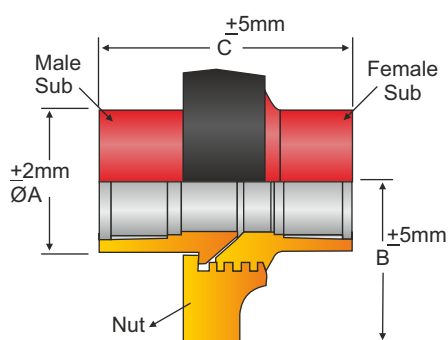
HAMMER UNIONS



2,000 psi CWP (Fig. - 207)



2,000 psi CWP (Fig. - 211)



4,000 psi CWP (Fig. - 400)

Fig 207. Blue Cap - Grey Subs

These banking unions have a resilient O-ring in the blanking cap to provide an efficient and leak-proof seal suitable for 2,000 psi CWP.

Size (inch)	A		B		C		ACME (TPI)	Union	
	inch	mm	inch	mm	inch	mm		lbsf	kgf
3	4.09	104	2.91	74	3.74	95	4STD	10.36	4.70
4	5.15	131	3.58	91	4.33	110	3MOD	16.30	7.40
6	7.55	192	5.00	127	5.90	150	3STD	38.13	17.30
8	9.60	245	6.10	155	6.10	220	3STD	70.76	32.10
10	11.53	293	7.16	182	7.16	248	3STD	96.11	43.60

Fig. 211. Blue Subs - Grey Nut

These unions protect against electrolytic action. There is no metal - to - metal contact between the subs. A resilient seal ring in the female sub provides additional sealing and protection from corrosion. Suitable for 2,000 psi CWP.

Size (inch)	A		B		C		ACME (TPI)	Union	
	inch	mm	inch	mm	inch	mm		lbsf	kgf
1	1.57	40	2.09	53	2.72	69	6STD	2.20	1.00
1 1/4"	2.20	56	2.43	62	3.00	76	6STD	3.70	1.68
1 1/2"	2.20	56	2.43	62	3.00	76	6STD	3.20	1.45
2	2.84	72.2	3.07	78	3.49	88.8	4STD	6.40	2.90
2 1/2	3.38	86	3.67	93	4.13	105	4STD	9.70	4.40
3	4.09	104	3.96	101	4.45	113	4STD	15.80	7.16
4	5.12	130	4.68	119	4.84	123	3MOD	18.40	8.34
6	7.56	192	7.25	184	7.21	183	3STD	43.50	19.60
8	9.62	244	8.75	222	9.12	232	3STD	65.50	29.50

Fig 400. Black Nut - Red Subs

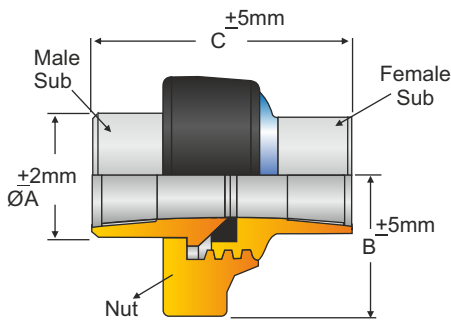
These unions are rigid in design and have all the three parts made of steel forgings. These unions are best suited for manifold and line connections. Unions from 3 inch through 8 inch sizes have O-rings for primary sealing. From 5" to 12" sizes, C.W.P. is 2,500 psi

Size (inch)	A		B		C		ACME (TPI)	Union	
	inch	mm	inch	mm	inch	mm		lbsf	kgf
1	1.75	44.5	2.28	58.0	3.54	90.0	3STD	3.0	1.35
2	3.06	76.8	3.44	87.5	5.24	133	3STD	11.00	5.00
2 1/2	3.54	90	4.17	106	6.18	157	3STD	16.3	7.40
3	4.19	106.6	4.29	109	6.18	157	3STD	19.40	8.80
4	5.23	133	4.74	120.5	8.25	209.7	3STD	28	12.70
5	6.26	159	5.63	143	10.47	266	3STD	48.5	22.0
5 1/2	6.29	160	5.78	147	10.43	265	3STD	48.0	21.80
6	7.75	197	6.52	165.6	11.02	280	3STD	75.0	34.0
7	7.75	198	6.62	168	11.03	280	3STD	61	27.70
8	9.59	243.5	7.71	196	11.42	290	3STD	94.13	42.70
10	11.75	298.4	9.60	244	11.29	287	3STD	121.2	55.0
12	13.98	355	10.62	270	11.02	280	3STD	158.7	72.0

HAMMER UNIONS

Fig. 600. Silver Subs - Black Nut

These unions have wide range of applications including steam service and line connections. These unions are provided with a bronze seat in the female for the effective sealing and prevention of rust formation. Suitable for 6,000 psi CWP.

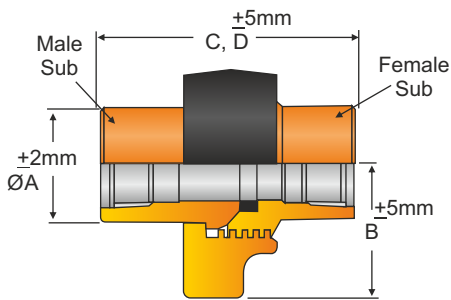


6,000 psi CWP (Fig - 600)

SIZE (INCH)	A		B		C		ACME (TPI)	UNION WEIGHT	
	INCH	MM	INCH	MM	INCH	MM		LBSF	KGF
1	1.75	44.5	2.26	57.5	3.58	91	6STD	3.52	1.6
1 1/2	2.55	65	3.07	78	4.92	125	4STD	9.26	4.20
2	3.07	78	3.70	94	6.42	163	2STD	15.43	7.00
2 1/2	3.54	90	4.17	106	7.52	191	2STD	20.28	9.20
3	4.25	108	4.54	115.5	8.72	221.5	2STD	27.23	12.40
4	5.27	134	5.19	132	10.04	255	2STD	40.0	18.10

Fig 602. Orange Subs - Black Nut

These unions are recommended for manifold and line connections truck mounting and in-mud services. This union has resilient lip-type seal for positive sealing and also protects secondary metal - to metal seal. Suitable for 6,000 psi

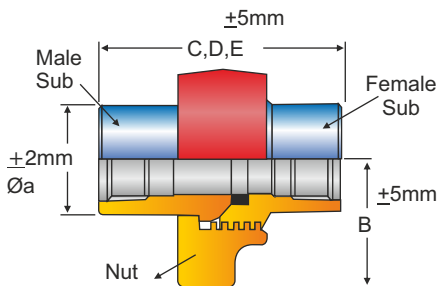


6,000 psi CWP (Fig - 602)

SIZE	A		B		C		BUTT WELDED END D		ACME (TPI)	UNION WEIGHT	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM		LBSF	KGF
1	1.75	44.5	2.28	58	3.50	89	3.50	89	6STD	3.30	1.5
1 1/4	2.60	66	3.23	82	4.88	124	4.88	124	4STD	11.00	5.0
1 1/2	2.56	65	3.06	77.8	4.88	124	4.88	124	4STD	9.7	4.4
2	3.07	78	3.81	97	5.25	133.5	5.28	133.5	3MOD	12.12	5.5
2 1/2	3.51	89.1	3.75	95.5	6.24	158.5	5.59	142	3MOD	15.87	7.2
3	4.25	108	4.52	115	6.22	158	5.62	143	3MOD	20.94	9.5
4	5.27	134	5.04	128	8.23	209	5.67	144	3MOD	30.86	14.0

Fig 1002. Blue Subs - Red Nut

These unions are designed for high pressure systems like choke and kill lines, cementing, acidizing, testing and truck mounted system. This union has a lip-type seal made of nitrile rubber and subs made of alloy steel, suitable for 10,000 psi



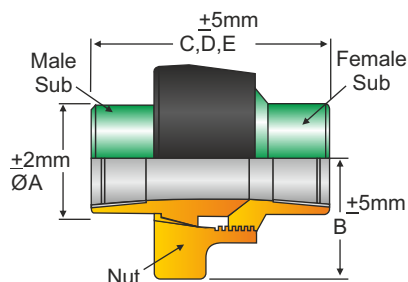
10,000 psi CWP (Fig - 1002)

SIZE	A		B		C		BUTT WELDED END				ACME	UNION WEIGHT	
							D		E				
	INCH	MM	INCH	MM	INCH	MM	SCH-160	SCH-XXS	(TPI)	LBSF		KGF	
1	1.75	44.5	2.28	58	3.50	89	3.50	89	3.50	89	6STD	3.5	1.6
1 1/4	2.60	66	2.95	75	4.88	124	4.88	124	4.88	124	4STD	9.7	4.4
1 1/2	2.55	65	3.18	81	4.88	124	4.88	124	4.88	124	4STD	9.25	4.2
2	3.07	78	3.81	97	5.25	133.5	5.28	133.5	5.28	133.5	3MOD	12.12	5.5
2 1/2	3.46	88	3.78	96	6.18	157	6.18	157	6.18	157	4STD	16.0	7.0
2 1/2(EUE)	3.81	97	4.00	100	5.51	140	-	-	-	-	4STD	17.8	8.1
3	4.25	108	4.52	115	6.22	158	5.51	140	5.51	140	4STD	22.26	10.1
4	5.27	134	5.04	128	8.23	209	5.67	144	5.67	144	4STD	33.0	15.0
5	5.55	141	6.10	155	6.22	158	6.22	158	6.22	158	3STD	56.0	25.4
6	6.62	168.3	6.81	173	6.57	167	6.57	167	6.57	167	3STD	79.8	36.2

HAMMER UNIONS

Fig 1003. Green Subs - Black Nut

These unions have a ball seat incorporating a primary O-ring seal with a metal secondary seal which assures perfect sealing in misalignment position. The degree of misalignment upto 2" size is 4° and beyond 2" size it is 7 1/2°. This union is ideally suited for use on high pressure lines. Available in 10,000 psi with end threaded or butt-welded for welding.

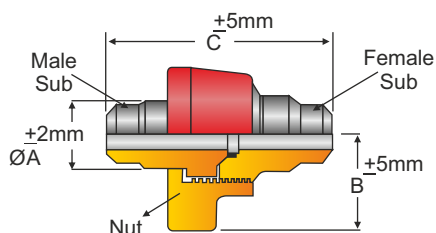


10,000 psi CWP (Fig - 1003)

Size	A		B		C		Beveled Ends				ACME	Union Weight	
							D		E				
	(Inch)	Inch	mm	Inch	mm	Inch	mm	Sch-160 Inch	mm	Sch-xxs Inch		mm	(TPI)
1	1.77	45	2.36	60	5.0	127	5.0	127	5.0	127	4STD	5.0	2.3
2	3.00	76	3.86	98	4.80	122	4.80	122	4.80	122	4STD	12.6	5.7
3	4.29	109	4.96	126	9.17	233	8.82	224	9.17	233	4STD	44.5	20.0
4	5.43	138	5.74	146	10.94	278	10.78	274	10.98	279	4STD	73.0	32.8
5	5.62	143	6.74	146	-	-	10.78	274	10.98	279	4STD	73.0	32.8
6	7.03	178.7	7.48	190	-	-	11.03	280	11.17	282.9	3STD	191	87

Fig 1004. Red Nut - Grey Subs

These unions use lip type seal ring end. Here, faces of male and female subs are perfectly square. These are available in 5" & 6" butt weld sizes.



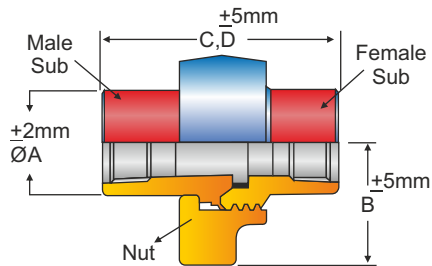
10,000 psi CWP (Fig - 1004)

Size (Inch)	A		B		C		ACME (TPI)	Union Weight	
	Inch	mm	Inch	mm	BUTT WELDED ENDS			lbsf	kgf
					Inch	mm			
5	6.30	160.0	6.50	165.1	8.15	207.0	-	86	39
6	7.40	189.0	7.2	182.8	9.50	241.3	-	142	64

HAMMER UNIONS

Fig 1502. Blue Nut - Red Subs

These unions are widely used in cementing, manifold and other services wherein extra high pressures of 15,000 psi CWP are encountered. These unions are provided with replaceable seal ring.

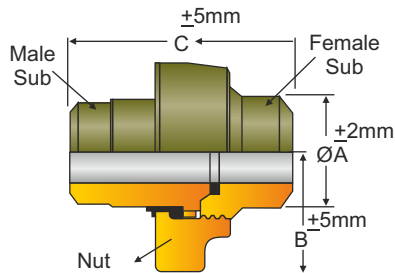


15,000 psi CWP (Fig - 1502)

Size (Inch)	A		B		C		D		ACME (TPI)	Union Weight	
	Inch	mm	Inch	mm	Inch	mm	BEVELED ENDS			lbsf	kgf
							Inch	mm			
1	2.18	55.5	2.75	70	4.33	110	4.33	110	3.5STD	8.5	3.8
1.1 / 2	2.96	75.2	3.48	88.5	5.39	137	5.39	137	3.5STD	12.8	5.7
2	3.22	82	3.86	98	7.03	178.5	6.30	160	3STD	20.3	9.2
2.1 / 2	3.74	95.2	3.96	100.6	7.28	185	7.08	180	3STD	23.0	10.3
3	4.45	113	4.53	115	7.67	195	5.28	134	3.5STD	29.5	13.3
4	5.75	146.1	6.00	152.2	8.54	217	10.55	268	3MOD	76.5	34.4
5	6.45	164	6.53	166	-	-	9.0	230	3.5STD	96	43
6	7.48	190	7.2	183	-	-	9.8	249	3.5STD	148	67

Fig 2002. Green Nut - Grey Subs

These unions are provided with replacement lip-type seal and are recommended for choke and kill lines, cementing, acidizing and testing services for pressure up to 20,000 psi CWP.



**20,000 psi CWP (Fig. - 2002)
15,000 psi CWP (Fig. - 2202)**

Fig 2202. (H2S) - Olive Green

These unions are specially designed for sour gas service in accordance with NACE Std. MR-01-75 and API Std. RP-14E for pressure up to 15,000 psi CWP. Dimensions identical with Fig-2002 above.

Size (Inch)	A		B		C		ACME (TPI)		Union Weight	
	Inch	mm	Inch	mm	Inch	mm	Fig. 2002	Fig. 2202	lbsf	kgf
2	2.5	63.5	3.75	95.2	7.44	189	4	5	22.6	10.1
3	5.38	136.7	6.00	152	10.51	267	4	5	49.0	22.2
4	5.5	139.7	6.00	152	8.65	220	-	5	77.5	35.1
5	6.12	155.4	6.55	166	10.9	277	-	5	112.0	50.8
6	7.75	197.0	7.30	185	13.20	335	-	-	169.0	76.7

NOTE:

1. ACT 2", Fig-2202 is interchangeable with Fig-2" 2052/2252 & 2 1/2" 2052/2252 of other reputed makes.
2. Dimension 'A' will vary depending upon size of weld preparation.

AIR - UNIONS

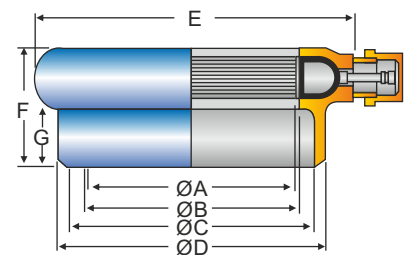
ACT's AIR-UNIONS are designed for 150 PSI maximum line pressure.

Features

- Air inflates tube to seal around pipe
- Fast and easy make up without close alignment
- Allows pipe expansion or misalignment (12°-15°) without breaking the seal
- No wrenches, bolts & nuts required
- Available in 4", 6", 8", 10", 12" 13", 16" sizes

NOTE: Line pressure = 150 PSI max. Tube pressure = Line pressure + 50 PSI = 150+50=200 PSI (max.)

SIZE(IN)	4"		6"		8"		10"		12"		13"		16"	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
A	4.60	117	6.75	172	8.75	222	10.95	277.5	12.95	329	13.66	347	16.30	414
B	4.60	117	6.93	177	8.93	228	11.14	283	13.12	333	13.78	350	16.41	417
C	5.08	129	8.00	203	10.12	258	12.12	307	13.38	337	15.43	392	17.40	442
D	5.56	141	8.62	223	10.75	279	12.75	324	14.02	358	16.02	407	18.03	458
E	6.62	168	10.5	263	12.25	313	14.50	370	16.50	419	17.24	438	19.84	504
F	3.12	79	4.00	102	4.00	102	4.25	108	4.25	107	4.40	112	4.29	109
G	1.50	38	2.00	51	2.00	51	2.00	51	2.00	51	2.04	52	2.04	52
TOTAL MISALIGNMENT DEGREE	6		14		14		14		14		14		14	
WEIGHT (LBSF)	7.25		17.5		21.75		26.00		30.00		34.5		38.8	
WEIGHT (KGF)	3.3		8.0		10.0		11.8		13.6		15.6		17.6	

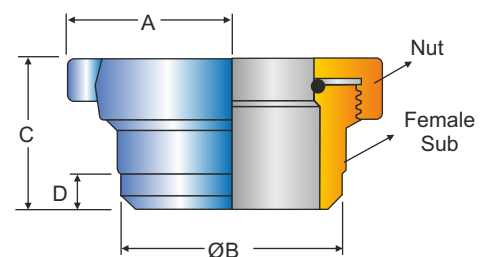


Air - Union



ACT Mud Tank Unions

ACT manufactures and supplies unions for mud tanks, mud tank connecting lines and pump suction flanges. These are manufactured for a maximum line pressure of 150 PSI. The nitrile seal provides compressive seal, the cross-section of the seal designed to provide greater sealing surface. The union is designed to take a maximum of 7° misalignment on the pipe. Sizes which are catered for are 6", 8", 10", 12", 14", 16" and 18" sizes can be socket welded to pipe or butt welded to tubing. 12" size and above requires butt weld.



Mud Tank Union

	6"		8"		10"		12"		14"		16"		18"	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
A (CLEARANCE RADIUS)	6.25	159	7.50	191	8.50	216	9.75	248	10.62	270	11.75	298	12.87	327
B (OUTSIDE DIAMETER)	7.88	200	9.88	251	11.88	302	14.00	356	16.0	406	18.0	457	20.0	507
C (END TO FACE)	4.38	111	4.38	111	4.52	115	4.52	115	4.68	119	4.85	123	4.72	120
D (SOCKET WELD DEPTH)	0.38	9.5	0.38	9.5	0.38	9.5	0.38	9.5	-	-	-	-	-	-
WEIGHT (LBSF)	37		42		53		61		83		99		115	
WEIGHT (KGF)	16.8		19		24		28		38		45		53	

NOTE:

Material is steel casting.

CEMENTING AND CIRCULATING HOSES

General Description

Introduction

ACT's Cementing & Circulating Hoses are manufactured in various sizes (from 1" to 6") and in various configurations to meet virtually all the needs of the Oil Industry. These can handle a wide variety of fluids at cold working pressure up to 20,000 PSI. These hoses are made in steel to meet ASTM/AISI standards, are rugged, fold up easily and quickly for transportation. These are specially heat treated to get the desired hardness to suit various applications. Even sizes beyond 4" can be supplied to meet customer requirement.



Service Applications

These hoses are recommended for service in Low Pressure Lines, High & Extra High Pressure Lines, Discharge Lines, Water Lines, Well Testing Lines, Cementing & Circulating Lines, Temporary Flow Lines and Extra Pressure Abrasive Applications.

Swivel Joint Connections

ACT's hoses feature ACT's Swivel Joints which provide flexibility, maximize flow characteristics and absorb shock vibrations.

Wing Unions

ACT's wing unions end connections provided in the cementing hoses ensure pressure tight and fast make up and quick break-out without threading, welding or special connections.

Sour Gas Service

ACT's cementing hoses are available in various sizes and configurations for sour gas service as per NACE standards MR-01-75 and API standard RP-14E up to cold working pressure of 15000 PSI.

Method of Construction

These hoses can be manufactured as either threaded or integral or welded constructions or with NPS end connections.

Standard Lengths of Hoses

Following standard lengths are available. These lengths are fully extended lengths of the unfolded hoses:

Threaded Hose - 12 feet

NPS Hose - 12 feet

Welded Hose - 12 feet

Integral Hose - 12 feet

Other lengths can also be provided on request. ACT's hoses are also available in half section configuration. In this case, stated length will be half of the length of comparable full length section. The loop can be divided into various sections depending upon the number of unions in the loop. The loop is generally in 4 & 2 sections.

Swivel Joint Styles

ACT's Swivel Joints can be manufactured equivalent to style 10, 20, 30, 40, 50, 60, 70, 80 & 100. Normally the most used styles in various applications are style 50 and style 10 but ACT'S can cater to any style to meet customer requirements.

Pressure Ratings

Hoses with following ratings are available as given in the table below.

Interchangeability

ACT's Hammer Unions or end connections are interchangeable with the unions and connections of all the major manufacturers of these products in the world.

CEMENTING AND CIRCULATING HOSES

CEMENTING & CIRCULATING HOSES SWIVEL JOINTS	COLOUR CODE	SERVICE	CONSTRUCTIONS DETAILS				NOMINAL SIZE (INCHES)								CWP (PSI)	UNION FIGURE
			THREADED	NPS	INTEGRAL	WELDED	1"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"		
SHORT SWEEP SWIVEL JOINT (1", 1 1/2", 2", 2 1/2", 3", 4" 5", 6")	OLIVE GREEN	SOUR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100 PSI TO 6000PSI	FIG-602
	YELLOW/SILVER	STD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100 PSI TO 6000PSI	FIG-602
	BLACK	STD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10000 PSI	FIG-1002
	OLIVE GREEN	SOUR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10000 PSI	FIG-1502
	BROWN	STD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	6000 PSI TO 7500 PSI	FIG-602 OR FIG-1002
LONG SWEEP SWIVEL JOINT (1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6")	OLIVE GREEN	SOUR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	6000 PSI TO 7500 PSI	FIG-602 OR FIG-1002
	BLACK	STD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10000 PSI	FIG-1002 OR FIG-1502
	OLIVE GREEN	SOUR	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	15000 PSI	FIG-2202 OR FIG-1502
	RED	STD	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	15000 PSI	FIG-1502
	LIGHT BLUE	STD	–	–	✓	–	–	–	✓	–	✓	✓	–	–	20000 PSI	FIG-2002

ACT's typical steel Cementing & Circulating Hoses (1" to 6") are shown below with their model numbers. These hoses have either Threaded ends or NPS or Integral or Welded ends.

Model Number indicates:

- Type of Sweep i.e. Long Sweep or Short Sweep (i.e. LS or SS)
- Style of Swivel Joints used (i.e. Style 10, Style 50 or Style 10 & Style 50 both & numbers of swivel joints i.e.1 or 2)
- Numbers of Unions used (i.e. 1, 2 or 4 etc.)
- Type of end connection i.e. Threaded (T), NPS (N), Integral (I) or Welded (W)

Example: Model Number PLSCCH-50-2-4U-1 indicates

- PLSCCH** : ACT Long Sweep Cementing & Circulating Hose
- 50-2** : Style 50 Swivel Joint, 2 Numbers
- 4U** : 4 Numbers of Union
- I** : Integral Union End Connection



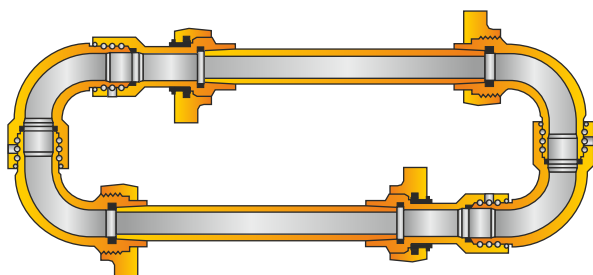
CEMENTING AND CIRCULATING HOSES

1. NPS ENDS

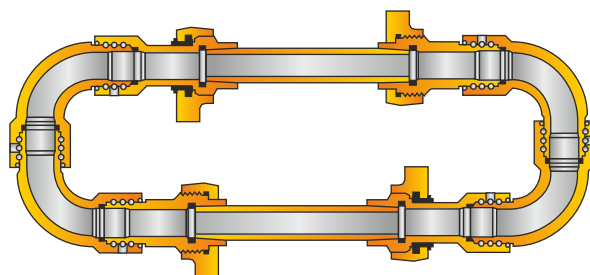
UNION	4 NOS.	4 NOS.	4 NOS.	4 NOS.
SWIVEL JOINT UNION END	STYLE-50 (2 NOS.)	STYLE- 10 (2 NOS.)	STYLE-50 (2 NOS.)	STYLE- 10 (2 NOS.)
MODEL NUMBER	PLSCCH-50-2-4U-N	PLSCCH-10-2-4U-N	PSSCH-50-2-4U-N	PSSCH-10-2-4U-N

CONFIGURATION OF NPS END MODELS

Model Number: PLSCCH-50-2-4U-N



Model Number: PLSCCH-10-2-4U-N

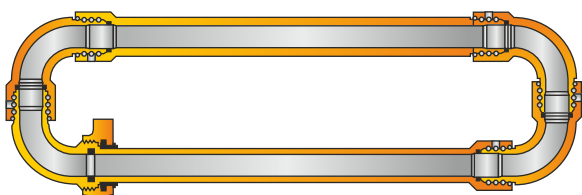


2. INTEGRAL UNION ENDS

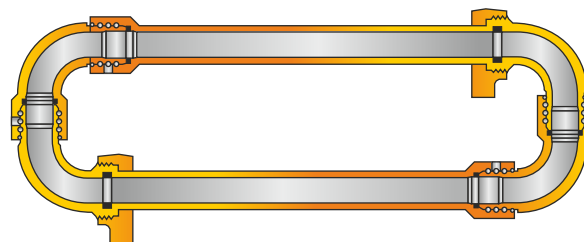
UNION	1 NO.	2 NOS.	2 NOS.	1 NO.
SWIVEL JOINT	STYLE-50 (1 NO)	STYLE- 50 (2 NOS.)	STYLE-10 (2 NOS.)	STYLE-10 (2 NOS.)
(UNION ENDS)	STYLE- 10 (1 NO)			
MODEL NUMBER	PLSCCH-50-1-10-1-1U-I	PLSCCH-50-2-2U-I	PLSCCH-10-2-2U-I	PLSCCH-10-2-1U-I

CONFIGURATION OF INTEGRAL UNION END MODELS

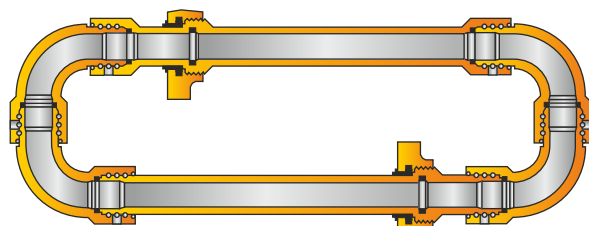
Model Number: PLSCCH-50-1-10-1-1U-I



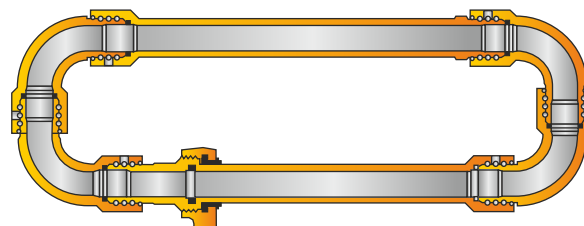
Model Number: PLSCCH-50-2-2U-I



MODEL NUMBER: PLSCCH-10-2-2U-I



MODEL NUMBER: PLSCCH-10-2-1U-I



SWIVEL JOINTS

Products Description

Swivel Joints (1" to 6") are manufactured both for standard service & sour service. Long Sweep Swivel Joints are designed generally from 6,000 PSI CWP to 20,000 PSI CWP, both for standard and sour service, and ensure better flow characteristics. Smooth and round bore design keeps pressure drop low and minimizes turbulence.

LONG SWEEP SOUR SERVICE SWIVEL JOINTS are manufactured in accordance with National Association of Corrosion Engineers (NACE) standard, MR-01-75 (Latest) and the American Petroleum Institute's (API) standard RP-14E.

ACT Swivel Joints have following features

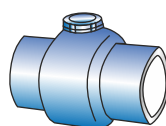
- Swivel Joints are made from carbon steel and low alloy steel and are specially heat treated for controlled hardness
- All union ends are interchangeable with other manufacturers adhering to industry standards. All Long Sweep Swivel Joints-Jar- sour service have union ends of corresponding pressure rating
- Swivel Joints for sour service are provided with snap rings to assure high load bearing capacity
- These Swivel Joints are provided with dual packing arrangement. Primary seal with stainless steel anti-extrusion ring and an additional O-ring between ball races and primary seal is provided, which acts as a secondary seal. When leakage occurs, it is diverted through the leak detection port. A leak at this port indicates the necessity of primary seal replacement
- The grease retainer is self-relieving to prevent pressure accumulation in the ball race chamber if leakage occurs through the secondary packing

ACT's Swivel Joints bearings assure long and dependable service. These bearings are either dual race or tri race ball bearings and are matched to load capacity and service conditions. All ball races are either carburized and hardened or use snap ring in stainless steel.

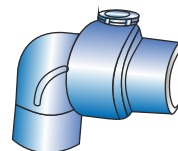
Style of Swivel Joints

ACT manufactures all styles of Swivel Joints to suit various service conditions and installations. These are style 10, 20, 30, 40, 50, 60, 70 and 80, as described below:

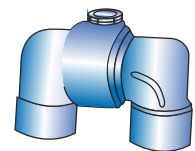
1. STYLE 10
Three Swivels with two elbows
2. STYLE 20
Single Swivel coupling
3. STYLE 30
Single Swivel with one elbow
4. STYLE 40
Single Swivel with two elbows
5. STYLE 50
Two Swivels with two elbows
6. STYLE 60
Two Swivels with one elbow
7. STYLE 70
Two Swivels with three elbows
8. STYLE 80
Three Swivels with three elbows



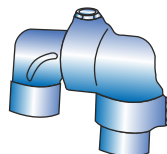
Style 20



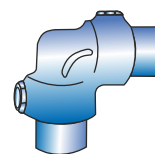
Style 30



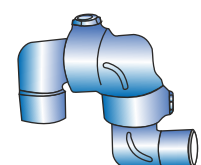
Style 40



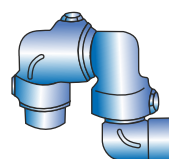
Style 50



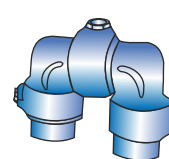
Style 60



Style 70



Style 80



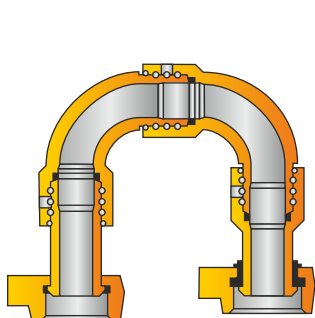
Style 10



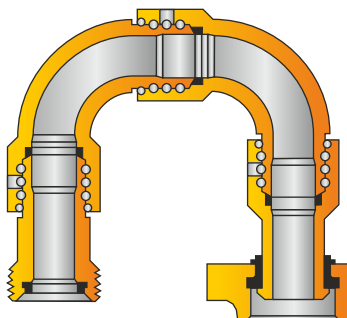
Sizes of Swivel Joints

ACT manufactures size 1" to 6" for normal application. ACT can also manufacture higher/lower sizes if required by customer.

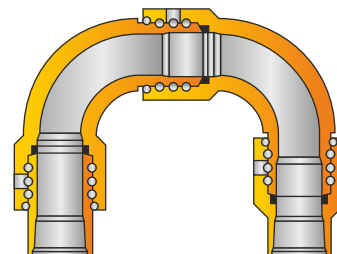
SWIVEL JOINTS



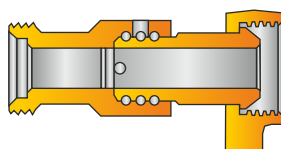
Style - 10 Long Sweep Swivel Joint
End Connection: Union (MxM)
Fig. 602 / 1002 / 1502
Model: PLSSJ - 10MM



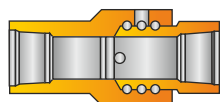
Style - 10 Long Sweep Swivel Joint
End Connection: Union (MxF)
Fig. 602 / 1002 / 1502
Model: PLSSJ - 10MF



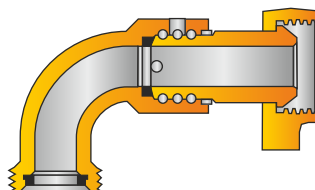
Style - 10 Long Sweep Swivel Joint
End Connection: Threaded
Model: PLSSJ - 10T



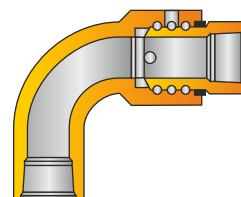
Style - 20 Long Sweep Swivel Joint
End Connection: Union (MxF)
Fig. 602 / 1002 / 1502
Model: PLSSJ - 20MF



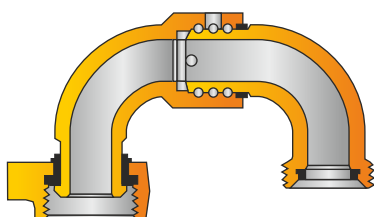
Style - 20 Long Sweep Swivel Joint
End Connection: Threaded
Model: PLSSJ - 20T



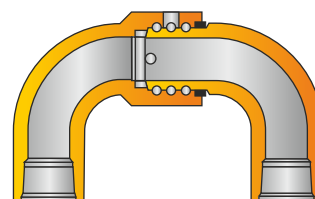
Style - 30 Long Sweep Swivel Joint
End Connection: Union (MxF)
Fig. 602 / 1002 / 1502
Model: PLSSJ - 30MF



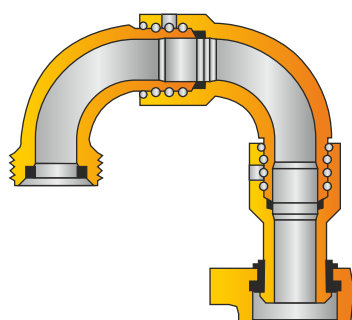
Style - 30 Long Sweep Swivel Joint
End Connection: Threaded
Model: PLSSJ - 30T



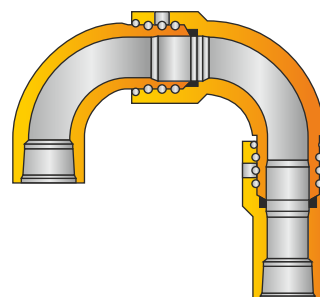
Style - 40 Long Sweep Swivel Joint
End Connection: Union (MxF) Fig. 602 / 1002 / 1502
Model: PLSSJ - 40MF



Style - 40 Long Sweep Swivel Joint
End Connection: Threaded
Model: PLSSJ - 40T

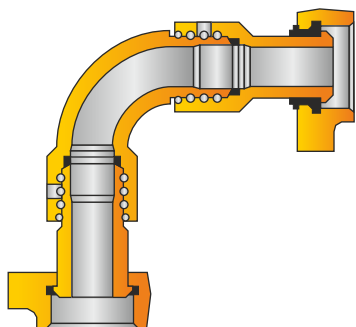


Style - 50 Long Sweep Swivel Joint
End Connection: Union (MxF) Fig. 602 / 1002 / 1502
Model: PLSSJ - 50MF

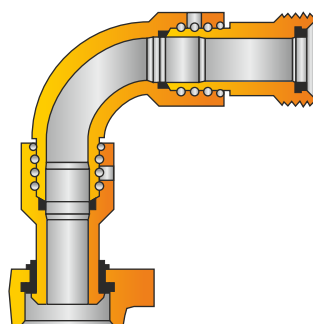


Style - 50 Long Sweep Swivel Joint
End Connection: Threaded
Model: PLSSJ - 50T

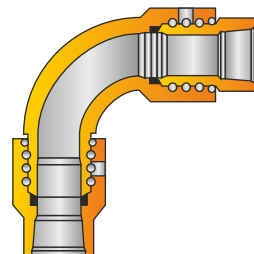
SWIVEL JOINTS



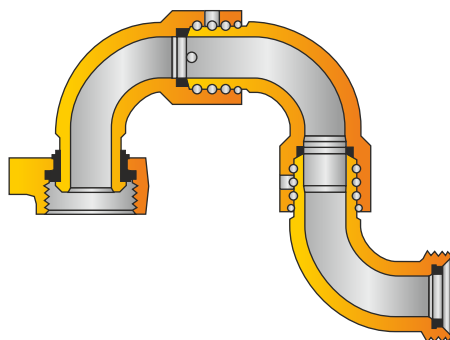
Style - 60 Long Sweep Swivel Joint
End Connection: Union (MxM)
Fig. 602 / 1002 / 1502
Model: PLSSJ - 60MM



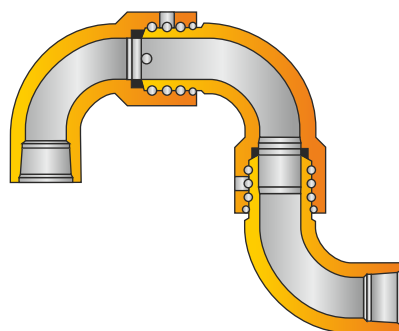
Style - 60 Long Sweep Swivel Joint
End Connection: Union (MxF)
Fig. 602 / 1002 / 1502
Model: PLSSJ - 60MF



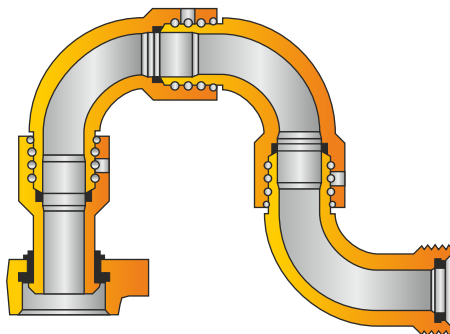
Style - 60 Long Sweep Swivel Joint
End Connection: Threaded
Model: PLSSJ - 60T



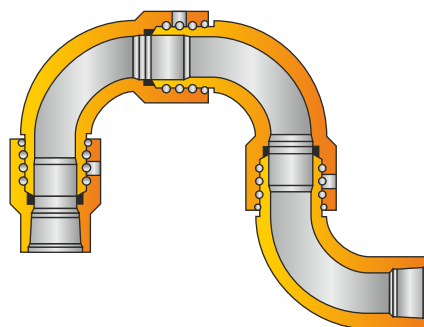
Style - 70 Long Sweep Swivel Joint
End Connection: Union (MxF) Fig. 602 / 1002 / 1502
Model: PLSSJ - 70MF



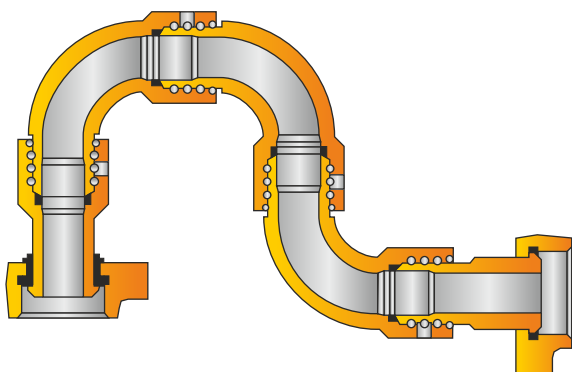
Style - 70 Long Sweep Swivel Joint
End Connection: Threaded
Model: PLSSJ - 70T



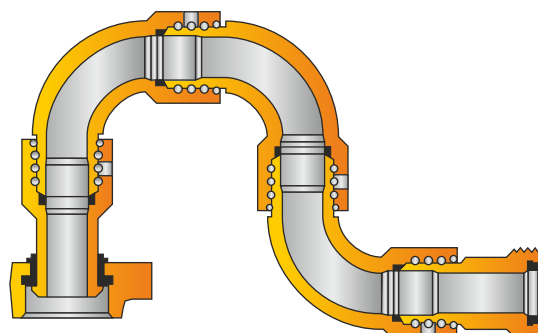
Style - 80 Long Sweep Swivel Joint
End Connection: Union (MxF) Fig. 602 / 1002 / 1502
Model: PLSSJ - 80MF



Style - 80 Long Sweep Swivel Joint
End Connection: Threaded
Model: PLSSJ - 80T



Style - 100 Long Sweep Swivel Joint
End Connection: Union (MxM) Fig. 602 / 1002 / 1502
Model: PLSSJ - 100MM



Style - 100 Long Sweep Swivel Joint
End Connection: Union (MxF) Fig. 602 / 1002 / 1502
Model: PLSSJ - 100MF

TREATING IRONS

Treating Irons

ACT's one piece Treating Iron comprises an integral ACT's wing union end connection which eliminates, welds and threads. Available in lengths up to 20 feet. The materials are carbon steel and alloy steel and are light weight. This integral treating iron is capable of handling a variety of fluids at cold working pressure of 15000 psi. ACT's treating irons are also available for sour service up to a CWP of 10,000 PSI & in other lengths if required.

Recommended Service

These are suitable for High Pressure Discharge Lines, Temporary Flow Lines, Auxiliary Flow Lines, Well Testing Lines, Water Lines, Choke and Kill Lines and Abrasive Applications.

Salient Benefits

Since there are no welds and threads, ACT's treating irons provide an uniform bore of greater flow capacity and improved flow characteristics. ACT's design allows for uniform heat treating of the entire joint for better structural qualities. Nut can be detached for easy disassembly if replacement becomes necessary. For this only a circlip has to be removed.

End Connections

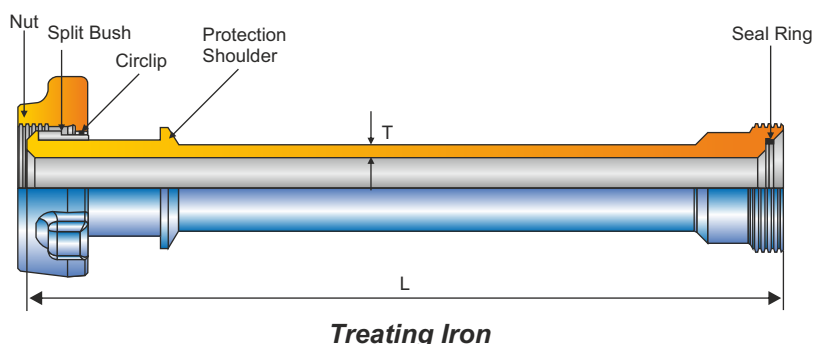
End connections can be provided for Fig-206, Fig-602, Fig-1002 and Fig-1502 or any other figure required by the customer.

NOTE: ACT can also provide welded & threaded 2", 3" & 4" NPST type treating iron if required by the customer.



DIMENSIONAL REFERENCE CHART																	
SIZE (IN)	1"		1- 1/2"		2"		2- 1/2"		3"		4"		5"		6"		8"
FIGURE	602	1502	602	1502	602	1502	602	1502	602	1502	602	1502	1002	1502	1002	1502	900
WORKING PRESSURE (PSI)	6000	15000	6000	15000	6000	15000	6000	15000	6000	15000	6000	15000	10000	15000	10000	15000	2500
TEST PRESSURE (PSI)	9000	22500	9000	22500	9000	22500	9000	22500	9000	22500	9000	22500	15000	22500	15000	22500	3750
WALL (T)	MM	6.35	9.09	7.14	10.16	8.74	13	7.14	14.02	7.62	15.24	13.49	17.11	15.87	19.05	18.26	21.94
	INCH	0.250	0.358	0.281	0.400	0.344	0.511	0.281	0.552	0.300	0.600	0.531	0.674	0.625	0.750	0.719	0.864
APPROX WT. PIPE:																	
LBSF /FT	2.84	3.66	4.86	6.41	6.28	9.03	8.0	11.81	10.25	18.58	22.51	28.65	32.96	38.55	45.35	53.16	49.00
KGF /M	4.24	5.45	7.25	9.56	9.36	13.44	14.92	20.39	15.27	27.68	33.54	42.65	49.04	57.36	67.48	79.10	72.92
H UNION:																	
LBSF	3.30	8.50	9.70	12.80	12.12	20.30	15.87	23.00	20.94	29.50	30.66	76.50	56.00	99.00	79.80	155.00	94.13
KGF	1.50	3.80	4.40	5.70	5.50	9.20	7.20	10.30	9.50	13.30	14.00	34.40	25.40	44.90	36.19	70.30	42.69
LENGTH L (FEET)	2', 3', 4', 5', 6', 7', 8', 9', 10', 12', 15', 20'																

NOTE: Other lengths, Figures, Pressure Rating, Butt Weld and Integral Connections are also available on customer's request.



INTEGRAL UNION CONNECTIONS

ACT manufactures a quality line of high pressure Integral/Fabricated Union connections with unions in various configurations and sizes from 1" to 6" and in pressure ratings up to 20,000 PSI CWP. These items are manufactured from high strength alloy steel forgings and fully heat treated under controlled conditions to assure uniform quality throughout. Available in combinations male by male, male by female to suit virtually any installation. The type of connections that ACT manufactures are:

- a. Cross, Elbows, Tees and Wyes.
- b. 45° and 60° Laterals
- c. Crow's Foot
- d. Goat Head.

Recommended Service

High Pressure Discharge Lines, Auxiliary Flow Lines, Temporary Flow Lines, Cementing and Circulating Lines, Well Testing Lines and other High Pressure applications.



90° Elbow



90° Y



Cross



T - Conn



Lateral 45° & 60°



Crow's Foot



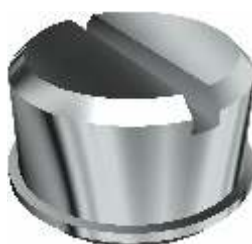
Goat Head

Bull Plugs, Gauge Bull Plugs and Lifting Bull Plugs

ACT's bull plugs are available in sizes 1" to 6" male and female models and with pressure ratings up to 15000 PSI CWP.



**Female Plug
With Autoclave Connection**



Male Plug



**Hammer Union
Male Blind & Female Welded
C/W SS Chain & Rod**

CHANGEOVER / CROSSOVER ADAPTERS / BLAST JOINTS

ACT's changeover/crossover adapters are manufactured in different sizes and threads, types male to male, female to female, female to male configurations with sizes varying from 1" to 4" and in pressure ratings from 1000 PSI to 20000 PSI CWP.

Swages

ACT manufactures Integral Swages with unions male and female to pipe and tubing threads, in different sizes 1" to 4" and thread configurations, in pressure ratings from 6000 PSI to 15000 PSI CWP. These are made to highest quality standards to provide trouble free service to users.

Precautions

1. Do not expose standard service products to sour gas fluid
2. Pressure ratings given are for temperatures between -20°F to 100°F. For services above 100°F consult factory
3. Excessive hammering force should not be used for tightening Hammer Unions
4. For using Hammer Unions below freezing temperatures, correct safety precautions should be taken
5. Hammer Unions under pressure should not be struck otherwise failure may occur causing personnel injury or death

Integral Female Adapter Flanges

We manufacture these adapter flanges of various sizes commencing from 1 13/16" onwards and various flanges pressure ratings with Integral Hammer Union ends.



Female To Tubing Thread



Male To Tubing Thread



Double Wing (Male)



Double Thread (Female)



*Thread To Wing
(Male To Female)*



*Integral Female
Adapter Flange*

INTEGRAL / WELDED UNION END FITTINGS (FIG-602, 1002, 1502)

Size: 1" To 6" Up To W.P. 15,000 PSI, T.P. 22,500 PSI For Standard & Sour Service



*Corner Joint (Integral),
(Split Bush Type)*



*Straight Pipe With Corner
Bend (Integral Or Welded)*



*Corner Joint
(Integral Or Welded)*



Straight Pipe (Integral Or Welded)

**Block Type Fittings (Welded & Studded Flanged Type)
(Up To 30,000 PSI Test Pressure In Any Size)**



**Manifold Fittings (Threaded, Butt Welded & Socket Welded)
(Up To 10,000 PSI Test Pressure, Sizes: 2", 3", 4", & 5")**



Long Sweep Elbow 90°



Long Sweep Tee



Long Sweep Full Flow Tee



*Standpipe
Gooseneck 180°*



Lateral 45° & 60°



*Standpipe Gooseneck
160°
With Top Outlet*



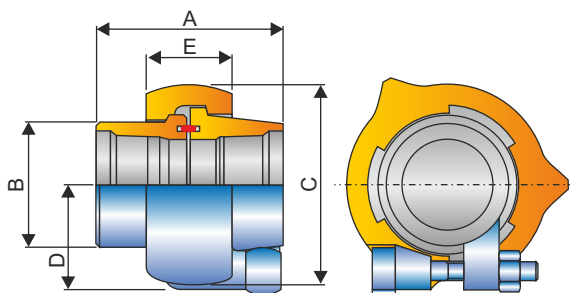
Full Flow Cross

NOTE: For other sizes, pressures and services, consult factory.

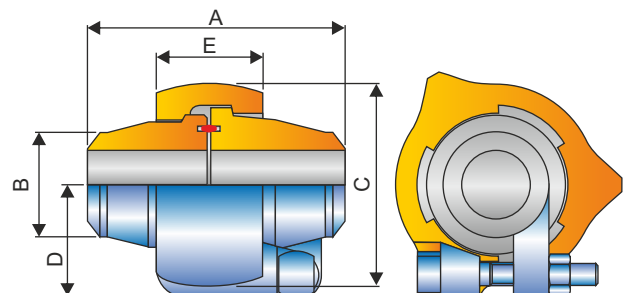
UNIBOLT TYPE COUPLINGS

ACT Unibolt Type Couplings are the high pressure, compact and light weight alternative to API or ANSI flanges. The connection is made up by means of the interlocking helical shelf design. Unibolt Type Couplings ensure superior reliability and provide a higher degree of safety than conventional threads or flanges due to the greater amount of metal under shear load.

A metal seal ring provides a strong seal between male and female sub of the unibolt type coupling. The nut slips over male sub and the helical shelves in the nut wedge against external helical shelves of female sub when rotated. The T-head bolt is then tightened and the helix angle of the shelves multiplies the bolt force, exerting a tremendous force on the seal ring. Since the helix angle is self-locking, the bolt is under no stress after the initial tightening.



Threaded End



Butt Weld End

DIMENSIONAL DATA (INCHES), 3000 LB / 5000 LB WP THREADED					
NOM. SIZE	DIMENSION				
	A	B	C	D	E
1	3.27/32	1.5/8	3.3/8	2.1/8	1.5/8
2	5.1/8	2.7/8	5.3/8	3.1/8	2.7/16
2.1/2	6.1/4	3.3/8	6.1/8	3.5/8	2.7/8
3	6.1/4	4.3/16	6.3/4	4.1/16	2.7/8
4	8.3/8	5.1/2	8.11/16	5.3/16	3.1/2
5	10.6/16	6.1/2	10.1/2	6.1/8	4.1/16

DIMENSIONAL DATA (INCHES), 3000 LB / 5000 LB / 10,000 LB 15,000 LB WP BUTT WELD					
NOM. SIZE	DIMENSION				
	A	B	C	D	E
1	4.23/32	1.315	3.3/8	2.1/8	1.5/8
2	6.1/8	2.3/8	5.3/8	3.1/8	2.7/16
2.1/2	7	2.7/8	6.1/8	3.5/8	2.7/8
3	7.5/8	3.1/2	6.3/4	4.1/16	2.7/8
4	9.9/16	4.1/2	8.11/16	5.3/16	3.1/2
3000 LB CWP					
*5	10.5/16	5.5/8	10.1/2	6.1/8	4.1/16
*6	9.1/2	6.5/8	10.1/2	6.1/8	4.1/16
5000 LB CWP					
*5	11.5/8	5.9/16	11.9/16	6.5/8	5
*6	11.5/8	6.5/8	11.9/16	6.5/8	5
10,000 LB WP					
2	7.1/8	2.3/8	5.3/16	3.13/32	2.3/4
2.1/2	7.3/8	2.7/8	5.5/16	3.13/32	2.3/4
3	8.5/8	3.1/2	6.11/16	4.7/32	3.9/16
4	11.1/2	4.1/2	8.7/8	5.11/16	4.1/2
5	16.1/4	5.9/16	12.5/16	7.1/4	6.1/2
15,000 LB WP					
2.1/2	7.5/16	2.7/8	5.13/16	3.1/2	2.7/8

* These sizes require two bolts

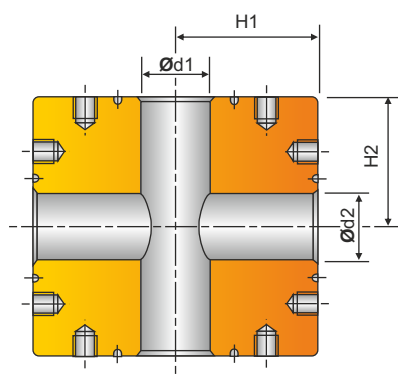
FLANGED STUDDED CROSSES AND TEES (AS PER API-6A)

*All dimensions are in inches.

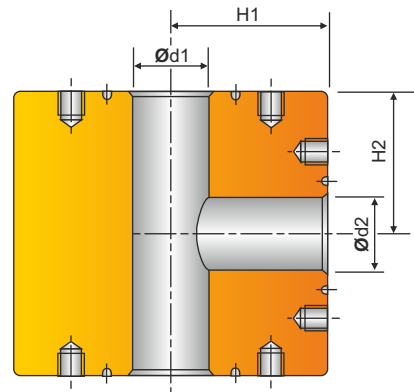
(1-1) PRESSURE RATING:- 2,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
2 1/16	2 1/16	3.50	3.50
2 9/16	2 1/16	3.50	4.00
2 9/16	2 9/16	4.50	4.50
3 1/8	2 1/16	3.50	4.50
3 1/8	2 9/16	4.50	4.50
3 1/8	3 1/8	4.50	4.50
4 1/16	2 1/16	4.50	5.50
4 1/16	2 9/16	4.50	5.50
4 1/16	3 1/8	4.50	5.50
4 1/16	4 1/16	5.50	5.50

(1-2) PRESSURE RATING:- 3,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
3 1/8	2 1/16	4.50	5.00
3 1/8	2 9/16	5.00	5.00
3 1/8	3 1/8	5.00	5.00
4 1/16	2 1/16	4.50	6.12
4 1/16	2 9/16	5.00	6.12
4 1/16	3 1/8	5.00	6.12
4 1/16	4 1/16	6.12	6.12

(1-3) PRESSURE RATING:- 5,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
2 1/16	2 1/16	4.50	4.50
2 9/16	2 1/16	4.50	5.00
2 9/16	2 9/16	5.00	5.00
3 1/8	2 1/16	4.50	5.50
3 1/8	2 9/16	5.50	5.50
3 1/8	3 1/8	5.50	5.50
4 1/16	2 1/16	4.50	6.50
4 1/16	2 9/16	5.00	6.50
4 1/16	3 1/8	5.50	6.50
4 1/16	4 1/16	6.50	6.50



API Studded Cross



API Studded Tee

(1-4) PRESSURE RATING:- 10,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
1 13/16	1 13/16	4.38	4.38
2 1/16	1 13/16	4.38	4.38
2 1/16	2 1/16	4.38	4.38
2 9/16	1 13/16	4.50	5.12
2 9/16	2 1/16	4.50	5.12
2 9/16	2 9/16	5.12	5.12
3 1/16	1 13/16	4.50	5.88
3 1/16	2 1/16	4.50	5.88
3 1/16	2 9/16	5.12	5.88
3 1/16	3 1/16	5.88	5.88
4 1/16	1 13/16	4.50	6.88
4 1/16	2 1/16	4.50	6.88
4 1/16	2 9/16	5.12	6.88
4 1/16	3 1/16	5.88	6.88
4 1/16	4 1/16	6.88	6.88

(1-5) PRESSURE RATING:- 15,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
1 13/16	1 13/16	5.00	5.00
2 1/16	1 13/16	5.00	5.00
2 1/16	2 1/16	5.00	5.00
2 9/16	1 13/16	5.50	5.50
2 9/16	2 1/16	5.50	5.50
2 9/16	2 9/16	5.50	5.50
3 1/16	1 13/16	6.31	6.31
3 1/16	2 1/16	6.31	6.31
3 1/16	2 9/16	6.31	6.31
3 1/16	3 1/16	6.31	6.31
4 1/16	1 13/16	7.62	7.62
4 1/16	2 1/16	7.62	7.62
4 1/16	2 9/16	7.62	7.62
4 1/16	3 1/16	7.62	7.62
4 1/16	4 1/16	7.62	7.62

(1-6) PRESSURE RATING:- 20,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
1 13/16	1 13/16	6.47	6.47
2 1/16	1 13/16	6.47	6.47
2 1/16	2 1/16	6.47	6.47
2 9/16	1 13/16	7.28	7.28
2 9/16	2 1/16	7.28	7.28
2 9/16	2 9/16	7.28	7.28
3 1/16	1 13/16	7.97	7.97
3 1/16	2 1/16	7.97	7.97
3 1/16	2 9/16	7.97	7.97
3 1/16	3 1/16	7.97	7.97
4 1/16	1 13/16	9.97	9.91
4 1/16	2 1/16	9.91	9.91
4 1/16	2 9/16	9.91	9.91
4 1/16	3 1/16	9.91	9.91
4 1/16	4 1/16	9.91	9.91

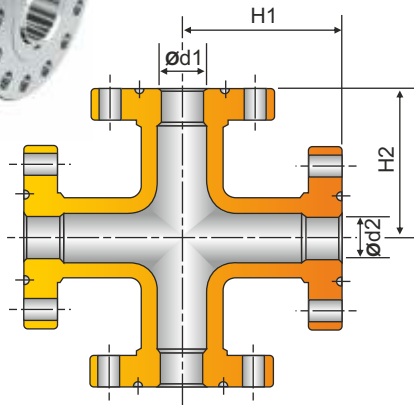
FLANGED CROSSES AND TEES (AS PER API-6A)

*All dimensions are in inches.

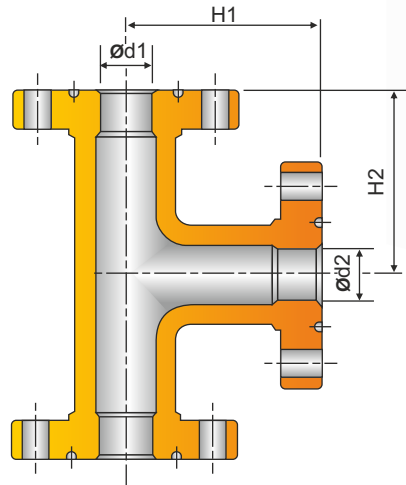
(1-1.) PRESSURE RATING:- 2,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
2 1/16	2 1/16	5.81	5.81
2 9/16	2 1/16	5.94	6.31
2 9/16	2 9/16	6.56	6.56
3 1/8	2 1/16	6.06	6.69
3 1/8	2 9/16	6.56	6.81
3 1/8	3 1/8	7.06	7.06
4 1/16	2 1/16	6.31	7.94
4 1/16	2 9/16	6.81	8.06
4 1/16	3 1/8	7.19	8.19
4 1/16	4 1/16	8.56	8.56

(1-2.) PRESSURE RATING:- 3,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
3 1/8	2 1/16	7.31	7.81
3 1/8	2 9/16	7.88	7.94
3 1/8	3 1/8	7.56	7.56
4 1/16	2 1/16	7.56	8.81
4 1/16	2 9/16	8.12	8.94
4 1/16	3 1/8	8.06	8.81
4 1/16	4 1/16	9.06	9.06

(1-3.) PRESSURE RATING:- 5,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
2 1/16	2 1/16	7.31	7.31
2 9/16	2 1/16	7.44	7.88
2 9/16	2 9/16	8.31	8.31
3 1/8	2 1/16	7.69	8.31
3 1/8	2 9/16	8.25	8.44
3 1/8	3 1/8	9.31	9.31
4 1/16	2 1/16	7.94	9.19
4 1/16	2 9/16	8.50	9.31
4 1/16	3 1/8	8.94	9.56
4 1/16	4 1/16	10.81	10.81



API Flanged Cross



API Flanged Tee



(1-4.) PRESSURE RATING:- 10,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
2 1/16	1 13/16	6.67	6.84
2 1/16	2 1/16	6.92	6.92
2 9/16	1 13/16	6.95	7.47
2 9/16	2 1/16	7.20	7.55
2 9/16	2 9/16	7.83	7.83
3 1/16	1 13/16	7.23	8.22
3 1/16	2 1/16	7.48	8.30
3 1/16	2 9/16	8.11	8.58
3 1/16	3 1/16	8.86	8.86
4 1/16	1 13/16	7.81	9.25
4 1/16	2 1/16	8.06	9.33
4 1/16	2 9/16	8.69	9.61
4 1/16	3 1/16	9.44	9.89
4 1/16	4 1/16	10.34	10.34

(1-5.) PRESSURE RATING:- 15,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
2 1/16	1 13/16	7.34	7.41
2 1/16	2 1/16	7.62	7.62
2 9/16	1 13/16	7.59	8.03
2 9/16	2 1/16	7.88	8.25
2 9/16	2 9/16	8.50	8.50
3 1/16	1 13/16	7.86	8.69
3 1/16	2 1/16	8.16	8.91
3 1/16	2 9/16	8.78	9.16
3 1/16	3 1/16	9.44	9.44
4 1/16	1 13/16	8.69	10.25
4 1/16	2 1/16	8.97	10.47
4 1/16	2 9/16	9.59	10.72
4 1/16	3 1/16	10.25	11.00
4 1/16	4 1/16	11.69	11.69

(1-6.) PRESSURE RATING:- 20,000 PSI			
NOMINAL SIZE & BORE		CENTER TO FACE	
Ød1 (VERTICAL)	Ød2 (OUTLET)	H2 (VERTICAL)	H1 (HORIZONTAL)
1 1/16	1 1/16	8.94	8.94
2 1/16	1 13/16	9.25	9.53
2 1/16	2 1/16	9.84	9.84
2 9/16	1 13/16	9.56	10.28
2 9/16	2 1/16	10.16	10.59
2 9/16	2 9/16	10.91	10.91
3 1/16	1 13/16	9.94	10.91
3 1/16	2 1/16	10.53	10.22
3 1/16	2 9/16	11.28	11.53
3 1/16	3 1/16	11.91	11.91
4 1/16	1 13/16	11.12	12.66
4 1/16	2 1/16	11.72	12.66
4 1/16	2 9/16	12.47	13.28
4 1/16	3 1/16	13.09	13.66
4 1/16	4 1/16	14.84	14.84

RIG EQUIPMENT REFURBISHMENT

ACT provides refurbishment of individual pieces of rig equipment, regardless of make, model or brand. Most importantly we have the people with the knowledge, background and experience to understand your requirements or problems and provide you with qualified solutions to enhance or repair your equipment.

Our quality refurbishment of oilfield equipment incorporates:

- Complete Manifolds repairs & replacement, i.e. Choke & Kill Manifold, Standpipe Manifold, etc.
- Mud systems & high-pressure piping replacement
- Spare parts, Gears & Jacking systems
- Paint & body work
- DC Motors refurbishment
- Winches refurbishment

Our quality refurbishment services include re-certification from:

- ABS, CDS & DNV

DC Motor Refurbished GE 752 Shunt Wound DC Traction Motor, rated at 750HP, 1040RPM, 750VDC armature, 50.5 amp field, forced ventilated are supplied with following features:

- Shunt Field
- Marine type stainless steel pressurized junction box
- Lockout Device
- Pressure Switch
- Anti-friction grease type ball bearings
- 100 ohm Platinum RTD's installed and terminated
- Single Shaft Extension
- Tachometer



SUPPLIERS OF WELL SERVICE PRODUCTS MANUFACTURED BY, ACT GERMANY



Hot Oil Pumping Unit



Cementing Unit



Blender



Data Acquisition Unit



Frac Pumping Unit



De Hydration Unit



Manifold Unit



Acid Pumper

FLANGES - INTRODUCTION

ACT is a manufacturer of various types of Flanges and Pipe Fittings required by the oil field, petrochemical and different process industries.

Our name is synonymous with high quality manufacture, precision machining and unparalleled dedication to quality. Excellence which has kept us in the forefront of the oil industry.

Flanges / Boltings / Gaskets / Flanged Fittings

Flanges

ACT manufactures all types of Forged Flanges such as Weldneck, Slip-on, Socket Weld, Threaded, Lapped and Blind as per ANSI B-16.5 & ASA B-16.5, covering sizes from 1/2" to 24", pressure ratings from class 150 to 2,500 and temperature rating -20° F to 1500°. Studs, Nuts and Gaskets for these Flanges are also provided.

Flanges to API specifications 6A such as 6B and 6BX (Threaded, Weldneck, Blind, Test, Integral, Adapter & Companion Flanges) for any size & pressure ratings from 2,000 PSI to 20,000 PSI can be catered to. Large dia flanges to API 605, from size NPS 26" to 48" and ratings 150 to 900 are also manufactured and supplied. Slipon and Weld Neck Flanges as per BS 3293, of class 150, 300, 400, 600 from size NPS 26" to 48" can also be manufactured. Ring Joint Gaskets and Grooves are provided as per ASME B 16.20, ANSI B 16.5 & API-6A.

Orifice Flanges/Meter Runs as per ANSI B-16.36, API 2530 and AGA-3 specifications with orifice plates can also be provided for any class and size. Flanges in other standards such as BIS, BS, DIN, ISO, JIS, can also be manufactured to meet the customer's requirements.

Studs & Nuts

ACT manufactures Studs & Nuts to API 6A & ANSI B 16.5, in various materials and sizes.

Gaskets

ACT manufactures Ring Joint Gaskets in all sizes and materials to ASME B 16. 20 & API6A.

Flanged Fittings

Flanged, Studded Crosses and Tees from sizes 1.13/16" to 4.1/16" and for pressure ratings from 2000 PSI to 20000 PSI are manufactured and supplied.

Pipe Fittings (Butt Welded)

ACT manufactures Pipe Fittings, Butt-Welded, such as Elbows, Returns, Tees, Reducers etc. as per ASME B-16.9. The Butt -Welded Ends are prepared as per ANSI B-16.25.

Forged Socket Welded & Threaded Fittings

Forged, Socket Welded & Threaded Fittings can also be supplied to specifications ASME B-16.11 in pressure ratings of 2000, 3000 & 6000 PSI.

Steel Pipe Fittings, Screwed and Socket Welded Fittings as per BS 3799 for pressure rating of 3000 PSI and 6000 PSI and as per IS:1239, and Bends to BS 534 & IS:1239 are also manufactured and supplied.

Seamless Pipes

ACT can also supply Line Pipes as per AP 5L, Seamless Tubings and Casings as per API 5CT and also Pipes as per ASTM standard in Carbon Steel, Alloy Steel and Stainless Steel.

Specially Forged Products

Following forged products can also be supplied in machined / un-machined condition:

- A. Any closed die forging to single piece weight upto 200 Kg. and open forging to single piece weight upto 2000 Kg.
- B. Forgings for oil field products, automobile products, piping products, products for nuclear applications and special engineering products

Material

The above items can be supplied in Carbon Steel, Low Alloy Steel, Alloy Steel, Super Alloys as 17-4 PH, MONEL, INCONEL etc., meeting any International Standards e.g. ASTM, API, BIS, JIS, DIN, AISI, ISO, BS & IS etc.



TERMS & CONDITIONS OF SALE

Note: These Terms & Conditions of Sales control the rights and responsibilities of the parties in connection with goods and/or services sold to any customer or purchaser of goods or service hereunder (hereinafter, "Buyer") by ACT. and its affiliates (individually and/or collectively "Seller"). Please read this document carefully because of its significant legal consequences.

1. ACCEPTANCE: Acceptance by Seller of Buyer's order or proposal is expressly made conditional on assent to these Terms & Conditions of Sales, either by written acknowledgment or by conduct by Buyer that recognizes the existence and controlling nature of these Terms & Conditions of Sales.

2. FORM OF CONTRACT AND NO WAIVER: Seller will not be deemed to have accepted any proposal or sales order through course of dealing, performance, implied consent, or waiver specifically, but without limitation, Seller's (i) supplying products or performing services in response to Buyer's purchase order or proposal, and/or (ii) failing to complain of Buyer's noncompliance with these Terms & Conditions of Sales or the presence of any conflicting terms and condition in any other purchase order or similar document and/or (iii) accepting payment for products or services, shall not be construed as acceptance of any terms and conditions proposed by Buyer. No attempted modification by Buyers of these Terms & Conditions of Sales will be effective against Seller unless expressly in a writing signed by Seller's competent authority with the express authority of Seller to make such agreements.

3. CONFLICTING PROVISION VOID: Seller hereby objects to and rejects any terms & conditions included in Buyer's purchase order or other writing or modification that conflict with these Terms & Conditions of Sales. Any inconsistent terms and conditions contained in Buyer's purchase order, terms & conditions, or any other writing that represents Buyer's offer are not a part of the agreement between Seller and Buyer and shall have no effect.

4. PAYMENT STANDARD: Payment terms are 30% advance and balance before delivery at ex-works days from the date of Seller's invoice. Seller at its sole discretion reserve the right to require progress payments or payment in advance. If payment is not made when due the unpaid balance will be subject to a finance charge of 1½% of the unpaid balance per month or at the highest interest rate allowed by law, whichever is less. The amount of finance charges will be added to the balance owed to Seller. If Buyer fails to pay any invoice when due, or if the financial condition or credit of Buyer becomes unsatisfactory to Seller, Seller, at its sole discretion and without affecting any other lawful remedy, may change the terms of payment or suspend work and further deliveries, or both, until Buyer provides security or other assurance of performance as demanded by Seller. In the event Seller institutes legal or collection action against Buyer for non-payment, Buyer shall be liable to Seller for all reasonable costs and attorney's fees incurred by Seller in connection therewith. In the event of a dispute between Seller and Buyer regarding any separate sale(s), purchase(s), project(s), or service(s), Buyer shall not be entitled to withhold payments due Seller as a setoff for claims based on separate sale(s), purchase(s), project(s), or service(s).

5. LIMITED WARRANTY: Subject to limitations contained below, Seller warrants that services performed by Seller will be free from defects in workmanship under normal care and use until the expiration of the applicable warranty periods hereafter set forth said services are warranted for a period of ninety (90) days from the date of services. If Buyer discovers any warranty defects and notifies Seller thereof in writing and during the applicable warranty period, Seller shall at its sole discretion, promptly correct any errors that are found by the Seller in the services or refund the purchase price of the defective services. All replacements or repairs necessitated by inadequate maintenance, normal wear and usage, unsuitable environmental conditions, accident, misuse, or by improper installation, modification, repair, storage, or handling or any other cause not the fault of Seller, are not covered by this limited warranty, and shall be at Buyer's expense. Seller shall not be obligated to pay any costs or charges incurred by Buyer or any other party except as may be agreed upon in writing and in advance by an authorized representative of Seller. All cost of transportation and time and expenses of Seller's personnel for site travel and diagnosis under this warranty clause will be borne by Buyer. Warranty services rendered during the warranty period shall be warranted for the remainder of the original warranty period. This limited warranty is the sole warranty made by Seller and can be amended only in writing signed by an authorized representative of Seller.

OTHER THAN AS EXPRESSED ABOVE, THERE ARE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, AT LAW, BY CONTRACT, OR OTHERWISE, AS TO THE MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, OR ANY OTHER MATTER WITH RESPECT TO ANY OF THE GOODS OR SERVICE.

6. LIMITATION OF REMEDY AND LIABILITY: In no event, regardless of the form of the claim or cause of action (including but not limited to claims based in contract, patent or trademark infringement, negligence, strict liability, other tort, or otherwise), shall Seller's liability to Buyer and/or its affiliates exceed the contract price. The parties agree that in no event shall either party's liability to the other and/or their affiliates extend to include incidental, consequential, punitive or exemplary damages. The term "consequential damages" shall include, but not be limited to, lost or deferred production, loss of anticipated profits, loss of use, loss of revenue, and cost of capital.

7. DELIVERY: Seller's obligation is to deliver the goods F.O.B. Seller's warehouse, place of manufacture, or other place from which the goods are actually shipped within INDIA, at which point risk of loss shall pass to Buyer. Freight will be prepaid and added to invoice unless otherwise agreed to by Seller in writing. Delivery dates give to Buyer in any manner are approximate. Seller will not be liable for failure to make delivery or delay in making delivery that directly or indirectly results from or is contributed to by any cause beyond Seller's reasonable control, including but not limited to fire, flood or other acts of God, strikes or other labor disagreements, accidents, acts or requirements of government or civil authorities, riot, war, embargo, shortages of labor, material or energy, delay in transportation, failure or delay by subcontractors or suppliers, or necessary changes in production or shipment schedules. In the event of such delay, Seller, at its sole discretion, will have the right to apportion supplies among its customers, including Buyer, in any manner that Seller determines, and any delivery date will be postponed for a period of time equal to the delay. If shipments are held at Seller's premises at request of Buyer, invoices will be rendered for all completed goods as though actually shipped, and Buyer will also pay Seller for all extra expenses incurred.

8. CANCELLATION BY BUYER: Buyer may cancel its order, or any part of it, by sending written notice of cancellation to Seller and by paying Seller a reasonable cancellation fee. The reasonable cancellation fee will be determined by Seller and will reflect, among other factors: the expenses already incurred, other commitments made by Seller, sales and administrative overheads, and profits. Goods may not be returned without Seller's prior written consent. Restocking charges may be assessed at the sole discretion of Seller.

9. PRICES: Unless otherwise specified by Seller, Seller's prices for the goods or services shall remain in effect for thirty (30) days from the date of Seller's quotation or acceptance of the order for the goods, whichever occurs first, provided an unconditional, complete authorization for the immediate procurement and shipment of the goods pursuant to Seller's standard invoicing procedures is received and accepted by the Seller from the Buyer within such time period. After such thirty (30) days period, Seller shall have the right to revise the price of the goods or services up to Seller's price in effect for the goods at the time the order is released by Buyer and Seller prior to shipment. The price for any Resale Goods or Services shall be Seller's price in effect at the time of shipment to Buyer.

10. INSTALLATION: All goods shall be installed by and at the expense of the Buyer.

11. TAXES: Buyer is responsible for any taxes, charges or other fees presently or subsequently imposed by any law, order, regulation or ordinance of the Federal, State or municipal governments for production sale, use, transportation, delivery or servicing of the products sold hereby. The foregoing shall not apply to taxes based upon Seller's net income.

12. ASSIGNMENT: Buyer shall not (by operation of law or otherwise) assign its rights or delegate its performance hereunder without the prior written consent of Seller, and any attempted assignment or delegation without such consent shall be void.

13. GOVERNING LAW: All sales shall be governed by and construed for all purpose, including without limitation, Seller's obligations or liabilities respecting its products, according to the laws of the Government Of India at New Delhi.

14. ENTIRE AGREEMENT: These Terms & Conditions of Sale (and any of Seller's purchase or work orders in connection therewith) constitute a complete and exclusive statement of the agreement between Seller and Buyer. There are no understandings, agreements or representations, express or implied, not specified in the Agreement. These Terms & Conditions of Sale control over any conflicting provision in any purchase or work order issued by Buyer. There are no other promises, conditions, understandings, representations or warranties. All provisions are severable, and if any of these Terms & Conditions of Sales are found by a court of competent jurisdiction to be unenforceable, then the Terms & Conditions of Sale shall be deemed modified only to the extent necessary to make them enforceable.

15. CREDIT BALANCES: Buyer agrees that any credit balances issued will be applied within one (1) year of its issuance. IF NOT APPLIED OR REQUESTED WITHIN ONE (1) YEAR, ANY BALANCE REMAINING WILL BE SUBJECT TO CANCELLATION, AND SELLER SHALL HAVE NO FURTHER LIABILITY.

16. GENERAL PROVISION: (a) No action, regardless of form, arising out of transactions under the Agreement, may be brought by either party more than one (1) year after the cause of action has accrued. (b) UNLESS OTHERWISE SPECIFICALLY PROVIDED IN SELLER'S QUOTATION, GOODS AND SERVICES HEREUNDER ARE NOT INTENDED FOR USE IN ANY NUCLEAR OR NUCLEAR RELATED APPLICATIONS. Buyer (i) accepts Goods and Services in accordance with the restriction set forth in the immediately preceding sentence, (ii) agrees to communicate such restriction in writing to any and all subsequent purchasers or users and (iii) agrees to defend, indemnify and hold harmless Seller from any and all claims, losses, liabilities, suits, judgments and damages, including incidental and consequential damages, arising from use of Goods and Services in any nuclear or nuclear related applications, whether the cause of action be based in tort, contract or otherwise, including allegations that the Seller's liability is based on negligence or strict liability. (c) The 1980 United Nation Convention on Contracts for the International Sale of Goods does not apply to this Agreement. (d) Seller specifically objects to the application of any Federal Acquisition Regulation ("FAR") provision or clause to the Agreement.



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