



**Sara Sae**


A JOULON COMPANY

PRODUCT  
CATALOG

# Sara Sae

A JOULON COMPANY

Sara manufactures a diverse range of oilfield equipment in its manufacturing facilities in India, using the latest design techniques and CNC machines. These products are available through distributors worldwide, including Sara's subsidiary company (STS Products, Inc.) in USA, Singapore and Dubai.



Quality & Innovation	1
BOP Accumulator Units	3
Remote Panels	4
Solar BOP Control Unit	5
High Pressure Test Units	6
PLC Test Unit	7
Containerised Pressure Testing Workshop	8
Manifolds	9
Pressure Wash Units	10
Hydraulic Tongs	11
Power Units	12
Elevators	13
Manual Tongs	16
Slips	18
API 6A Gate Valves	20
Hammer Unions	24
Integral Union Fitting	28
Swivel Joints	30
Pup Joints	32
Plug Valves	33
Chokes	34
HP Manifolds	34
Manifold Fittings	35
Spools & Adapters	36
Flanges, Tees & Crosses	37
Ring Joint Gaskets	38
Manufacturing Facilities	40

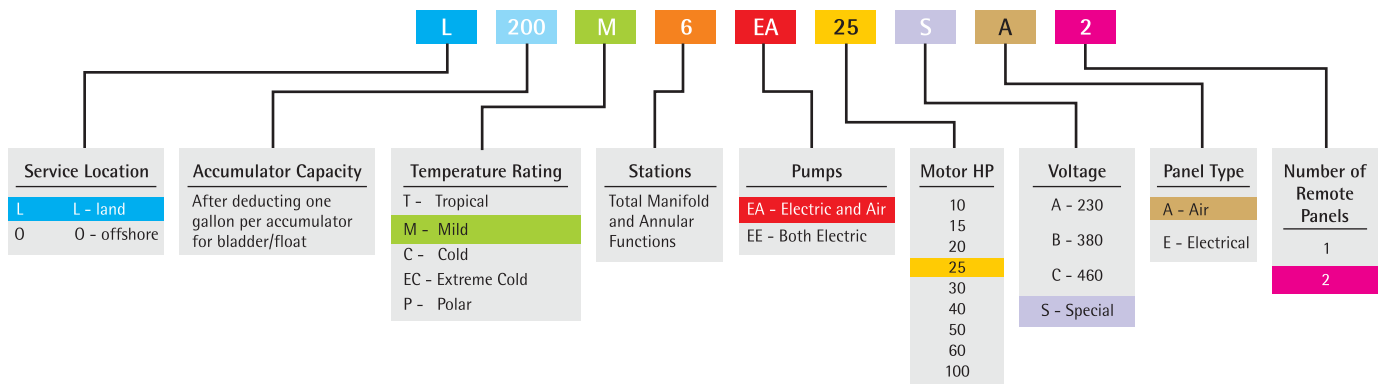


# BOP Accumulator Units

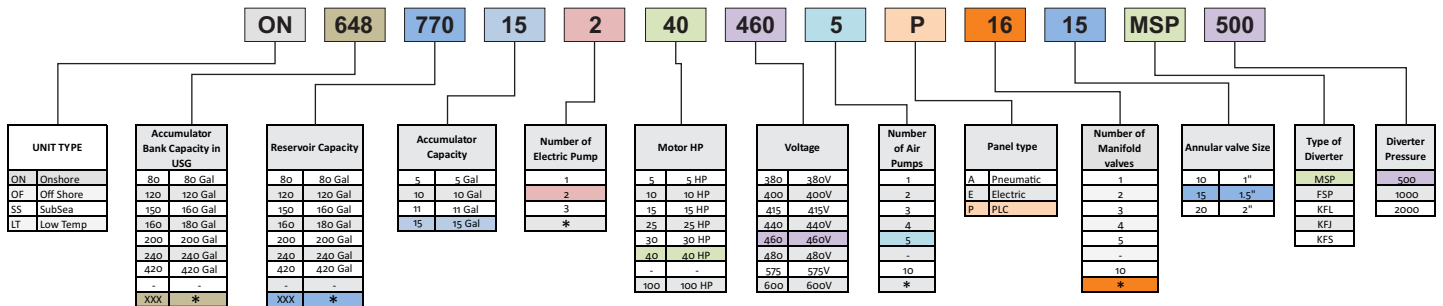


Sara Sae's BOP Accumulator Units meet or exceed the design specification as specified in API 16D. Each control system is specifically engineered to assure reliable control of the BOP stack with adequate reserve for continuous operation under emergency conditions. Sara Sae welcomes the opportunity to assist you in the proper selection of standard equipment or custom design to meet your application and certification requirements.

## Model Number Identification System (OLD SELECTION)

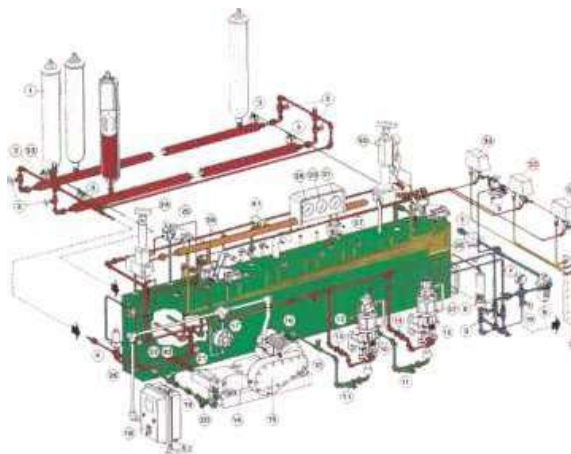


## BOP CONTROL UNIT MODEL SELECTION (NEW SELECTION)



\* As per API Calculation / Customer Specific

- Rig Air Pressure
- Fluid-regulated, 1500 PSI
- Regulated Instrument Air, 18 PSI
- Fluid-high Pressure, 3000 PSI
- Fluid-atmospheric Pressure
- Remote Air Signals



This system shown here is for air remote control operation. Sarasae systems that are designed to meet API 16D must have Air / Electrical / Smart Remote Control Panels if they are used on Offshore drilling Rigs.

## Remote Panels



System Configuration



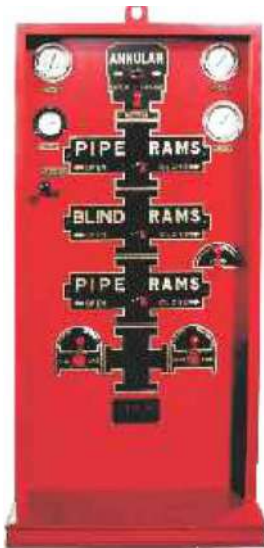
Alarm Logs and Pressure Trends



System Setting

### Air Remote Panels

Air Remote Panels control rig air pressure to the hydraulic control manifold to operate the manifold functions. An air interface module is required on the accumulator unit and an air interconnect is required to connect the air remote panel to the interface module. Air remote offered in several standard models to meet usual requirements and are available for any special application upon request. Air-electric panels additionally have explosion proof light stations for each BOP stack function (bypass / internal override included, when applicable) to indicate open or close status of the hydraulic control manifold valves.



### PLC Panel with Touchscreen Display

- Programmable Logic Controls (PLC) based system
- LCD color touchscreen provides pressure readout
- Electrical indication lights for valve position
- Audible and visual alarm for low system pressure, low rig-air and low reservoir fluid level
- 24 VDC electrical backup
- Wireless and wired configurations
- Logs, functions, and alarms

### Features

- Explosion proof for Class I Div. I or Class I Div. II
- Air cooler for higher temperatures
- Logging of functions and alarms
- Air and battery back up
- Minimum rig-up time; no air hose
- Printer port for report generation

### Functions

- Visual indications of valve position
- Audible and visual alarm for low accumulator pressure, low manifold pressure, low rig air pressure and low reservoir fluid level
- Push buttons from open/close function with master push button for two hand operation
- Push buttons for high/low function of bypass valve
- Push buttons for raise/lower annular regulator pressure setting
- Push button for lamp test

### Options

- Wireless modem for remote communications allows unit status to be monitored remotely
- Communication via optic fiber cable
- Sunlight viewable screen



# Solar BOP Control Unit

## Salient Features

1. Can run both on Solar PV power & Grid Power.
2. Easy to operate, useful for rigs in remote areas.
3. Smart Inverter to prioritize PV power over Grid.
4. Protection against overloading, under voltage, phase imbalance, cut cable.
5. Provided with battery backup sufficient to charge accumulator 5 times in a day.
6. Adjustable & Removable high efficiency solar Panel mounted on the unit itself.
7. 3 HP motor with robust Pump supported by Maximum power point tracker for fail safe operation.
8. Single time investment with negligible running cost.

## Technical Specification

Fluid Reservoir Capacity	:	30 Gallons
Operating Temperature	:	Mild, Tropical (-40° to 60° Deg<)
Accumulator Capacity	:	4 X 2.5 Gallons
Pumping Capacity	:	4.5 GPM @ 3000 PSI
Pipe Line	:	SCH 160
Batter Bank	:	2 Sets of 400AH Gel based C10 rated

Alternate Hand Pump module for Manual operation.

Compliant to ASME U-1A, API 16D



# High Pressure Test Units



Skid-mounted Self-contained Test Unit Model No. T 15g-m



Portable Test Units

High Pressure Test Units are provided in working pressure ranges from 5,000 to 30,000 PSI.

These units are recommended for high pressure testing of BOP stacks, choke and kill lines, Christmas trees and any other type of equipment requiring high pressure static testing. Test Units are available in unit-mounted, portable, skid-mounted and high flow electric driven styles. Accessories include stand-mounted chart recorders and high pressure hose assemblies.

## Specifications

Model Number	Maximum Pressure (PSI)	Approximate Dimensions						Approximate Weight	
		Length		Width		Height		lbs.	Kgs.
		in.	cm.	in.	cm.	in.	cm.		
S 10G-M	10000	42	107	30	76	46	117	430	195
S 15G-M	15000	42	107	30	76	46	117	430	195
S 20G-M	20000	42	107	30	76	46	117	430	195
S 30G-M	30000	42	107	30	76	46	117	445	202

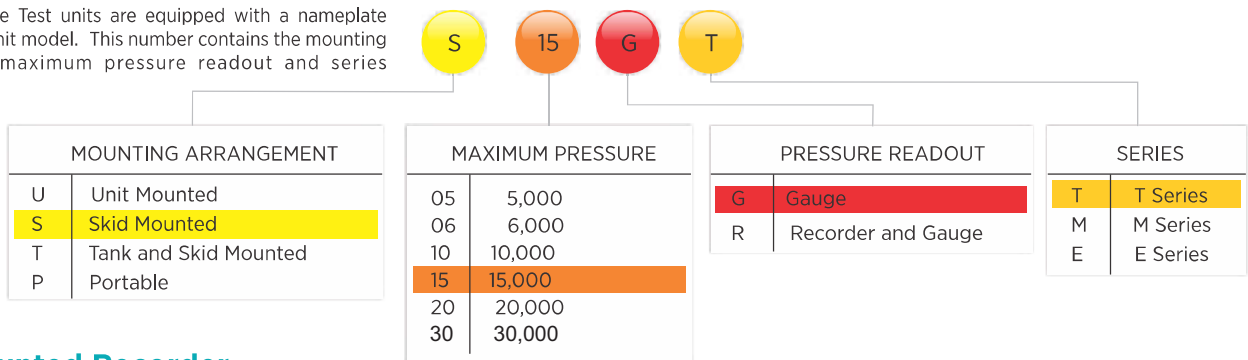
Model Number	Maximum Pressure (PSI)	Approximate Dimensions						Approximate Weight	
		Length		Width		Height		lbs.	Kgs.
		in.	cm.	in.	cm.	in.	cm.		
T 10G-M	10,000	54	137	30	122	61	132	920	418
T 15G-M	15,000	54	137	30	122	61	132	920	418
T 20G-M	20,000	54	137	30	122	61	132	920	418
T 30G-M	30,000	54	137	30	122	61	132	920	418

Model Number	Maximum Pressure (PSI)	Approximate Dimensions						Approximate Weight	
		Length		Width		Height		lbs.	Kgs.
		in.	cm.	in.	cm.	in.	cm.		
P05 G-M	5,000	38	97	28	71	42	107	223	101
P06 G-T	6,000	38	97	28	71	42	107	223	101

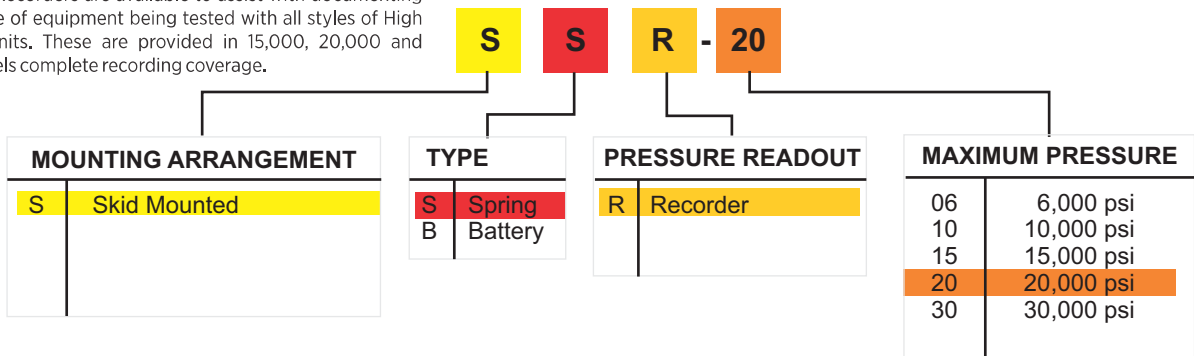
## Model Number Identification

All High Pressure Test units are equipped with a nameplate containing the unit model. This number contains the mounting arrangement, maximum pressure readout and series identification.



## Stand Mounted Recorder

Stand Mounted Recorders are available to assist with documenting test performance of equipment being tested with all styles of High Pressure Test Units. These are provided in 15,000, 20,000 and 30,000 PSI models complete recording coverage.



## PLC Test Unit

Sara Sae Hydraulic PLC Test unit is self-contained air- driven unit of proven design with Computer/Notebook control cabinet. It can be used to pressurize & Test valves, fittings, hoses, piping, vessels and wellhead equipment etc. to be define/ defined Hydraulic pressure.

All components, including the necessary connecting materials and tubing are built together on epoxy painted frame complete with reservoir.

### Key Features

- Work shop pressure test unit.
- Easy and low cost maintenance.
- Ergonomic operating design.
- Pressure ranges available up to 2068 bar/30,000 PSI.
- Flow up to 10 liters/minutes or 2.4 GPM.
- Real time v/s Pressure recording.
- Optional Battery Backup
- Can be retrofitted on existing unit.
- Option of secondary units eg. PSI, KPA, Kg/cm2, Bar.
- Settable Min Max pressure limit.
- Settable time zone for accurate login.
- Proven reliability.
- All operating features and gauges at workable height.
- All parts are made out of non-corrosive materials.
- Auto/Manual operation.
- Show test procedure on Computer/Notebook screen and print test result.



### OPTIONAL ACCESSORIES (CONTINUED)

High Pressure Test Hoses are available to use with the test units. These hoses are equipped with swivel-type end fittings on each end. Some Test Units can produce pressures beyond the working pressure ratings of these hoses. For these Ultra- High Pressure Test, 316 stainless steel tubing is recommended.





# Containerised Pressure Testing Workshop

Sara Sae Pressure Testing Workshop has been designed to provide a safe and controlled environment for pressure testing and maintenance operations.



The workshop allows testing to be carried out on location or on a company base. The cabin gives the operator full control of testing and monitoring up to maximum 30,000 psi working pressure.



Workshop with test unit, Baker vice and chain hoist

## Weights and Dimensions

Weights 18,000kg (39,672lbs)      Dimensions MTR (FT) (H) L 6.10 (20.00)

W 2.44 (8.00)

H 2.44 (8.00)

(Approx)

## Features

- Max-Safe (30,000 psi WP) pressure test unit
- Colour camera CCTV system and recorder
- Wall mounted air conditioners (Optional)
- 10ft work bench complete with vice (Optional)
- Removable Baker vice (Optional)
- Chain hoist rated to (1) tonne
- 220V/110V electrical system
- Removable steel blast panels (internal)
- Manual Door locks
- Warning & Emergency light
- Operator's control cabin
- Designed, built in accordance with DNV.2.7-1 (2007)
- Internals lined with wood
- Fully load tested

## Max-safe Pressure Test Unit (30,000 PSI) Wall Mounted Panel

### Features

- Air driven high volume and high pressure pump system
- 50 gallon stainless steel reservoir (Optional)
- Wall mounted "wet centre" reel (Optional)
- Battery/Spring chart recorder

## Monitoring System

- Colour camera CCTV system
- 24 hour recorder
- Flat screen monitor (Optional)



Air Pump Assembly



Wall mounted "Max-Safe" pressure test unit



Flat Screen Monitor and CCTV controls (Optional)



CCTV Camera

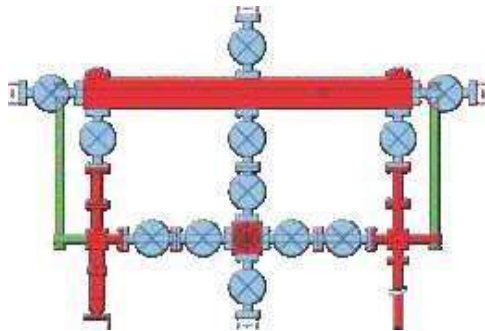
# Manifolds



Choke Manifold

Sara Sae manufactures a range of Manifolds for applications like choke & kill, standpipe and high pressure pumping in sizes up to 4-1/16" and pressures up to 15,000 PSI.

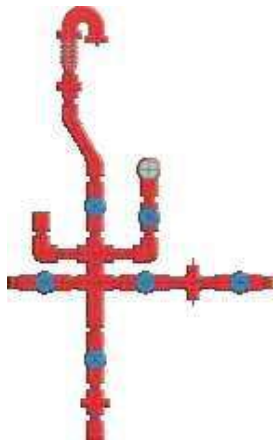
Customized manifolds to specific requirements can be ordered.



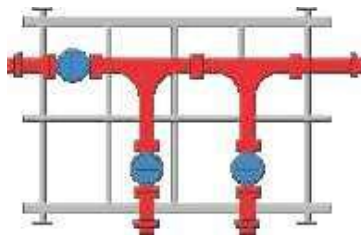
Choke Manifold



Kill Manifold



Standpipe Manifold



Discharge Manifold

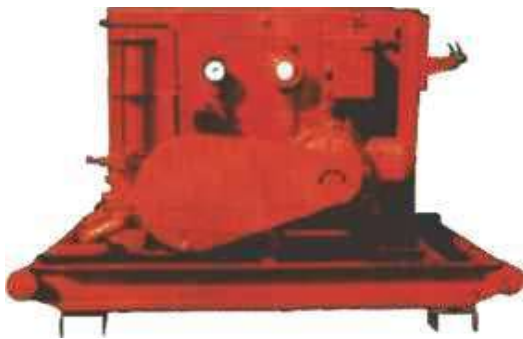


Console

## Pressure Wash Units

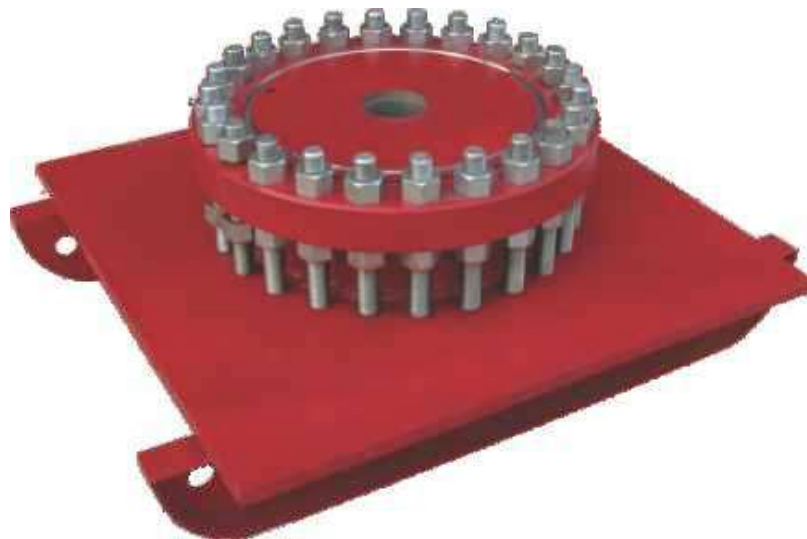
Pressure Wash Units are specifically designed to provide an efficient and versatile method of cleaning heavy equipment by means of a high pressure jet of water.

The unit consists of a triplex reciprocating plunger type pump driven by an explosion proof electric motor to pressurize water, an accumulator to prevent pressure surge, auto electric pressure switch to adjust the water at desired pressure (1500 psi max.), a rectangular reservoir for storage of the atmospheric water supply for the pressure pumps, relief valve, shut off valves, strainer, filter and pressure gauge, all manifolded and mounted on an oil field type skid. The unit is provided with a hand control pressure gun with a 50-foot hose.



Air operated units, not requiring electric power, are also available.

## Test Stump



# Hydraulic Tongs

Sara Sae tongs are available in a variety of models, size and types to handle casings, drill collars, sucker rods and tubing including chrome tubular and can be supplied with hydraulic or manual backup assemblies



	4-1/2" Tong Specification	5-1/2" Tong Specification				7-5/8" Tong Specification			8-5/8" Tong Specification	
	4-1/2" TONG STANDARD	5-1/2" LT TONG LOW TORQUE	5-1/2" STD TONG STANDARD	5-1/2" MT TONG MEDIUM TORQUE	5-1/2" HT TONG HIGH TORQUE	7-5/8" STD TONG STANDARD	7-5/8" MT TONG MEDIUM TORQUE	7-5/8" HT TONG HIGH TORQUE	8-5/8" STD TONG STANDARD	8-5/8" HT TONG HIGH TORQUE
Pipe size range	1" to 4-1/2"	1" to 5-1/2"	2-3/8" to 5-1/2"	2-3/8" to 5-1/2"	2-3/8" to 5-1/2"	2-3/8" to 7-5/8"	2-3/8" to 7-5/8"	2-3/8" to 7-5/8"	2-3/8" to 8-5/8"	2-3/8" to 8-5/8"
Torque at High Gear	2000	2000	2000	4000	5100	2500	5100	6000	2500	5100
Torque at Low Gear	8000	8000	15000	20000	25000	15000	25000	30000	15000	25000
RPM at High Gear (Approx)	120 TO 140	130 TO 140	85 TO 95	40 TO 50	40 TO 60	50 TO 65	35 TO 50	25 TO 35	50 TO 65	35 TO 50
RPM at Low Gear (Approx)	30 TO 50	40 TO 50	10 TO 20	5 TO 10	5 TO 15	5 TO 15	05 TO 15	2 TO 5	5 TO 15	05 TO 15
Tong Dimensions - Length X Width X Height (inch)	39"X23"X42"	39"X23"X42"	55"X32"X50"	55"X32"X50"	59"X32"X50"	59"X32"X50"	59"X32"X50"	59"X32"X50"	59"X32"X50"	59"X32"X50"
Tong w/BackUp Dimensions - Length X Width X Height (inch)	39"X23"X72"	39"X23"X72"	55"X34"X79"	55"X34"X79"	59"X36"X81"	59"X36"X81"	59"X36"X81"	59"X36"X81"	59"X36"X81"	59"X36"X81"
Tong Dry Weight -approx.(Kg)	272	272	560	560	700	700	700	700	700	700
Tong w/BackUp Dry Weight - approx.(Kg)	452	452	960	960	1200	1200	1200	1200	1200	1200
Torque arm Length	24"	24"	36"	36"	36"	36"	36"	36"	36"	36"
Includes :										
Safety Door Interlock.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lift Cylinder Assembly	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Spring Hanger assembly	Single spring assy	Single spring assy	Single spring assy	Single spring assy	Single spring assy	Single spring assy	Single spring assy	Single spring assy	Single spring assy	Single spring assy
Hydraulic Backup	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Backup Dies	1" to 4-1/2"	1" to 5-1/2"	2-3/8" to 5-1/2"	2-3/8" to 5-1/2"	2-3/8" to 5-1/2"	2-3/8" to 7-5/8"	2-3/8" to 7-5/8"	2-3/8" to 7-5/8"	2-3/8" to 8-5/8"	2-3/8" to 8-5/8"
DIE HEADS (per set)	1" to 4-1/2"	1" to 5-1/2"	2-3/8" to 5-1/2"	2-3/8" to 5-1/2"	2-3/8" to 5-1/2"	2-3/8" to 7-5/8"	2-3/8" to 7-5/8"	2-3/8" to 7-5/8"	2-3/8" to 8-5/8"	2-3/8" to 8-5/8"

	9-5/8" Tong Specification	10-3/4" Tong Specification		13-3/8" Tong Specification		13-5/8" Tong Specification		20" Tong Specification	
	9-5/8" HS TONG HYDRA SHIFT	10-3/4" STD TONG STANDARD TORQUE	10-3/4" HT TONG HIGH TORQUE	13-3/8" STD TONG STANDARD	13-3/8" HT TONG HIGH TORQUE	13-5/8" STD TONG STANDARD	13-5/8" HT TONG HIGH TORQUE	20" TONG STANDARD	20" TONG HIGH TORQUE
Pipe size range	2-7/8" to 9-5/8"	4" to 10-3/4"	4" to 10-3/4"	4" to 13-3/8"	4" to 13-3/8"	4" to 13-5/8"	4" to 13-5/8"	8-5/8" to 20"	8-5/8" to 20"
Torque at High Gear	3500	4000	5000	4000	7100	4000	7100	7500	8300
Torque at Low Gear	18000	20000	25000	24000	35000	24000	35000	35000	45000
RPM at High Gear (Approx)	47/95	70 TO 100	35 TO 45	70 TO 100	40 TO 50	80 TO 100	40 TO 50	15 TO 30	15 TO 30
RPM at low Gear (Approx)	9/18	10 TO 25	5 TO 10	10 TO 20	5 TO 10	10 TO 20	5 TO 10	5 TO 10	5 TO 10
Tong Dimensions - Length X Width X Height (inch)	49"X28"X48"	56"X36"X50"	56"X36"X50"	61"X36"X54"	61"X36"X54"	61"X36"X54"	61"X36"X54"	76"X44"X58"	76"X44"X58"
Tong w/BackUp Dimensions - Length X Width X Height (inch)				61"X36"X90"	61"X36"X90"	61"X36"X90"	61"X36"X90"		
Tong Dry Weight-approx.(Kg)	800	620	620	750	750	750	750	1300	1300
Tong w/BackUp Dry Weight - approx.(Kg)	500			1250	1250	1250	1250		
Torque arm Length	32"	34"	34"	36"	36"	36"	36"	52"	52"
Includes :									
Safety Door Interlock.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lift Cylinder Assembly	✓	✓	✓	✓	✓	✓	✓	✓	✓
Spring Hanger assembly	Single spring assy	Single spring assy	Single spring assy	Single spring assy	Single spring assy	Single spring assy	Single spring assy	Double spring assy	Double spring assy
Hydraulic Backup	✓			✓	✓	✓	✓		
Backup Dies	2-7/8" to 9-5/8"			4" to 13-3/8"	4" to 13-3/8"	4" to 13-5/8"	4" to 13-5/8"		
DIE HEADS (per set)	2-7/8" to 9-5/8"	4" to 10-3/4"	4" to 10-3/4"	4" to 13-3/8"	4" to 13-3/8"	4" to 13-5/8"	4" to 13-5/8"	8-5/8" to 20"	8-5/8" to 20"
Notes:-									
• Lift Cylinder	Lift Cylinder (54"Stroke Length X Lift Cylinder Height 96")								
• Hanger assembly	Rigid Bail assembly or Bridle Chain assembly								



## Computerized Torque Control System

Microprocessor based systems for providing computerized analysis of each joint and complete string. Provides graphic analysis of torque Vs. turn, torque Vs. time and various other options.

## Power Units

### Zone I - Electric Power Unit Technical Specifications

- Pump: Variable delivery axial piston pump
- Engine: 50/60 hp (37/45KW) Eexd electric motor
- Cooler: thermostatically controlled hydraulic oil cooler
- Electric Supply: 3 phase 415/480 volts 50/60 Hz
- Hydraulic Output: 2,500 psi (172 bar) or 35 gpm (160 litres per minute)

### Dimensions

- Size: 4' 9" long x 4' 9" wide x 4' x 9" high (1,500mm long x 1,500mm wide x 1,500mm high)
- Weight: 5,060 lbs (2,300 kg)



### Zone II - Diesel Power Unit Technical Specifications

- Cooler: Combined water cooled manifold / exhaust cooler
- Flame Arrester: Exhaust gas flame and spark arrester, inlet air flame arrester, crank case vent flame arrester
- Fan and Fan Belts: Non-metallic radiator fan and antistatic fan belts
- Protection Device: Over-speed protection device operating an inlet air cut-off
- Pressure and Temperature Trips: Low lubricating oil pressure, high cooling water temperature and high exhaust temperature trips
- Caps: Screw caps to dipstick and oil filter caps
- Engine: 6 Cylinder Diesel
- Hydraulic Output: 2,500 psi (172 bar) or 35 gpm (160 litres per minute)
- Starter: Air-operated.

### Dimensions

- Size: 8' 9" long x 4' 3" wide x 5' 6" high (2,700mm long x 1,300mm wide x 1,700mm high)
- Weight: 6,600 lbs (3,000 kg)



### Non-Zoned Diesel Power Unit Technical Specifications

- Engine: 6 cylinder diesel
- Hydraulic Output: 2,500 psi (172 bar) or 35 gpm (160 litres per minute)
- Starter: Air or spring-operated.

### Dimensions

- Size: 7' 8" long x 4' 3" wide x 4' 9" high (2,400 long x 1,300 mm wide x 1,500 mm high)
- Weight: 4,510 lbs (2,050 kg).

# Elevators

Elevators are a hinged device with handles that are used to wrap around the tool joint of drill pipe, casing or lift collars to facilitate the lifting or lowering of them individually or of the drill string as a whole.

In practical use elevators are highly stressed components and require regular careful inspection.

To latch around a piece of pipework a set of elevators need a precise internal diameter, with an appropriately profiled shoulder to accommodate the lower profile of a tool joint. The latch mechanism prevents opening under radial loads of up to hundreds of tons. The elevators also need to resist cross-axial loads of the weight of the pipe joints.

Sara sae elevators are manufactured from a special alloy steel and in conformance to requirements of API 8C.

There are various models available and are suitable for both collar type and external upset tubulars of load rating upto 500 Tons.

Below are different models of commonly used elevators.

- Slip type “Y” series Elevators
- Center latch collar type “A” series Elevators
- 18° Center latch “G” series Elevators
- Sucker rod Elevators
- Collar type Side door “X” series Elevators
- Single joint auxiliary “S” series Elevators.

Size Range (Inch)	Type	Part Number	Capacity (Tons)	Weight (Kg)
<b>Slip Type “Y” Series Elevators:</b>				
1.050 to 2-1/16	LYT	-	20	26
1.315 to 2-7/8	MYT	29328-XXX	40	67
1.315 to 3-1/2	YT	50006582-XXX	75	161
2-3/8 to 3-1/2	HYT	39284-XXX	150	336
3-1/2 to 7	YC	24140-XXX	75	206
3-1/2 to 7	MYC	200360-XXX	125	
3-1/2 to 7-5/8	HYC	55310-XXX	200	452
<b>Center Latch Collar Type “A” Series Elevators:</b>				
1.050” -2.7 -8”	TA	32387-XXX	35	31
1.660” -2.7/8”	TA	-	65	51
2.3/8” -2.7/8”	TA	50006310-XXX	100	56
3.1/2” -5”	TA	50006310-XXX	100	76
4.3/4” -8.5/8”	TA	200000-XXX	100	195
4.1/2” -8.5/8”	TA	32754-XXX	150	176
8.1/2” -11.1/4”	TA	39342-XXX	150	216
<b>18° Center Latch “G” Series Elevators:</b>				
2.3/8” -5”	MG	30157-XXX	100	108
2.3/8” -4.1/2”	RG	200680-XXX	150	145
4” -5.1/2”	RG	-	150	158
2.3/8” -5.1/2”	MGG	35005-XXX	250	176
2.3/8” -5.1/2”	GG	31068-XXX	350	350
3.1/2” -6.5/8”	HGG	70013-XXX	500	500
<b>Sucker ROD Elevators:</b>				
5/8”-3/4”	SRE	27725-XXX	25	17
3/4”-7/8”	SRE	27726-XXX	25	17
1”	SRE	27727	25	17
1” -1/8”	SRE	27727-XXX	25	17



“Y” Series Elevator



“A” Series Elevator



“G” Series Elevator



Sucker Rod Elevator

Size Range (inch)	Type	Part Number	Capacity (Tons)	Weight (Kg)
<b>Collar Type Side Door "X" Series Elevators:</b>				
3.1/2" -5.1/2"	SLX	SLX -33734 -XXX	65	60
5.3/4" -8.5/8"	SLX	SLX -31239 -XXX	65	78
9" -10.3/4"	SLX	SLX -33950 -XXX	65	85
11" -14 -1/4"	SLX	SLX -33982 -XXX	65	97
2.3/8" -2.7/8"	SLX	SLX -33693 -XXX	100	41
3.1/2" -5.3/4"	SLX	SLX -33809 -XXX	100	67
5.1/2" -8.5/8"	SLX	SLX -31239 -XXX	150	160
9.5/8" -10.3/4"	SLX	SLX -33950 -XXX	150	168
11.3/4" -13.5/8"	SLX	SLX -33982 -XXX	150	237
5.1/2" -7.3/4"	SLX	-	250	186
8.5/8" -10.3/4"	SLX	-	250	214
11.3/4" -14"	SLX	SLX -33982 -XXX	250	285
16" -20"	SLX	SLX -34087 -XXX	150	300
16" -20"	SLX	-	250	425
22" -30"	SLX	SLX -34175 -XXX	250	590
9.5/8" -14"	SX	SLX -29964 -XXX	350	502
9.5/8" -14"	SX	-	500	502
16" -20"	SX	SLX -30729 -XXX	350	690
16" -20"	SX	-	500	690
<b>"S" Series SJ Type Auxiliary Elevators:</b>				
2.3/8 - 2.7/8	SJ	SJ-33010-XXX	5	11
3.1/2 - 4.3/4	SJ	SJ-33011-XXX	5	13
5 - 5.3/4	SJ	SJ-33039-XXX	5	14
6 - 6.5/8	SJ	SJ-33040-XXX	5	19
7 - 7.3/4	SJ	SJ-33040-XXX	5	23
8.5/8 - 9.5/8	SJ	SJ-33041-XXX	5	26
9.7/8 - 10.3/4	SJ	SJ-33041-XXX	5	41
11.3/4 - 13.3/8	SJ	SJ-33042-XXX	5	53
13.5/8 - 14	SJ	SJ-33042-XXX	5	55
16	SJ	SJ-33043-XXX	5	57
18.5/8	SJ	SJ-33043-XXX	5	64
20	SJ	SJ-33043-XXX	5	77
21.1/2 - 22	SJ	SJ-33044-XXX	5	81
24 - 24.1/2	SJ	SJ-33044-XXX	5	113
26 - 28	SJ	SJ-33045-XXX	5	147
30	SJ	SJ-33046-XXX	5	149
<b>"S" Series SP Type Auxiliary Elevators:</b>				
2.3/8 - 5.1/2	SP 5°	SP-200008-XXX	5	32
5.1/2 - 7.5/8	SP 5°	SP-200010-XXX	5	46
8.5/8 - 9.5/8	SP 5°	SP-200012-XXX	5	63
10.3/4	SP 5°	SP-200013-XXX	5	70
2.3/8 - 4.1/2	SP 12°	SP-200014-XXX	5	36
2.7/8 - 5	SP 18°	SP-200009-XXX	5	33
5.1/2 - 6.5/8	SP 18°	SP-200011-XXX	5	39



"X" Series Elevator



"SJ" Type Elevator



"SP" Type Elevator

## Accessories

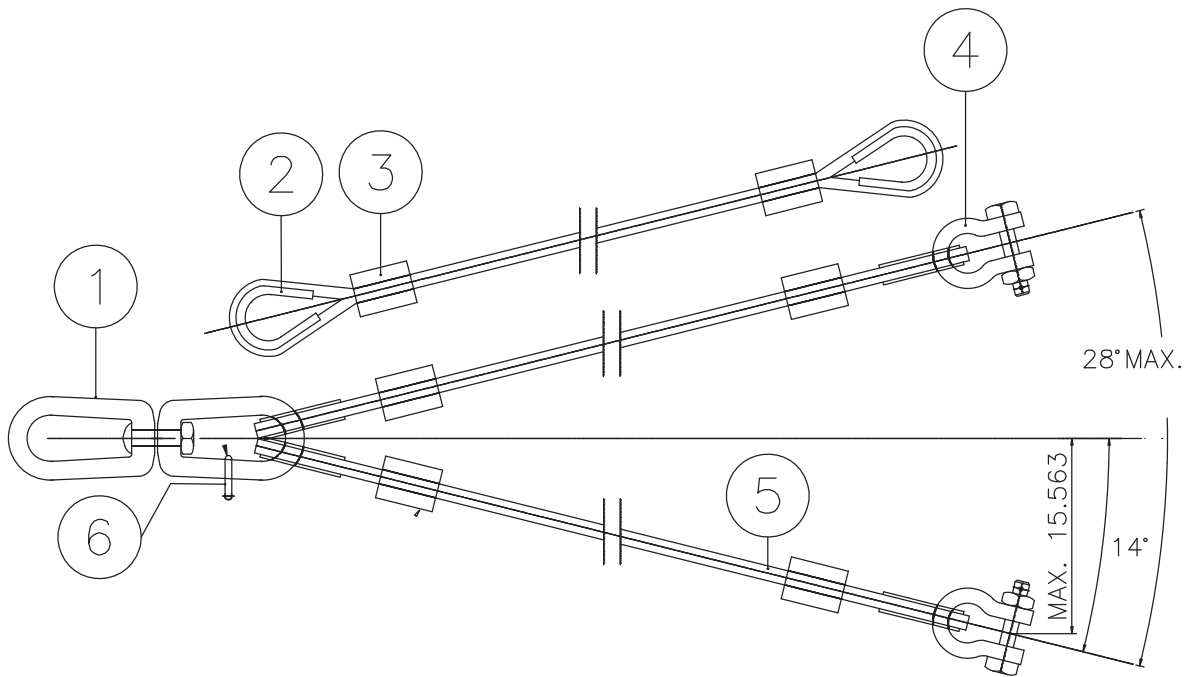
### Weldless Links

Model	Rated Load Capacity (Tons)	Size (inch)
DH050	50	43-3/8"
DH075	75	59"
DH150	150	70-7/8"
DH250	250	106-3/8"
DH350	350	130"
DH500	450	141-3/4"
DH750	750	144"



Weldless Links

### Swivel & Sling Assembly



Item	Part Number	Description
1	979456-56	Regular swivel Min WWL 6.26 tons
2	979457-18	Thimble
3	979458-18	Swage sleeve
4	979459-475	Shackle bolt type 3/4" 4.75 ton
5	979460-18	Chain 1/2" High Tensile 4 meter long
6	50001125	Weld ring



# Manual Tongs



Sara Manual Tong is a tool designed for making up and breaking connections of tubular goods, from light tubing to thick walled pipe including drill collars. These are in various designs and types having varying torque capacity from 2,000 to 100,000 ft lbs (2,700-1,35,600Nm). Covering sizes from 2 3/8" to 17" or 36" (HT50 with extended reach). The Manual tongs can be assembled for either making up or break out by removing the hanger and turning the complete HT Tong over.

Interchangeable lug jaw design permits each tong to handle different sizes of tubing's and pipe per torque range. Bigger pipe sizes can be handled by installing hinge jaws which is available in only some of the models.

Sara Manual tongs are precisely machined from a properly heat treated special high tensile steel alloy.

Part Description	Part No.	Torque Rating		Weight	
		Ft-lbs	Nu	Lbs	Kg
<b>SDD, Range 4" – 17" Rating 100000 ft-lbs</b>					
SDD, complete less lug jaws	31054	1,00,000	1,35,600	533	242
Lug Jaw (4" – 8-1/2")	31059-1	1,00,000	1,35,600	132	60
Lug Jaw (8-1/2" – 12")	31060	1,00,000	1,35,600	98	45
Lug Jaw (12" – 15")*	31061	75,000	1,01,700	136	62
Lug Jaw (15-3/4")*	31063	1,00,000	1,35,600	158	72
Lug Jaw (16" – 17")*	31062	60,000	81,400	132	60
Hinge Jaw assembly 8-1/2" – 17")	31065-1	1,00,000	1,35,600	109	50
<b>DB, RANGE 3-1/2" – 17" RATING 65000 ft-lbs</b>					
DB, less lug jaws	30111	65,000	88,100	440	200
Lug jaw (3-1/2" – 8-1/4")	30062-2	65,000	88,100	82	37
Lug, jaw (8" – 11-3/4")	60707-1	65,000	8,100	97	44
Lug jaw (11-3/4" – 14-3/8")	30067	40,000	54,200	71	32
Lug jaw (16" – 17")	30069	40,000	54,200	83	38
Hinge jaw assembly (8-1/4" – 17")	30068-3	65,000	88,100	56	25

Part Description	Part No.	Torque Rating		Weight	
		Ft-lbs	Nu	Lbs	Kg
<b>AAX, range 2-7/8"- 13-3/8" rating 55,000 ft-lbs</b>					
AAX, complete with long lever less lug jaws	8531-5025	55,000	74,600	360	164
AAX, complete with short lever less lug jaws	8531-5057	55,000	74,600	348	158
Lug jaw (2-7/8" – 3-3/4")	4522	55,000	74,600	35	16
Lug jaw(3-1/2" – 4-1/2")	4523	55,000	74,000	37	17
Lug jaw (4" – 5-1/4")	4528	55,000	74,000	35	16
Lug jaw (5" – 7-1/4")	4527	55,000	74,000	45	20
Lug jaw (6" – 6-1.2")	4526	55,000	74,000	35	16
Lug jaw (6-7/8" – 8-5/8")	8531-5192	55,000	74,000	62	28
Lug jaw (9" – 10-3/4")	4524	30,000	40,700	55	25
Lug jaw (10-3/4" – 11-3/4")	4529	30,000	40,700	70	32
Lug jaw (13-3/8")	4530	30,000	40,700	82	37
<b>C, range 2-3/8" – 10-3/4", rating 35000 ft-lbs</b>					
C, complete with long lever less lug jaws	30117-2	35,000	47,500	242	110
C, complete with short lever less lug jaws	30117-3	35,000	47,500	238	108
Lug jaw (2-3/8"-3.688")	30728-1	35,000	47,000	25	11
Lug jaw (2-7/8"-4-1/4")	30727-1	35,000	47,000	29	13
Lug jaw (3-1/2"-5-1/4")	11939-4	35,000	47,000	33	15
Lug jaw (5-1/4"-7")	11940-2	35,000	47,000	45	20
Hinge & lug assembly (7" – 8-5/8")**	11941-1	35,000	47,000	61	28
Hinge & lug jaw assembly (9-5/8" – 10-3/4")	13799-1	35,000	47,000	76	35
Short jaw assembly (7-5/8" – 10-3/4")	11513-1	35,000	47,000	30	14

Part Description	Part No.	Torque Rating		Weight	
		Ft-lbs	Nu	Lbs	Kg
<b>LF, range 2-3/8" – 7", rating 16000 ft-lbs</b>					
LF, complete less lug jaws	30121	16,000	21,700	99	45
Lug jaw (2-3/8" – 3-1/2")	23911-1	16,000	21,700	12	5
Lug jaw (3-1/2" – 5")	23912-3	16,000	21,700	15	7
Lug jaw (4-3/4" – 6-1/4")	23913-1	16,000	21,700	24	11
Lug jaw (5-3/4" – 7")	25010-1	16,000	21,700	30	14
<b>MS, range 1,900" – 6-1/8" rating 6500 ft-lbs</b>					
MS, compl. Range 1.900"-4 1/2" less lug jaws	30425	6,500	8,800	41	19
MS, compl. Range 4-1/2"-6-1/8" less lug jaws	31131	6,500	8,800	26	12
Lug jaw (1.900" – 2-1/16")	34311	6,500	8,800	4	2
Lug jaw (2-3/8" – 3.668")	30422-5	6,500	8,800	4	2
Lug jaw (3-1/2" – 4-1/2")	30424-5	6,500	8,800	5	2
Lug jaw (4-1/2" – 5-1/4")	33917-5	6,500	8,800	6	3
Lug jaw (5.200" – 6-1/8")	31139-5	6,500	8,800	6	3
Kelco Fulgrip K-30 2.062" – 4-125"	8527-5035	5,000	6,800	48	22
Kelco Fulgrip K-25 1.200" – 3.063"	8527-5016	2,000	2,700	21	10
Snap-on Tubing Tong 2-7/8" upset tubing coupling	36816-366	3,000	4,100	29	13
Snap-on Tubing Tong 3-1/2" tubing & 2-7/8" plain tubing coupling	36816-350	3,000	4,100	29	13
Snap-on Tubing Tong 2-3/8" upset tubing coupling	36816-306	3,000	4,100	25	11
Snap-on Tubing Tong 2-7/8" tubing & 2-3/8" plain tubing coupling	36816-287	3,000	4,000	25	11
Snap-on Tubing Tong 1.9" upset tubing coupling	26816-250	3,000	4,000	24	11
Snap-on Tubing tong 2-8"	36816-237	3,000	4,000	24	11

### Extended Casing Head Tong

These Tong are necessary tools applied to make up and break out pipes to larger diameter. Same

Tong can be used by changing lug jaws and latch steps adjust different handling sizes drill pipe. They are designed and manufactured according to API Spec 7K Specification for drilling and well servicing equipment.



### Extended Casing Tong

No of Hinge Jaw	Pipe Size Range		Rated Torque	
	inch	mm	Nm	Ft-lbs
9,8	13.3/8" -14.1/2"	340-368.3	35000-68000	25000 -50000
8,7	14.1/2" -16"	368.3-406.4		
8,9,9	16" -17.1/2"	406.4-444.5		
8,9,7	17.1/2" -19"	444.5-482.6		
7,8,7	19" -20"	482.6-508		
9,8,9,7	20" -21.1/2"	508 -546.1		
9,7,8,7	21.1/2" -23"	546.1-584.2		
9,9,8,7,7	24" -25.1/2"	609.6-647.7		
9,8,7,7,7	25.1/2" -27"	647.7-685.8		
8,7,7,7,7	27" -28.1/2"	685.8-723.9		
9,9,8,7,7,8	28.1/2" -30"	723.9-762		

# Slips

Slips is a device used to grip and hold the upper part of a drill string to the drill floor on an oil rig. The slips are constructed as a collection of metal wedges, hinged together to form a circular shape around the drill pipe. On the inside surface, the slips normally have replaceable inserts having teeth that grips the pipe. The outsides of the slips are tapered and meets a similar taper on the drill floor. Usually the pipe goes through a Rotary table - machinery that makes the pipe rotate.

After the slips is placed around the drill pipe, it is lowered so that the teeth on the inside grip the pipe and the slips are pulled down. The wedges then holds the drill pipe by the compressive force.

After work is completed, the drill string is raised, thereby unlocking the gripping action. The slips are then lifted away.

Sara manufacture complete range of slips mostly covering all the sizes of drill pipe certified to API-7K requirement.

## SDS, SDML & SDXL Rotary Slips

Drill pipe slips are used to accommodate drill pipe from 2-3/8" to 5-1/2" O.D. Drill pipe slip is classified as type short(SDS), medium(SDML) and extra-long(SDXL) according to gripping length.

SDS slips are designed for shallow hole drilling, SDML slips are the perfect choice for all medium depth drilling, SDXL slips are designed for deep drilling. All rotary slips Sara provided are API-7K certified.



### SDS - Short Rotary Slips and SDS Inserts

Slip Body Size (In)	3-1/2"			4-1/2"		
Pipe Size (In.)	2-3/8"	2-7/8"	3-1/2"	3-1/2"	4"	4-1/2"
Part No. Slip w/inserts	3901	3903	3905	3907	3909	3911
Wt: Slip w/insert lbs (kg)	134 (61)	128 (58)	124 (56)	162 (73)	155 (70)	146 (66)
Insert Set	2160-24	2161-24	2162-24	2163-36	2164-36	2165-36
Part No. Wt-lbs (Kg)	21 (9.5)	16 (7)	10 (4.5)	32 (14.5)	25 (11)	16 (7)
Qty.	24	24	24	36	36	36
Insrt Grip Length (in.)	11"	11"	11"	11"	11"	11"



### SDML - Medium Rotary Slips and SDML Inserts

Slip Body Size (In)	3-1/2"			4-1/2"			5"			5-1/2"		
Pipe Size (In.)	2-3/8"	2-7/8"	3-1/2"	3-1/2"	4"	4-1/2"	4	4-1/2"	5	4-1/2"	5	5-1/2"
Part No. Complete (Long)	15524	15523	15522	15563	15564	15565	15567	15568	15569	15571	15572	15573
Wt: Slip w/insert lbs (kg)	193 (87.5)	188 (85)	180 (81.5)	207 (94)	199 (90)	188 (85)	204 (92.5)	196 (89)	185 (84)	200 (91)	192 (87)	181 (82)
Insert Set	2610-30	2161-30	2162-30	2163-45	2164-45	2165-45	2168-45	2166-45	2167-45	2168-45	2169-45	2170-45
Part No. Wt-lbs (Kg)	26(12)	21 (9.5)	13 (6)	39 (17.5)	31 (14)	20 (9)	39 (17.5)	31 (14)	20 (9)	39 (17.5)	31 (14)	20 (9)
Qty.	30	30	30	45	45	45	45	45	45	45	45	45
Insert Grip Length (in.)	13-3/4	13-3/4	13-3/4	13-3/4	13-3/4	13-3/4	13-3/4	13-3/4	13-3/4	13-3/4	13-3/4	13-3/4

### SDXL - Extra Long Rotary Slips and Inserts

Slip Body Size (In)	4-1/2"			5"			5-1/2"			7"	
Pipe Size (In.)	3-1/2"	4	4-1/2"	4	4-1/2"	5	4-1/2"	5	5- 1/2"	6-5/8"	7
Part No. Slip comp. w/inserts	V15515	15514	V15513	15518	15517	V15516	15521	15520	V15519	86720	86719
Wt: Slip comp/w/insert lbs	229 (104)	219 (99)	205 (93)	237 (107.5)	227 (103)	213 (96.5)	234 (106)	224 (101.5)	210 (95)	242 (110)	232(105)
Insert Set	2163- 54	2164- 54	2165- 54	2168- 54	2166-54	2167- 54	2168-54	2169- 54	2170- 54	2172- 60	2173- 60
Part No. Wt-lbs (kg)	47 (21)	37 (17)	23 (10.5)	47 (21)	37 (17)	23 (10.5)	47 (21)	37 (17)	23 (10.5)	41 (19)	26(12)
Qty.	54	54	54	54	54	54	54	54	54	60	60
Insert Grip Length (in.)	16-1/2	16-1/2	16-1/2	16-1/2	16-1/2	16-1/2	16-1/2	16-1/2	16 - 1/2	16-1/2	16-1/2



DCS Complete W/Liners

### DCS - Drill Collar Slips

There are three models of DCS drill collar slips: S,R and L. All DSC drill collar slips can accommodate drill collar from 3" to 14" O.D. Sara provided drill collar slips are API-7K certified. Each Slip segment is a rugged design with an extra-long back to provide maximum support to the circular button gripping element. Full wrapped around design and circular buttons assures positive holding and slip setting. Drill collar slips are flat on the top to accommodate the MP clamp. All Sara slips have an API taper of 4"/ft on the diameter.

Slip Set	Drill Collar OD (In.)	Part No	Weight lbs	Tot Segment
DCS-S	3-4	2572	112	7
	4 - 4-7/8	2573	103	7
DCS-R	4-1/2 - 6	2552	120	9
	5-1/2 - 7	2550	112	9
DCS-L	5-1/2 - 7	2501	145	9
	6-3/4 - 8-1/4	2503	154	11
	8 - 9-1/2	2507	173	12
	8-1/2 - 10	2530	185	13
	9-1/4 - 11-1/4	2508	198	14
	11 - 12-3/4	2534	256	17
	12 - 14	2536	237	17

### CMS-XL Extra-long Multi-segment Casing Slips

Casing slips can accommodate casing from 6-5/8" to 30" (168.3-762mm) O.D. Sara provide all casing slips API-7K certified. Today's deeper drilling calls for long and heavy casing strings. Sara has slips to handle any casing job and are manufactured , reinforced to take severe service. The self-centering full wraparound grip prevents damage to casing , with simple adjustments the CMS XL can accommodate casing from 6-3/8" to 30". All Sara slips have an API taper of 4"/ft on the diameter.



CMS-XL Casing Slips

Slip Set	Casing OD (In.)	Part No	Weight lbs	Tot Segment
CMS-XL	6-5/8	5315	196	12
	7	5301	184	12
	7-5/8	5303	166	12
	8-5/8	5305	181	13
	9-5/8	5307	192	14
	10-3/4	V5309	209	15
	11-3/4	5311	260	17
	13-3/8	5313	247	18
	16	5325	308	21
	18-5/8	5333	367	25
	20	5329	383	26
	24	5331	443	30
	26	5346	486	33
	30	5342	546	37
	CP-S	24	5338	276
26		5344	296	14
30		5340	319	16

## API 6A Gate Valves



### Ordering Guide for Gate Valve

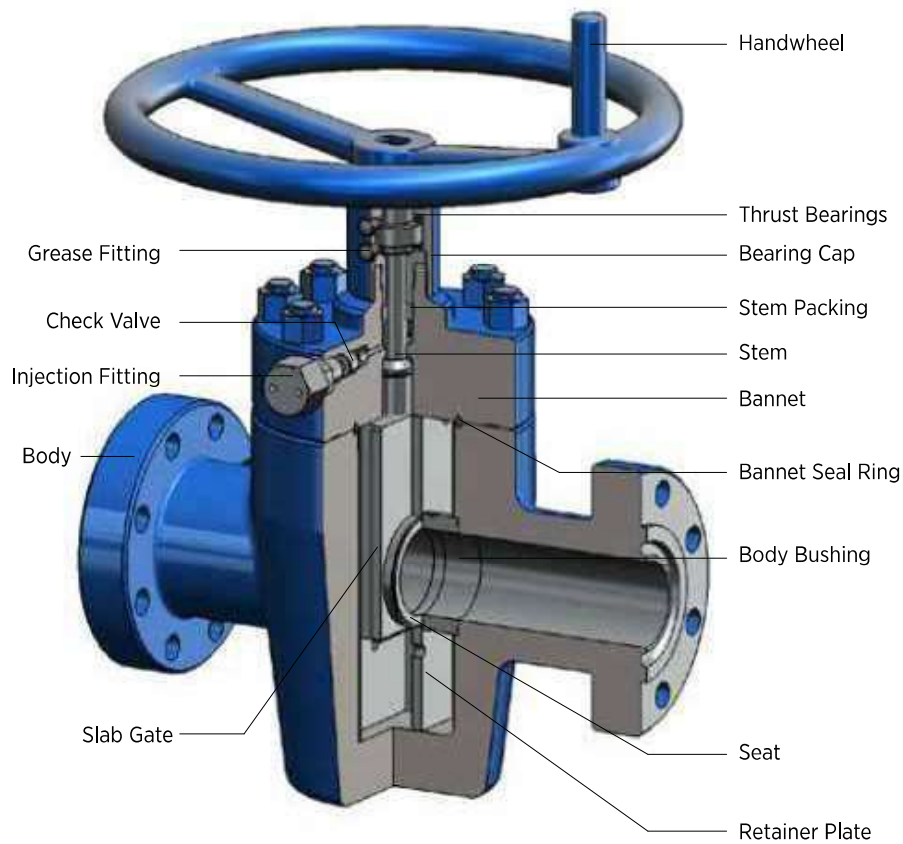
Following selection is required to comply customer specification

<b>1. Model</b>	FC / FLS																		
<b>2. Valve</b>	Manual Operated / Hydraulic Actuated																		
<b>3. Size</b>	1-13/16"	Thru	7-1/16"																
<b>2. Pressure Rating</b>	3000 PSI / 5000 PSI / 10000 PSI / 15000 PSI																		
<b>3. End Connection</b>	RTJ FLANGE LINE PIPE NPT		CLAMP HUB END UNION ENDS																
<b>4. Performance Requirement</b>	PR-1 / PR-2																		
<b>5. Product Specification Level</b>	PSL1 / PSL2 / PSL3 / PSL3G / PSL4																		
<b>6. Material Class</b>	<table border="0"> <tr> <td>AA</td><td>General Service</td> <td>CC</td><td>General Service</td> <td>EE</td><td>Sour Service</td> <td>HH</td><td>Sour Service</td> </tr> <tr> <td>BB</td><td>General Service</td> <td>DD</td><td>Sour Service</td> <td>FF</td><td>Sour Service</td> <td></td><td></td> </tr> </table>			AA	General Service	CC	General Service	EE	Sour Service	HH	Sour Service	BB	General Service	DD	Sour Service	FF	Sour Service		
AA	General Service	CC	General Service	EE	Sour Service	HH	Sour Service												
BB	General Service	DD	Sour Service	FF	Sour Service														

**7. Temperature Rating**

Temperature Classification	Operating Range (°F)		Operating Range (°C)	
K	-75	180	-60	82
L	-50	180	-46	82
N	-50	140	-46	80
P	-20	180	-29	82
R	Room Temperature			
S	0	140	-18	60
T	0	180	-18	82
U	0	250	-18	121
V	35	250	2	121
X	0	350	-18	177
Y	0	650	-18	343

**FC Type Slab Gate Valves**



Sara Sae Model forged-body slab gate valves are designed for oil and natural gas wellhead, manifold or other critical service applications with operating pressures from 3,000 to 15,000 psi. All model slab gate valves are API 6A latest edition monogrammed equipment and are available in bore sizes ranging from 1-13/16” through 4-1/16”.

**Operating Temperatures**

Sara Sae valves are available with API 6A Temperature ratings of L (-50 F) through Y (650 F) . Valves for API Temperature ratings of X and Y are pressure de-rated as required per Annex G of API 6A Latest Edition.

**Slab Gate**

The single piece slab gate is field-replaceable and provides the valve with full bidirectional sealing capability at both high and low pressures.

**Seat Design**

The standard gate to seat and seat to body sealing interface is a two-piece design consisting of a seat ring and a body bushing, assisted by inserts in the rear of each piece. Metal-to-metal gate to seat interface is standard. Metal inserts are used for high-temperature applications.

**Packing Design**

Stem packing is replaceable and assisted by an anti-extrusion ring. This ensures efficient sealing for the life of the valve. Graphite packing is used for high-temperature applications.

**Integrates Backseat**

All valves have an integrated metal-to-metal stem to bonnet backseat. When valve is in backseat position pressure is contained within the valve cavity and cannot ingress into bonnet or stem packing area.

**Grease Fittings**

The valve body may be lubricated through the grease fitting provided in the valve bonnet. An in-line check valve is provided behind the grease fitting to ensure a unidirectional flow. All fittings meet the requirements of NACE MRO175.

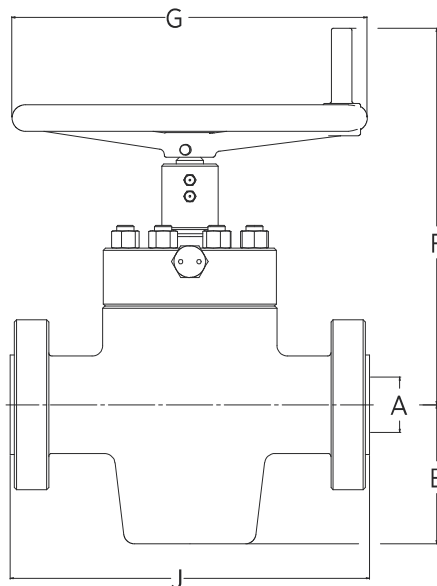
**Lubrication and Corrosion Protection**

All valves have body cavity lubrication appropriate for the material class and temperature rating of the valve under pressure and prevents corrosion during storage.

**Full Through Conduit Bore**

The full through conduit bore provides for smooth flow with minimal turbulence. It also provides an unobstructed passage for well intervention tools.

**3,000 - 15,000 PSI Slab Gate Valves, FC Type**



- A Valve Bore
- E Bore centerline to bottom of valve
- F Bore centerline to handwheel top
- G Handwheel diameter
- J Flange face to face
- WT Estimated weight

MODEL S DIMENSIONAL DETAILS												
Size	Press	A		E		F		G		J		WT
		in	mm	in	mm	in	mm	in	mm	in	mm	kgs
<b>1 13/16</b>	10,000	1.81	46	5.69	144	16.47	418	14.00	355	18.25	463	108
	15,000	1.81	46	5.90	149	16.73	425	18.00	431	18.00	457	136
<b>2 1/16</b>	3,000-5,000	2.06	52	5.06	128	19.43	493	13.00	330	14.62	371	56
	10,000	2.06	52	5.69	144	16.45	417	14.00	355	20.50	520	120
<b>2 9/16</b>	15,000	2.06	52	5.90	149	16.73	425	18.00	431	19.00	482	149
	3,000-5,000	2.56	65	5.93	150	20.43	519	16.00	406	16.62	422	99
<b>3 1/8</b>	10,000	2.56	65	6.75	171	17.68	448	18.00	431	22.25	565	167
	15,000	2.56	65	7.74	196	18.95	481	18.00	431	21.00	533	204
<b>3 1/8</b>	3,000	3.12	79	7.31	185	22.75	577	16.00	406	17.12	434	136
	5,000	3.12	79	7.31	185	22.75	577	16.00	406	18.62	437	154
<b>4 1/16</b>	10,000	3.06	77	8.12	206	18.58	471	24.00	584	24.38	619	235
	15,000	3.06	77	9.65	245	22.79	578	24.00	584	23.56	598	399
<b>4 1/16</b>	3,000	4.06	103	9.06	230	26.37	669	20.00	508	20.12	511	235
	5,000	4.06	103	9.06	230	26.37	669	20.00	508	21.62	549	254
<b>4 1/16</b>	10,000	4.06	103	10.19	258	21.42	544	24.00	584	26.38	670	385
	15,000	4.06	103	11.71	297	24.05	636	24.00	584	29.00	736	616





# Hammer Unions

## Material

Sara Sae unions are manufactured from steel forgings using materials appropriate to specific pressure ratings.

## End Connections

Sara Sae Unions are available in a choice of end connections. API line pipe threads are standard. Butt weld ends and Socket weld ends can be provided. The customer should specify the schedule of pipe while ordering.

## Sour Services

Sour service is available and all H<sub>2</sub>S service parts of Sara Sae unions conform to the latest NACE specifications.

## Low Temperature Service

Sara Sae unions can be supplied for low temperature applications with suitable impact value testing.

## Interchangeability

All Sara Sae union components of the same size and figure number are Weco interchangeable. All Sara Sae union nuts have 3 hammer lugs.

## Traceability

Sara Sae unions are supplied with full traceability documentation for each component.

## Integral Union Connections

Sara Sae manufactures a line of high pressure integral union connections in pressure ratings to 15,000 PSI CWP, including but not limited to Crosses, Ells, Tees, Wyees.

## Other Wing Unions

Sara Sae also manufactures a range of Hex Unions, Hammerseal Tank Unions and Flat Face Unions where the sealing is dependent on an O-Ring fitted between the grooves machined on the mating metal parts.

## Hammer Union Quick Reference Chart

Fig. No.	Assembly Colour Key for Standard Service	Pressure Rating (psi)				Nominal Pipe Size (in Inch)											
		Standard Service		Sour Gas Service		1	1 <sup>1/4</sup>	1 <sup>1/2</sup>	2	2 <sup>1/2</sup>	3	4	5	6	8	10	12
		Cold Working	Test	Cold Working	Test	25	32	40	50	65	80	100	125	150	200	250	300
50		500	750	NA	NA							✓	✓				
100		1,000	1,500	NA	NA				✓	✓	✓	✓	✓	✓			
200		2,000	3,000	NA	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
206		2,000	3,000	NA	NA	✓		✓	✓	✓	✓	✓	✓	✓	✓		
207		2,000	3,000	NA	NA						✓	✓		✓			
211		2,000	3,000	NA	NA				✓		✓						
400		2,500	3,750	2,500	3,750									✓			✓
400		4,000	6,000	4,000	6,000				✓		✓	✓					
600		6,000	9,000	NA	NA	✓			✓		✓	✓					
602		6,000	9,000	6,000	9,000	✓	✓	✓	✓		✓	✓					
1002		10,000	15,000	7,500	11,250	✓	✓	✓	✓		✓	✓	✓	✓			
1003		10,000	15,000	7,500	11,250						✓	✓	✓				
1502		15,000	22,500	10,000	15,000	✓			✓		✓	✓	✓				
2002		20,000	30,000	NA	NA				✓		✓	✓					
2202		NA	NA	15,000	22,500				✓		✓	✓					

\*Refer notes with each Union for pressure rating variances.

**Fig 50 Union - 500 PSI CWP**



Recommended for air, water, oil, or gas service to 500 PSI NSCWP. Standard subs are threaded for API line pipe.

**Sizes - 4", 5"**

**Fig 100 Union - 1,000 PSI CWP**



Recommended for air, water, oil, or gas service to 1,000 PSI NSCWP. Standard subs are threaded for API line pipe and are Weco interchangeable. Also available with butt weld ends.

**Sizes - 2", 2 1/2", 3", 4", 5", 6", 8"**

**Fig 200 Union - 2,000 PSI CWP**



Recommended for air, water, oil, or gas service to 2000 PSI NSCWP. A union of great utility meeting most requirements in the medium pressure ranges. Precision seating surfaces assure dependable pressure seal. Standard subs are threaded for API line pipe and are Weco interchangeable. Also available with butt weld end connections.

**Sizes - 1", 1-1/4", 1-1/2", 2", 2-1/2" 3", 4", 5", 6", 8", 10"**

**Fig 206 Union - 2,000 PSI CWP**



Recommended for air, water, oil or gas service to 2,000 PSI NSCWP. A Buna-N 'O' ring is mounted on the plain sub to provide an additional seal. Subs and nuts of the Fig. 206 union are interchangeable with the Fig. 200 union. Standard subs are threaded for API line pipe. Also available with butt weld end connections.

**Sizes - 1", 1-1/2", 2", 2-1/2" 3", 4", 5", 6", 8", 10"**

**Fig 207 Union - 2,000 PSI CWP**



Recommended for air, water, oil, or gas service to 2,000 PSI NSCWP. A blanking cap with Buna-N 'O' ring seal provides an efficient and dependable closure. The threaded sub is interchangeable with Fig. 200 threaded sub. Also available with butt weld ends.

**Sizes - 3", 4", 6"**

**Fig 211 Union - 2,000 PSI CWP**



Recommended for production systems with electrolytic corrosion problems. Laminated insulating rings provide 35 million Ohms resistance across the union. O-ring in male sub provides a positive primary seal. Seal ring in female sub delivers a positive secondary seal.

**Sizes - 2", 3"**

**Fig 400 Union - 4,000 PSI CWP**



Recommended for air, water, oil, or gas service to 4,000 PSI NSCWP. Utilizes precision ball and cone seating surfaces for easy alignment and dependable pressure seal. Sizes over 4" are rated to 2,500 PSI NSCWP. Also available with a lip-type seal in 2" size only as Fig 402 and butt weld end connections.

**Sizes - 2", 3", 4", 6", 12"**

**Fig 600 Union - 6,000 PSI CWP**



Recommended for air, oil, gas or steam service to 6,000 PSI NSCWP. Rugged and fast 2 pitch acme thread makes this the quickest union to make-up or break out (only two turns). The threaded sub is fitted with a bronze seat insert for added effectiveness in pressure sealing.

**Sizes - 1", 2", 3", 4"**

**Fig 602 Union - 6,000 PSI CWP**



Recommended for air, water, oil, gas or mud service to 6,000 PSI NSCWP. This union has a replaceable lip-type seal ring of Buna-N specifically designed to minimize fluid flow turbulence. Lip-type ring provides a pressure seal and protection for metal-to-metal seating surfaces. Smaller and lighter than Fig. 600 unions and are recommended for manifold and truck mounting where size and weight are critical.

**Sizes - 1", 1-1/4", 1-1/2", 2", 3", 4"**

**Fig 1002 Union - 10,000 PSI CWP**



Recommended for air, water, oil, gas and mud service to 10,000 PSI NSCWP. This union has a replaceable lip-type seal ring of Buna-N specifically designed to minimize fluid flow turbulence. The lip-type ring works similarly as in the Fig. 602 union. These unions are for use on high pressure systems and trucks.

**Sizes - 1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4", 5", 6"**  
 5" & 6" sizes rated at 7,500 PSI CWP & 11,250 PSI Test  
 5" & 6" sizes for sour gas rated at 5,000 PSI CWP & 7,500 PSI Test

**Fig 1003 Union - 10,000 PSI CWP**



Recommended for high pressure manifolding and drilling rig use where alignment of piping components is a problem. Recommended for air, water, oil, gas or mud service to 10,000 PSI NSCWP. This union has a ball seat that allows a total of 15° ( $\pm 7\frac{1}{2}$ ) angular adjustment. An 'O' ring seal in addition to the metal-to-metal seat assures a pressure tight connection.

**Sizes - 3", 4", 5"**  
 5" size rated at 7,500 PSI CWP & 11,250 PSI Test  
 5" Union for sour gas rated at 5,000 PSI CWP & 7,500 PSI Test

**Fig 1502 Union - 15,000 PSI CWP**



Recommended for air, water, oil, gas and mud service to 15,000 PSI NSCWP. This union has a replaceable lip-type seal ring of Buna-N specifically designed to minimize fluid flow turbulence. The lip-type ring also provides a pressure seal and protection for metal-to-metal seating surface and are recommended for manifold and truck mounting or other installations where high pressure is encountered.

**Sizes - 1", 2", 3", 4", 5"**

**Fig 2002 Union - 20,000 PSI CWP  
& Fig 2202 Union - 15,000 PSI CWP**



Recommended for standard service to 20,000 PSI NSCWP. Available in butt weld end connections only. Available as Fig 2202 for sour service (15,000 PSI WP).

**Sizes - 2", 3", 4"**

**Fig YH - 300 Union - 500-12,500 PSI CWP**



It is a flat face Union with 'O'-Ring fitted into the groove of the female sub. The 'O'-Ring is completely enclosed with the flat face of mating part and becomes more effective as additional pressure is applied.

**Sizes - 1/2", 1", 2", 3", 4"**

**Mud Tank Seal Union - 150 PSI CWP**



Recommended for Mud tanks, mud tank connecting lines, and pump suction flanges

- Nitrile seal provides a compression seal.
- Elongated cross-section of seal ring ensures greater sealing surface when in contact with the pipe.
- Accepts up to 7° pipe misalignment.
- 6, 8, and 10-inch sizes require butt-weld.

**Sizes - 3", 4", 6", 8", 10", 12", 14", 16"**

**Suction Hose Unions - 500 PSI (34 bar)  
Maximum Line Pressure, 4", 5" & 6" sizes**



Sara manufactures a range of Suction-hose and Frac Tank Unions in 4", 6" and 8" sizes in pressures ranging from 500 to 1,000 PSI CWP.

**Frac Subs / Hose Unions**

Sara Sae manufactures an assortment of other products having usage in varied oilfield applications. In addition to the Frac Subs shown below, Sara Sae also manufactures Flange to Wing Adapters, Wing to Wing Adapters, Flanged Tees and Crosses.



Frac Subs











# Integral Union Fitting

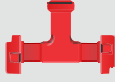











Sara Sae also manufactures Flange to Wing Adapters, Wing to Wing Adapters, Flanged Tees and Crosses and an assortment of other products having usage in varied oilfield applications.



Flange to Union Crossover

## Integral Fitting Specifications

Nom. Size in.		1	1.5	2		3		4				
Figure No.		1502	1502	602	1502	2002	602	1502	2002	602	1002	1502
CWP (PSI)		15,000	15,000	6,000	15,000	20,000	6,000	15,000	20,000	6,000	10,000	15,000
Longsweep Elbow	 F x M Wt. (Kg.)	-	-	10	12.6	-	24.5	22.9	-	40.4	40.4	-
Elbows	 F x M Wt. (Kg.)	-	-	12.4	14.7	-	45.6	46.3	100	-	-	-
	 M x M Wt. (Kg.)	-	-	16.3	18.5	-	52.2	54.9	-	-	-	-
	 F x F Wt. (Kg.)	-	-	8.2	10.9	-	38.1	39.5	-	-	-	-
Tees	 F x F x F Wt. (Kg.)	13.2	15.4	12	13.2	14.5	50.8	51.7	99.8	44.9	45.8	90.7
	 F x F x M Wt. (Kg.)	14.4	18	14.2	17	19	56.2	58	115	51.7	52.6	106
	 F x M x F Wt. (Kg.)	14.4	18	14.2	17	19	56.2	58	115	51.7	52.6	106
	 F x M x M Wt. (Kg.)	15.9	21.1	16.3	20.9	23.6	61.7	64.4	129	57.6	59	122

Nom. size in.		1	1.5	2			3			4		
Figure No.		1502	1502	602	1502	2002	602	1502	2002	602	1002	1502
CWP (PSI)		15,000	15,000	6,000	15,000	20,000	6,000	15,000	20,000	6,000	10,000	15,000
Tees	 M x M x F Wt. (Kg.)	15.9	21.1	16.3	20.9	23.6	61.7	64.4	129	57.6	59	122
	 M x M x M Wt. (Kg.)	17.2	23.6	18.6	24.7	28.1	67.1	70.8	144	64	64.9	137
Longsweep Elbow	 M X M Wt. (Kg.)	-	-	12.2	34 15.4	-	30	29.5	-	46.3	46.3	-
Crosses	 F x F x F x F Wt. (Kg.)	-	31.8	26.3	26.8	-	71.2	61.7	-	65.3	65.5	-
	 F x F x M x F Wt. (Kg.)	-	35	28.1	30	-	76.2	80.7	-	71.2	71.2	-
	 F x F x M x M Wt. (Kg.)	-	37.6	30.4	33.1	-	81.6	83	-	77.1	77.1	-
	 F x M x M x F Wt. (Kg.)	-	37.6	30.4	33.1	-	81.6	83	-	77.1	77.1	-
Crosses	 F x M x M X M Wt. (Kg.)	-	40.4	32.7	36.3	-	87.1	89.4	-	83	83	-
	 M x M x M x M Wt. (Kg.)	-	142.6	35	39.5	-	92.1	95.7	-	89.4	89.4	-
Laterals	 M x F x F Wt. (Kg.)	26.3	27.9	21.5	24.3	-	-	40.1	-	53.1	78.9	141
	 F x F x F Wt. (Kg.)	25.4	-	-	-	-	-	40.9	-	-	-	-
Wyes	 M x F x F Wt. (Kg.)	-	20	12.7	12.2	12.7	-	-	-	-	-	-

# Swivel Joints

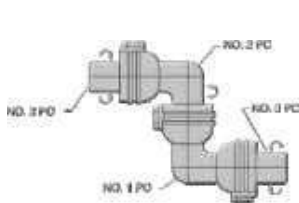
Available in sizes 3/4" through 3" up to 15,000 PSI non-shock cold working pressure, Sara Sae Swivel Joints offer the following features:

- Minimum flow restriction
- Heavy duty hex head style ball loading plug
- Grease retainer ring (ensures clean ball race)
- Standard packing units (operating temperature to 2250°F)

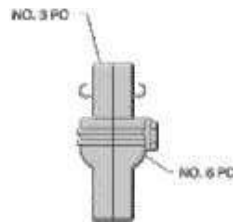


- High temperature packing units (operating temperature to 450°F)
- Superior hardened ball races ensure uniform surface hardness and depth for longer life under severe thrust and radial loading
- Standard Swivel Joints are provided with API line pipe threads
- Other end connections are available on request
- Available for standard and sour service
- All sizes are available in 8 styles, for 360° rotation in 1, 2 or 3 planes

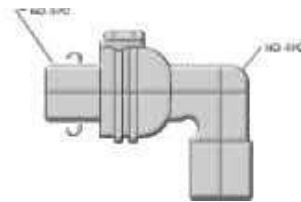
## Short Radius Swivel Joints



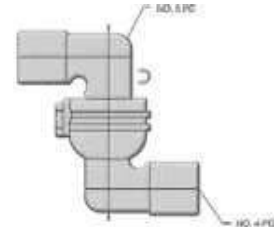
**Style No. 10**  
(Three Planes of Rotation)



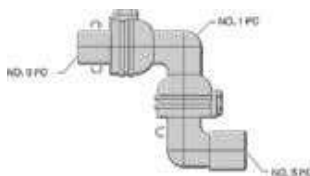
**Style No. 20**  
(One Plane of Rotation)



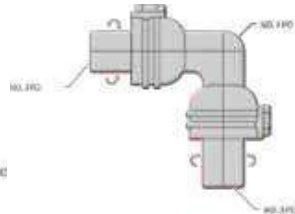
**Style No. 30**  
(One Plane of Rotation)



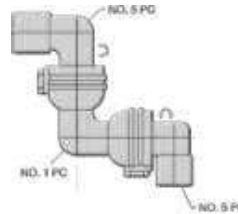
**Style No. 40**  
(One Plane of Rotation)



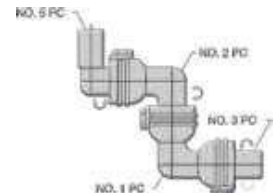
**Style No. 50**  
(Two Planes of Rotation)



**Style No. 60**  
(Two Planes of Rotation)



**Style No. 70**  
(Two Planes of Rotation)



**Style No. 80**  
(Three Planes of Rotation)

### Quick Reference Chart

Model	Color Code	NSCWP	End Connections	Standard Service SIZE (in)						Sour Service SIZE (in)						
				3/4	1 <sup>1/4</sup>	1 <sup>1/2</sup>	1	2	3	3/4	1 <sup>1/4</sup>	1 <sup>1/2</sup>	1	2	3	
Low Pressure	BLUE	1000	Female Line Pipe Threads					✓	✓							
High Pressure	OLIVE GREEN	6000	Fig. 602 Union												✓	✓
	SILVER	6000	Female Line Pipe Threads	✓	✓	✓	✓	✓	✓							
Extra High Pressure Long Sweep	OLIVE GREEN	7500	Fig. 1002 Union												✓	✓
	OLIVE GREEN	10000	Fig. 1502 Union												✓	✓
	BLACK	10000	Female Line Pipe Threads					✓	✓							
	OLIVE GREEN	15000	Fig. 2202 Union												✓	✓
	RED	15000	Fig. 1502 Union					✓	✓							
	LIGHT BLUE	20000	Fig. 2002 Union					✓	✓							

### Steel Hose Assemblies

High pressure cementing and circulating hoses incorporate swivel joints of forged steel with superior quality hardened ball races and high pressure type packing units.



One wing union and two style 50 or style 10 swivel joints with threaded ends



- One wing union and one each style 50 and style 10 swivel joints with integral wing union ends
- Four wing unions and two style 50 or style 10 swivel joints with integral wing union ends
- Four wing unions and two style 50 or style 10 swivel joints

### Long Radius Swivel Joints



STYLE NO. 10  
MxM Union Ends



STYLE NO. 10  
MxF Union Ends



STYLE NO. 50  
Threaded Ends



STYLE NO. 50  
MxF Union Ends



STYLE NO. 10  
Threaded Ends



## Pup Joints



### Integral Pup Joints

- Integral Pup joints are made of high quality alloy steel, integrally constructed, forged ended, and features seamless upset construction
- Detachable wing union end connections enable fast, easy make-up and break-out of temporary flow lines
- Eliminates all welds or threads
- Uniform bore for greater flow capacity
- Pup joints are hydrostatically tested at 1.5 times the rated cold working pressure
- Available from 2" to 3" sizes, lengths for pup joints range from 1 feet to 12 feet to 15,000 psi working pressure
- Integral pup joints can be made available with two models, one is plain integral pup joints, another is pup joints with retaining shoulder, integral pup joints with retention shoulder features specially machined shoulder to prevent nut from sliding down pup joints when held vertically

### NPST Pup Joints

- NPST Pup joints are made of high quality seamless pipeline with male and female detachable Hammer Unions
- Uniform bore for greater flow capacity
- Available from 2" to 3" sizes, lengths for pup joints range from 1 feet to 20 feet to 15,000 psi working pressure

### Butt weld Pup Joints

- Butt weld Pup joints are made of high quality seamless pipeline with male and female Hammer Unions welded to pup joint pipeline
- Detachable wing union end connections enable fast, easy make-up and break-out of temporary flow lines
- Pup joints are hydrostatically tested at 1.5 times the rated cold working pressure
- Available from 2" to 4" sizes, lengths for pup joints range from 1 feet to 20 feet to 6,000 psi working pressure

## Plug Valves



Sara Plug valves are built to the highest standards using advanced manufacturing techniques to ensure optimum performance and reliability.

Sara Plug valves are used throughout the oil and gas industry worldwide in Standard and H2S service environments

Sara Plug valves can be offered specifically with the end connections or combinations to suit the specific field application. Applications for the Sara plug valves include:

- Blow-Out Preventer systems
- Snubbing
- Cementing
- Well Stimulation
- Sand Separator Systems
- Gravel Pack applications
- Coiled Tubing systems
- Production Testing
- Flow Back operations

Sara Plug Valve is a lubricated, tapered seal, quarter-turn plug valve for rapid full open or close operation. The valve cavity is tapered to ensure uniform seating of the sealing inserts, providing a reliable seal at the full range of pressures. Sara Plug Valves are presently offered in 2 x 1 and 2 x 2 configurations with Fig. 1502 Hammer unions ends. Sara Plug valves can be offered specifically with the end connections or combinations to suit the specific field application.

## Chokes



Sara Adjustable and positive choke tees are primarily used in choke manifolds, flow thru manifolds and test manifolds. Various forged-body configurations are available in 2-inch and 3-inch sizes, for up to 15000 psi cold working pressure. These Adjustable and Positive Chokes are also available in sour gas configuration.

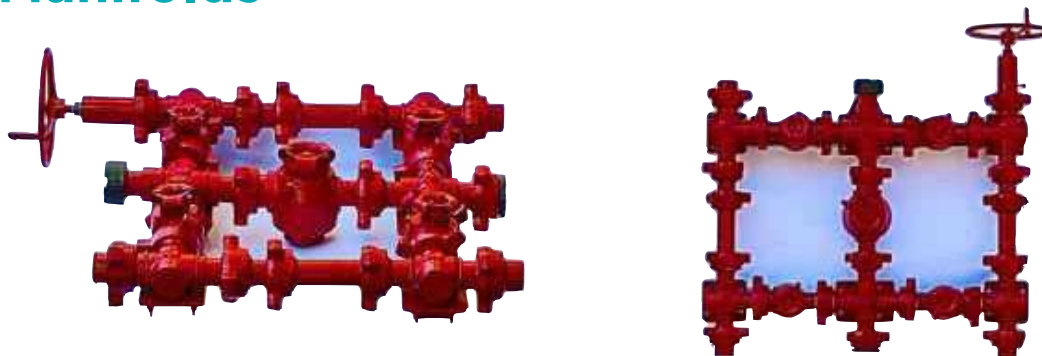
### Adjustable Choke

- 2" and 3" Fig 1502 MxF with 3/4", 1" and 2" Orifice
- Standard and H2S Service are used up to CWP 15,000 psi, tested at 22,500 psi
- Hammer Union end connection
- Forged alloy steel body, stainless steel and tungsten carbide parts
- Suitable for a broad range of applications including wellheads, production manifolds, well testing, steam injection, choke and kill manifolds and well clean operations, etc

### Positive Choke

- 2" and 3" Fig 1502 MxF with 3/4", 1", and 2" Orifice
- Standard and H2S Service are used up to CWP 15,000 psi, Tested at 22,500psi
- Hammer Union End Connection
- Forged alloy steel body, stainless steel and tungsten carbide parts. Suitable for a broad range of applications including wellheads, production manifolds, well testing, steam injection, choke and kill manifolds and well clean operations, etc.

## HP Manifolds



Sara can supply manifolds : Choke and kill, frac, cement, multi-well, discharge, flow thru, test and circulation manifolds. Manifold to customer specific engineered designs are also manufactured. Sara Manifolds are available in pressure ratings upto 15000 PSI CWP.

Manifolds are available in both standard and sour service. Sara manifolds can be skidded as per customer request and manufactured with 1x2, 2x2, 3x3 1502 Plug Valves.

Manifolds can be custom made for bottom entry Low Torque Plug Valves or Top Entry Premium Plug Valves. Complete data package is provided including Material Test Reports, UT, MPI, and Pressure Test Charts. Plug Catcher manifolds also available upon request as well as Actuated Plug Valve Manifolds. Control panels are available based on in house engineering designs.

# Manifold Fittings



Sara Manifold fittings are available in both standard pressure and high pressure mud manifolds. These are offered for standard buttweld connections - Sch XXH and Sch 160.

However other configurations and end connections are also available on specific request.

Sizes - 2", 3", 4" and 5".



Long Sweep Full Flow Cross



Long Sweep Full Flow Tee



Long Sweep Tee



90° Long Sweep Ell



90° Long Sweep Ell w/2" Outlet



45° Long Sweep Ell



160° Standpipe Gooseneck w/Top Outlet



160° Standpipe Gooseneck



180° Standpipe Gooseneck



Long Sweep Y

# Spools & Adapters



**Adapter Spools**  
Order Formula: Nominal size and working pressure

Sara Sae manufactures a wide range of Drilling Spools and Double Studded Adapter Flanges conforming to API-16 A and 6A in line with specific customer requirements.

**Drilling Spools**  
Order Formula: Nominal Size, Working Pressure, end connections and outlet sizes



**Double Studded Adapter Flanges**



**Spacer Spools**  
Order Formula : Nominal size, working pressure and connections



**Studs and Nuts**  
Order Formula : Nominal size, working pressure and end connections

## Flanges, Tees & Crosses

Sara Sae manufactures a wide range of High Pressure Flanges, Tees, Crosses conforming to API 6A and in line with specific customer requirements.



**Weld Neck Flanges**  
Order Formula: Nominal size, working pressure and pipe schedule

### Studded Crosses and Tees

Sara manufactures Studded Crosses and Tees according to the designs and tables in API Spec 6A.

### Flanged Crosses and Tees

Sara manufactures Flanged Crosses and Tees according to the design requirements and face to centerline requirements of API Spec 6A.

When specific nominal sizes and combinations of nominal sizes do not appear in API Spec 6A, Sara shall manufacture Studded / Flanged Crosses and Tees according to the design criteria provided in API Spec 6A.



**Studded Tees**  
Order Formula: Nominal size and working pressure



**Studded Crosses**  
Order Formula: Nominal size and working pressure

# Ring Joint Gaskets

Sara Metallic Ring Joint Gaskets are suitable for high pressure and high temperature applications. The Gaskets are available in R, RX, BX styles and in oval/octagonal profiles. Sara manufactures gaskets in accordance with specific tolerances on CNC machines.

Sara Ring Joint Gaskets fully comply with the ASME B16.20 standard and API spec 6A requirements (where applicable). Sara Sae is authorized to monogram Ring Joint Gaskets as per API-6A.

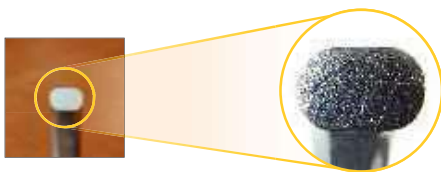


## Prime Features

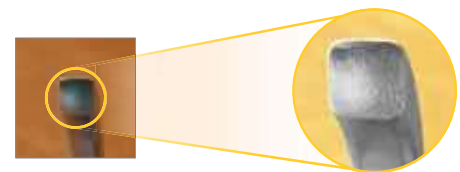
- R type (oval and octagonal) solid sections to fit standard ring joint flanges with trapezoidal grooves.
- Types RX and BX with complex beveled edge sections for wellhead pressures above 700 bar.
- Combination Gaskets – Used where two flanges of different sizes are to be joined together.
- Split Gaskets – Used where an API flange is to be joined with a low pressure ANSI Flange where a spiral wound gasket is used.
- Special metal gaskets made to customer specifications.

## Materials

- Standard: Soft iron, low carbon steel, alloy steels F5 and 410; stainless steels 304, 304L, 316, 316L, 321 and 347.
- Non-standard: high nickel alloys, super alloy steels, and other stainless grades.
- Rubber coated ring joint gaskets – soft iron metal ring joint gaskets are coated with nitrile rubber for testing wellhead assemblies and valves. Rings can be reused and do not damage flange grooves.



R-Oval



BX Type



R-Octagonal



RX Type

**Model R or RX**

For flanges in accordance with ASME B16.5 and BS 1560

Nominal Pipe Dimension (inches)	Ring Number at Pressure Rating (lbs)						
	150	300	400	600	900	1500	2500
1/2	-	R11	-	R11	-	R12	R13
3/4	-	R13	-	R13	-	R14	R16
1	R15	R16	-	R16	-	R16	R18
1 1/4	R17	R18	-	R18	-	R18	R21
1 1/2	R19	R/RX20	-	R/RX20	-	R/RX20	R/RX23
2	R22	R/RX23	-	R/RX23	-	R/RX24	R/RX26
2 1/2	R/RX25	R/RX26	-	R/RX26	-	R/RX27	R28
3	R29	R/RX31	-	R/RX31	R/RX31	R/RX35	R32
3 1/2	R33	R34	-	R34	-	-	-
4	R36	R/RX37	R/RX37	R/RX37	R/RX37	R/RX39	R38
5	R40	R/RX41	R/RX41	R/RX41	R/RX41	R/RX44	R42
6	R43	R/RX45	R/RX45	R/RX45	R/RX45	R/RX46	R/RX47
8	R48	R/RX49	R/RX49	R/RX49	R/RX49	R/RX50	R51
10	R53	R/RX53	R/RX53	R/RX53	R/RX53	R/RX54	R55
12	R56	R/RX57	R/RX57	R/RX57	R58	R60	-
14	R59	R61	R61	R61	R62	R/RX63	-
16	R64	R/RX65	R/RX65	R/RX65	R/RX66	R67	-
18	R68	R/RX69	R/RX69	R/RX69	R/RX70	R71	-
20	R72	R/RX73	R/RX73	R/RX73	R/RX74	R75	-
24	R76	R77	R77	R77	R78	R79	-

**Model BX**

For flanges in accordance with API spec 6A, model 6BX

Nominal Pipe Dimension (inches)	Ring Number at Pressure Rating (lbs)					
	2,000	3,000	5,000	10,000	15,000	20,000
1 <sup>11/16</sup>	-	-	-	BX150	BX150	-
1 <sup>13/16</sup>	-	-	-	BX151	BX151	BX151
2 <sup>1/16</sup>	-	-	-	BX152	BX152	BX152
2 <sup>9/16</sup>	-	-	-	BX153	BX153	BX153
3 <sup>1/16</sup>	-	-	-	BX154	BX154	BX154
4 <sup>1/16</sup>	-	-	-	BX155	BX155	BX155
5 <sup>1/8</sup>	-	-	-	BX169	-	-
7 <sup>1/16</sup>	-	-	-	BX156	BX156	BX156
9	-	-	-	BX159	BX157	BX157
11	-	-	-	BX158	BX158	BX158
13 <sup>5/8</sup>	-	-	BX160	BX159	BX159	BX159
16 <sup>3/4</sup>	-	-	BX162	BX162	-	-
18 <sup>3/4</sup>	-	-	BX163	BX164	BX164	-
21 <sup>1/4</sup>	-	-	BX165	BX166	-	-
26 <sup>3/4</sup>	BX167	BX168	-	-	-	-
30	BX303	BX303	-	-	-	-

**Model R or RX**

For flanges in accordance with API spec 6A model 6B

Nominal Pipe Dimension (inches)	Ring Number at Pressure Rating (lbs)		
	2000	3000	5000
2 <sup>1/8</sup>	R/RX23	R/RX24	R/RX24
2 <sup>9/16</sup>	R/RX26	R/RX27	R/RX27
3 <sup>1/8</sup>	R/RX31	R/RX31	R/RX35
4 <sup>1/16</sup>	R/RX37	R/RX37	R/RX39
5 <sup>1/8</sup>	R/RX41	R/RX41	R/RX44
7 <sup>1/16</sup>	R/RX45	R/RX45	R/RX46
9	R/RX49	R/RX49	R/RX50
11	R/RX53	R/RX53	R/RX54
13 <sup>5/8</sup>	R/RX57	R/RX57	-
16 <sup>3/4</sup>	R/RX65	R/RX66	-
20 <sup>3/4</sup>	-	R/RX74	-
21 <sup>1/4</sup>	R/RX73	-	-

**Model R or RX**

For flanges in accordance with ASME B16.47 series A (MSS-SP44)

Nominal Pipe Dimension (inches)	Ring Number at Pressure Rating (lbs)	
	300 - 600	900
12	R/RX57	R/RX57
14	R61	R62
16	R/RX65	R/RX66
18	R/RX69	R/RX70
20	R/RX73	R/RX74
22	R81	-
24	R77	R78
26	R93	R100
28	R94	R101
30	R95	R102
32	R96	R103
34	R97	R104
36	R98	R105



BX Type Ring



R Type Ring



RX Type Ring



Combination Ring



Split Ring



Buna Coated Ring



## Manufacturing Facilities





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