



Operation and Maintenance Manual

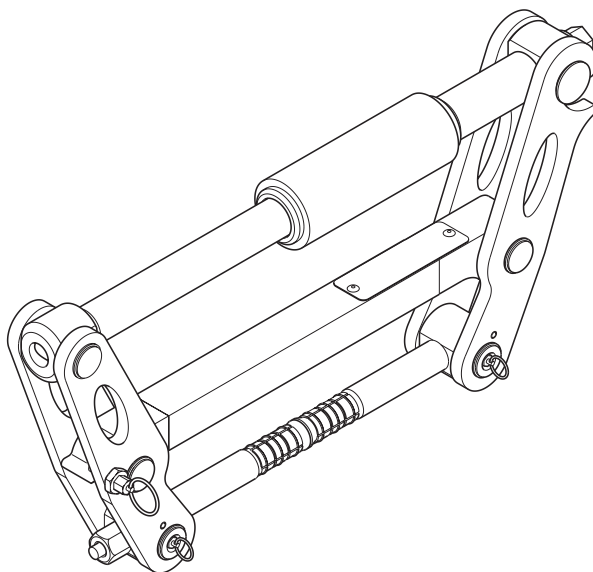
SG4TM / SG6TM / SG11TM **Secure-Grip Mechanical Flange Spreaders**


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 To reduce the risk of injury, users must read and understand this document before use.

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1. Safety

Read all instructions carefully. Follow all recommended safety precautions to avoid personal injury as well as damage to the product and / or damage to other property. Equalizer cannot be responsible for any damage or injury from unsafe use, lack of maintenance, or incorrect operation. Do not remove warning labels, tags, or decals. In the event that any questions or concerns arise, contact Equalizer or a local Equalizer distributor for clarification.

Save these instructions for future use.

If you have never been trained on high-pressure hydraulic safety, consult your distributor or service center for information about Equalizer Hydraulic Safety Courses.

This manual follows a system of safety alert symbols, signals, words, and safety messages to warn the user of specific hazards. Failure to comply with these warnings could result in death or serious personal injury, as well as damage to the equipment or other property.

The Safety Alert Symbol appears throughout this manual. It is used to alert you to potential physical injury hazards. Pay close attention to Safety Alert Symbols and obey all safety messages that follow this symbol to avoid the possibility of death or serious injury.



Safety Alert Symbols are used in conjunction with certain Signal Words that call attention to safety messages or property damage messages and designate a degree or level of hazard seriousness. The Signal Words used in this manual are DANGER, WARNING, CAUTION, and NOTICE.

⚠ DANGER Indicates a hazardous situation that, if not avoided, will result in death or serious personal injury.

⚠ WARNING Indicates a hazardous situation that, if not avoided, could result in death or serious personal injury.

⚠ CAUTION Indicates a hazardous situation that, if not avoided, could result in minor or moderate personal injury.

NOTICE Indicates information considered important, but not hazard related (e.g. messages related to property damage). Please note that the Safety Alert Symbol will not be used with the signal word.

✓ DO: an illustration showing how the tool should be used.

✗ DON'T: an illustration showing an incorrect way to use a tool.

1.1 Safety Precautions



Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

- Read and completely understand the safety precautions and instructions in this manual before operating the SGM tools or preparing them for use. Always follow all safety precautions and instructions, including those that are contained within the procedures of this manual.

- Be sure the operator has completed safety induction training, specific to the work surroundings. The operator should be thoroughly familiar with the controls and the proper use of the tool.
- Wear personal protective gear when operating hydraulic equipment. Always wear eye protection. Safety equipment such as dust mask, non-skid safety shoes, hard hats, gloves, or hearing protection (used as appropriate) will reduce personal injuries. The protective clothing must not interfere with safe operation of the tool or restrict the ability to communicate with co-workers.
- Operating procedures will vary, depending on the system arrangement. Always read, follow, and completely understand all manufacturers' instructions when operating pumps, valves and all other devices used with the SGM tools. Follow all safety precautions contained in the manufacturer's manuals. Use only for intended purpose.
- To minimize risk of personal injury, keep hands and feet away from the tool and workpiece during operation.
- Do not overload equipment.
- Immediately replace worn or damaged parts. Use only genuine Equalizer parts from approved distributors or service centers. Equalizer parts have been engineered and manufactured to be fit-for-purpose.
- Use only a high-quality non-flammable solvent for cleaning and degreasing parts during wrench repair procedures. To reduce the risk of fire or explosion, do not use flammable solvents.
- Care should be taken when using the lanyard to avoid entanglement with body parts.

⚠ CAUTION

Failure to observe and comply with the following precautions could result in minor or moderate personal injury. Property damage could also occur.

- Ensure components are protected from external sources of damage, such as excessive heat, flame, moving machine parts, sharp edges, and corrosive chemicals.
- Lubricate tools as directed in this manual prior to operation. Use only approved lubricants of high quality, following the lubricant manufacturer's instructions.
- Only use the designated anchor point for fixing the lanyard. Do not attach the lanyard to the plastic handle.

NOTICE

Failure to observe and comply with the following precautions could result in property damage and/or void the product warranty.

- Always use Equalizer replacement parts.
- Always follow the inspection and maintenance instructions contained in this manual. Perform inspection and maintenance after use, and at regular intervals.
- Rope off working area and place warning signs.
- To help ensure proper operation and best performance, use of Equalizer oil is strongly recommended

2. Compliance Statement(s)

EU Declaration of Incorporation

•SG4TM •SG6TM •SG11TM



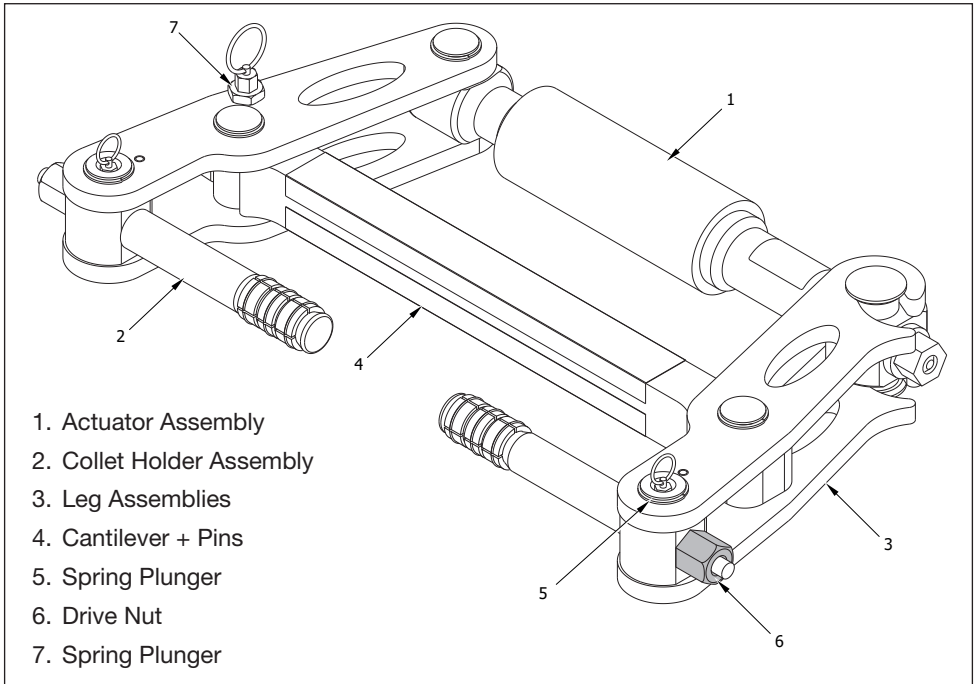
These tools conform with the requirements for CE.

Equalizer declares that this/ these product(s) has/ have been tested and conforms to applicable standards and is compatible to all CE Requirements.

A copy of an EU Declaration of Incorporation is enclosed with each shipment of this product.

3. Features & Components

3.1 SG4TM, SG6TM, SG11TM Features Diagram



3.2 SG4TM, SG6TM, SG11TM Capabilities and Kit Contents

3.2.1 SG4TM Tool Capabilities and Kit Contents

Spreading Force:

With the maximum torque of 47 N·m [35 ft·lb] applied, each SG4TM can apply 3.7 T [37 kN] spreading force.

It is recommended that tools are used in pairs positioned 180° apart, giving 2 x 3.7 T = 7.4 T [74 kN].

The spreading force can be determined by pre-setting the torque wrench. The torque wrench settings will produce a spreading force as set out below.

	Torque Wrench Setting	Spreading Force
	27 N·m [20 ft·lb]	2.2 T [22 kN]
	34 N·m [25 ft·lb]	2.5 T [25 kN]
	41 N·m [30 ft·lb]	3.3 T [33 kN]
Max.	47 N·m [35 ft·lb]	3.7 T [37 kN]

Spreading Distance:

0 mm - 75 mm [0" - 2.95"]

3.2.2 SG4TM Kit Contents

Product Code: SG4TMSTD

- 1 x SG4TM Tool
- 1 x 150 mm [6"] Vernier Calliper
- 1 x 3/8" Drive Torque Wrench and 16 mm Socket
- 1 x Safety Block
- 2 x M16 [5/8"] Collets
- 2 x M20 [3/4"] Collets
- 1 x Instruction Manual
- 1 x Carry-Case with foam inserts
- Carry-Case Dimensions: 520 mm x 375 mm x 165 mm [20.5" x 14.8" x 6.5"]
- Gross Kit Weight: 12.8 kg [28.2 lb]
- Tool only weight: 4.5 kg [9.9 lb]

3.2.3 SG6TM Tool Capabilities and Kit Contents

Spreading Force:

With the maximum torque of 108 N·m [80 ft·lb] applied, each SG6TM can apply 6 T [60 kN] spreading force.

It is recommended that tools are used in pairs positioned 180° apart, giving 2 x 6 T = 12 T [120 kN].

The spreading force can be determined by pre-setting the torque wrench. The torque wrench settings will produce a spreading force as set out below.

	Torque Wrench Setting	Spreading Force
	54 N·m [40 ft·lb]	2.8 T [28 kN]
	67 N·m [50 ft·lb]	3.5 T [35 kN]
	81 N·m [60 ft·lb]	4.5 T [45 kN]
	95 N·m [70 ft·lb]	5 T [50 kN]
Max.	108 N·m [80 ft·lb]	6 T [60 kN]

Spreading Distance:

0 mm - 80 mm [0" - 3.15"]

3.2.4 SG6TM Kit Contents

Product Code: SG6TMSTD

- 1 x SG6TM Tool
- 1 x 150 mm [6"] Vernier Calliper
- 1 x 3/8" Drive Torque Wrench and 21 mm Socket
- 1 x Safety Block
- 2 x M24 [7/8"] Collets
- 2 x M27 [1"] Collets
- 1 x Instruction Manual
- 1 x Carry-Case with foam inserts
- Carry-Case Dimensions:
640 mm x 540 mm x 165 mm
[25.2" x 21.3" x 6.5"]
- Gross Kit Weight: 16.0 kg [35.3 lb]
- Tool only weight: 7.5 kg [16.5 lb]

3.2.5 SG11TM Tool Capabilities and Kit Contents

Spreading Force:

With the maximum torque of 120 N·m [89 ft·lb] applied, each SG11TM can apply 11 T [110 kN] spreading force.

It is recommended that tools are used in pairs positioned 180° apart, giving 2 x 11 T = 22 T [220 kN].

The spreading force can be determined by pre-setting the torque wrench. The torque wrench settings will produce a spreading force as set out below.

	Torque Wrench Setting	Spreading Force
	40 N·m [30 ft·lb]	3.7 T [37 kN]
	60 N·m [44 ft·lb]	5.5 T [55 kN]
	80 N·m [59 ft·lb]	7.4 T [74 kN]
	100 N·m [74 ft·lb]	9.2 T [92 kN]
Max.	120 N·m [89 ft·lb]	11 T [110 kN]

Spreading Distance:

0 mm - 90 mm [0" - 3.54"]

3.2.6 SG11TM Kit Contents

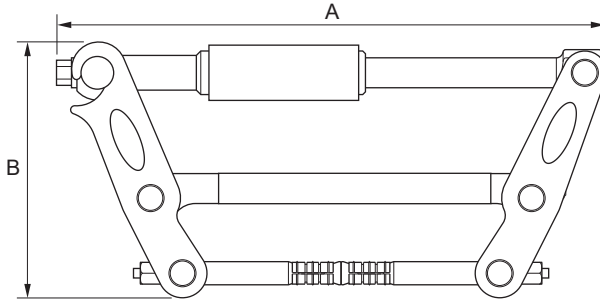
Product Code: SG11TMSTD

- 1 x SG11TM Tool
 - 1 x 150 mm [6"] Vernier Calliper
 - 1 x 1/2" Drive Torque Wrench and 24 mm Socket
 - 1 x Safety Block
 - 2 x M30 [1 1/8"] Collets
 - 2 x M33 [1 1/4"] Collets
 - 2 x M36 [1 3/8"] Collets
 - 1 x Instruction Manual
 - 1 x Carry-Case with foam inserts
- Carry-Case Dimensions:
640 mm x 540 mm x 165 mm
[25.2" x 21.3" x 6.5"]
- Gross Kit Weight: 20.0 kg [44.1 lb]
Tool only weight: 10.5 kg [23.1 lb]

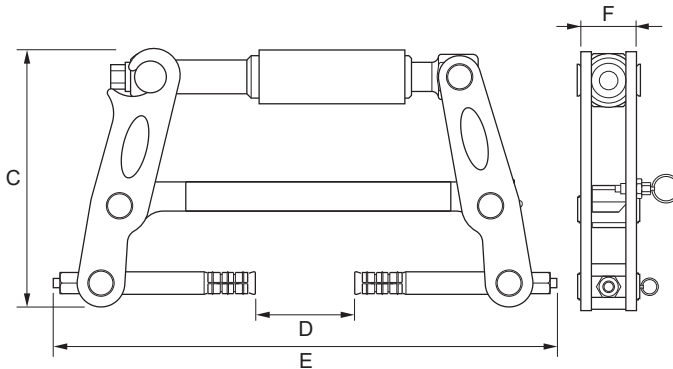
4. Technical Product Data

4.1 SG4TM / SG6TM / SG11TM Dimensions

Tool Dimensions Closed



Tool Dimensions Open



Tool Dimensions Table

TOOL	SG4TM	SG6TM	SG11TM
A	398 mm [15.67"]	468 mm [18.42"]	516 mm [20.31"]
B	190 mm [7.48"]	245 mm [9.65"]	250 mm [9.84"]
C	182 mm [7.2"]	252 mm [9.92"]	263 mm [10.35"]
D	75 mm [2.95"]	80 mm [3.15"]	90 mm [3.55"]
E	385 mm [15.16"]	444 mm [17.48"]	462 mm [18.2"]
F	48 mm [1.89"]	52 mm [2.05"]	60 mm [2.36"]

4.2 Secure Grip Flange Puller Specifications Table

(See Flange Dimensions for location of dimensions G + H)

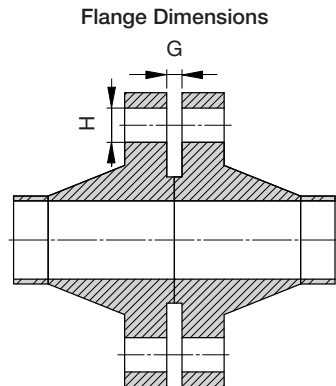
Model Number	Type	Maximum Spreading Force Per Tool [kN]	Spreading Distance Maximum [mm]	Flange Dimensions		Tool Weight [kg]
				Minimum Access Gap G [mm]	Bolt-hole Diameter Gap H [mm]	
SG4TM	Mechanical	37.0 [4.16*]	75.0 [2.95in]	0	17.5 - 23.0 [0.69in - 0.91in]	4.5 [9.9lbs]
SG6TM	Mechanical	60.0 [6.74*]	80.0 [3.15in]	0	24.0 - 30.0 [0.94in - 1.18in]	7.5 [16.5lbs]
SG11TM	Mechanical	110.0 [12.36*]	90.0 [3.54in]	0	30.0 - 39.0 [1.18in - 1.54in]	10.5 [23.1lbs]

* US tons

See Section 3.2.2 for case dimensions and kit contents for SG4TM.

See Section 3.2.4 for case dimensions and kit contents for SG6TM.

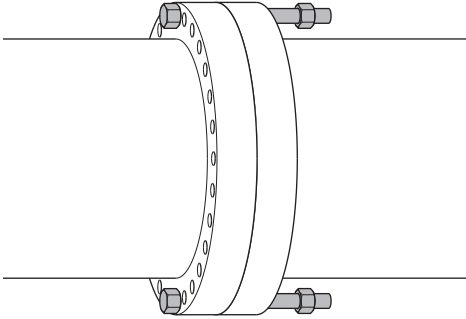
See Section 3.2.6 for case dimensions and kit contents for SG11TM.



5. Operation

5.1 Initial Setup and Inspection

The Secure Grip Tools spread flange joints by engaging collets into the bolt-holes. They can easily spread flange joints with zero access gap, which traditional wedge-type flange spreaders cannot spread.



The collets are suited to the sizes of the bolt-holes and should be selected prior to commencing work by following the instructions in this section.

Replacement collets or different collets to suit different bolt-hole sizes are available from a local Equalizer distributor.

5.2 Collet Selection

⚠ WARNING It is important that the correct size of collet is used. An undersized collet could allow the collet holder to pull through its bore. An oversized collet has the potential to become jammed in the bolt-hole.

The Secure Grip tools have a range of collets which are applicable to the following bolts and flange bolt-hole diameters shown in the table below.

If the specification of the flange is unknown then the vernier calliper supplied in the kit should be used to determine the correct collet.

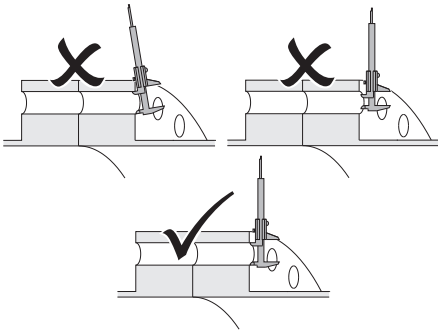
TOOL	COLLET	Minimum bolt-hole diameter [mm]	Maximum bolt-hole diameter [mm]
SG4TM	M16 [$\frac{5}{8}$ "	17.5 mm [0.69"]	19.5 mm [0.77"]
	M20 [$\frac{3}{4}$ "	20.5 mm [0.81"]	23 mm [0.91"]
SG6TM	M24 [$\frac{7}{8}$ "	24 mm [0.94"]	26.5 mm [1.04"]
	M27 [1"]	27.5 mm [1.1"]	30 mm [1.18"]
SG11TM	M30 [1 $\frac{1}{8}$ "	30 mm [1.18"]	33 mm [1.30"]
	M33 [1 $\frac{1}{4}$ "	32 mm [1.26"]	36 mm [1.42"]
	M36 [1 $\frac{3}{8}$ "	35 mm [1.38"]	39 mm [1.54"]

5.3 Bolt Hole Measurement

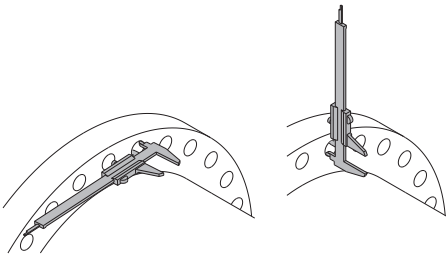
To ensure a true measurement is taken, hold the vernier calliper:

- Square to the flange face,
- In the middle of the bolt-hole.

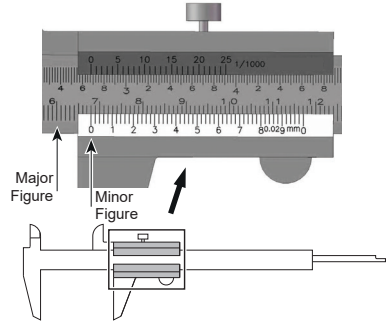
It is important that the vernier calliper is held in the middle of the bolt-hole, and not held at an angle to the flange face, nor used on a bolt-hole which is worn, damaged or distorted, as these actions may result in the selection of an incorrect size of collet.



To confirm that the bolt-hole is round, take two separate measurements with the vernier calliper turned through 90° between measurements.



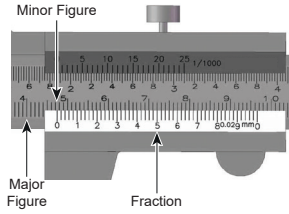
To read the measurement from the vernier calliper, scan along the desired scale from left to right. In this example, the major figure is 60 mm, this is added to the minor figure of 8 mm (indicated by where the vernier scale aligns with the main scale), giving a total measurement of 68 mm.



With a bolt-hole size of 68 mm, the operator can determine which collet and tool is appropriate to this flange by referring to the table. For example: 68 mm falls within the 63 mm minimum and 69 mm maximum bolt-hole sizes.

Therefore, collet identification is M64 / 2½"

If the measurement contains fractions of a millimetre the method of reading the vernier calliper is slightly different. In this example, the major figure is 40 mm (read in the same way as previously described). The minor figure is 7 mm (read to the left of the zero). The fraction is 0.5 mm (read from where the vernier scale lines up with the main scale). This gives a total measurement of 47.5 mm.



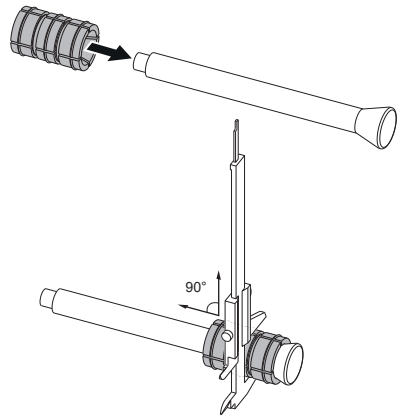
Each tool in the Secure Grip range comes with the appropriate sizes of Collets for that tool. If the Collet labelling is worn or missing, then the Collet can be measured to ensure that the correct size is selected.

An accurate measurement can only be obtained with the Collet mounted on the Collet Holder. To do this:

- Remove the Collet Head Assembly from the tool and disassemble (see Section 5.4 for details)
- Slide the Collet over the Collet Holder
- Measure the centre section of the Collet with the vernier calliper
- Identify the Collet using the chart below and select the correct size for the flange.

⚠ WARNING The Secure Grip collets are consumable items. The lifespan of a collet will vary depending on the flange materials with which it is used. To increase the lifespan of the collets it is recommended that they are flipped through 180° on the collet holder, this will produce more even wear across the four ridges on the outer profile of the collet. See Section 5.4 for details on collet removal and replacement.

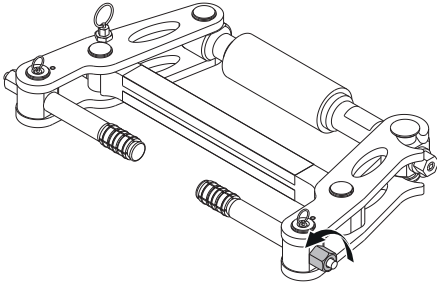
TOOL	COLLET	Minimum bolt-hole diameter [mm]	Maximum bolt-hole diameter [mm]
16 mm	M16 [5/8"]	17.5 mm [0.69"]	19.5 mm [0.77"]
19 mm	M20 [3/4"]	20.5 mm [0.81"]	23 mm [0.91"]
22.5 mm	M24 [7/8"]	24 mm [0.94"]	26.5 mm [1.04"]
25.5 mm	M27 [1"]	27.5 mm [1.1"]	30 mm [1.18"]
27 mm	M30 [1 1/8"]	30 mm [1.18"]	33 mm [1.30"]
29.5 mm	M33 [1 1/4"]	32 mm [1.26"]	36 mm [1.42"]
32.5 mm	M36 [1 3/8"]	35 mm [1.38"]	39 mm [1.54"]



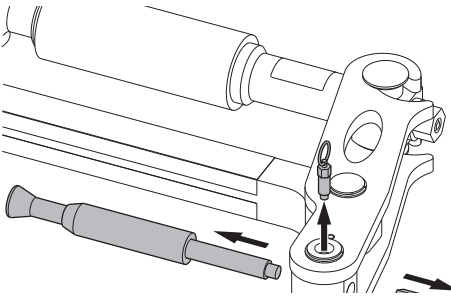
5.4 Collet Replacement

Once the correct collet has been selected it may be necessary to change the collet on the SG4TM, SG6TM, or SG11TM tool:

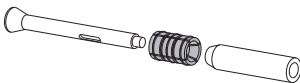
Place the tool on its side on a work bench or flat surface. Unscrew and remove the collet nut.



Pull the Collet Spring Plunger Ring to release and remove the collet head assembly.



Remove the Drive Cone and Collet from the Collet Holder. Replace the Collet with the applicable size for the flange joint as selected in Section 5.2.



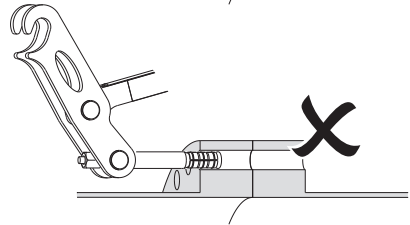
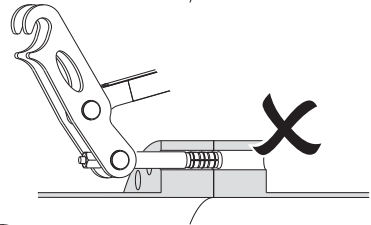
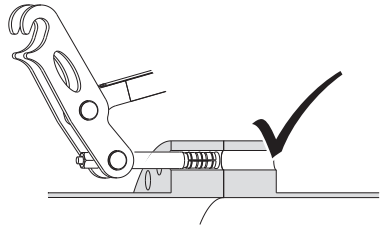
Repeat the operation for the opposite Collet Leg Sub-assembly.

Reverse the procedure to re-assemble the tool. Care should be taken to ensure the slot in the Collet holder is aligned with the collet plunger.

5.5 Collet Leg Sub-Assembly - Installation

The Collet Leg Sub-assemblies, as used in tools SG4TM, SG6TM, SG11TM; should be the first parts of the tool fitted to the flange joint.

The Collets from each assembly should be installed into the bolt-hole of the flanges on either side of the joint to be spread. Care should be taken to ensure that the Collets are engaged in the correct position.

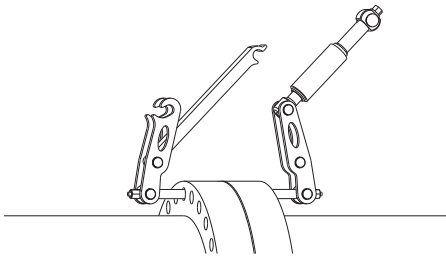


If a spacer, blind or valve is installed between the flanges, care should be taken to ensure that the Collet or Collet Holder do not extend beyond the flange bolt hole.

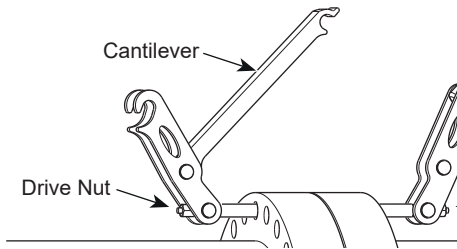
5.6 Tool Installation and Operation

Once the correct Collet has been selected and mounted, tool operation can commence.

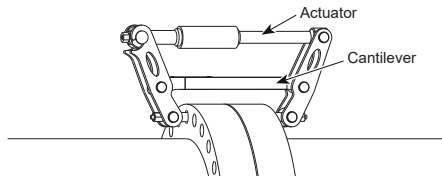
The two halves of the mechanical Secure Grip are inserted into opposing flange bolt-holes.



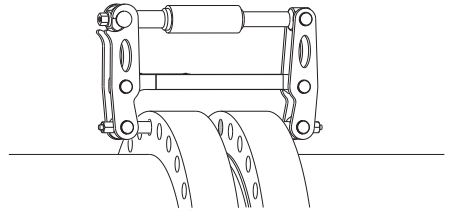
Both drive nuts are tightened, locking the tool into the flange bolt-holes.



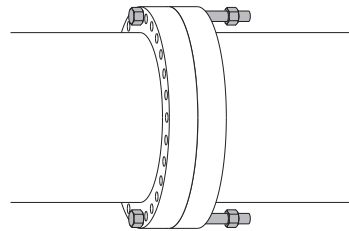
The cantilever followed by the actuator are swung and locked into position.



The actuator is tensioned, spreading the flange to the maximum load capacity or maximum spreading distance of the tool.

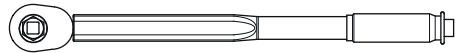


WARNING Before attaching the tool ensure at least two flange bolts remain in place 180 degrees apart with nuts loosened sufficiently enough for flange work to be carried out. These bolts will reduce lateral flange movement during flange spreading.



Mechanical Tool Operation

The mechanical Secure Grip tools use mechanical torque to advance the actuator and spread the tool. The torque is applied using the supplied torque wrench, enabling accurate control of the force applied.



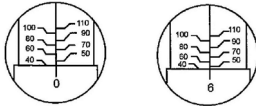
Torque Wrench Usage

Holding the Torque Wrench in one hand, unlock the knurled handle by turning the locking knob anti-clockwise.

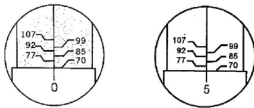
Select the torque setting by turning the knurled handle until the required torque value is indicated.

For example, to set the Torque Wrench to 46 N·m: turn the knurled handle until the 0 on the fine scale aligns with 40 N·m on base scale; now turn slightly further until the 6 on the fine scale aligns with the central line.

Setting an imperial torque [in ft·lb] is done in exactly the same way.



Lock the handle by turning the locking knob clockwise.



Install the supplied socket onto the Torque Wrench and attach to the tool.

Slowly and smoothly pull the handle, gradually applying more force until you feel or hear the Torque Wrench click, indicating that the selected torque has been achieved. Do not continue to apply force after the Torque Wrench has clicked. Special care should be taken when using low torque settings.

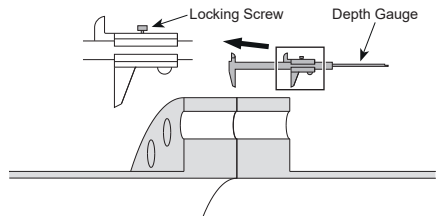
CAUTION Do not attempt to turn the grip while it is locked. Do not turn the grip more than one turn below the lowest scale reading or above the highest scale reading.

Torque Wrench Care

Prior to storing the Torque Wrench, and between use, leave the Torque Wrench with its lowest torque setting selected.

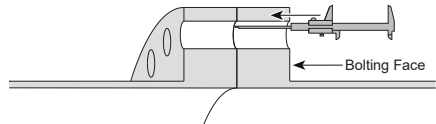
To clean the Torque Wrench, wipe gently with a damp cloth. Avoid using any detergent or solvent as this may detrimentally affect the factory-fitted internal lubrication of the mechanism.

Measure the thickness of the flange using the vernier calliper provided. Adjust the depth gauge to one half of the flange total length and lock the calliper in position by tightening the locking screw.

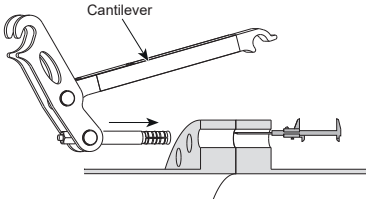


Select a suitable bolt-hole in which to attach the tool.

Insert the depth gauge part of the vernier calliper into the bolt-hole keeping the base of the calliper flush with the bolting face of the flange.

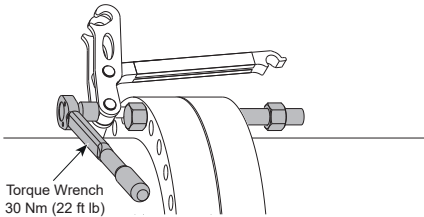


Insert the collet on the cantilever half of the tool into the opposite end of the same bolt-hole until it touches the end of the depth gauge (so that the Collet is fully through one flange but not entering the other).

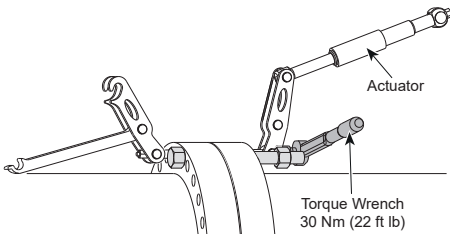


Set the torque wrench to 30 N-m [22 ft-lb] and tighten the drive nut until the torque wrench clicks.

The cantilever half of the tool will now have a secure hold in the bolt-hole.

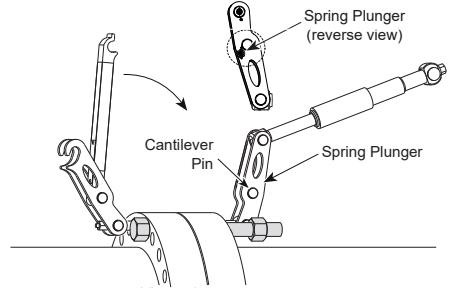


Insert the Collet on the actuator half of the tool into the bolt-hole until it touches the collet on the cantilever half of the tool. Tighten the drive nut with the torque wrench pre-set to 30 N-m [22 ft-lb] until it clicks. The actuator half of the tool will now have a secure hold in the bolt-hole.



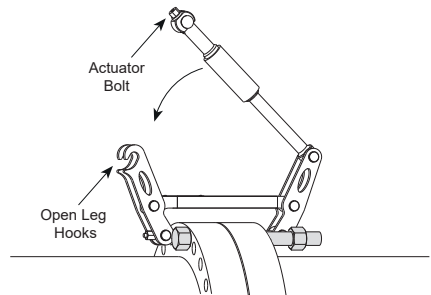
Rotate the cantilever into position hooking it over the cantilever pin in the actuator half of the tool.

A click should be felt from the spring plunger when it is locked fully home.

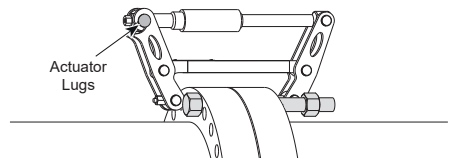


WARNING Operating the tool without the cantilever fully locked into position may result in personnel injury and damage to the tool.

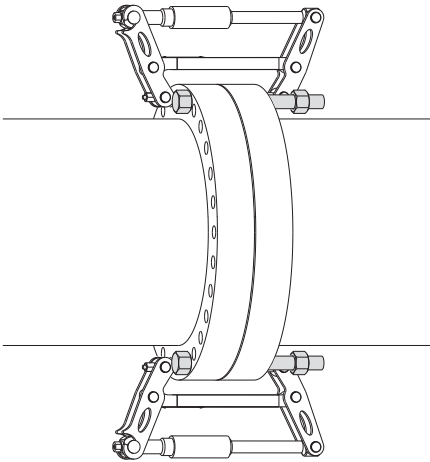
Ensure the actuator bolt is fully unscrewed, then swing the actuator down into position.



Tighten the actuator bolt until the lugs on the actuator union engage in the hooks on the open legs.



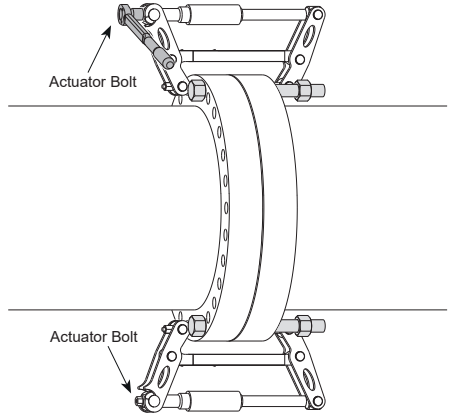
Select the bolt-hole 180° opposite the tool that has just been attached and repeat the above steps for the second tool.



CAUTION If more than two tools are being used they should be attached at an equal spacing around the flange joint.

With the torque wrench set at 30 N·m [22 ft·lb], tighten the actuator bolt on one tool until the torque wrench clicks and then torque the actuator bolt on the other tool.

Continue tensioning the actuator bolts until the flange spreads or the torque wrench clicks. Care should be taken to ensure the actuator bolts maintain an equal tension on both tools.



When the torque wrench clicks, stop and increase the torque wrench setting by 10 N·m [6.5 ft·lb]. Continue to tension both tools evenly until the flange spreads or the torque wrench clicks.

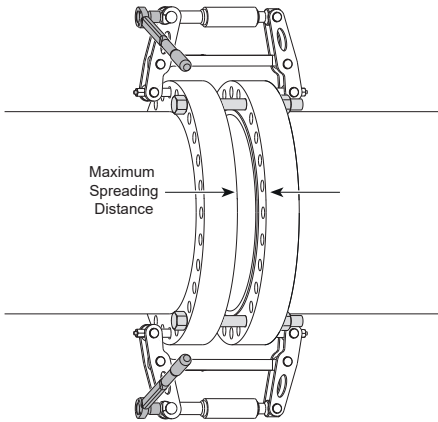
If the torque wrench clicks, continue increasing the torque wrench setting in 10 N·m [6.5 ft·lb] increments until the maximum for the tool has been reached (see table below).

NOTICE If a greater spreading force is required then further tools can be added around the flange joint.

WARNING Overloading the tool will cause tool failure which may result in personal injury.

		SG4TM	SG6TM	SG11TM
Max. Torque Wrench Setting	Nm	47	108	120
	ft lb	35	80	89
Max. Spreading Force	T	3.7	6	11

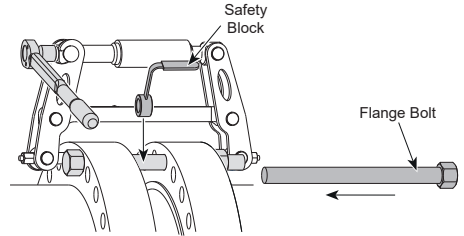
Continue spreading the flange until the access gap required has been achieved or until the maximum tool travel has been reached.



WARNING The Secure Grip mechanical tools are fitted with an internal mechanical stop which limits the travel. Forcing the tool to travel further will result in tool failure.

Tool	Max. Distance
SG4TM	75 mm [2.95"]
SG6TM	80 mm [3.15"]
SG11TM	90 mm [3.50"]

Once the flange has been separated and prior to any maintenance work, the safety blocks must be inserted between the flanges. These are held in position by removing two of the flange bolts that are reinserted with the safety block positioned in-between the flange faces.

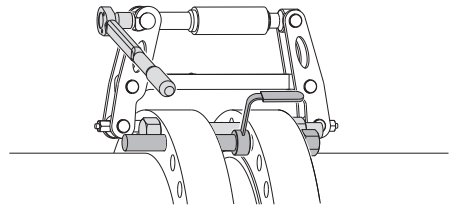


WARNING Do not allow fingers, hands or other body parts to come into contact with the flange or tools during operations. Never place fingers, hands or other body parts into the flange gap.

Following any maintenance works and prior to closing the flange joint, the safety blocks must be removed.

To reduce the load on each tool rotate the actuator bolt one full rotation. Repeat this on both tools in turn until the tools have no load on them and the joint is closed.

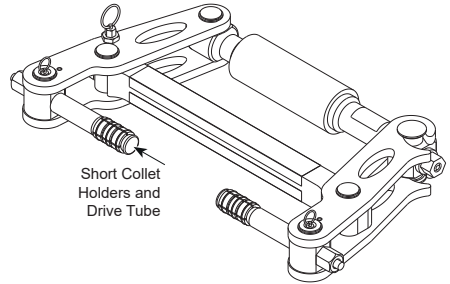
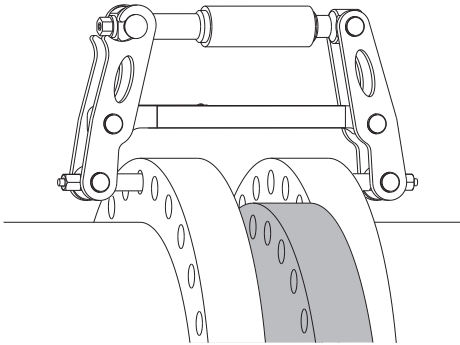
The tools can then be removed from the flange by reversing the installation procedure.



5.6.1 Valve, Spade, or Blind Removal, Installation, and Operation

The Secure Grip mechanical tools are also ideal for the removal and insertion of blinds, spades and valves.

Equalizer can supply Short Collet Holder (SCH) Kits for each tool that will increase its relative stroke.



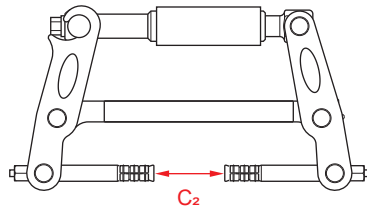
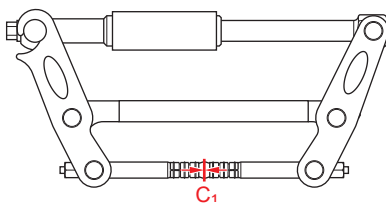
Please refer to Section 5.4 for instruction on how to remove the standard Collet Holder and Drive Tube.

The Short Collet Holder Kit replaces one Collet Holder and Drive Cone, and is supplied with Collet fitted.

The SG11TM Short Collet Kit comprises a pair of Short Collet Holders and Drive Cones, but is not supplied with Collets or Springs.

Please refer to Sections 5.5 and 5.6 for instruction on how to install and operate the Secure Grip mechanical tool.

Tool	Configuration	C ₁ (Closed)	C ₂ (Open)
SG4TM	Standard Tool	0 mm [0"]	75 mm [2.95"]
	Collet holder kits to accommodate	42 mm [1.65"]	159 mm [6.26"]
SG6TM	Standard Tool	0 mm [0"]	80 mm [3.15"]
	Collet holder kits to accommodate	60 mm [2.36"]	200 mm [7.87"]
SG11TM	Standard Tool	0 mm [0"]	90 mm [3.54"]
	Collet holder kits to accommodate	13 mm [0.51"]	160 mm [6.29"]



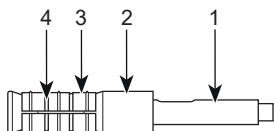
SG4TM Collet Holder Kit(s)

Product Code:

610100-01 110.5mm M16 Collet Holder Kit

610110-01 110.5mm M20 Collet Holder Kit

ITEM	DESCRIPTION	QTY.
01	COLLET HOLDER	02
02	DRIVE CONE	02
03	COLLET	02
04	SPRING RING	04



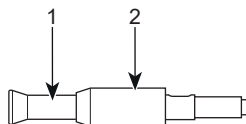
SG11TM Collet Holder Kit(s)

Product Code:

630100-01 183mm Collet Holder Kit(s)

636400-01 161mm Collet Holder Kit

ITEM	DESCRIPTION	QTY.
01	COLLET HOLDER	02
02	DRIVE CONE	02



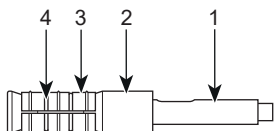
SG6TM Collet Holder Kit(s)

Product Code:

620100-01 126mm M24 Collet Holder Kit

625002-01 126mm M27 Collet Holder Kit

ITEM	DESCRIPTION	QTY.
01	COLLET HOLDER	02
02	DRIVE CONE	02
03	COLLET	02
04	SPRING RING	04



6. Storage

6.1 Recommended Storage

Equalizer Flange Spreader Secure Grip tools should be stored in a cool dry place. Tools should always be cleaned, serviced and lubricated prior to storage. Ensure that tools are stored in their designated packing cases.

6.2 Long-Term Storage - Maintenance Plan

1. Rub components down with a dry cloth to remove moisture.
2. Coat EVERY surface and contact point with a corrosion inhibitor. Where necessary, coat inside and outside of component e.g. VC10
3. Nuts and threads must also be coated with a corrosion inhibitor.
4. Once surfaces have been coated, seal individual components in clear plastic bags or clear vacuum bags or clear shrink wrap. NOTE: bags/shrink wrap must be clear for visibility. Take care when using shrink wrap that the tool is / components are still easy to see.
5. Remove all or, where not vacuum sealed, as much air from bags as possible.
6. Once bags have been closed and sealed DO NOT re-open. Any visual inspections must be done with closed and sealed bags. If bags are opened the components will have to be dried, re-coated and re-sealed in bags/shrink wrap.
7. Replace silica gel (100g) EVERY TIME the case is opened.
NOTE: depending on moisture content of air, silica gel should be changed weekly.
8. Visually inspect kits after 30-days and every 30-days thereafter. Remember to replace silica gel before closing case.

7. Maintenance

7.1 General Maintenance

On the completion of each job and before allocation against subsequent work the completeness of the Equalizer Secure Grip tool kits must be checked and items examined to ensure that they are serviceable.

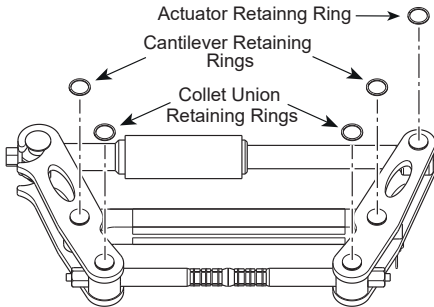
At regular intervals and specifically after exposure to salt water Secure Grip tools should be dismantled and lubricated as follows.

7.2 SG4TM/ SG6TM/ SG11TM Disassembly and Servicing

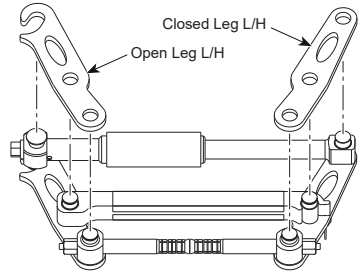
Disassembly

Lay the tool on a bench or flat surface.

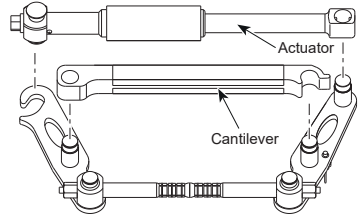
Remove the collet union, actuator and cantilever retaining rings. Care should be taken not to over-stretch the retaining rings during removal or replacement.



Remove the open leg L/H and closed leg L/H from the tool.

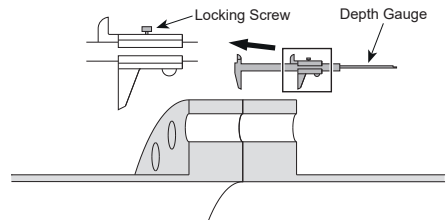


Remove the actuator and cantilever from the tool.



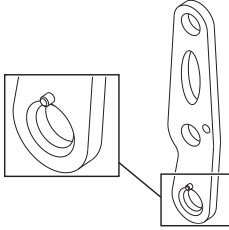
Servicing

The left hand side of the tool can now be cleaned and lubricated. Care should be taken to ensure the centring springs do not jump out of their recess.



It is recommended that the tool is wiped down with a clean rag and WD40 or similar cleaning fluid to remove any dirt or grit and then liberally greased with a high load bearing grease (Rocol sapphire high load 2 or similar) in the areas shown.

The tool can now be reassembled by reversing the dismantling procedure.

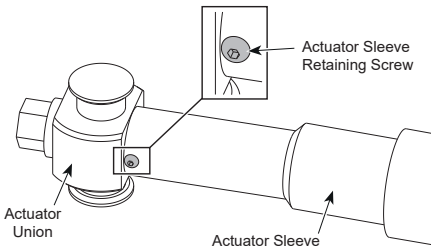


Care should be taken to ensure the dowel protruding from the L/H closed leg of the tool is engaged between the two centring springs.

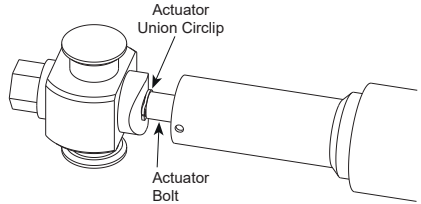
Once the tool is rebuilt, flip the tool over and repeat the above procedure with the other side of the tool.

Following the cleaning and lubrication procedure of the left and right hand sides of the tool, the actuator can now be dismantled, cleaned and lubricated as follows:

Remove the actuator sleeve retaining screw using a 2.5 mm allen key.



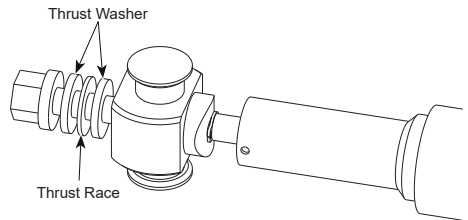
Pull the actuator sleeve back - this will expose the actuator union retaining circlip. Expand the circlip with circlip pliers and slide it up the actuator bolt by about 50 mm [2"].



SG11TM Only:

Slide the actuator union up the actuator bolt - this will expose the thrust washers and thrust race.

Clean the thrust washers and thrust race with a clean cloth and WD40 (or similar cleaning fluid) to remove any grit or dirt. Liberally grease with a high load bearing grease (Rocol sapphire high load 2 or similar).

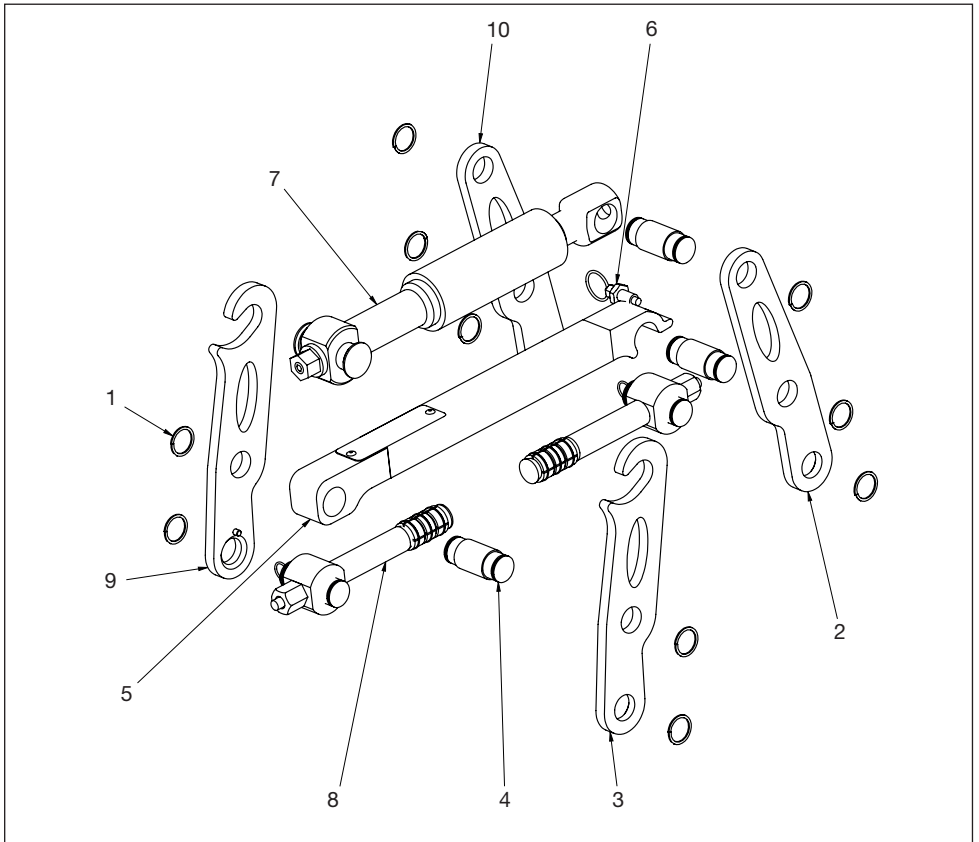


The actuator is reassembled by reversing the dismantling procedure.

The collet head assembly is dismantled by following the procedure in Section 5.4. The various components can then be cleaned and reassembled.

8. Parts List

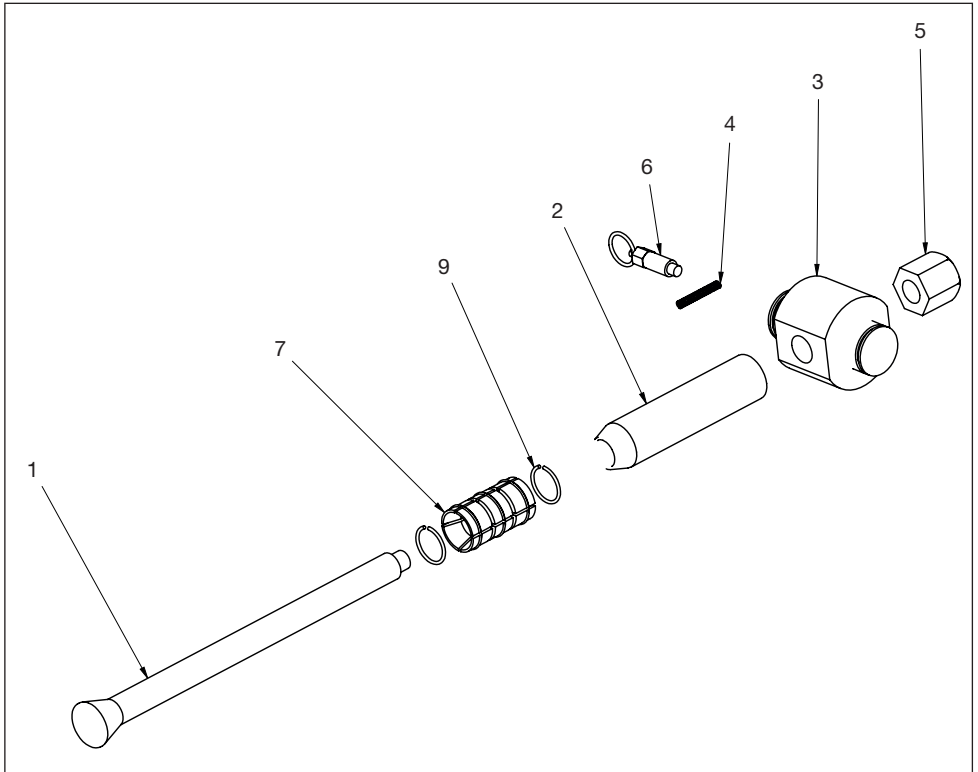
8.1 Exploded Views - SG4TM



8.2 Table of Parts - SG4TM

Item	Description	Qty	Part Numbers
1	Spirol Retaining Ring	10	611501-01
2	Closed Leg Left Hand - no pin	1	611901-01
3	Open Leg Left Hand - no pin	1	611301-01
4	Cantilever Pin	3	611701-01
5	Cantilever	1	612101-01
6	M8 Spring Plunger	1	632001-01
7	Actuator Assembly	1	See section 8.5/ 8.6
8	Collet Head Assembly	2	See section 8.3/ 8.4
9	SG4TM Open Leg Right Hand with pin weldment	1	611401-01
10	SG4TM Closed Leg Right Hand with pin weldment	1	611801-01

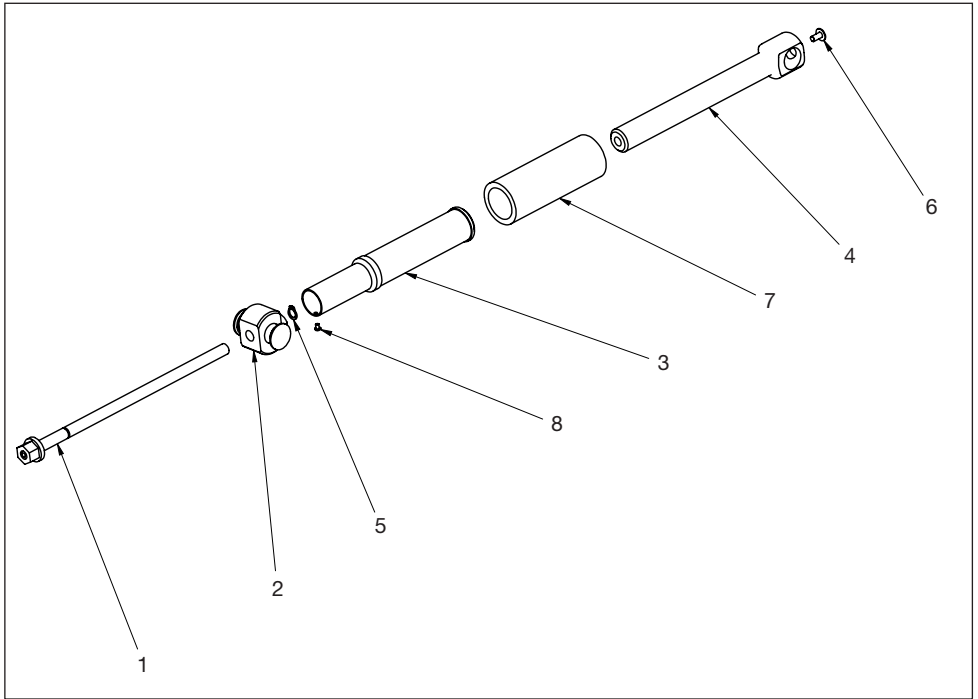
8.3 Exploded Views - SG4TM Collet Head Assembly



8.4 Table of Parts - SG4TM Collet Head Assembly

Item	Description	Qty	Part Numbers
1	Collet Holder	2	610401-01
2	Drive Cone	2	610501-01
3	Collet Union	2	610601-01
4	Centering Spring 1	2	610701-01
5	Collet Nut	2	610801-01
6	M6 Plunger	2	612001-01
7	M16 Collet	2	610201-90
	M20 Collet	2	610301-90
9	M20 Spring Ring	4	611101-01
	M16 Spring Ring	4	611001-01

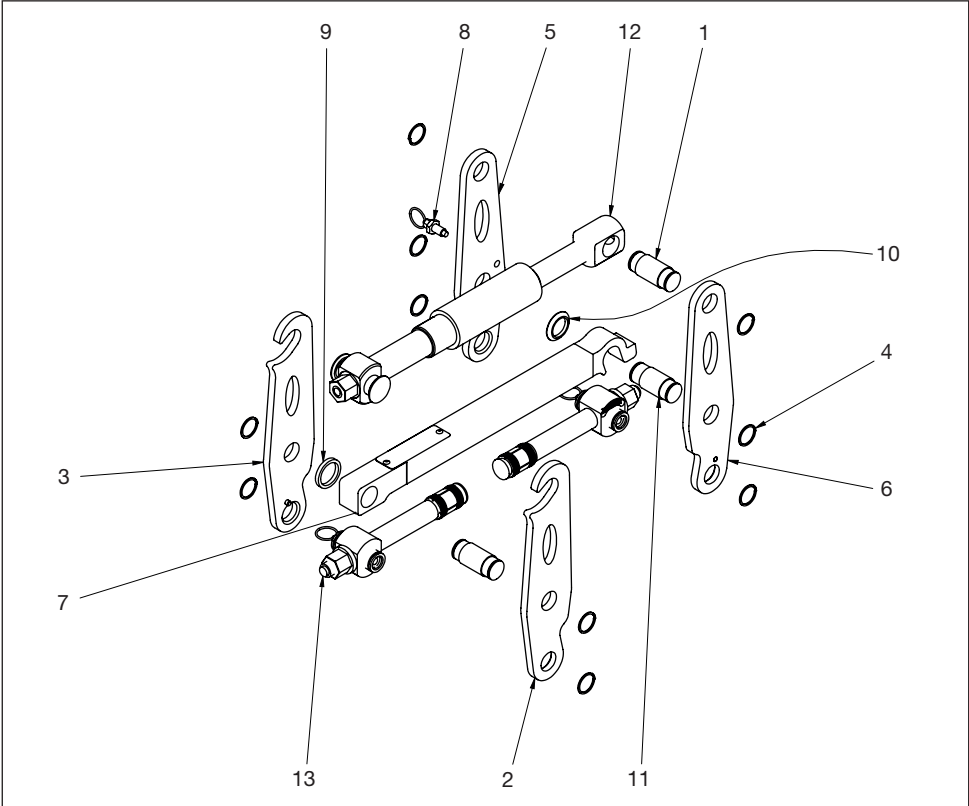
8.5 Exploded Views - SG4TM Actuator Assembly



8.6 Table of Parts - SG4TM Actuator Assembly

Item	Description	Qty	Part Numbers
1	Actuator Bolt Assembly	1	612201-01
2	Open Actuator Union	1	612501-01
3	Actuator Sleeve	1	612701-01
4	Closed Actuator Union	1	612901-01
5	Actuator Retaining Ring	1	613101-01
6	M5 x 10 Socket Flat Button Screw	1	613001-01
7	Foam Grip	1	632801-01
8	M3 x 4mm Button Head Socket Screw (GD10.9)	1	622801-01

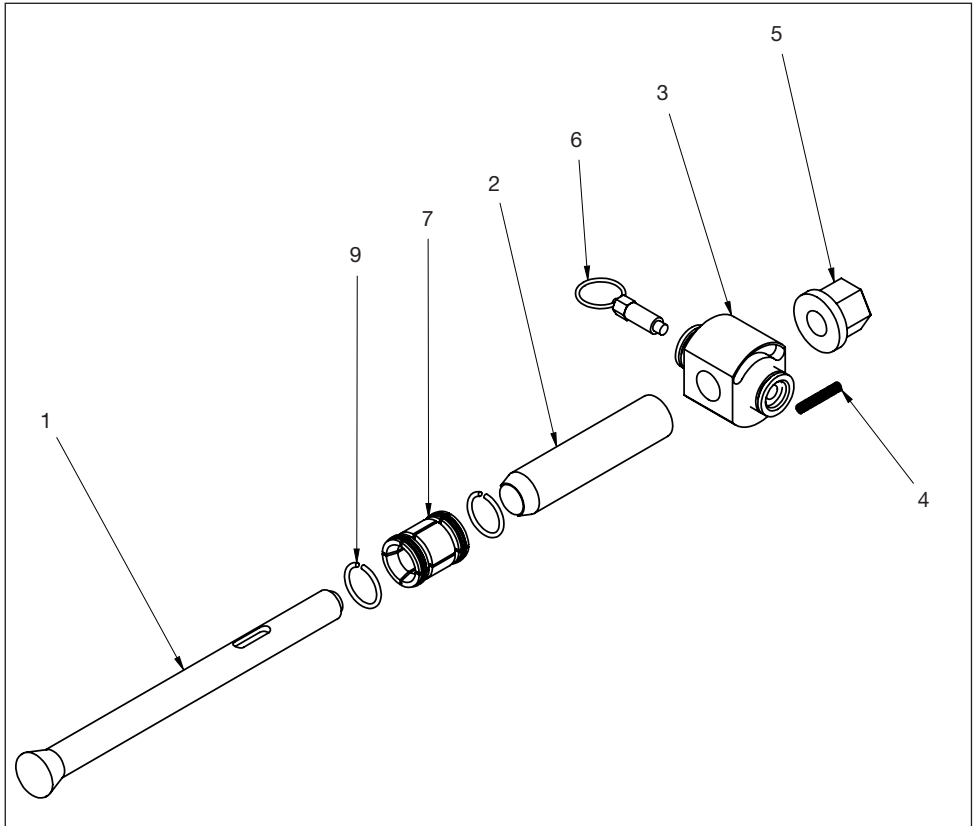
8.7 Exploded Views - SG6TM



8.8 Table of Parts - SG6TM

Item	Description	Qty	Part Numbers
1	Cantilever Pin	2	621701-01
2	Open Leg Left Hand - no pin	1	621301-01
3	Open Leg with pin weldment	1	621401-01
4	Spirol Retaining Ring	10	621501-01
5	Closed Leg Left Hand - no pin	1	621801-01
6	Closed Leg Right Hand with pin weldment	1	621901-01
7	Cantilever	1	622101-01
8	M8 Spring Plunger	1	632001-01
9	Cantilever Spacer	1	623401-01
10	Cantilever Washer	1	623501-01
11	Hook Pin	1	623601-01
12	Actuator Assembly	1	See section 8.11/ 8.12
13	Collet Head Assembly	2	See section 8.9/ 8.10

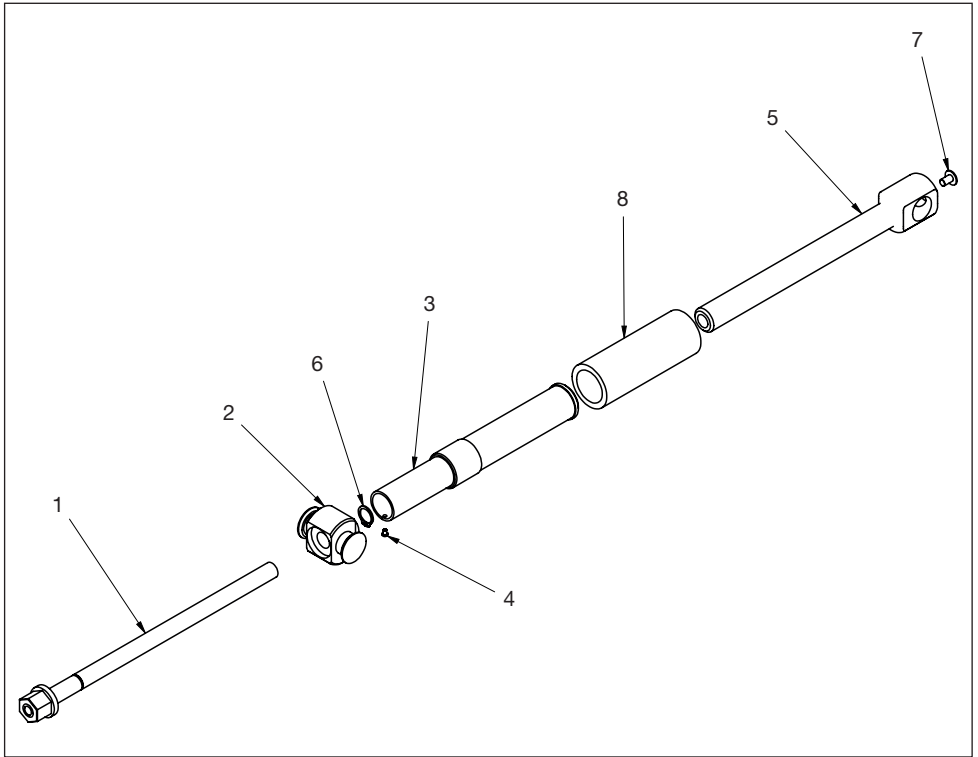
8.9 Exploded Views - SG6TM Collet Head Assembly



8.10 Table of Parts - SG6TM Collet Head Assembly

Item	Description	Qty	Part Numbers
1	Collet Holder	2	620401-01
2	Drive Cone	2	620501-01
3	Collet Union	2	620601-01
4	Centering Spring 1	2	620701-01
5	M14 x 2 Collet Nut	2	620801-01
6	M8 Plunger	2	63200-01
7	M24 Collet	2	620201-90
	M27 Collet	2	620301-90
9	20mm External Snap Ring	4	621001-01
	24mm External Snap Ring	4	621101-01

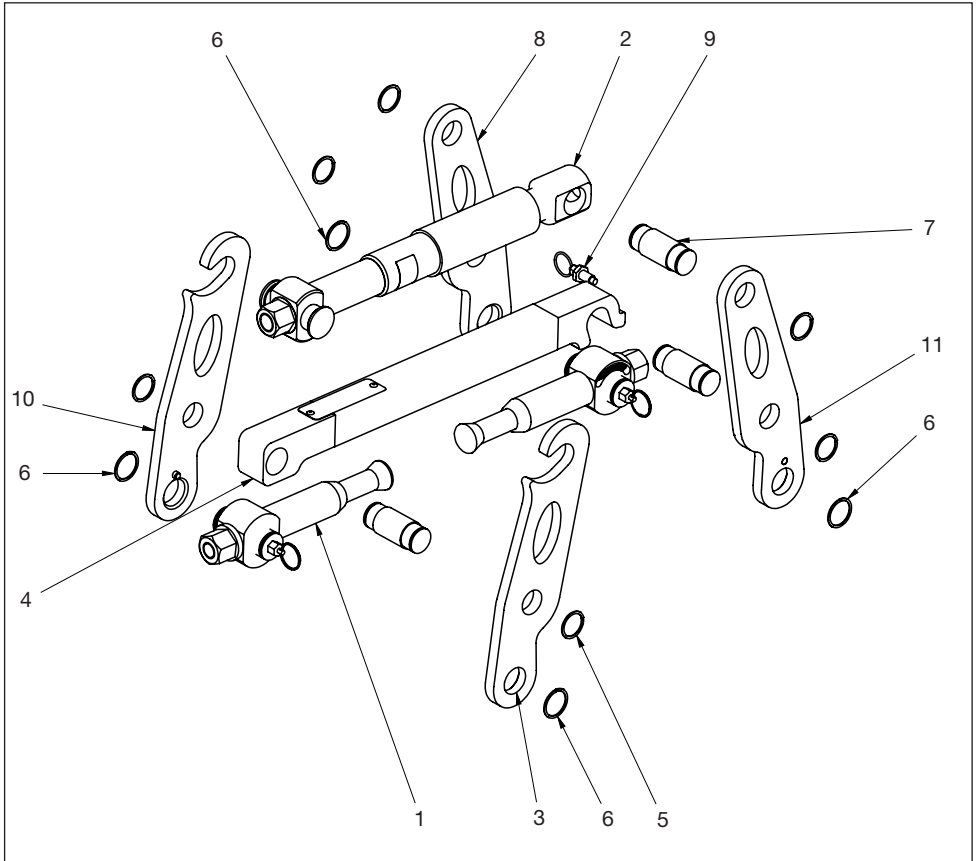
8.11 Exploded Views - SG6TM Actuator Assembly



8.12 Table of Parts - SG6TM Actuator Assembly

Item	Description	Qty	Part Numbers
1	Actuator Bolt	1	622201-01
2	Open Actuator Union	1	622501-01
3	Actuator Sleeve	1	622701-01
4	M3 x 4mm Button Head Socket Screw (GD10.9)	1	622801-01
5	Closed Actuator Union	1	622901-01
6	Actuator Retaining Ring	1	623101-01
7	M6 x 10 Socket Flange Button Screw	1	623001-01
8	Foam Grip	1	632801-01
9	M20 Spring Ring	4	611101-01
	M16 Spring Ring	4	611001-01

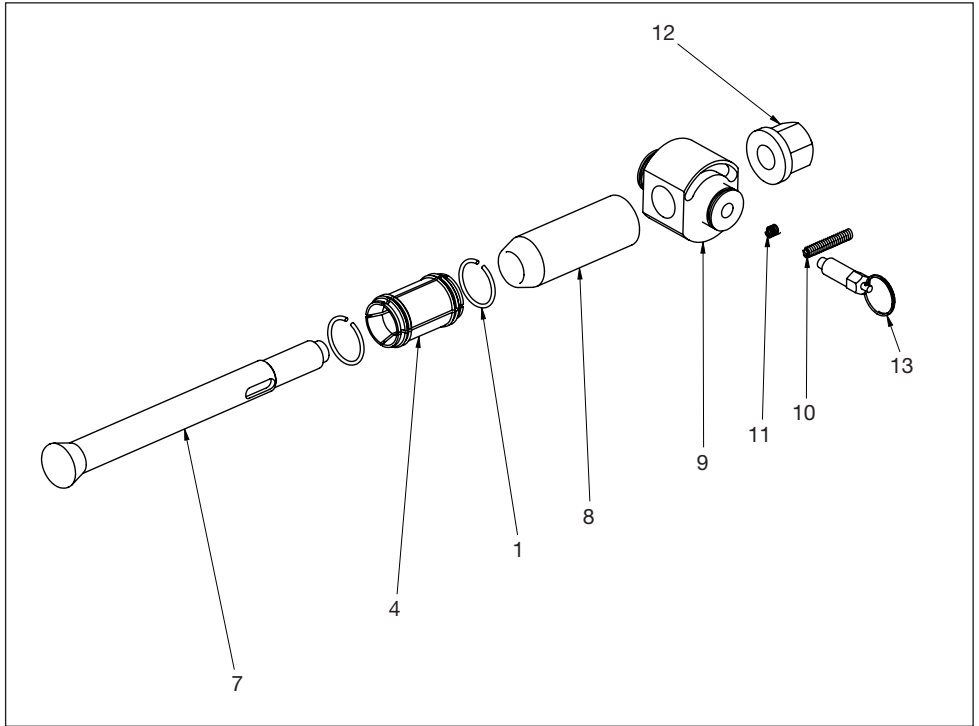
8.13 Exploded Views - SG11TM



8.14 Table of Parts - SG11TM

Item	Description	Qty	Part Numbers
1	Collet Head Assembly	1	See section 8.15/ 8.16
2	Actuator Assembly	1	See section 8.17/ 8.18
3	Open Leg Left Hand - no pin	1	631301-01
4	Cantilever	1	632101-01
5	Spirol Retaining Ring	6	631501-01
6	Spirol Retaining Ring	4	631601-01
7	Cantilever Pin	3	631701-01
8	Closed Leg Left Hand - no pin	1	631901-01
9	M8 Spring Plunger	1	632001-01
10	SG11TM Open Leg Right Hand with pin weldment	1	631401-01
11	SG11TM Closed Leg Right Hand with pin weldment	1	631801-01

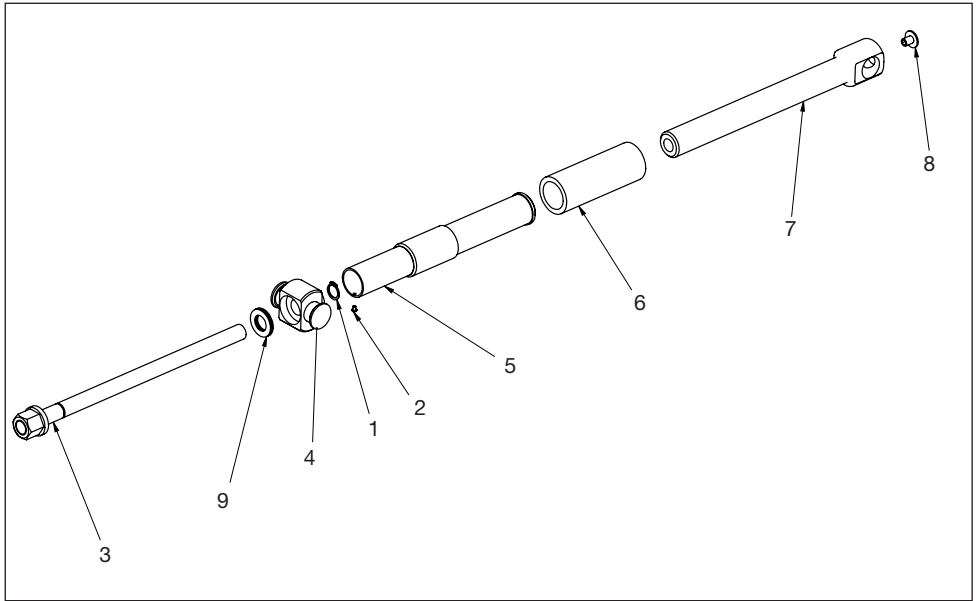
8.15 Exploded Views - SG11TM Collet Head Assembly



8.16 Table of Parts - SG11TM Collet Head

Item	Description	Qty	Part Numbers
1	M30 Spring Ring	4	631001-01
	M33 Spring Ring	4	631101-01
	M36 Spring Ring	4	631201-01
4	M30 Collet	2	630201-90
	M33 Collet	2	630301-90
	M36 Collet	2	630401-90
7	Collet Holder	2	630101-01
8	Drive Cone	2	630501-01
9	Collet Union	2	630601-01
10	Centering Spring 1	2	630701-01
	Centering Spring 2	2	633201-01
12	M16x2 Collet Nut	2	630801-01
13	Pull Pin M10	2	900502-01

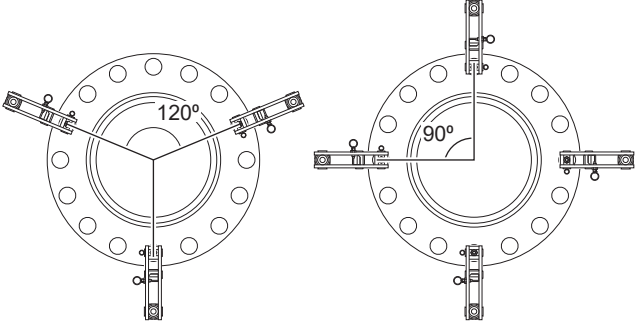
8.17 Exploded Views - SG11TM Actuator Assembly

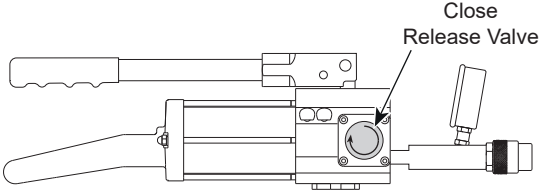


8.18 Table of Parts - SG11TM Actuator Assembly

Item	Description	Qty	Part Numbers
1	Circlip to Suit 15mm Shaft	1	633101-01
2	M3x4mm Button Head Socket Screw GD10.9	1	622801-01
3	Actuator Bolt Assembly	1	632201-01
4	Open Actuator Union	1	632501-01
5	Actuator Sleeve	1	632701-01
6	Foam Grip	1	632801-01
7	Closed Actuator Union	1	632901-01
8	M8x10 Socket Flange Button Screw	1	633001-01
9	Thrust Bearing	1	632301-01

9. Troubleshooting

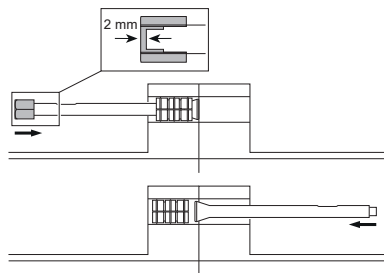
Fault	The tools have been tensioned to their maximum torque value but the joint will not spread.
Possible Cause	The force required to spread the joint is greater than that of the tools used.
Corrective Action	<p>Add another one or two tools and distribute them equally around the joint (120° apart with 3 tools and 90° apart with 4 tools) and try again.</p> 

Fault	Hoses are connected but the tool does not advance. The pressure on the pump handle is minimal.
Possible Cause	The release valve is in the retract (open) position
Corrective Action	<p>Close the release valve .</p> 

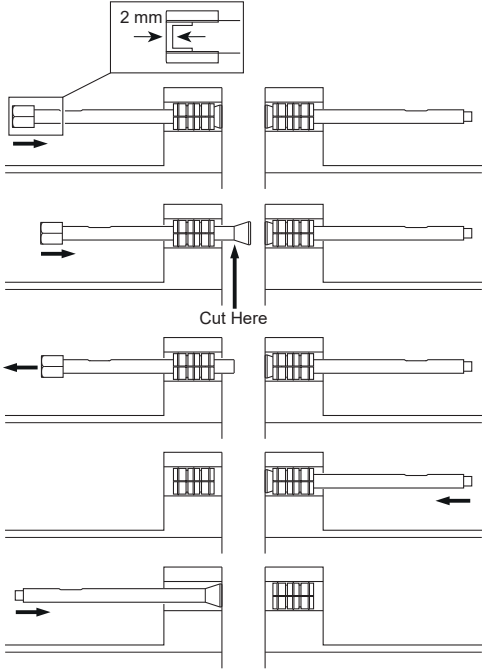
Fault	Hoses are connected and the pump quickly reaches maximum pressure but the tool has not advanced.
Possible Cause	One or more of the connectors are not fully tightened and the hydraulic oil cannot pass through from the pump to the cylinder.
Corrective Action	Check all connectors are fully tightened and the release valve is in the fully closed position.

Fault	Hoses are connected and the tool advances but there is minimal pressure on the pump handle; the handle is rising back of its own accord.
Possible Cause	There is dirt or a damaged valve seat within the pump unit.
Corrective Action	The pump should be sent to an authorised Equalizer distributor for repair.

Fault	One collet is jammed in a bolt hole.
Possible Cause	A collet which is too small or large has been selected, or the collet has been inserted into a damaged or non-round bolt hole.
Corrective Action	<p>Removal can be achieved as follows:</p> <ol style="list-style-type: none"> 1. Pull the collet spring plunger ring out, and remove the rest of the tool, leaving the collet head assembly in the bolt hole. 2. Unscrew the collet nut and remove the drive cone and collet cone. 3. Screw the collet nut back onto the collet holder until it is 1 - 2 mm off the end. 4. Using a hammer and a suitable drift, move the collet holder until the collet nut is against the flange. 5. Remove the collet nut and push the collet holder through the flange and out of the other end of the bolt hole. 6. Drive the collet out using the collet holder.



Fault	One collet is jammed in a bolt hole.
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Fault	A pair of collets are jammed in a bolt hole.
Possible Cause	A collet which is too small or large has been selected, or the collet has been inserted into a damaged or non-round bolt hole.
Corrective Action	<p>The flange must be spread before removal can be attempted. This can be done using another pair of Secure Grip tools, or another method if available. Removal can be achieved as follows:</p> <ol style="list-style-type: none"> 1. On both sides, pull the collet spring plunger ring out, and remove the rest of the tool, leaving the collet head assemblies in the bolt hole. 2. On both sides, unscrew the collet nut and remove the drive cone and collet cone. 3. On the left-hand side, screw the collet nut back on to the collet holder until it is 1 - 2 mm off the end. 4. Using a hammer and a suitable drift, move the collet holder until it is possible to cut off the tapered end of the collet holder. 5. Cut off the tapered end with a hack saw or other cutting tool. 6. Withdraw the collet holder from the bolt hole. 7. Using a hammer and a suitable drift, move the collet holder on the right-hand side up to the left-hand side collet and drive it out. 8. Drive the right-hand side collet out using the collet holder. 

ANNEX 1 - SECURE GRIP TOOL RANGE OF APPLICATION

Use the charts on the following pages to determine which Secure Grip tool (and which collet size) is suitable for a particular flange.

The charts are categorised as per flange type.

Collet identification	Tool type	Operation type	SWL [ton]	Min. bolt-hole diameter	Max. bolt-hole diameter
M16 5/8"	SG4TM	Manual	4	17.5	19.5
M20 3/4"	SG4TM	Manual	4	20.5	23
M24 7/8"	SG6TM	Manual	6	24	26.5
M27 1"	SG6TM	Manual	6	27.5	30
M30 1 1/8"	SG11TM	Manual	11	30	33
M33 1 1/4"	SG11TM	Manual	11	32	36
M36 1 3/8"	SG11TM	Manual	11	35	39
M39 1 1/2"	SG13TE	Hydraulic	13	38	42
M42 1 5/8"	SG13TE	Hydraulic	13	41	45
M45 1 3/4"	SG13TE	Hydraulic	13	44	49
M48 1 7/8"	SG15TE	Hydraulic	15	47.5	52
M52 2"	SG15TE	Hydraulic	15	50.5	56
M56 2 1/4"	SG15TE	Hydraulic	15	55.5	62
M60	SG18TE	In-line Hydraulic	18	59.5	63
M64 2 1/2"	SG18TE	In-line Hydraulic	18	63	69
M70 2 3/4"	SG18TE	In-line Hydraulic	18	69	75
M76 3"	SG25TE	In-line Hydraulic	25	75	81
M80 3 1/4"	SG25TE	In-line Hydraulic	25	79	86
M84	SG25TE	In-line Hydraulic	25	83	88
M90 3 1/2"	SG25TE	In-line Hydraulic	25	88	94
M95 3 3/4"	SG25TE	In-line Hydraulic	25	94	101
M100 4"	SG25TE	In-line Hydraulic	25	99	107

SPO		→	See page 48-49
ANSI	Compact	→	See page 50
	Orifice	→	See page 51
	Reducing	→	See page 52-53
DIN	Blind	→	See page 54
	Threaded	→	See page 55
	Weldneck	→	See page 56-57
	Flat	→	See page 58
	Lapped	→	See page 59
ASME	Series A weld neck	→	See page 60-61
	Series A lapped	→	See page 62-63
	Series A socket welded	→	See page 64
	Series B weld neck and blind	→	See page 65
API	6B weld neck	→	See page 66
	6B blind and threaded	→	See page 67
	6BX weld neck	→	See page 68
	6BX blind and test	→	See page 69
BS		→	See page 70-71

SPO FLANGES

Nominal pipe size	Class							
	150		300		600		900	
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool
1 1/2"								
2"								
2 1/2"								
3"								
4"					M16 5/8"	SG4TM	M16 5/8"	SG4TM
5"					M16 5/8"	SG4TM	M16 5/8"	SG4TM
6"					M16 5/8"	SG4TM	M16 5/8"	SG4TM
8"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM
10"			M16 5/8"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM
12"			M16 5/8"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM
14"			M16 5/8"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM
16"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
18"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM
20"	M16 5/8"	SG4TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM
22"	M16 5/8"	SG4TM	M24 7/8"	SG6TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE
24"	M20 3/4"	SG4TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M42 1 5/8"	SG13TE
26"	M20 3/4"	SG4TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M45 1 3/4"	SG13TE
28"	M20 3/4"	SG4TM	M27 1"	SG6TM	M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE
30"	M20 3/4"	SG4TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M48 1 7/8"	SG15TE
32"	M20 3/4"	SG4TM	M30 1 1/8"	SG11TM	M39 1 1/2"	SG13TE	M52 2"	SG15TE
34"	M20 3/4"	SG4TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M60	SG18TE
36"	M24 7/8"	SG6TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M60	SG18TE
38"	M24 7/8"	SG6TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M64 2 1/2"	SG18TE
40"	M24 7/8"	SG6TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M64 2 1/2"	SG18TE
42"	M24 7/8"	SG6TM	M36 1 3/8"	SG11TM	M48 1 7/8"	SG15TE	M64 2 1/2"	SG18TE
44"	M24 7/8"	SG6TM	M36 1 3/8"	SG11TM	M48 1 7/8"	SG15TE	M64 2 1/2"	SG18TE
46"	M24 7/8"	SG6TM	M39 1 1/2"	SG13TE	M48 1 7/8"	SG15TE	M70 2 3/4"	SG18TE
48"	M24 7/8"	SG6TM	M39 1 1/2"	SG13TE	M48 1 7/8"	SG15TE	M76 3"	SG25TE

Nominal pipe size	1500		2500		4500i	
	Collet	Tool	Collet	Tool	Collet	Tool
1 1/2"					M16 5/8"	SG4TM
2"			M16 5/8"	SG4TM	M16 5/8"	SG4TM
2 1/2"			M20 3/4"	SG4TM	M20 3/4"	SG4TM
3"	M16 5/8"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
4"	M20 3/4"	SG4TM	M27 1"	SG6TM	M24 7/8"	SG6TM
5"	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
6"	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM
8"	M27 1"	SG6TM	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE
10"	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M48 1 7/8"	SG15TE
12"	M33 1 1/4"	SG11TM	M45 1 3/4"	SG13TE	M48 1 7/8"	SG15TE
14"	M36 1 3/8"	SG11TM	M48 1 7/8"	SG15TE	M52 2"	SG15TE
16"	M39 1 1/2"	SG13TE	M60	SG18TE	M60	SG18TE
18"	M45 1 3/4"	SG13TE	M60	SG18TE	M64 2 1/2"	SG18TE
20"	M48 1 7/8"	SG15TE	M64 2 1/2"	SG18TE	M84	SG25TE
22"	M52 2"	SG15TE	M76 3"	SG25TE	M90 3 1/2"	SG25TE
24"	M60	SG18TE	M84	SG25TE	M100 4"	SG25TE
26"	M60	SG18TE				
28"	M60	SG18TE				
30"	M64 2 1/2"	SG18TE				
32"	M64 2 1/2"	SG18TE				
34"	M70 2 3/4"	SG18TE				
36"	M84	SG25TE				
38"	M90 3 1/2"	SG25TE				
40"	M84	SG25TE				
42"	M95 3 3/4"	SG25TE				
44"	M95 3 3/4"	SG25TE				
46"	M95 3 3/4"	SG25TE				
48"	M95 3 3/4"	SG25TE				

ANSI COMPACT

Nominal pipe size	300		600		900		1500		2500	
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool
1"	no flange		no flange		no flange		no flange		no flange	
1 1/2"										
2"									M16 5/8"	SG4TM
2 1/2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM
3"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
4"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
5"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M27 1"	SG6TM
6"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM
8"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M27 1"	SG6TM	M36 1 3/8"	SG11TM
10"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M45 1 3/4"	SG13TE
12"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M52 2"	SG15TE
14"	M20 3/4"	SG4TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE
16"	M20 3/4"	SG4TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M42 1 5/8"	SG13TE	M52 2"	SG15TE
18"	M24 7/8"	SG6TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE	M56 2 1/4"	SG15TE
20"	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE	M52 2"	SG15TE	M64 2 1/2"	SG18TE
24"	M30 1 1/8"	SG11TM	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE	M56 2 1/4"	SG15TE	M64 2 1/2"	SG18TE
30"	M27 1"	SG6TM	M42 1 5/8"	SG13TE	M56 2 1/4"	SG15TE	M70 2 3/4"	SG18TE		
36"	M30 1 1/8"	SG11TM	M45 1 3/4"	SG13TE	M56 2 1/4"	SG15TE	M76 3"	SG25TE		
40"	M30 1 1/8"	SG11TM	M52 2"	SG15TE	M64 2 1/2"	SG18TE	M84	SG25TE		

ANSI ORIFICE

Nominal pipe size	300		400		600		900		1500		2500	
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool
1"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
1 1/2"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM
2 1/2"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
3"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M33 1 1/4"	SG11TM
4"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE
6"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M52 2"	SG15TE
8"	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE	M52 2"	SG15TE
10"	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M48 1 7/8"	SG15TE	M64 2 1/2"	SG18TE
12"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M52 2"	SG15TE	M70 2 3/4"	SG18TE
14"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE	M56 2 1/4"	SG15TE		
16"	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE	M64 2 1/2"	SG18TE		
18"	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE	M48 1 7/8"	SG15TE	M70 2 3/4"	SG18TE		
20"	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE	M52 2"	SG15TE	M76 3"	SG25TE		
24"	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE	M48 1 7/8"	SG15TE	M64 2 1/2"	SG18TE	M90 3 1/2"	SG25TE		

ANSI REDUCING

Nominal pipe size	Class							
	150		300		400		600	
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool
1/2"								
3/4"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
1"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
1 1/4"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
1 1/2"			M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
2 1/2"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
3"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
3 1/2"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
4"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
5"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM
6"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM
8"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
10"	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM
12"	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM
14"	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM
16"	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE
18"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M42 1 5/8"	SG13TE
20"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M42 1 5/8"	SG13TE
22"	no flange		no flange		no flange		no flange	
24"	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE	M48 1 7/8"	SG15TE
26"	M33 1 1/4"	SG11TM	M42 1 5/8"	SG13TE	M42 1 5/8"	SG13TE	M48 1 7/8"	SG15TE
28"	M33 1 1/4"	SG11TM	M42 1 5/8"	SG13TE	M42 1 5/8"	SG13TE	M52 2"	SG15TE
30"	M33 1 1/4"	SG11TM	M45 1 3/4"	SG13TE	M45 1 3/4"	SG13TE	M56 2 1/4"	SG15TE
32"	M39 1 1/2"	SG13TE	M48 1 7/8"	SG15TE	M48 1 7/8"	SG15TE	M56 2 1/4"	SG15TE
34"	M39 1 1/2"	SG13TE	M48 1 7/8"	SG15TE	M48 1 7/8"	SG15TE	M56 2 1/4"	SG15TE
36"	M39 1 1/2"	SG13TE	M52 2"	SG15TE	M52 2"	SG15TE	M56 2 1/4"	SG15TE
38"	M39 1 1/2"	SG13TE	M39 1 1/2"	SG13TE	M39 1 1/2"	SG13TE	M56 2 1/4"	SG15TE
40"	M39 1 1/2"	SG13TE	M42 1 5/8"	SG13TE	M42 1 5/8"	SG13TE	M56 2 1/4"	SG15TE
42"	M39 1 1/2"	SG13TE	M42 1 5/8"	SG13TE	M42 1 5/8"	SG13TE	M56 2 1/4"	SG15TE
44"	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE	M45 1 3/4"	SG13TE	M56 2 1/4"	SG15TE
46"	M39 1 1/2"	SG13TE	M48 1 7/8"	SG15TE	M48 1 7/8"	SG15TE	M56 2 1/4"	SG15TE
48"	M39 1 1/2"	SG13TE	M48 1 7/8"	SG15TE	M48 1 7/8"	SG15TE	M70 2 3/4"	SG18TE

Nominal pipe size	900		1500		2500	
	Collet	Tool	Collet	Tool	Collet	Tool
1/2"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
3/4"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
1"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
1 1/4"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM
1 1/2"	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
2"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM
2 1/2"	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
3"	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM
3 1/2"	no flange		no flange		no flange	
4"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE
5"	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE
6"	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M52 2"	SG15TE
8"	M36 1 3/8"	SG11TM	M42 1 5/8"	SG13TE	M52 2"	SG15TE
10"	M36 1 3/8"	SG11TM	M48 1 7/8"	SG15TE	M64 2 1/2"	SG18TE
12"	M36 1 3/8"	SG11TM	M52 2"	SG15TE	M70 2 3/4"	SG18TE
14"	M39 1 1/2"	SG13TE	M56 2 1/4"	SG15TE		
16"	M42 1 5/8"	SG13TE	M64 2 1/2"	SG18TE		
18"	M48 1 7/8"	SG15TE	M70 2 3/4"	SG18TE		
20"	M52 2"	SG15TE	M76 3"	SG25TE		
22"	no flange		no flange			
24"	M64 2 1/2"	SG18TE	M90 3 1/2"	SG25TE		
26"	M70 2 3/4"	SG18TE				
28"	M76 3"	SG25TE				
30"	M76 3"	SG25TE				
32"	M84	SG25TE				
34"	M90 3 1/2"	SG25TE				
36"	M90 3 1/2"	SG25TE				
38"	M90 3 1/2"	SG25TE				
40"	M90 3 1/2"	SG25TE				
42"	M90 3 1/2"	SG25TE				
44"	M95 3 3/4"	SG25TE				
46"	M100 4"	SG25TE				
48"	M100 4"	SG25TE				

DIN BLIND

Nominal pipe size	Class											
	PN16		PN25		PN40		PN64		PN100			
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool
3/4"											no flange	
1"											M16 5/8"	SG4TM
1 1/4"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM
1 1/2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM
2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM
2 1/2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM
3"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM
4"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M27 1"	SG6TM
5"	M16 5/8"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM
6"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM
7"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
8"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM
10"	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM
12"	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM	M39 1 1/2"	SG13TE
14"	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M45 1 3/4"	SG13TE
16"	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M36 1 3/8"	SG11TM	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE
20"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M39 1 1/2"	SG13TE	M39 1 1/2"	SG13TE		

DIN THREADED

Nominal pipe size	PN16		PN25		PN40		PN64		PN100	
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool
3/4"									M16 5/8"	SG4TM
1"									M16 5/8"	SG4TM
1 1/4"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM
1 1/2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM
2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM
2 1/2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM
3"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM
4"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM
5"	M16 5/8"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM
6"	M16 5/8"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG11TM	M30 1 1/8"	SG11TM

DIN WELDNECK

Nominal pipe size	Class							
	PN16		PN25		PN40		PN64	
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool
1"							M16 5/8"	SG4TM
1 1/4"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM		
1 1/2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM
2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM
2 1/2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM
3"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM
4"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM
5"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M27 1"	SG6TM
6"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M30 1 1/8"	SG11TM
7"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M20 3/4"	SG4TM	M30 1 1/8"	SG11TM
8"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M20 3/4"	SG4TM	M33 1 1/4"	SG11TM
10"	M24 7/8"	SG6TM	M27 1"	SG6TM	M24 7/8"	SG6TM	M33 1 1/4"	SG11TM
12"	M24 7/8"	SG6TM	M27 1"	SG6TM	M24 7/8"	SG6TM	M33 1 1/4"	SG11TM
14"	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M24 7/8"	SG6TM	M36 1 3/8"	SG11TM
16"	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M27 1"	SG6TM	M39 1 1/2"	SG13TE
18"	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M27 1"	SG6TM		
20"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M30 1 1/8"	SG11TM		
24"	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM				
28"	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE				
32"	M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE				
36"	M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE				
40"	M39 1 1/2"	SG13TE	M52 2"	SG15TE				
48"	M45 1 3/4"	SG13TE						
56"	M45 1 3/4"	SG13TE						
64"	M52 2"	SG15TE						
72"	M52 2"	SG15TE						
80"	M56 2 1/4"	SG15TE						

Nominal pipe size	Class					
	PN64		PN100		PN160	
	Collet	Tool	Collet	Tool	Collet	Tool
1"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
1 1/4"						
1 1/2"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
2"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
2 1/2"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
3"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
4"	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM
5"	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM
6"	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM
7"	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM
8"	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM
10"	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE
12"	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M39 1 1/2"	SG13TE
14"	M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE		
16"	M39 1 1/2"	SG13TE				
18"						
20"						
24"						
28"						
32"						
36"						
40"						
48"						
56"						
64"						
72"						
80"						

DIN FLAT

Nominal pipe size	Class			
	PN6		PN10	
	Collet	Tool	Collet	Tool
1 1/4"			M16 5/8"	SG4TM
1 1/2"			M16 5/8"	SG4TM
2"			M16 5/8"	SG4TM
2 1/2"			M16 5/8"	SG4TM
3"	M16 5/8"	SG4TM	M16 5/8"	SG4TM
4"	M16 5/8"	SG4TM	M16 5/8"	SG4TM
5"	M16 5/8"	SG4TM	M16 5/8"	SG4TM
6"	M16 5/8"	SG4TM	M20 3/4"	SG4TM
8"	M16 5/8"	SG4TM	M20 3/4"	SG4TM
10"	M16 5/8"	SG4TM	M20 3/4"	SG4TM
12"	M20 3/4"	SG4TM	M20 3/4"	SG4TM
14"	M20 3/4"	SG4TM	M20 3/4"	SG4TM
16"	M20 3/4"	SG4TM	M24 7/8"	SG6TM
18"	M20 3/4"	SG4TM	M24 7/8"	SG6TM
20"	M20 3/4"	SG4TM	M24 7/8"	SG6TM

DIN LAPPED

Nominal pipe size	Class			
	PN6		PN10	
	Collet	Tool	Collet	Tool
1 1/4"			M16 5/8"	SG4TM
1 1/2"			M16 5/8"	SG4TM
2"			M16 5/8"	SG4TM
2 1/2"			M16 5/8"	SG4TM
3"	M16 5/8"	SG4TM	M16 5/8"	SG4TM
4"	M16 5/8"	SG4TM	M16 5/8"	SG4TM
5"	M16 5/8"	SG4TM	M16 5/8"	SG4TM
6"	M16 5/8"	SG4TM	M20 3/4"	SG4TM
8"	M16 5/8"	SG4TM	M20 3/4"	SG4TM
10"	M16 5/8"	SG4TM	M20 3/4"	SG4TM
12"	M20 3/4"	SG4TM	M20 3/4"	SG4TM
14"	M20 3/4"	SG4TM	M20 3/4"	SG4TM
16"	M20 3/4"	SG4TM	M24 7/8"	SG6TM
18"	M20 3/4"	SG4TM	M24 7/8"	SG6TM
20"	M20 3/4"	SG4TM	M24 7/8"	SG6TM
24"	M24 7/8"	SG6TM	M27 1"	SG6TM
28"	M24 7/8"	SG6TM	M27 1"	SG6TM
32"	M27 1"	SG6TM	M30 1 1/8"	SG11TM
36"	M27 1"	SG6TM		
40"	M27 1"	SG6TM		

ASME SERIES A WELD NECK

Nominal pipe size	Class							
	150		300		400		600	
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool
1/2"								
3/4"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
1"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
1 1/4"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
1 1/2"			M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
2 1/2"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
3"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
3 1/2"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
4"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
5"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM
6"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM
8"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
10"	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM
12"	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM
14"	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM
16"	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE
18"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M42 1 5/8"	SG13TE
20"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M42 1 5/8"	SG13TE
22"								
24"	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE	M48 1 7/8"	SG15TE
26"	M33 1 1/4"	SG11TM	M42 1 5/8"	SG13TE	M42 1 5/8"	SG13TE	M48 1 7/8"	SG15TE
28"	M33 1 1/4"	SG11TM	M42 1 5/8"	SG13TE	M42 1 5/8"	SG13TE	M52 2"	SG15TE
30"	M33 1 1/4"	SG11TM	M45 1 3/4"	SG13TE	M42 1 5/8"	SG13TE	M56 2 1/4"	SG15TE
32"	M39 1 1/2"	SG13TE	M48 1 7/8"	SG15TE	M48 1 7/8"	SG15TE	M56 2 1/4"	SG15TE
34"	M39 1 1/2"	SG13TE	M48 1 7/8"	SG15TE	M48 1 7/8"	SG15TE	M56 2 1/4"	SG15TE
36"	M39 1 1/2"	SG13TE	M52 2"	SG15TE	M52 2"	SG15TE	M56 2 1/4"	SG15TE
38"	M39 1 1/2"	SG13TE	M39 1 1/2"	SG13TE	M39 1 1/2"	SG13TE	M56 2 1/4"	SG15TE
40"	M39 1 1/2"	SG13TE	M42 1 5/8"	SG13TE	M42 1 5/8"	SG13TE	M56 2 1/4"	SG15TE
42"	M39 1 1/2"	SG13TE	M42 1 5/8"	SG13TE	M42 1 5/8"	SG13TE	M56 2 1/4"	SG15TE
44"	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE	M45 1 3/4"	SG13TE	M56 2 1/4"	SG15TE
46"	M39 1 1/2"	SG13TE	M48 1 7/8"	SG15TE	M48 1 7/8"	SG15TE	M56 2 1/4"	SG15TE
48"	M39 1 1/2"	SG13TE	M48 1 7/8"	SG15TE	M48 1 7/8"	SG15TE	M70 2 3/4"	SG18TE

Nominal pipe size	Class					
	900		1500		2500	
	Collet	Tool	Collet	Tool	Collet	Tool
1/2"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
3/4"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
1"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
1 1/4"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM
1 1/2"	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
2"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM
2 1/2"	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
3"	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM
3 1/2"						
4"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE
5"	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE
6"	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M52 2"	SG15TE
8"	M36 1 3/8"	SG11TM	M42 1 5/8"	SG13TE	M52 2"	SG15TE
10"	M36 1 3/8"	SG11TM	M48 1 7/8"	SG15TE	M64 2 1/2"	SG18TE
12"	M36 1 3/8"	SG11TM	M52 2"	SG15TE	M70 2 3/4"	SG18TE
14"	M39 1 1/2"	SG13TE	M56 2 1/4"	SG15TE		
16"	M42 1 5/8"	SG13TE	M64 2 1/2"	SG18TE		
18"	M48 1 7/8"	SG15TE	M70 2 3/4"	SG18TE		
20"	M52 2"	SG15TE	M76 3"	SG25TE		
22"						
24"	M64 2 1/2"	SG18TE	M90 3 1/2"	SG25TE		
26"	M70 2 3/4"	SG18TE				
28"	M76 3"	SG25TE				
30"	M76 3"	SG25TE				
32"	M84	SG25TE				
34"	M90 3 1/2"	SG25TE				
36"	M90 3 1/2"	SG25TE				
38"	M90 3 1/2"	SG25TE				
40"	M90 3 1/2"	SG25TE				
42"	M90 3 1/2"	SG25TE				
44"	M95 3 3/4"	SG25TE				
46"	M100 4"	SG25TE				
48"	M100 4"	SG25TE				

ASME SERIES A LAPPED

		Class							
		150		300		400		600	
Nominal pipe size	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	
1/2"									
3/4"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	
1"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	
1 1/4"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	
1 1/2"			M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	
2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	
2 1/2"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	
3"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	
3 1/2"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	
4"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	
5"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM	
6"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM	
8"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	
10"	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	
12"	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	

Nominal pipe size	Class					
	900		1500		2500	
	Collet	Tool	Collet	Tool	Collet	Tool
1/2"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
3/4"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
1"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
1 1/4"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM
1 1/2"	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
2"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM
2 1/2"	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
3"	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM
3 1/2"	no flange		no flange		no flange	
4"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE
5"	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE
6"	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M52 2"	SG15TE
8"	M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE	M52 2"	SG15TE
10"	M36 1 3/8"	SG11TM	M48 1 7/8"	SG15TE	M64 2 1/2"	SG18TE
12"	M36 1 3/8"	SG11TM	M52 2"	SG15TE	M70 2 3/4"	SG18TE

ASME SERIES A SOCKET WELDED

Nominal pipe size	Class															
	150				300				600				1500			
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool		
1/2"													M20 3/4"	SG4TM		
3/4"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM		
1"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM		
1 1/4"			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM		
1 1/2"			M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M27 1"	SG6TM		
2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M24 7/8"	SG6TM		
2 1/2"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M27 1"	SG6TM		
3"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M27 1"	SG6TM		

ASME SERIES B WELD NECK AND BLIND

Nominal pipe size	Class											
	150		300		400		600		900			
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool
26"	M20 3/4"	SG4TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M42 1 5/8"	SG13TE	M64 2 1/2"	SG18TE	M70 2 3/4"	SG18TE
28"	M20 3/4"	SG4TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE	M76 3"	SG25TE	M76 3"	SG25TE
30"	M20 3/4"	SG4TM	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE	M52 2"	SG15TE	M76 3"	SG25TE	M80 3 1/4"	SG25TE
32"	M20 3/4"	SG4TM	M39 1 1/2"	SG13TE	M42 1 5/8"	SG13TE	M56 2 1/4"	SG15TE	M76 3"	SG25TE	M76 3"	SG25TE
34"	M24 7/8"	SG6TM	M39 1 1/2"	SG13TE	M42 1 5/8"	SG13TE	M56 2 1/4"	SG15TE	M76 3"	SG25TE	M76 3"	SG25TE
36"	M24 7/8"	SG6TM	M42 1 5/8"	SG13TE	M45 1 3/4"	SG13TE	M56 2 1/4"	SG15TE	M76 3"	SG25TE	M76 3"	SG25TE
42"	M27 1"	SG6TM	M45 1 3/4"	SG13TE	M56 2 1/4"	SG15TE						
48"	M30 1 1/8"	SG11TM	M48 1 7/8"	SG15TE								
54"	M30 1 1/8"	SG11TM	M48 1 7/8"	SG15TE								
60"	M33 1 1/4"	SG11TM	M56 2 1/4"	SG15TE								

API 6B WELD NECK

Nominal pipe size	Class					
	138 bar [2000 psi]		207 bar [3000 psi]		345 bar [5000 psi]	
	Collet	Tool	Collet	Tool	Collet	Tool
2 1/16"	M16 5/8"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
2 9/16"	M20 3/4"	SG4TM	M27 1"	SG6TM	M27 1"	SG6TM
3 1/8"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM
4 1/16"	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM
5 1/8"	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE
7 1/16"	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM
9"	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M42 1 5/8"	SG13TE
11"	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M48 1 7/8"	SG15TE

API 6B BLIND AND THREADED

Class						
Nominal pipe size	138 bar [2000 psi]		207 bar [3000 psi]		345 bar [5000 psi]	
	Collet	Tool	Collet	Tool	Collet	Tool
2 1/16"	M16 5/8"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
2 9/16"	M20 3/4"	SG4TM	M27 1"	SG6TM	M27 1"	SG6TM
3 1/8"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM
4 1/16"	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM
5 1/8"	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE
7 1/16"	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM
9"	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M42 1 5/8"	SG13TE
11"	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M48 1 7/8"	SG15TE
13 5/8"	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM		
16 3/4"	M39 1 1/2"	SG13TE	M42 1 5/8"	SG13TE		
21 1/4"	M42 1 5/8"	SG13TE	M52 2"	SG15TE		

API 6BX WELD NECK

Class						
Nominal pipe size	690 bar [10000 psi]		1035 bar [15000 psi]		1380 bar [20000 psi]	
	Collet	Tool	Collet	Tool	Collet	Tool
1 13/16"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM
2 1/16"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM
2 9/16"	M24 7/8"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM
3 1/16"	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM
4 1/16"	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM	M42 1 5/8"	SG13TE
5 1/8"	M30 1 1/8"	SG11TM				
7 1/16"	M39 1 1/2"	SG13TE	M39 1 1/2"	SG13TE	M52 2"	SG15TE
9"	M39 1 1/2"	SG13TE				
11"	M42 1 3/4"	SG13TE				
13 5/8"	M48 1 7/8"	SG15TE				
16 3/4"	M48 1 7/8"	SG15TE				

API 6BX BLIND AND TEST

Nominal pipe size	Class					
	690 bar [10000 psi]		1035 bar [15000 psi]		1380 bar [20000 psi]	
	Collet	Tool	Collet	Tool	Collet	Tool
1 13/16"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM
2 1/16"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM
2 9/16"	M24 7/8"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM
3 1/16"	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM
4 1/16"	M30 1 1/8"	SG11TM	M42 1 5/8"	SG13TE	M42 1 5/8"	SG13TE

BS APPLICATION CHART

Nominal pipe size	A		D		E		F		H	
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool
1/2"									M16 5/8"	SG4TM
3/4"									M16 5/8"	SG4TM
1"							M16 5/8"	SG4TM	M16 5/8"	SG4TM
1 1/4"							M16 5/8"	SG4TM	M16 5/8"	SG4TM
1 1/2"							M16 5/8"	SG4TM	M16 5/8"	SG4TM
2"	M16 5/8"	SG4TM			M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
2 1/2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
3"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
3 1/2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
4"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM
4 1/2"										
5"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
6"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
7"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
8"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
9"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
10"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
11"										
12"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
13"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM
14"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM
15"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM
16"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM
17"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM
18"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM
19"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM
20"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM
21"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM
22"	M27 1"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM
23"	M27 1"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM
24"	M27 1"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM
26"	M27 1"	SG6TM	no flange		no flange		no flange			
27"	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM		
29"	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM		
30"	M27 1"	SG6TM	M39 1 1/2"	SG13TE	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM		
33"	M27 1"	SG6TM	M39 1 1/2"	SG13TE	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE		
35"	M27 1"	SG6TM	M39 1 1/2"	SG13TE	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM		
36"	M27 1"	SG6TM	M39 1 1/2"	SG13TE	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM		
39"	M27 1"	SG6TM	M39 1 1/2"	SG13TE	M36 1 3/8"	SG11TM	M36 1 3/8"	SG11TM		
42"	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M36 1 3/8"	SG11TM		
45"	M27 1"	SG6TM	M39 1 1/2"	SG13TE	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE		
48"	M27 1"	SG6TM	M64 2 1/2"	SG18TE	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE		
54"	M30 1 1/8"	SG11TM	M90 3 1/2"	SG25TE						
60"	M39 1 1/2"	SG13TE	M36 1 3/8"	SG11TM						
66"	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM						
72"	M36 1 3/8"	SG11TM	M39 1 1/2"	SG13TE						
78"			M39 1 1/2"	SG13TE						
84"			M45 1 3/4"	SG13TE						
96"			M45 1 3/4"	SG13TE						
108"			M45 1 3/4"	SG13TE						
120"			M52 2"	SG15TE						

Nominal pipe size	J		K		R		S		T	
	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool	Collet	Tool
1/2"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
3/4"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
1"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
1 1/4"	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM
1 1/2"	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
2"	M20 3/4"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
2 1/2"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM
3"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM
3 1/2"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
4"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM
4 1/2"							M27 1"	SG6TM	M27 1"	SG6TM
5"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM
6"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM
7"	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM
8"	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE
9"	M27 1"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM
10"	M27 1"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE
11"							M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE
12"	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE
13"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M52 2"	SG15TE
14"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE		
15"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM		
16"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M45 1 3/4"	SG13TE		
17"	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM				
18"	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE				
19"	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M39 1 1/2"	SG13TE				
20"	M33 1 1/4"	SG11TM	M52 2"	SG15TE	M52 2"	SG15TE				
21"	M33 1 1/4"	SG11TM								
22"	M33 1 1/4"	SG11TM								
23"	M36 1 3/8"	SG11TM								
24"	M36 1 3/8"	SG11TM								
26"										
27"										
29"										
30"										
33"										
35"										
36"										
39"										
42"										
45"										
48"										
54"										
60"										
66"										
72"										
78"										
84"										
96"										
108"										
120"										



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