OPERATOR INSTRUCTION MANUAL

Hydraulikk as

kNm

Torque and tension specialist

SG4TM
SG6TM
SG11TM

SECURE-GRIP MECHANICAL FLANGE SPREADERS

EQUALIZER INTERNATIONAL LTD

www.equalizerinternational.com

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04/07/2019

1.

INTRODUCTION

The Equalizer™ SG Secure Grip tools are aids for use in normal maintenance and installation procedures. The tools can be used during pipework construction, commissioning or during routine maintenance.

The Mechanical Secure Grip Flange Spreading Tools are used to spread flanges with little or no access gap producing a spreading force up to:

- 7.4 T (74 kN) for the SG4TM when used in pairs
- 12 T (120 kN) for the SG6TM when used in pairs
- 22 T (220 kN) for the SG11TM when used in pairs

It is essential that the user familiarises themselves with the contents of this manual prior to using the tool.

This manual contains information for the following tools:

- SG4TM Secure Grip Mechanical Flange Spreader
- SG6TM Secure Grip Mechanical Flange Spreader
- SG11TM Secure Grip Mechanical Flange Spreader

2.

TOOL SAFETY

2.1
GENERAL SAFETY

These instructions cover the safe operation and maintenance of THE EQUALIZER **SG4TM**, **SG6TM** and **SG11TM** SECURE GRIP MECHANICAL FLANGE SPREADING tools. The use of these tools should be as part of a broader task-based risk assessment, which should be carried out by the operation supervisor or other competent person.

Failure to comply with the safety information contained within this manual could result in personal injury or equipment damage. Read all instructions, warnings and cautions carefully, and follow all safety precautions.

The safety of the operator, any assisting personnel and the general public is of paramount importance. Always work in accordance with applicable national, local, site & company-wide safety procedures.

2.2
PERSONNEL COMPETENCY

Only personnel deemed competent in the use of mechanical and hydraulic equipment should use these tools.

2.3
DISCLAIMER

Equalizer cannot be held responsible for injury or damage resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation. If in doubt as to the safety precautions and applications, contact Equalizer using the contact details at the back of this manual.

2.4
DEFINITION OF TERMS

A **CAUTION** is used to indicate correct operating or maintenance procedures and practices to prevent damage to, or destruction of equipment or other property.

A **WARNING** indicates a potential danger that requires correct procedures or practices to avoid personal injury.

A **DANGER** is only used when your action or lack of action may cause serious injury or even death.

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

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

2.5
HAZARDS

WARNING: ensure all hydraulic components are rated to a safe working pressure of 700 bar (10 000psi).

WARNING: Do not overload equipment. The risk of hydraulic overloading can be minimised by using the Equalizer Hand Pump, which has a factory-set safety valve preventing the safe working pressure being exceeded.

If alternative hydraulic pumps are used, ensure that there are adequate systems to limit the working pressure to 700 bar (10 000 psi).

CAUTION: ensure components are protected from external sources of damage, such as excessive heat, flame, moving machine parts, sharp edges and corrosive chemicals.

CAUTION: Take care to avoid sharp bends and kinks in hydraulic hoses. Bends and kinks can cause severe back-up pressure and cause hose failure. Protect hoses from dropped objects; a sharp impact may cause internal damage to hose wire strands. Protect hoses from crush risks, such as heavy objects or vehicles; crush damage can cause hose failure.

WARNING: Applying pressure to a damaged hose may cause it to rupture.

WARNING: Immediately replace worn or damaged parts. Use only genuine Equalizer parts from approved distributors or service centres. Equalizer parts have been engineered and manufactured to be fit-for-purpose.

DANGER: To minimise risk of personal injury keep hands and feet away from the tool and workpiece during operation.

WARNING: Always wear suitable clothing and Personal Protective Equipment (PPE). Do not handle pressurised hoses; escaping oil under pressure can penetrate the skin, causing serious injury. Seek medical attention immediately if oil penetration is suspected.

WARNING: Only pressurize complete and fully connected hydraulic systems. Do not pressurize systems that contain unconnected couplers.

CAUTION: Do not lift hydraulic equipment by the hoses or couplers. Use only the designated carrying handles.

CAUTION: Lubricate tools as directed in this manual prior to operation. Use only approved lubricants of high quality, following the lubricant manufacturers instructions.

CAUTION: Only use the designated anchor point for fixing the lanyard. Do not attach the lanyard to the plastic handle.

DANGER: Care should be taken when using the lanyard to avoid entanglement with body parts.

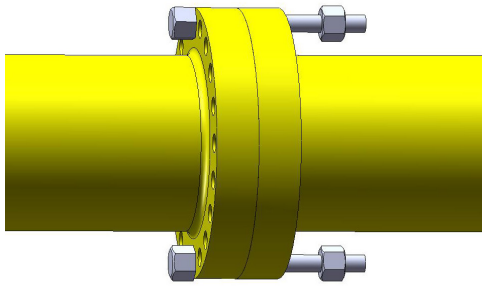
The vibration total value to which this tool is subjected does not exceed 2.5 m/s^2.

3.

TOOL OPERATION

3.1
GENERAL GUIDANCE

The Secure-Grip Mechanical 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.

3.2
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 SG range of 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.

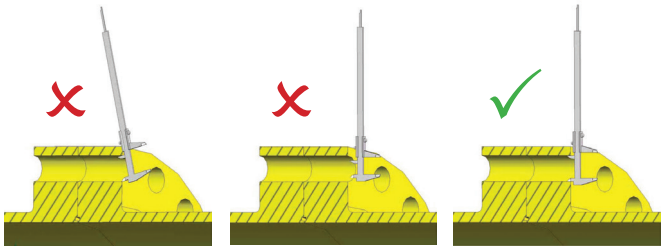
Minimum bolt-hole diameter (mm)	Maximum bolt-hole diameter (mm)	COLLET	TOOL
17.5 mm (0.69″)	19.5 mm (0.77″)	**M16 (⅝″)**	**SG4TM**
20.5 mm (0.81″)	23 mm (0.91″)	**M20 (¾″)**	
24 mm (0.94″)	26.5 mm (1.04″)	**M24 (⅞″)**	**SG6TM**
27.5 mm (1.1″)	30 mm (1.18″)	**M27 (1″)**	
30 mm (1.18″)	33 mm (1.30″)	**M30 (1 ⅛″)**	**SG11TM**
32 mm (1.26″)	36 mm (1.42″)	**M33 (1 ¼″)**	
35 mm (1.38″)	39 mm (1.54″)	**M36 (1 ⅜″)**	

3.3
BOLT HOLE MEASUREMENT

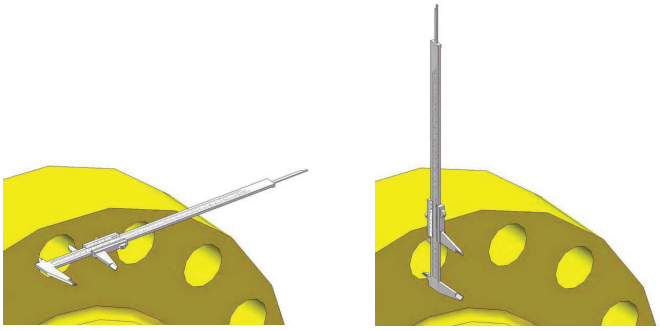
To ensure a true measurement is taken, hold the vernier calliper:

- square to the flange face
- in the middle of the bolt-hole

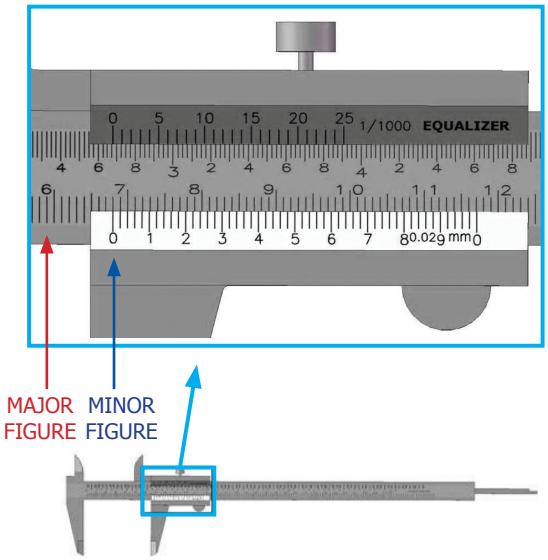
It is important that the vernier calliper is held in the middle of the bolt-hole, and not held at an angle to the flange face, nor used on a bolt-hole which is worn, damaged or distorted, as these actions may result in the selection of an incorrect size of collet.



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



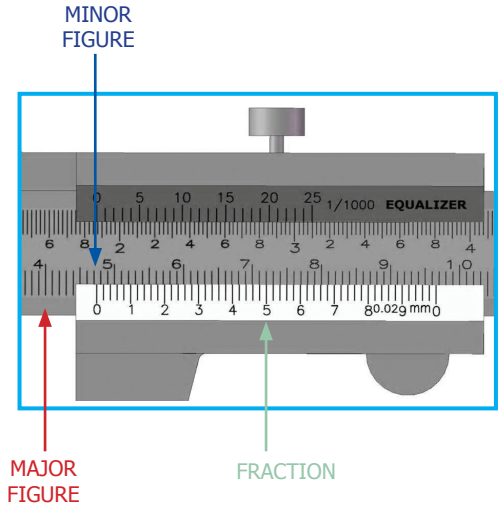
To read the measurement from the vernier calliper, scan along the desired scale from left to right. In this example, the major figure is 60 mm, this is added to the minor figure of 8 mm (indicated by where the vernier scale aligns with the main scale), giving a total measurement of 68 mm.



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”

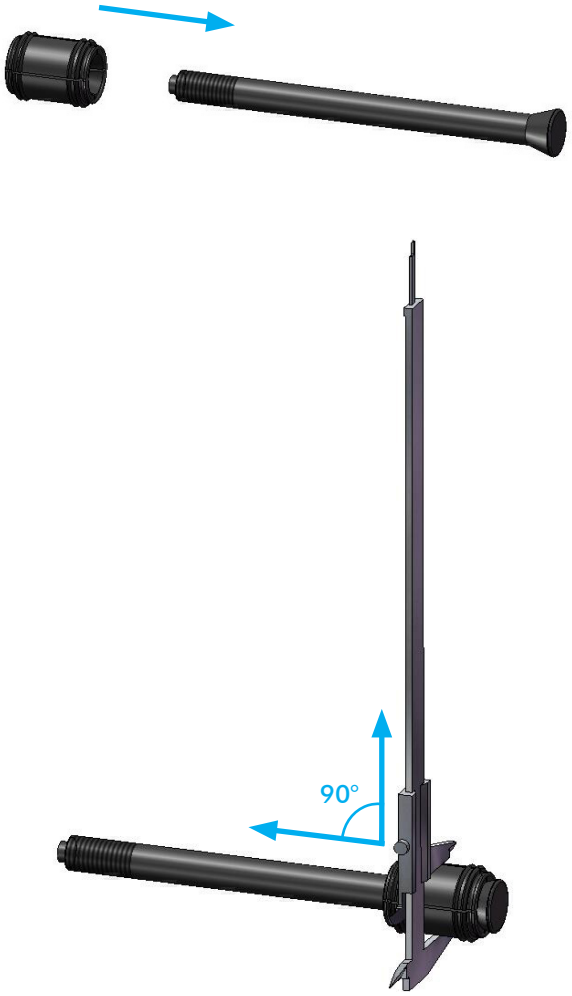
If the measurement contains fractions of a millimetre the method of reading the vernier calliper is slightly different. In this example, the major figure is 40 mm (read in the same way as previously described). The minor figure is 7 mm (read to the left of the zero). The fraction is 0.5 mm (read from 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 3.4 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



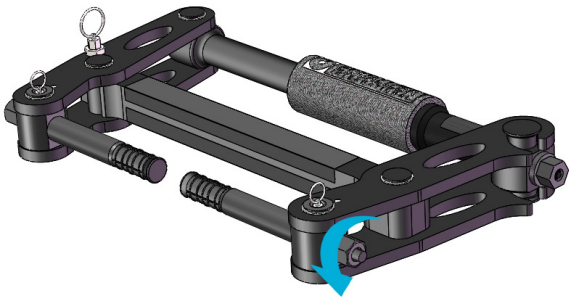
WARNING: The Secure-Grip collets are consumable items. The lifespan of a collet will vary depending on the flange materials with which it is used. To increase the lifespan of the collets it is recommended that they are flipped through 180° on the collet holder, this will produce more even wear across the four ridges on the outer profile of the collet. See Section 3.4 for details on collet removal and replacement.

Centre Section Ø	COLLET	Minimum bolt-hole diameter (mm)	Maximum bolt-hole diameter (mm)
16 mm	**M16 (⅝")**	17.5 mm (0.69")	19.5 mm (0.77")
19 mm	**M20 (¾")**	20.5 mm (0.81")	23 mm (0.91")
22.5 mm	**M24 (⅞")**	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 ⅛")**	30 mm (1.18")	33 mm (1.30")
29.5 mm	**M33 (1 ¼")**	32 mm (1.26")	36 mm (1.42")
32.5 mm	**M36 (1 ⅜")**	35 mm (1.38")	39 mm (1.54")

3.4
COLLET REPLACEMENT

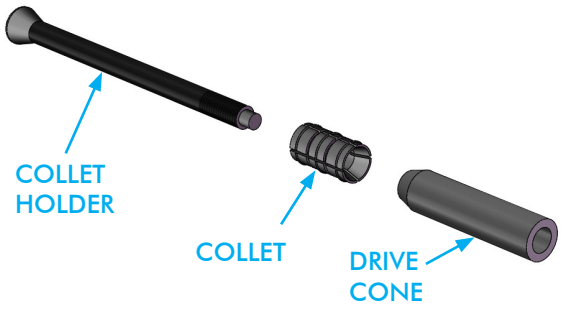
Once the correct collet has been selected it may be necessary to change the collet on the tool:

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 3.2.

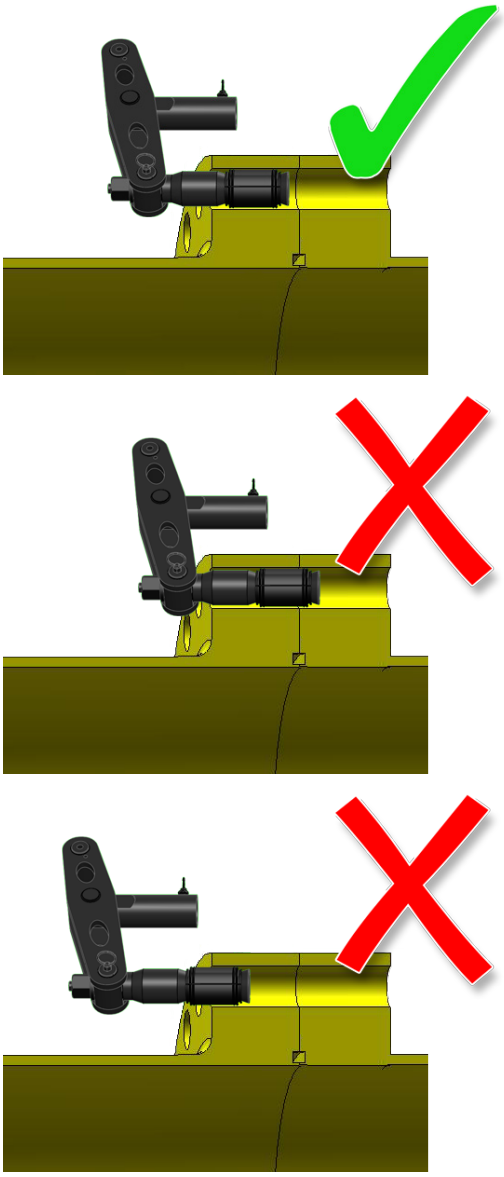


Repeat the operation for the opposite Collet Leg Subassembly.
Reverse the procedure to re-assemble the tool. Care should be taken to ensure the slot in the Collet holder is aligned with the collet plunger.

3.5
COLLET LEG SUBASSEMBLY INSTALLATION

The Collet Leg Subassemblies 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.

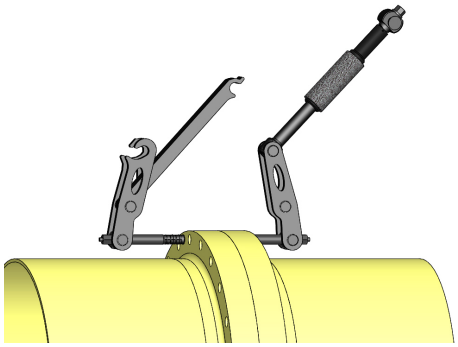


If a spacer, blind or valve is installed between the flanges, care should be taken to ensure that the Collet or Collet Holder do not extend beyond the flange bolt hole.

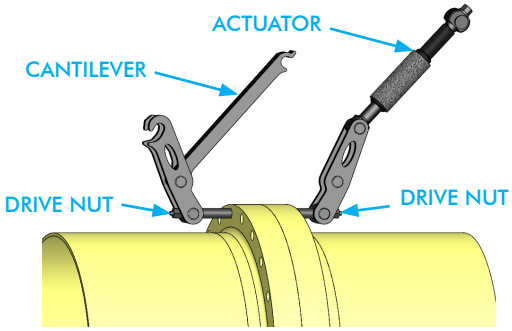
3.6
TOOL INSTALLATION AND OPERATION

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

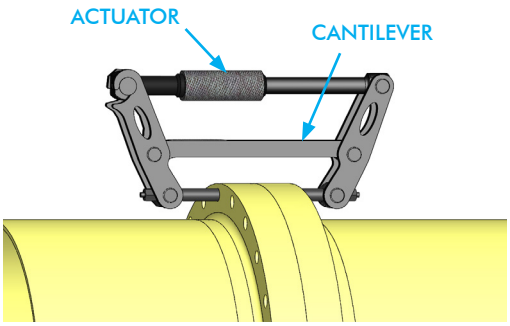
The two halves of the mechanical Secure-Grip are insterted into opposing flange bolt-holes.



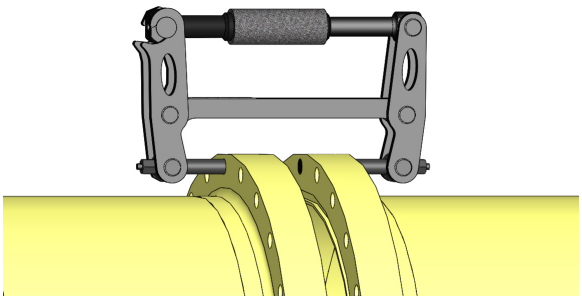
Both drive nuts are tightened, locking the tool into the flange bolt-holes.



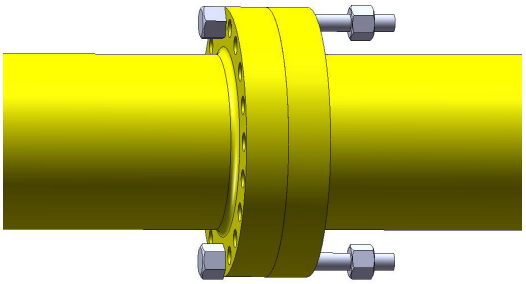
The cantilever followed by the actuator are swung and locked into position.



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

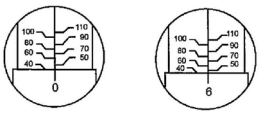
The mechanical Secure-Grip tools use mechanical torque to advance the actuator and spread the tool. The torque is applied using the supplied torque wrench, enabling accurate control of the force applied.

TORQUE WRENCH USAGE

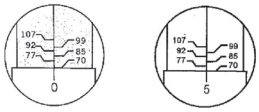
Holding the Torque Wrench in one hand, unlock the knurled handle by turning the locking knob anti-clockwise.

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.

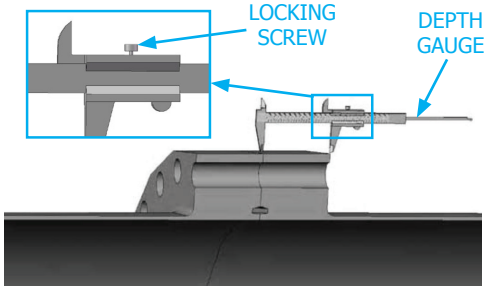
CAUTION: Do not attempt to turn the grip while it is locked. Do not turn the grip more than one turn below the lowest scale reading or above the highest scale reading.

TORQUE WRENCH CARE

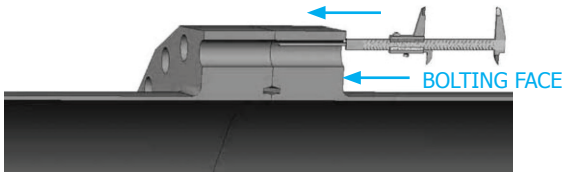
Prior to storing the Torque Wrench, and between use, leave the Torque Wrench with its lowest torque setting selected.

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.

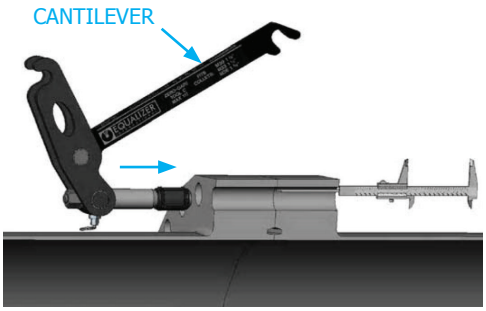
Measure the thickness of the flange using the vernier calliper provided. Lock the calliper in position by tightening the locking screw.



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.

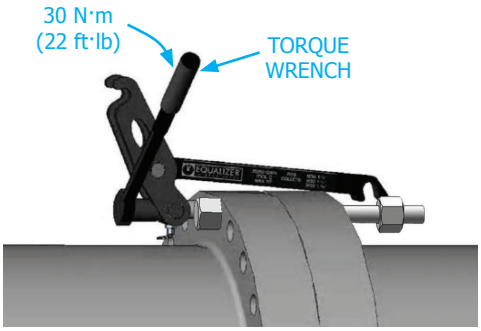


Insert the collet on the cantilever half of the tool into the opposite end of the same bolt-hole until it touches the end of the depth gauge (so that the Collet is fully through one flange but not entering the other).

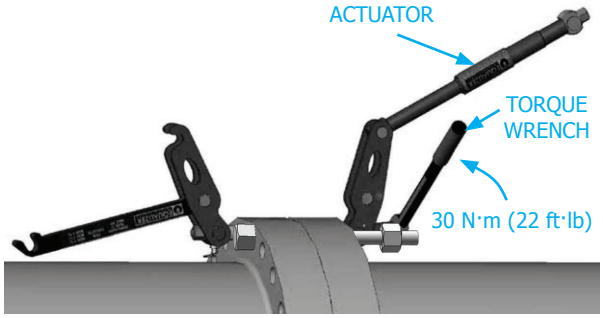


Set the torque wrench to 30 N·m (22 ft·lb) and tighten the drive nut until the the torque wrench clicks.

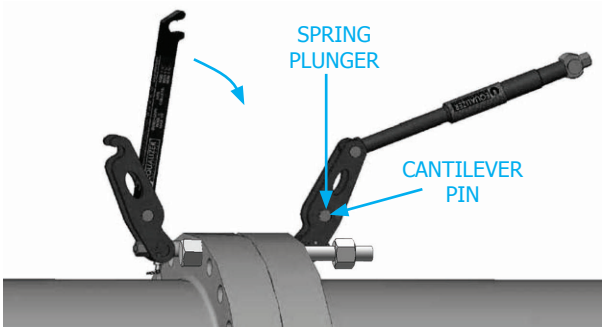
The cantilever half of the tool will now have a secure hold in the bolt-hole.



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 preset 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.

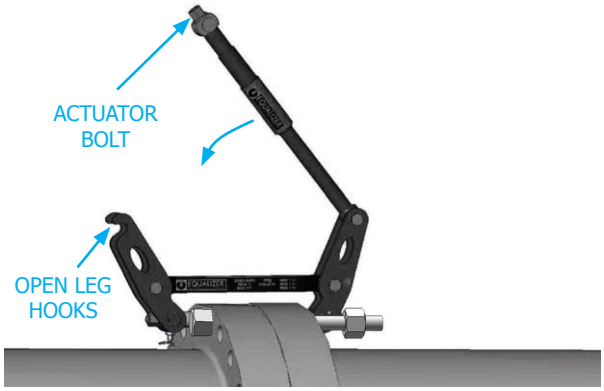


Rotate the cantilever into position hooking it over the cantilever pin in the actuator half of the tool.
A click should be felt from the spring plunger when it is locked fully home.

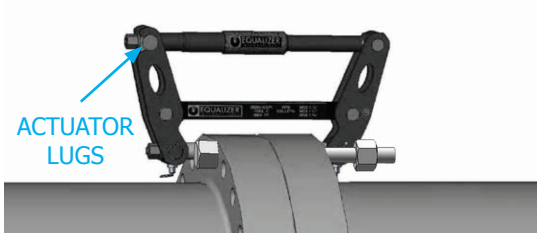


WARNING: Operating the tool without the cantilever fully locked into position may result in personnel injury and damage to the tool.

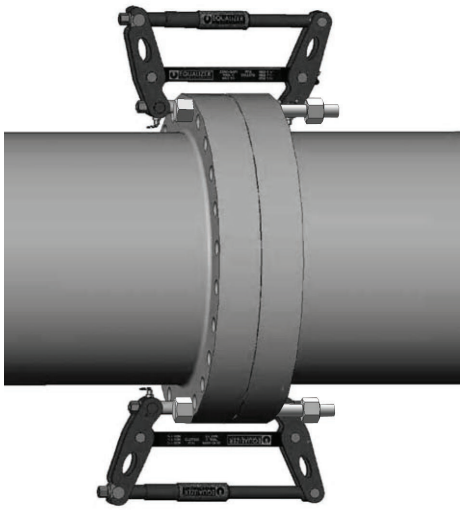
Ensure the actuator bolt is fully unscrewed, then swing the actuator down into position.



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



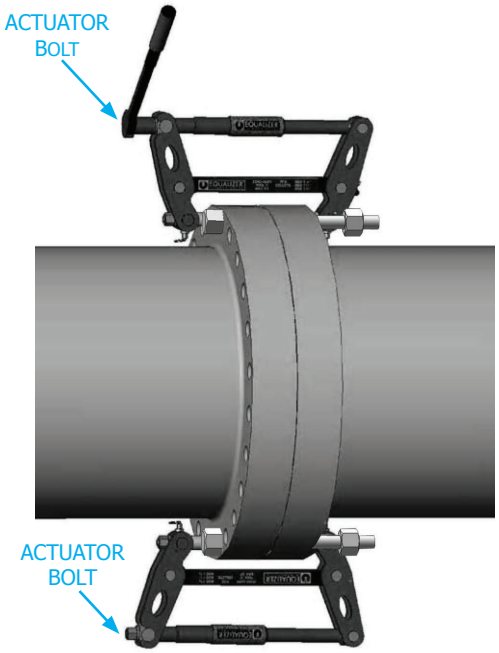
Select the bolt-hole 180° opposite the tool that has just been attached and repeat the above steps for the second tool.



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 insrease 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.

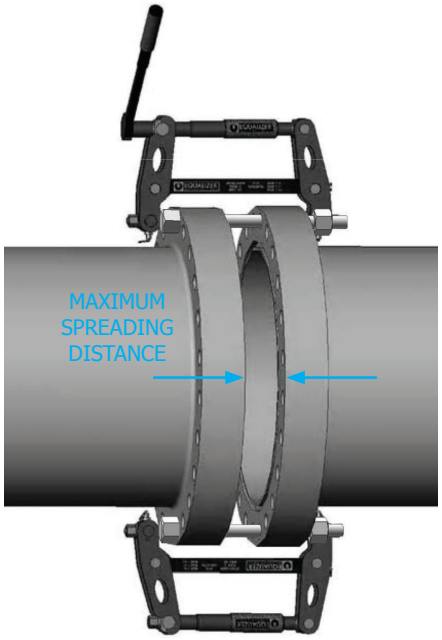
If the torque wrench clicks, continue increasing the torque wrench setting in 10 N·m (6.5 ft·lb) increments until the maximum for the tool has been reached (see table below).

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	N·m	47	108	120
	ft·lb	35	80	89
Max. Spreading Force	T	3.7	6	11

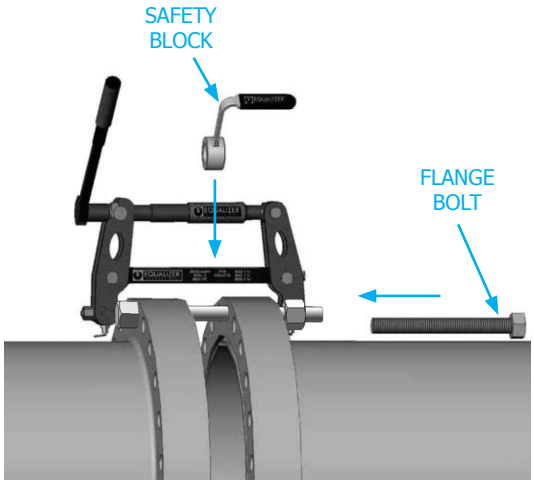
Continue spreading the flange until the access gap required has been achieved or until the maximum tool travel has been reached.



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 SPREADING 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 insterted between the flanges. These are held in position by replacing two of the flange bolts.

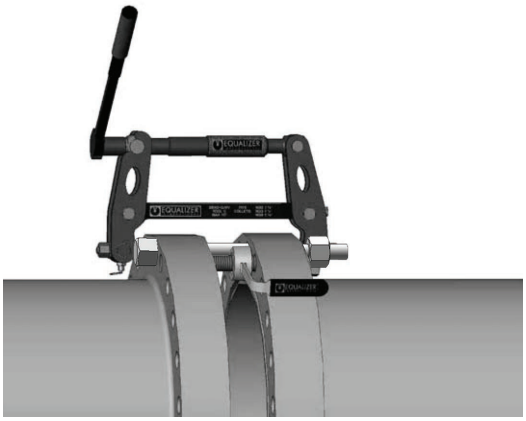


WARNING: Do not allow fingers, hands or other body parts to come into contact with the flange or tools during operations. Never place fingers, hands or other body parts into the flange gap.

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.



3.7
VALVE, SPADE OR BLIND REMOVAL, INSTALLATION AND OPERATION

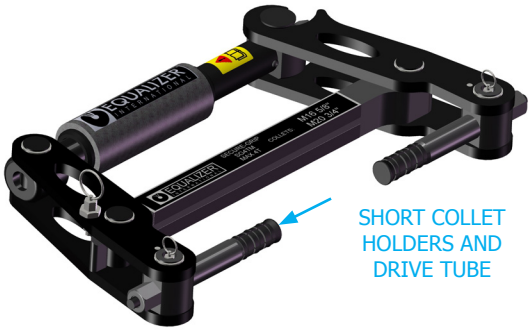
The Secure-Grip mechanical tools are also ideal for the removal and insertion of blinds, spades and valves.

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

Please refer to Section 3.4 for instruction on how to remove the standard Collet Holder and Drive Tube.

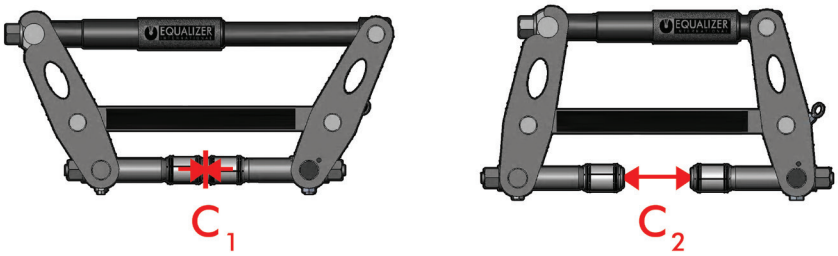
The Short Collet Holder Kit replaces one Collet Holder and Drive Cone, and is supplied with Collet fitted.

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 3.5 and 3.6 for instruction on how to install and operate the Secure-Grip mechanical tool.

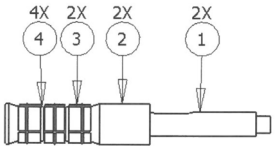
TOOL	CONFIGURATION	C_1 (Closed)	C_2 (Open)
SG4TM	Standard Tool	0 mm (0″)	75 mm (2.95″)
	Collet holder kits to accomodate	42 mm (1.65″)	159 mm (6.26″)
SG6TM	Standard Tool	0 mm (0″)	80 mm (3.15″)
	Collet holder kits to accomodate	60 mm (2.36″)	200 mm (7.87″)
SG11TM	Standard Tool	0 mm (0″)	90 mm (3.54″)
	Collet holder kits to accomodate	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

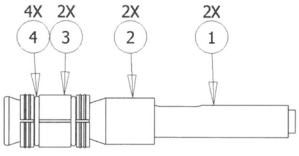
ITEM	DESCRIPTION	QTY.
01	COLLET HOLDER	02
02	DRIVE CONE	02
03	COLLET	02
04	SPRING RING	04



SG6TM COLLET HOLDER KIT(S)

Product Code: 620100-01 126mm M24 COLLET HOLDER KIT
625002-01 126mm M27 COLLET HOLDER KIT

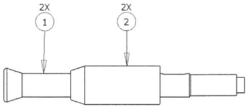
ITEM	DESCRIPTION	QTY.
01	COLLET HOLDER	02
02	DRIVE CONE	02
03	COLLET	02
04	SPRING RING	04



SG11TM COLLET HOLDER KIT(S)

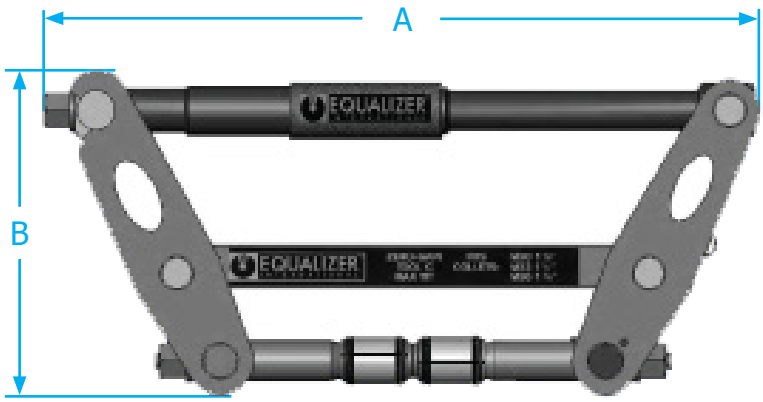
Product Code: 630100-01 183mm COLLET HOLDER KIT
636400-01 161mm COLLET HOLDER KIT

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

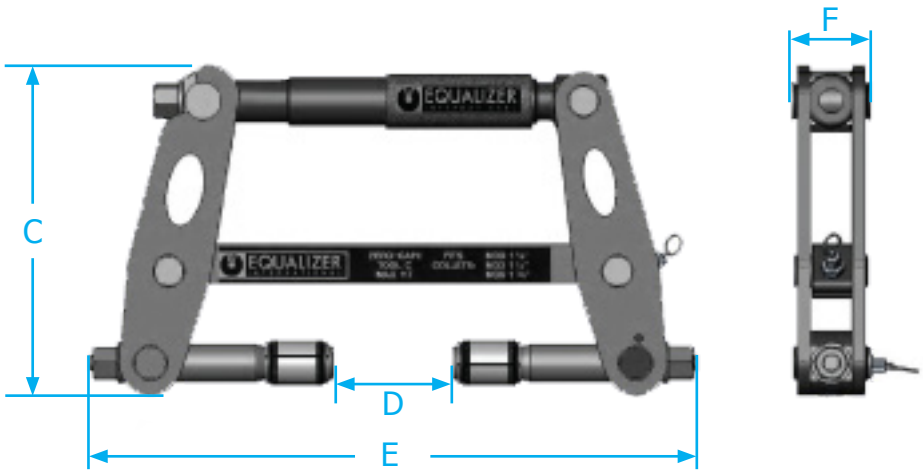


3.8
OVERALL DIMENSIONS

TOOL DIMENSIONS CLOSED



TOOL DIMENSIONS OPEN



TOOL	A	B	C	D	E	F
SG4TM	398 mm (15.67″)	190 mm (7.48″)	190 mm (7.48″)	75 mm (2.95″)	385 mm (15.16″)	48 mm (1.89″)
SG6TM	468 mm (18.42″)	245 mm (9.65″)	252 mm (9.92″)	80 mm (3.15″)	444 mm (17.48″)	52 mm (2.05″)
SG11TM	516 mm (20.31″)	250 mm (9.84″)	263 mm (10.35″)	90 mm (3.55″)	483 mm (19.01″)	60 mm (2.36″)

4.

TOOL MAINTENANCE

4.1
INSPECTION

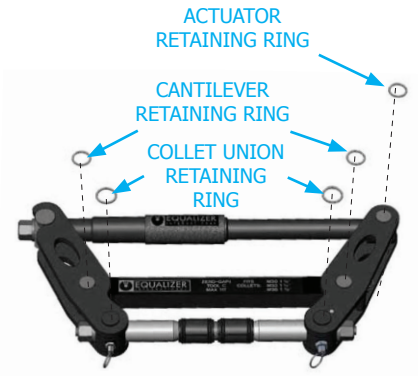
On return from each job and before allocation against subsequent work the completeness of the Equalizer Secure-Grip mechanical tool kits must be established and items examined to ensure that they are serviceable.

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

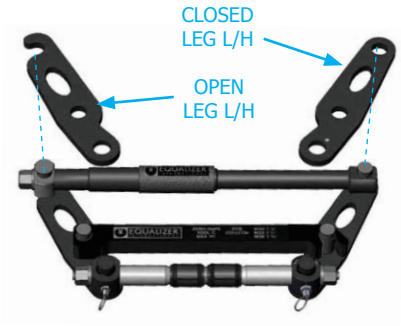
4.2
DISASSEMBLY

Lay the tool on a bench or flat surface.

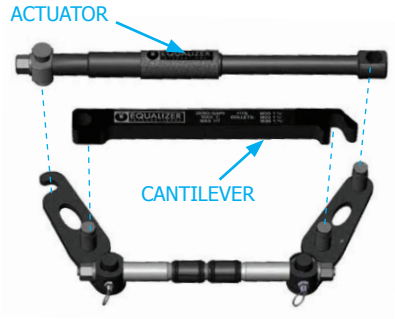
Remove the collet union, actuator and cantilever retaining rings. Care should be taken not to over-stretch the retaining rings during removal or replacement.



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

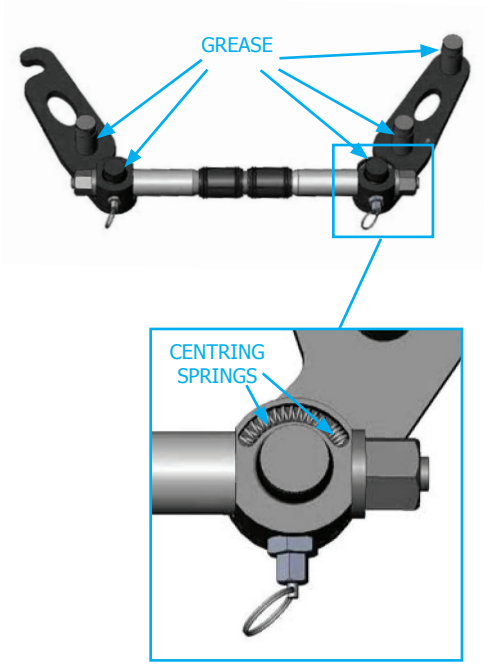


Remove the actuator and cantilever from the tool.



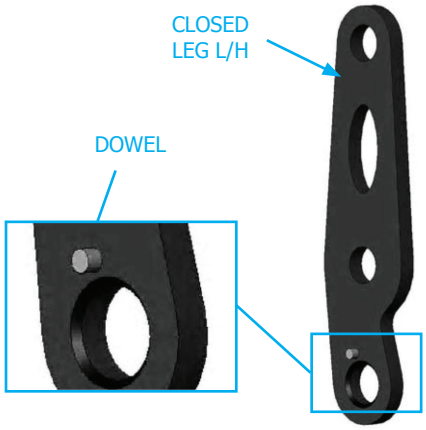
4.3
SERVICING

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.

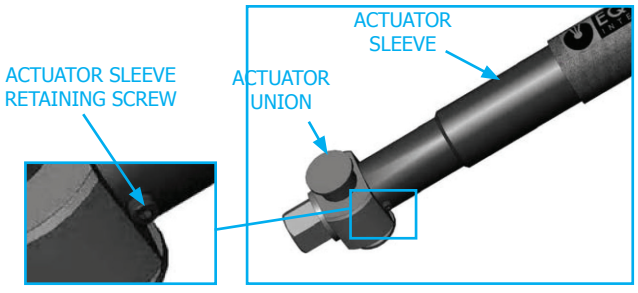


Care should be taken to ensure the dowel protruding from the L/H closed leg of the tool is engaged between the two centring springs.

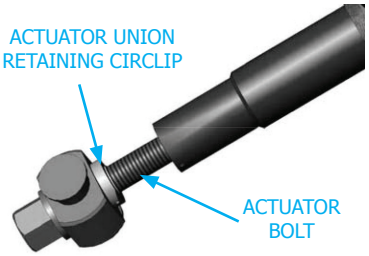
Once the tool is rebuilt, flip the tool over and repeat the above procedure with the other side of the tool.

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.



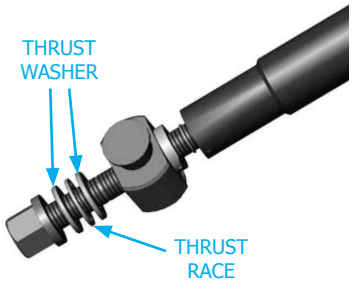
Pull the actuator sleeve back - this will expose the actuator union retaining circlip. Expand the circlip with circlip pliers and slide it up the actuator bolt by about 50 mm (2”).



SG11TM ONLY:

Slide the actuator union up the actuatr 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 3.4. The various components can then be cleaned and reassembled.

4.4
STORAGE & TRANSPORTATION

Equalizer 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.

4.5

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
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.

5.

SG4TM

5.1
SG4TM TOOL CAPABILITIES

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")

5.2
SG4TM KIT CONTENTS

Product Code: SG4TMSTD

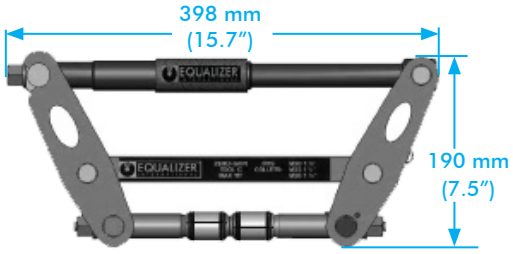
1 x SG4TM Tool
1 x 150 mm (6") Vernier Calliper
1 x 3/8" Drive Torque Wrench and 16 mm Socket
1 x Safety Block
2 x M16 (5/8") Collets
2 x M20 (3/4") Collets
1 x Instruction Manual
1 x Carry-Case with foam inserts

Carry-Case Dimensions:
520 mm x 375 mm x 165 mm (20.5" x 14.8" x 6.5")

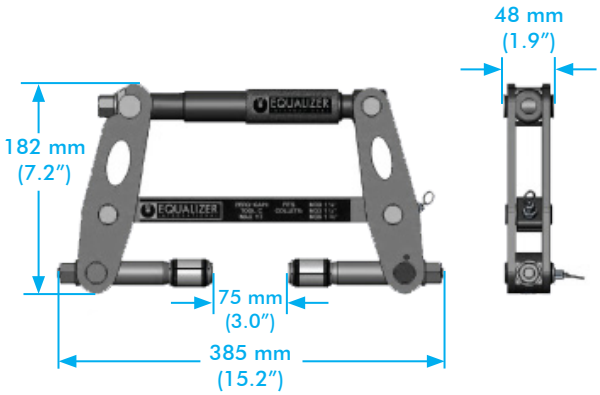
Gross Kit Weight: 12.8 kg (28.2 lb)
Tool only weight: 4.5 kg (9.9 lb)

5.3
SG4TM DIMENSIONS

TOOL DIMENSIONS - CLOSED



TOOL DIMENSIONS - OPEN



6.

SG6TM

6.1
SG6TM TOOL CAPABILITIES

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")

6.2
SG6TM KIT CONTENTS

Product Code: SG6TMSTD

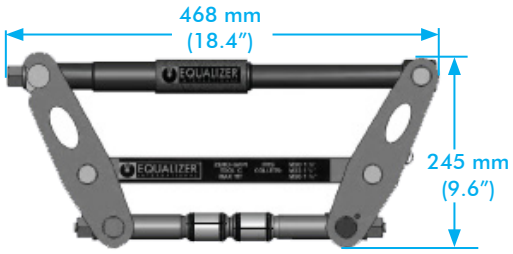
1 x SG6TM Tool
1 x 150 mm (6") Vernier Calliper
1 x 3/8" Drive Torque Wrench and 21 mm Socket
1 x Safety Block
2 x M24 (7/8") Collets
2 x M27 (1") Collets
1 x Instruction Manual
1 x Carry-Case with foam inserts

Carry-Case Dimensions:
640 mm x 540 mm x 165 mm (25.2" x 21.3" x 6.5")

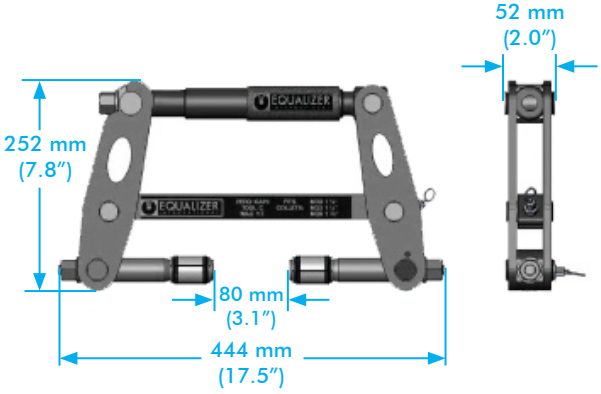
Gross Kit Weight: 16.0 kg (35.3 lb)
Tool only weight: 7.5 kg (16.5 lb)

6.3
SG6TM DIMENSIONS

TOOL DIMENSIONS - CLOSED



TOOL DIMENSIONS - OPEN



7.

SG11TM

7.1
SG11TM TOOL CAPABILITIES

SPREADING FORCE

With the maximum torque of 120 N·m (85 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 (26 ft·lb)	3.7 T (37 kN)
	60 N·m (40 ft·lb)	5.5 T (55 kN)
	80 N·m (55 ft·lb)	7.4 T (74 kN)
	100 N·m (70 ft·lb)	9.2 T (92 kN)
Max.	**120 N·m (85 ft·lb)**	**11 T (110 kN)**

SPREADING DISTANCE: 0 mm - 90 mm (0" - 3.54")

7.2
SG11TM KIT CONTENTS

Product Code: SG11TMSTD

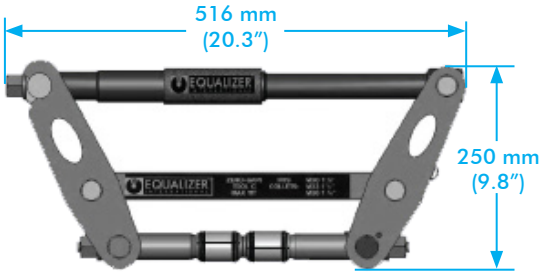
1 x SG11TM Tool
1 x 150 mm (6") Vernier Calliper
1 x 1/2" Drive Torque Wrench and 24 mm Socket
1 x Safety Block
2 x M30 (1 1/8") Collets
2 x M33 (1 1/4") Collets
2 x M36 (1 3/8") Collets
1 x Instruction Manual
1 x Carry-Case with foam inserts

Carry-Case Dimensions:
640 mm x 540 mm x 165 mm (25.2" x 21.3" x 6.5")

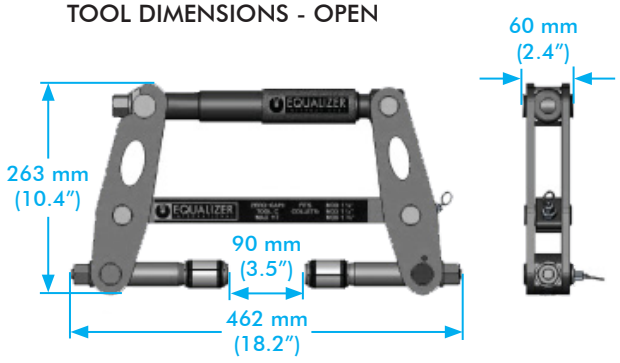
Gross Kit Weight: 20.0 kg (44.1 lb)
Tool only weight: 10.5 kg (23.1 lb)

7.3
SG11TM DIMENSIONS

TOOL DIMENSIONS - CLOSED



TOOL DIMENSIONS - OPEN



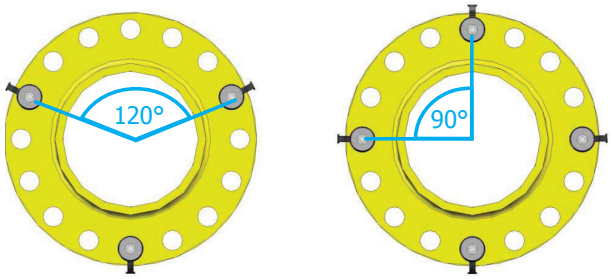
8.

TROUBLESHOOTING

8.1

SG4TM/SG6TM/SG11TM TROUBLESHOOTING

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.

RECOMMENDED ACTION:

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.

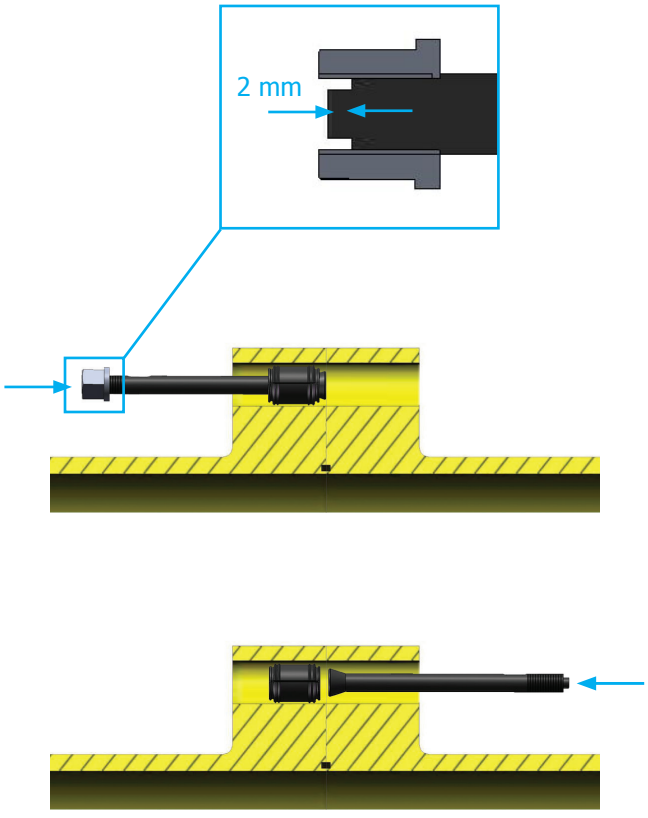
ONE COLLET IS JAMMED IN A BOLT HOLE.

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.

RECOMMENDED ACTION:

Removal can be achieved as follows:



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.

A PAIR OF COLLETS ARE JAMMED IN A BOLT HOLE.

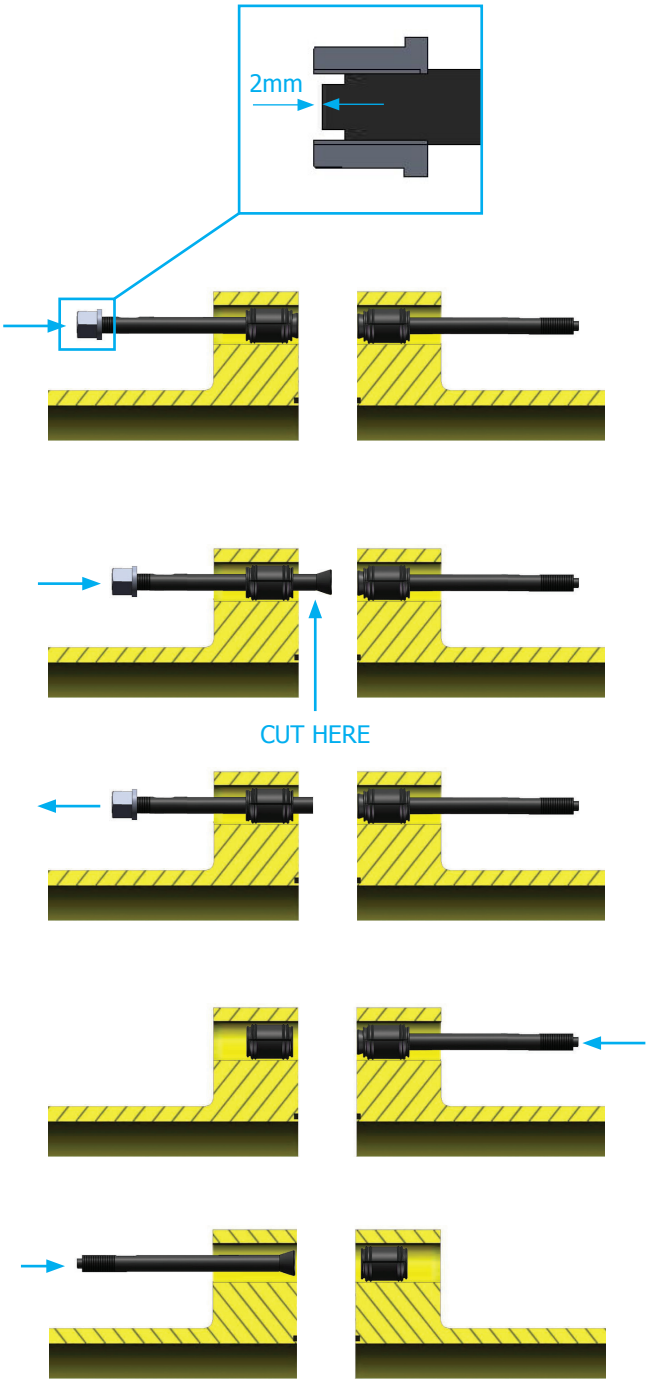
POSSIBLE CAUSE:

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.

RECOMMENDED ACTION:

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:

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.



9.

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 ⅝"	SG4TM	manual	4	17.5	19.5
M20 ¾"	SG4TM	manual	4	20.5	23
M24 ⅞"	SG6TM	manual	6	24	26.5
M27 1"	SG6TM	manual	6	27.5	30
M30 1 ⅛"	SG11TM	manual	11	30	33
M33 1 ¼"	SG11TM	manual	11	32	36
M36 1 ⅜"	SG11TM	manual	11	35	39
M39 1 ½"	SG13TE	hydraulic	13	38	42
M42 1 ⅝"	SG13TE	hydraulic	13	41	45
M45 1 ¾"	SG13TE	hydraulic	13	44	49
M48 1 ⅞"	SG15TE	hydraulic	15	47.5	52
M52 2"	SG15TE	hydraulic	15	50.5	56
M56 2 ¼"	SG15TE	hydraulic	15	55.5	62
M60	SG18TE	in-line hydraulic	18	59.5	63
M64 2 ½"	SG18TE	in-line hydraulic	18	63	69
M70 2 ¾"	SG18TE	in-line hydraulic	18	69	75
M76 3"	SG25TE	in-line hydraulic	25	75	81
M80 3 ¼"	SG25TE	in-line hydraulic	25	79	86
M84	SG25TE	in-line hydraulic	25	83	88
M90 3 ½"	SG25TE	in-line hydraulic	25	88	94
M95 3 ¾"	SG25TE	in-line hydraulic	25	94	101
M100 4"	SG25TE	in-line hydraulic	25	99	107

SPO FLANGES

	Class													
	150		300		600		900		1500		2500		4500i	
Nominal pipe size	collet	tool	collet	tool	collet	tool	collet	tool	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″					M16 5/8″	SG4TM	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M27 1″	SG6TM	M24 7/8″	SG6TM
5″					M16 5/8″	SG4TM	M16 5/8″	SG4TM	M24 7/8″	SG6TM	M27 1″	SG6TM	M30 1 1/8″	SG11TM
6″					M16 5/8″	SG4TM	M16 5/8″	SG4TM	M27 1″	SG6TM	M30 1 1/8″	SG11TM	M33 1 1/4″	SG11TM
8″			M16 5/8″	SG4TM	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M27 1″	SG6TM	M36 1 3/8″	SG11TM	M39 1 1/2″	SG13TE
10″			M16 5/8″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M48 1 7/8″	SG15TE
12″			M16 5/8″	SG4TM	M24 7/8″	SG6TM	M27 1″	SG6TM	M33 1 1/4″	SG11TM	M45 1 3/4″	SG13TE	M48 1 7/8″	SG15TE
14″			M16 5/8″	SG4TM	M24 7/8″	SG6TM	M27 1″	SG6TM	M36 1 3/8″	SG11TM	M48 1 7/8″	SG15TE	M52 2″	SG15TE
16″	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M27 1″	SG6TM	M30 1 1/8″	SG11TM	M39 1 1/2″	SG13TE	M60	SG18TE	M60	SG18TE
18″	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M30 1 1/8″	SG11TM	M33 1 1/4″	SG11TM	M45 1 3/4″	SG13TE	M60	SG18TE	M64 2 1/2″	SG18TE
20″	M16 5/8″	SG4TM	M24 7/8″	SG6TM	M30 1 1/8″	SG11TM	M36 1 3/8″	SG11TM	M48 1 7/8″	SG15TE	M64 2 1/2″	SG18TE	M84	SG25TE
22″	M16 5/8″	SG4TM	M24 7/8″	SG6TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M52 2″	SG15TE	M76 3″	SG25TE	M90 3 1/2″	SG25TE
24″	M20 3/4″	SG4TM	M27 1″	SG6TM	M33 1 1/4″	SG11TM	M42 1 5/8″	SG13TE	M60	SG18TE	M84	SG25TE	M100 4″	SG25TE
26″	M20 3/4″	SG4TM	M27 1″	SG6TM	M33 1 1/4″	SG11TM	M45 1 3/4″	SG13TE	M60	SG18TE				
28″	M20 3/4″	SG4TM	M27 1″	SG6TM	M36 1 3/8″	SG11TM	M45 1 3/4″	SG13TE	M60	SG18TE				
30″	M20 3/4″	SG4TM	M30 1 1/8″	SG11TM	M36 1 3/8″	SG11TM	M48 1 7/8″	SG15TE	M64 2 1/2″	SG18TE				
32″	M20 3/4″	SG4TM	M30 1 1/8″	SG11TM	M39 1 1/2″	SG13TE	M52 2″	SG15TE	M64 2 1/2″	SG18TE				
34″	M20 3/4″	SG4TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M60	SG18TE	M70 2 3/4″	SG18TE				
36″	M24 7/8″	SG6TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M60	SG18TE	M84	SG25TE				
38″	M24 7/8″	SG6TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M64 2 1/2″	SG18TE	M90 3 1/2″	SG25TE				
40″	M24 7/8″	SG6TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M64 2 1/2″	SG18TE	M84	SG25TE				
42″	M24 7/8″	SG6TM	M36 1 3/8″	SG11TM	M48 1 7/8″	SG15TE	M64 2 1/2″	SG18TE	M95 3 3/4″	SG25TE				
44″	M24 7/8″	SG6TM	M36 1 3/8″	SG11TM	M48 1 7/8″	SG15TE	M64 2 1/2″	SG18TE	M95 3 3/4″	SG25TE				
46″	M24 7/8″	SG6TM	M39 1 1/2″	SG13TE	M48 1 7/8″	SG15TE	M70 2 3/4″	SG18TE	M95 3 3/4″	SG25TE				
48″	M24 7/8″	SG6TM	M39 1 1/2″	SG13TE	M48 1 7/8″	SG15TE	M76 3″	SG25TE	M95 3 3/4″	SG25TE				

ANSI COMPACT

	Class									
	300		600		900		1500		2500	
Nominal pipe size	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

	Class											
	300		400		600		900		1500		2500	
Nominal pipe size	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	M30 1 1/8″	SG11TM	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	M42 1 5/8″	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	M42 1 5/8″	SG13TE	M64 2 1/2″	SG18TE		
18″	M33 1 1/4″	SG11TM	M36 1 3/8″	SG11TM	M42 1 5/8″	SG13TE	M48 1 7/8″	SG15TE	M70 2 3/4″	SG18TE		
20″	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M42 1 5/8″	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

	Class													
	150		300		400		600		900		1500		2500	
Nominal pipe size	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool
1/2″									M20 3/4″	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	M20 3/4″	SG4TM
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 1/4″			M16 5/8″	SG4TM	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M24 7/8″	SG6TM	M24 7/8″	SG6TM	M27 1″	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	M16 5/8″	SG4TM	M24 7/8″	SG6TM	M24 7/8″	SG6TM	M27 1″	SG6TM
2 1/2″	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M27 1″	SG6TM	M27 1″	SG6TM	M30 1 1/8″	SG11TM
3″	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M30 1 1/8″	SG11TM	M33 1 1/4″	SG11TM
3 1/2″	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M24 7/8″	SG6TM	no flange		no flange		no flange	
4″	M16 5/8″	SG4TM	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
5″	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M27 1″	SG6TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M45 1 3/4″	SG13TE
6″	M20 3/4″	SG4TM	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″	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M27 1″	SG6TM	M30 1 1/8″	SG11TM	M36 1 3/8″	SG11TM	M42 1 5/8″	SG13TE	M52 2″	SG15TE
10″	M24 7/8″	SG6TM	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″	M24 7/8″	SG6TM	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″	M27 1″	SG6TM	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″	M27 1″	SG6TM	M33 1 1/4″	SG11TM	M36 1 3/8″	SG11TM	M39 1 1/2″	SG13TE	M42 1 5/8″	SG13TE	M64 2 1/2″	SG18TE		
18″	M30 1 1/8″	SG11TM	M33 1 1/4″	SG11TM	M36 1 3/8″	SG11TM	M42 1 5/8″	SG13TE	M48 1 7/8″	SG15TE	M70 2 3/4″	SG18TE		
20″	M30 1 1/8″	SG11TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M42 1 5/8″	SG13TE	M52 2″	SG15TE	M76 3″	SG25TE		
22″	no flange		no flange		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	M64 2 1/2″	SG18TE	M90 3 1/2″	SG25TE		
26″	M33 1 1/4″	SG11TM	M42 1 5/8″	SG13TE	M42 1 5/8″	SG13TE	M48 1 7/8″	SG15TE	M70 2 3/4″	SG18TE				
28″	M33 1 1/4″	SG11TM	M42 1 5/8″	SG13TE	M42 1 5/8″	SG13TE	M52 2″	SG15TE	M76 3″	SG25TE				
30″	M33 1 1/4″	SG11TM	M45 1 3/4″	SG13TE	M45 1 3/4″	SG13TE	M56 2 1/4″	SG15TE	M76 3″	SG25TE				
32″	M39 1 1/2″	SG13TE	M48 1 7/8″	SG15TE	M48 1 7/8″	SG15TE	M56 2 1/4″	SG15TE	M84	SG25TE				
34″	M39 1 1/2″	SG13TE	M48 1 7/8″	SG15TE	M48 1 7/8″	SG15TE	M56 2 1/4″	SG15TE	M90 3 1/2″	SG25TE				
36″	M39 1 1/2″	SG13TE	M52 2″	SG15TE	M52 2″	SG15TE	M56 2 1/4″	SG15TE	M90 3 1/2″	SG25TE				
38″	M39 1 1/2″	SG13TE	M39 1 1/2″	SG13TE	M39 1 1/2″	SG13TE	M56 2 1/4″	SG15TE	M90 3 1/2″	SG25TE				
40″	M39 1 1/2″	SG13TE	M42 1 5/8″	SG13TE	M42 1 5/8″	SG13TE	M56 2 1/4″	SG15TE	M90 3 1/2″	SG25TE				
42″	M39 1 1/2″	SG13TE	M42 1 5/8″	SG13TE	M42 1 5/8″	SG13TE	M56 2 1/4″	SG15TE	M90 3 1/2″	SG25TE				
44″	M39 1 1/2″	SG13TE	M45 1 3/4″	SG13TE	M45 1 3/4″	SG13TE	M56 2 1/4″	SG15TE	M95 3 3/4″	SG25TE				
46″	M39 1 1/2″	SG13TE	M48 1 7/8″	SG15TE	M48 1 7/8″	SG15TE	M56 2 1/4″	SG15TE	M100 4″	SG25TE				
48″	M39 1 1/2″	SG13TE	M48 1 7/8″	SG15TE	M48 1 7/8″	SG15TE	M70 2 3/4″	SG18TE	M100 4″	SG25TE				

DIN BLIND

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

DIN THREADED

	Class									
	PN16		PN25		PN40		PN64		PN100	
Nominal pipe size	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	M20 3/4″	SG4TM	M24 7/8″	SG6TM
2 1/2″	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM
3″	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M20 3/4″	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	M30 1 1/8″	SG11TM	M30 1 1/8″	SG11TM

DIN WELDNECK

	Class											
	PN16		PN25		PN40		PN64		PN100		PN160	
Nominal pipe size	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
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	M20 3/4″	SG4TM	M20 3/4″	SG4TM
2″	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M24 7/8″	SG6TM
2 1/2″	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M24 7/8″	SG6TM
3″	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M24 7/8″	SG6TM
4″	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M24 7/8″	SG6TM	M27 1″	SG6TM	M27 1″	SG6TM
5″	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M27 1″	SG6TM	M30 1 1/8″	SG11TM	M30 1 1/8″	SG11TM
6″	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M30 1 1/8″	SG11TM	M30 1 1/8″	SG11TM	M30 1 1/8″	SG11TM
7″	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M20 3/4″	SG4TM	M30 1 1/8″	SG11TM	M30 1 1/8″	SG11TM	M33 1 1/4″	SG11TM
8″	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M20 3/4″	SG4TM	M33 1 1/4″	SG11TM	M33 1 1/4″	SG11TM	M33 1 1/4″	SG11TM
10″	M24 7/8″	SG6TM	M27 1″	SG6TM	M24 7/8″	SG6TM	M33 1 1/4″	SG11TM	M36 1 3/8″	SG11TM	M39 1 1/2″	SG13TE
12″	M24 7/8″	SG6TM	M27 1″	SG6TM	M24 7/8″	SG6TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M39 1 1/2″	SG13TE
14″	M24 7/8″	SG6TM	M30 1 1/8″	SG11TM	M24 7/8″	SG6TM	M36 1 3/8″	SG11TM	M45 1 3/4″	SG13TE		
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										

DIN FLAT

	Class			
	PN6		PN10	
Nominal pipe size	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

	Class			
	PN6		PN10	
Nominal pipe size	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

	Class													
	150		300		400		600		900		1500		2500	
Nominal pipe size	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool
1/2″									M20 3/4″	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	M20 3/4″	SG4TM
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 1/4″			M16 5/8″	SG4TM	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M24 7/8″	SG6TM	M24 7/8″	SG6TM	M27 1″	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	M16 5/8″	SG4TM	M24 7/8″	SG6TM	M24 7/8″	SG6TM	M27 1″	SG6TM
2 1/2″	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M27 1″	SG6TM	M27 1″	SG6TM	M30 1 1/8″	SG11TM
3″	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M30 1 1/8″	SG11TM	M33 1 1/4″	SG11TM
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	M30 1 1/8″	SG11TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE
5″	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M27 1″	SG6TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M45 1 3/4″	SG13TE
6″	M20 3/4″	SG4TM	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″	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M27 1″	SG6TM	M30 1 1/8″	SG11TM	M36 1 3/8″	SG11TM	M42 1 5/8″	SG13TE	M52 2″	SG15TE
10″	M24 7/8″	SG6TM	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″	M24 7/8″	SG6TM	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″	M27 1″	SG6TM	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″	M27 1″	SG6TM	M33 1 1/4″	SG11TM	M36 1 3/8″	SG11TM	M39 1 1/2″	SG13TE	M42 1 5/8″	SG13TE	M64 2 1/2″	SG18TE		
18″	M30 1 1/8″	SG11TM	M33 1 1/4″	SG11TM	M36 1 3/8″	SG11TM	M42 1 5/8″	SG13TE	M48 1 7/8″	SG15TE	M70 2 3/4″	SG18TE		
20″	M30 1 1/8″	SG11TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M42 1 5/8″	SG13TE	M52 2″	SG15TE	M76 3″	SG25TE		
22″														
24″	M33 1 1/4″	SG11TM	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		
26″	M33 1 1/4″	SG11TM	M42 1 5/8″	SG13TE	M42 1 5/8″	SG13TE	M48 1 7/8″	SG15TE	M70 2 3/4″	SG18TE				
28″	M33 1 1/4″	SG11TM	M42 1 5/8″	SG13TE	M42 1 5/8″	SG13TE	M52 2″	SG15TE	M76 3″	SG25TE				
30″	M33 1 1/4″	SG11TM	M45 1 3/4″	SG13TE	M45 1 3/4″	SG13TE	M56 2 1/4″	SG15TE	M76 3″	SG25TE				
32″	M39 1 1/2″	SG13TE	M48 1 7/8″	SG15TE	M48 1 7/8″	SG15TE	M56 2 1/4″	SG15TE	M84	SG25TE				
34″	M39 1 1/2″	SG13TE	M48 1 7/8″	SG15TE	M48 1 7/8″	SG15TE	M56 2 1/4″	SG15TE	M90 3 1/2″	SG25TE				
36″	M39 1 1/2″	SG13TE	M52 2″	SG15TE	M52 2″	SG15TE	M56 2 1/4″	SG15TE	M90 3 1/2″	SG25TE				
38″	M39 1 1/2″	SG13TE	M39 1 1/2″	SG13TE	M39 1 1/2″	SG13TE	M56 2 1/4″	SG15TE	M90 3 1/2″	SG25TE				
40″	M39 1 1/2″	SG13TE	M42 1 5/8″	SG13TE	M42 1 5/8″	SG13TE	M56 2 1/4″	SG15TE	M90 3 1/2″	SG25TE				
42″	M39 1 1/2″	SG13TE	M42 1 5/8″	SG13TE	M42 1 5/8″	SG13TE	M56 2 1/4″	SG15TE	M90 3 1/2″	SG25TE				
44″	M39 1 1/2″	SG13TE	M45 1 3/4″	SG13TE	M45 1 3/4″	SG13TE	M56 2 1/4″	SG15TE	M95 3 3/4″	SG25TE				
46″	M39 1 1/2″	SG13TE	M48 1 7/8″	SG15TE	M48 1 7/8″	SG15TE	M56 2 1/4″	SG15TE	M100 4″	SG25TE				
48″	M39 1 1/2″	SG13TE	M48 1 7/8″	SG15TE	M48 1 7/8″	SG15TE	M70 2 3/4″	SG18TE	M100 4″	SG25TE				

ASME SERIES A LAPPED

	Class													
	150		300		400		600		900		1500		2500	
Nominal pipe size	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool
1/2″									M20 3/4″	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	M20 3/4″	SG4TM
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 1/4″			M16 5/8″	SG4TM	M16 5/8″	SG4TM	M16 5/8″	SG4TM	M24 7/8″	SG6TM	M24 7/8″	SG6TM	M27 1″	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	M16 5/8″	SG4TM	M24 7/8″	SG6TM	M24 7/8″	SG6TM	M27 1″	SG6TM
2 1/2″	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M27 1″	SG6TM	M27 1″	SG6TM	M30 1 1/8″	SG11TM
3″	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M30 1 1/8″	SG11TM	M33 1 1/4″	SG11TM
3 1/2″	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M24 7/8″	SG6TM	no flange		no flange		no flange	
4″	M16 5/8″	SG4TM	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
5″	M20 3/4″	SG4TM	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M27 1″	SG6TM	M33 1 1/4″	SG11TM	M39 1 1/2″	SG13TE	M45 1 3/4″	SG13TE
6″	M20 3/4″	SG4TM	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″	M20 3/4″	SG4TM	M24 7/8″	SG6TM	M27 1″	SG6TM	M30 1 1/8″	SG11TM	M36 1 3/8″	SG11TM	M42 1 5/8″	SG13TE	M52 2″	SG15TE
10″	M24 7/8″	SG6TM	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″	M24 7/8″	SG6TM	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

ASME SERIES A SOCKET WELDED

	Class							
	150		300		600		1500	
Nominal pipe size	collet	tool	collet	tool	collet	tool	collet	tool
1/2″							M20 3/4″	SG4TM
3/4″			M16 5/8″	SG4TM	M16 5/8″	SG4TM	M20 3/4″	SG4TM
1″			M16 5/8″	SG4TM	M16 5/8″	SG4TM	M24 7/8″	SG6TM
1 1/4″			M16 5/8″	SG4TM	M16 5/8″	SG4TM	M24 7/8″	SG6TM
1 1/2″			M20 3/4″	SG4TM	M20 3/4″	SG4TM	M27 1″	SG6TM
2″	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	M27 1″	SG6TM
3″	M16 5/8″	SG4TM	M20 3/4″	SG4TM	M20 3/4″	SG4TM		

ASME SERIES B WELD NECK AND BLIND

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

	Class					
	138 bar (2000 psi)		207 bar (3000 psi)		345 bar (5000 psi)	
Nominal pipe size	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					
	138 bar (2000 psi)		207 bar (3000 psi)		345 bar (5000 psi)	
Nominal pipe size	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					
	690 bar (10000 psi)		1035 bar (15000 psi)		1380 bar (20000 psi)	
Nominal pipe size	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	M45 1 3/4″	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″	M45 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

	Class					
	690 bar (10000 psi)		1035 bar (15000 psi)		1380 bar (20000 psi)	
Nominal pipe size	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	M45 1 3/4″	SG13TE

BS APPLICATION CHART

	Table																			
	A		D		E		F		H		J		K		R		S		T	
Nominal pipe size	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool	collet	tool
1/2"									M16 5/8"	SG4TM	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	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	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	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM
1 1/2"							M16 5/8"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM	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	M20 3/4"	SG4TM	M16 5/8"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM
2 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	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	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	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM
3 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	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM
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	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"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M16 5/8"	SG4TM	M20 3/4"	SG4TM	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
6"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM
7"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM
8"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE
9"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M36 1 3/8"	SG11TM
10"	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	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"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M45 1 3/4"	SG13TE
13"	M20 3/4"	SG4TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M52 2"	SG15TE
14"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE		
15"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM		
16"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M45 1 3/4"	SG13TE		
17"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM				
18"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM	M45 1 3/4"	SG13TE				
19"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M39 1 1/2"	SG13TE	M39 1 1/2"	SG13TE				
20"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM	M52 2"	SG15TE	M52 2"	SG15TE				
21"	M24 7/8"	SG6TM	M24 7/8"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM								
22"	M27 1"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M30 1 1/8"	SG11TM	M30 1 1/8"	SG11TM	M33 1 1/4"	SG11TM								
23"	M27 1"	SG6TM	M27 1"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	SG11TM								
24"	M27 1"	SG6TM	M27 1"	SG6TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M33 1 1/4"	SG11TM	M36 1 3/8"	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																

10. REGULATORY INFORMATION

10.1 REGISTERED HEAD OFFICE

EQUALIZER INTERNATIONAL LTD.
Equalizer House
Claymore Drive
Aberdeen
Scotland
AB23 8GD

10.2 APPLICABLE PATENT NUMBERS

The following list of Patents are applicable to EQUALIZER INTERNATIONAL LTD Secure-Grip tools:

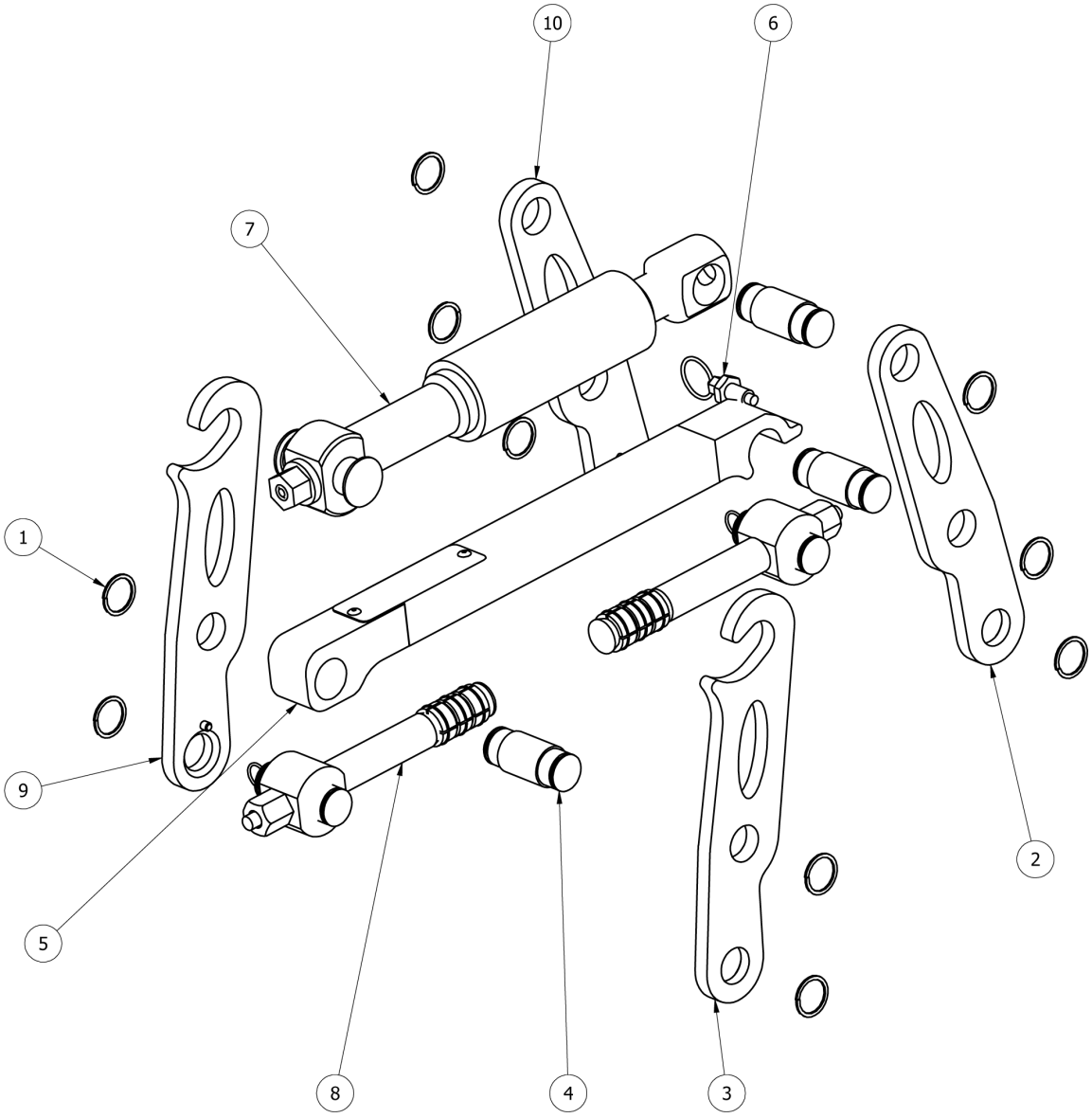
REGISTERED PATENTS

- WO2007/003937
- ZL200680024272.9
- 06764895.6
- 013621
- 8322009
- 298634

11. PARTS LISTS & SERVICE KITS

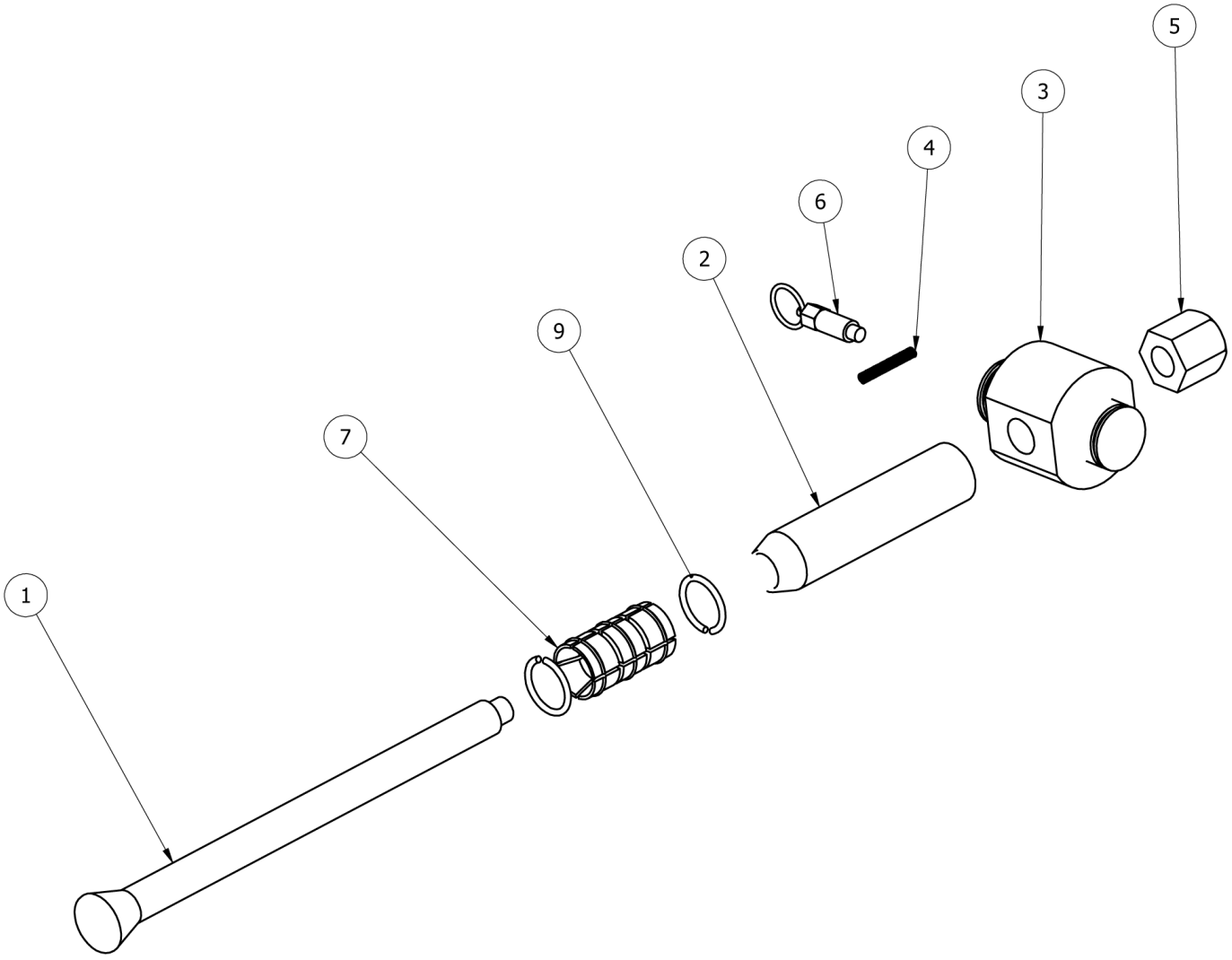
SG4TM PARTS LIST

ITEM NO.	PART NO	DESCRIPTION	QTY.
1	611501-01	SPIROL RETAINING RING	10
2	611901-01	CLOSED LEG LH - NO PIN	1
3	611301-01	OPEN LEG LH - NO PIN	1
4	611701-01	CANTILEVER PIN	3
5	612101-01	CANTILEVER	1
6	632001-01	M8 SPRING PLUNGER	1
7		SEE ACTUATOR PARTS LIST	
8		SEE COLLET HEAD PARTS LIST	
9	611401-01	SG4TM OPEN LEG RH WITH PIN WELDMENT	1
10	611801-01	SG4TM CLOSED LEG RH WITH PIN WELDMENT	1



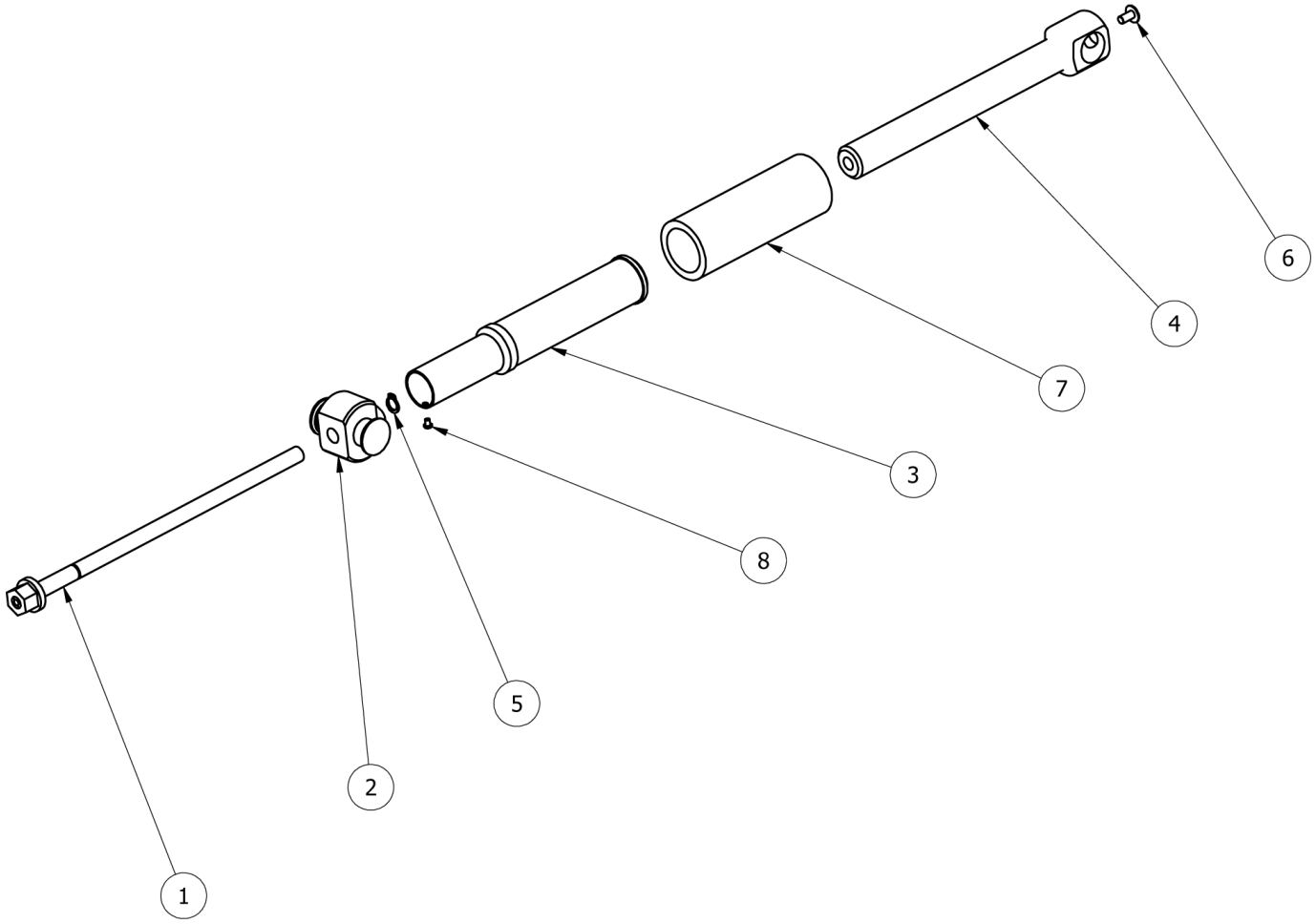
SG4TM COLLET HEAD PARTS LIST

ITEM NO.	PART NO	DESCRIPTION	QTY.
1	610401-01	COLLET HOLDER	2
2	610501-01	DRIVE CONE	2
3	610601-01	COLLET UNION	2
4	610701-01	CENTERING SPRING 1	2
5	610801-01	COLLET NUT	2
6	612001-01	M6 PLUNGER	2
7	610201-90	M16 COLLET	2
	610301-90	M20 COLLET	2
9	611101-01	M20 SPRING RING	4
	611001-01	M16 SPRING RING	4



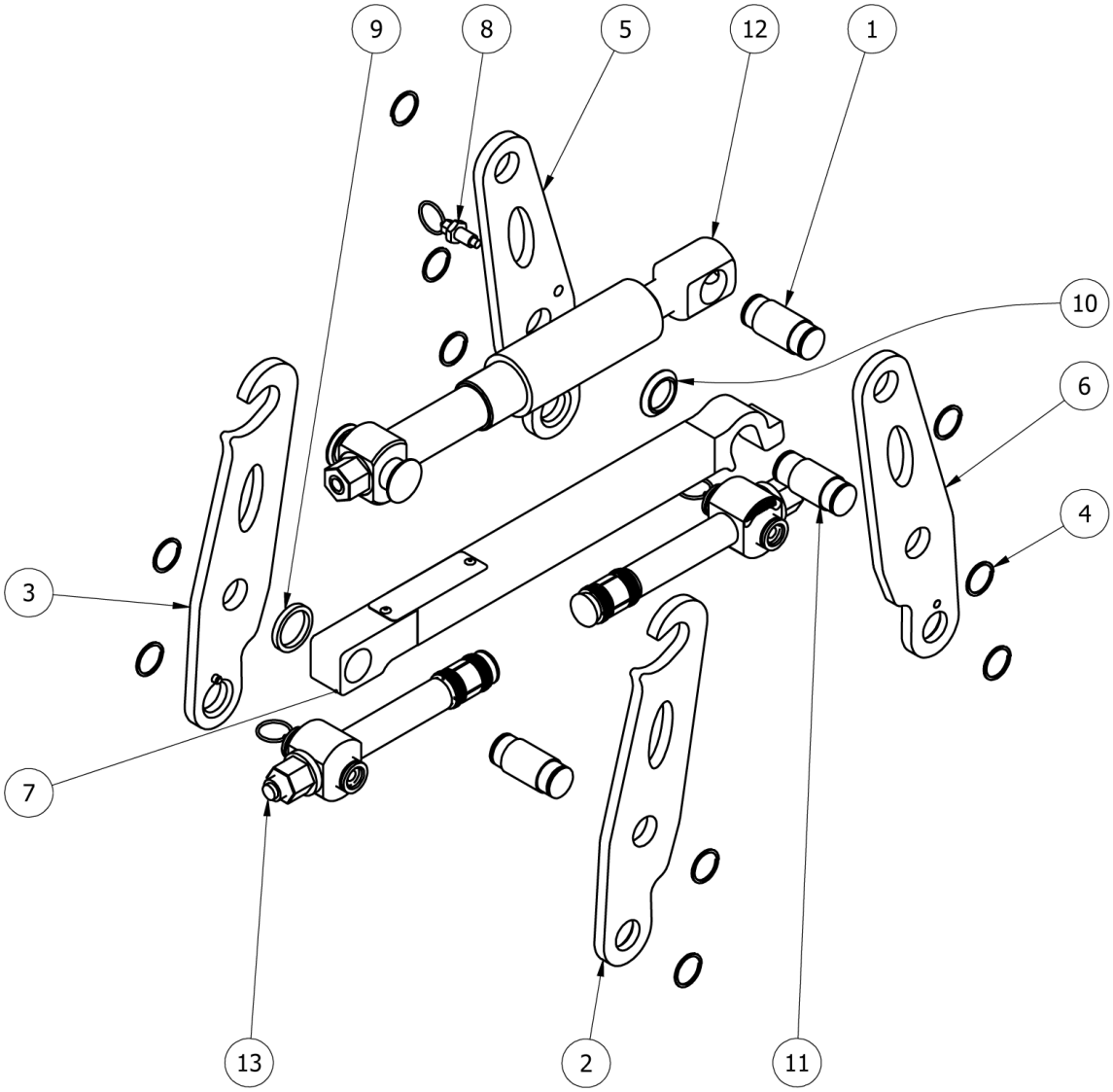
SG4TM ACTUATOR PARTS LIST

ITEM NO.	PART NO	DESCRIPTION	QTY.
1	612201-01	ACTUATOR BOLT ASSY	1
2	612501-01	OPEN ACTUATOR UNION	1
3	612701-01	ACTUATOR SLEEVE	1
4	612901-01	CLOSED ACTUATOR UNION	1
5	613101-01	ACTUATOR RETAINING RING	1
6	613001-01	M5x10 SCKT FL. BUTTON SCRW	1
7	632801-01	FOAM GRIP	1
8	622801-01	M3x4MM BUTTON H.SCKT SCREW GD10.9	1



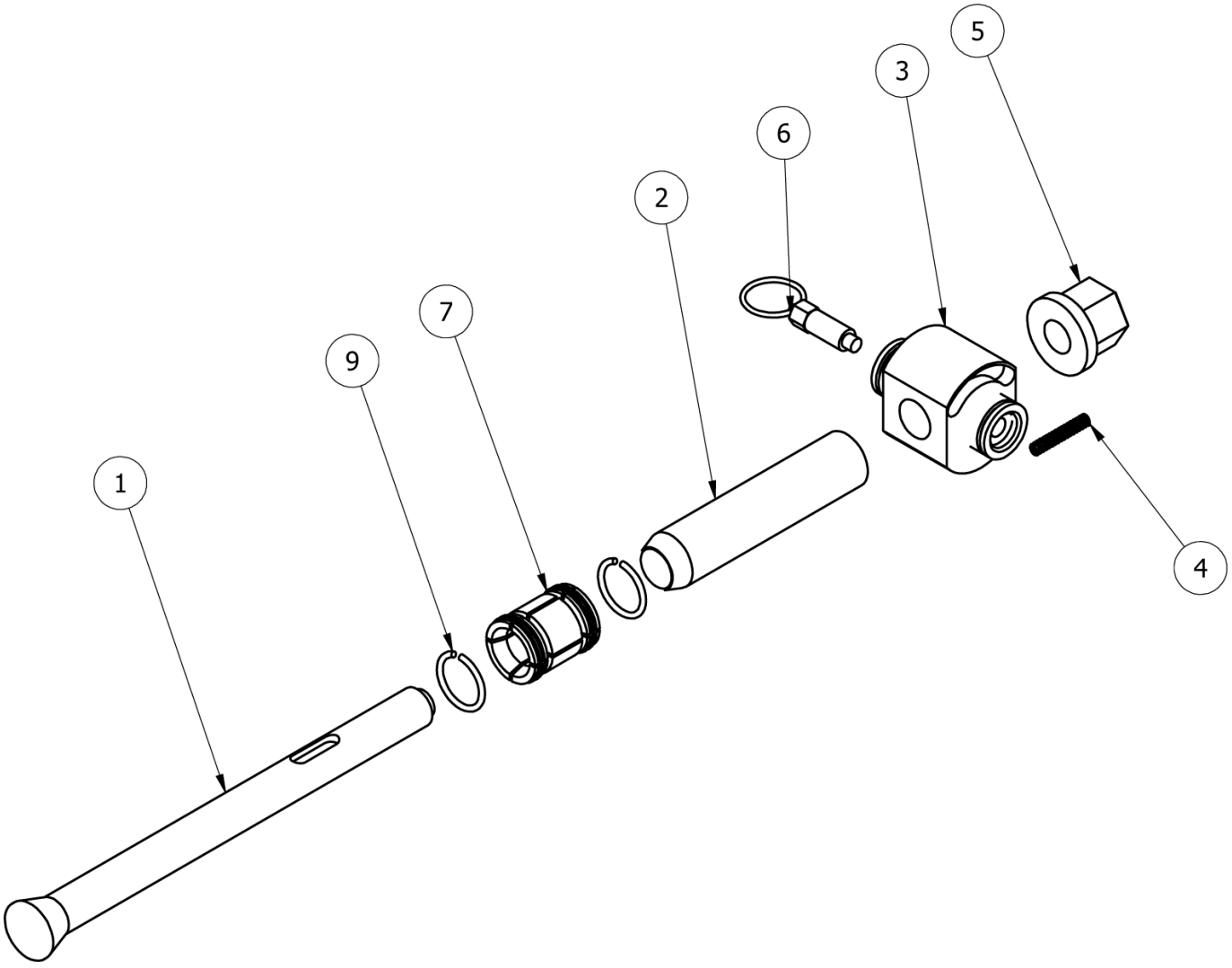
SG6TM PARTS LIST

ITEM NO.	PART NO	DESCRIPTION	QTY.
1	621701-01	CANTILEVER PIN	2
2	621301-01	OPEN LEG LH - NO PIN	1
3	621401-01	OPEN LEG WITH PIN WELDMENT	1
4	621501-01	SPIROL RETAINING RING	10
5	621801-01	CLOSED LEG TH - NO PIN	1
6	621901-01	CLOSED LEG RH WITH PIN WELDMENT	1
7	622101-01	CANTILEVER	1
8	632001-01	M8 SPRING PLUNGER	1
9	623401-01	CANTILEVER SPACER	1
10	623501-01	CHAMFER WASHER	1
11	623601-01	HOOK PIN	1
12		SEE ACTUATOR PARTS LIST	
13		SEE COLLET HEAD PARTS LIST	



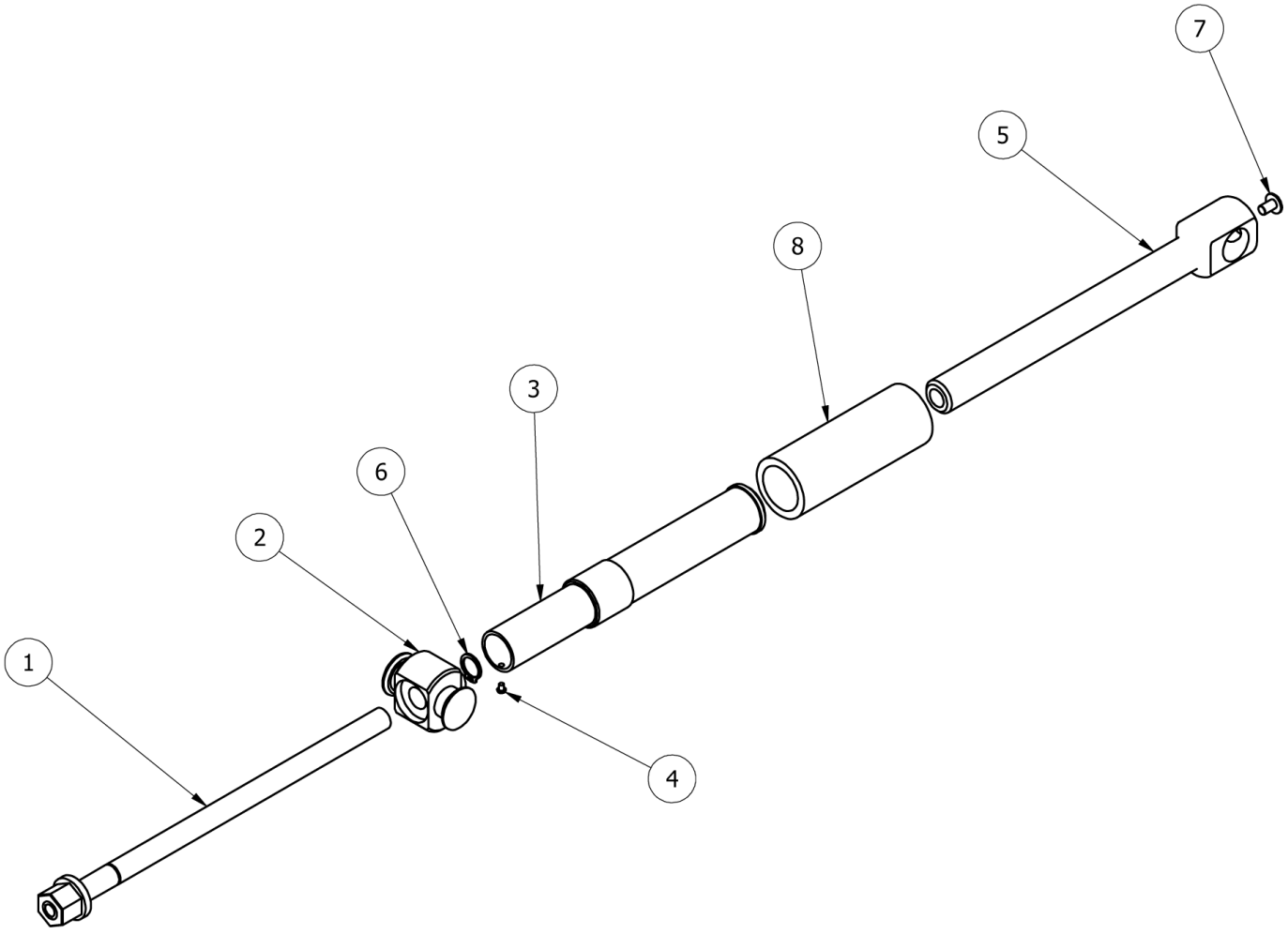
SG6TM COLLET HEAD PARTS LIST

ITEM NO.	PART NO	DESCRIPTION	QTY.
1	620401-01	COLLET HOLDER	2
2	620501-01	DRIVE CONE	2
3	620601-01	COLLET UNION	2
4	620701-01	CENTERING SPRING 1	2
5	620801-01	M14x2 COLLET NUT	2
6	63200-01	M8 SPRING PLUNGER	2
7	620201-90	M24 COLLET	2
	620301-90	M27 COLLET	2
9	621001-01	20 mm EXTERNAL SNAP RING	4
	621101-01	24 mm EXTERNAL SNAP RING	4



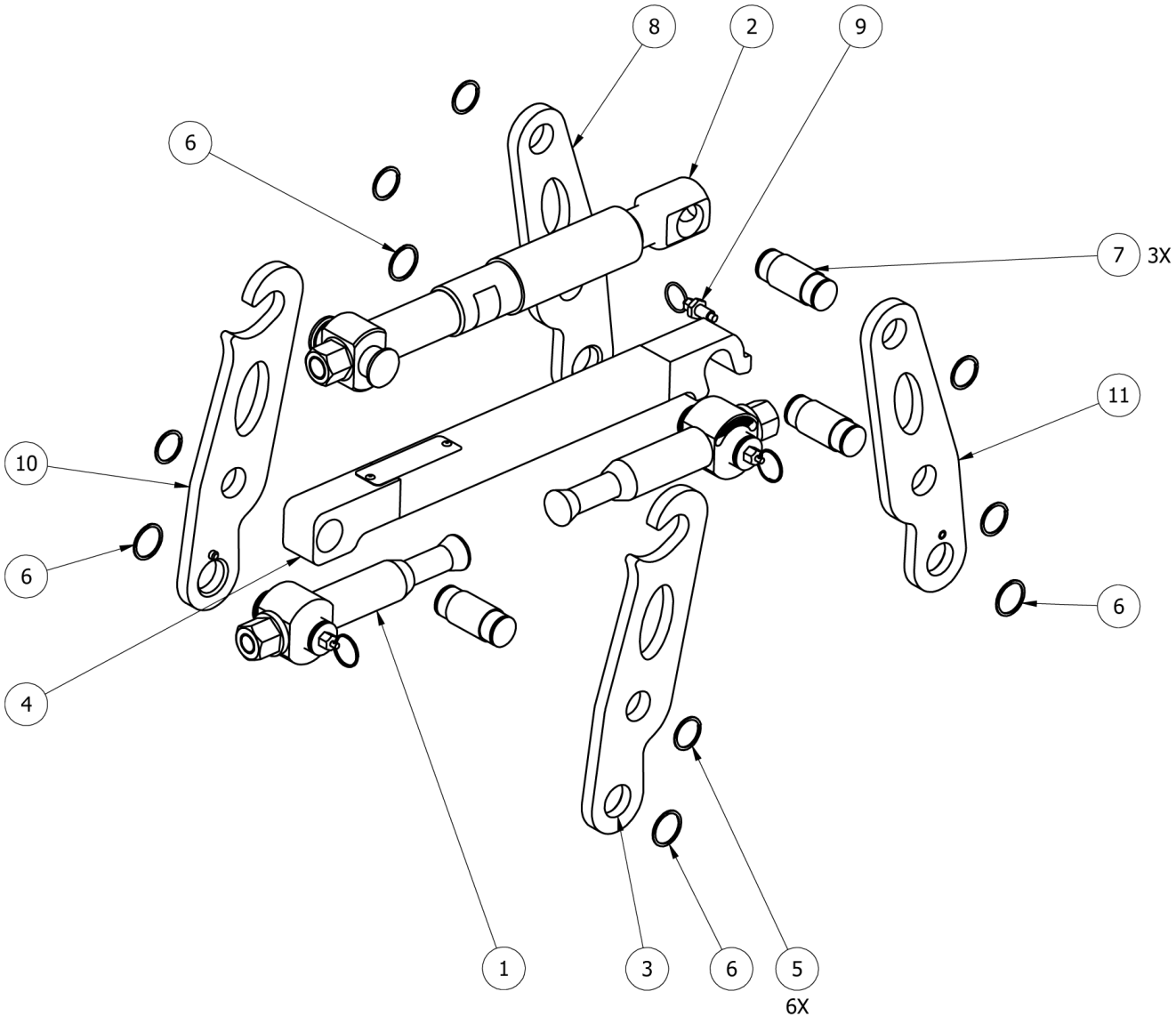
SG6TM ACTUATOR PARTS LIST

ITEM NO.	PART NO	DESCRIPTION	QTY.
1	622201-01	ACTUATOR BOLT	1
2	622501-01	OPEN ACTUATOR UNION	1
3	622701-01	ACTUATOR SLEEVE	1
4	622801-01	M3x4mm BUTTON H.SCKT SCREW GD10.9	1
5	622901-01	CLOSED ACTUATOR UNION	1
6	623101-01	ACTUATOR RETAINING RING	1
7	623001-01	M6x10 SCKT FLANGE B. SCRW	1
8	632801-01	FOAM GRIP	1



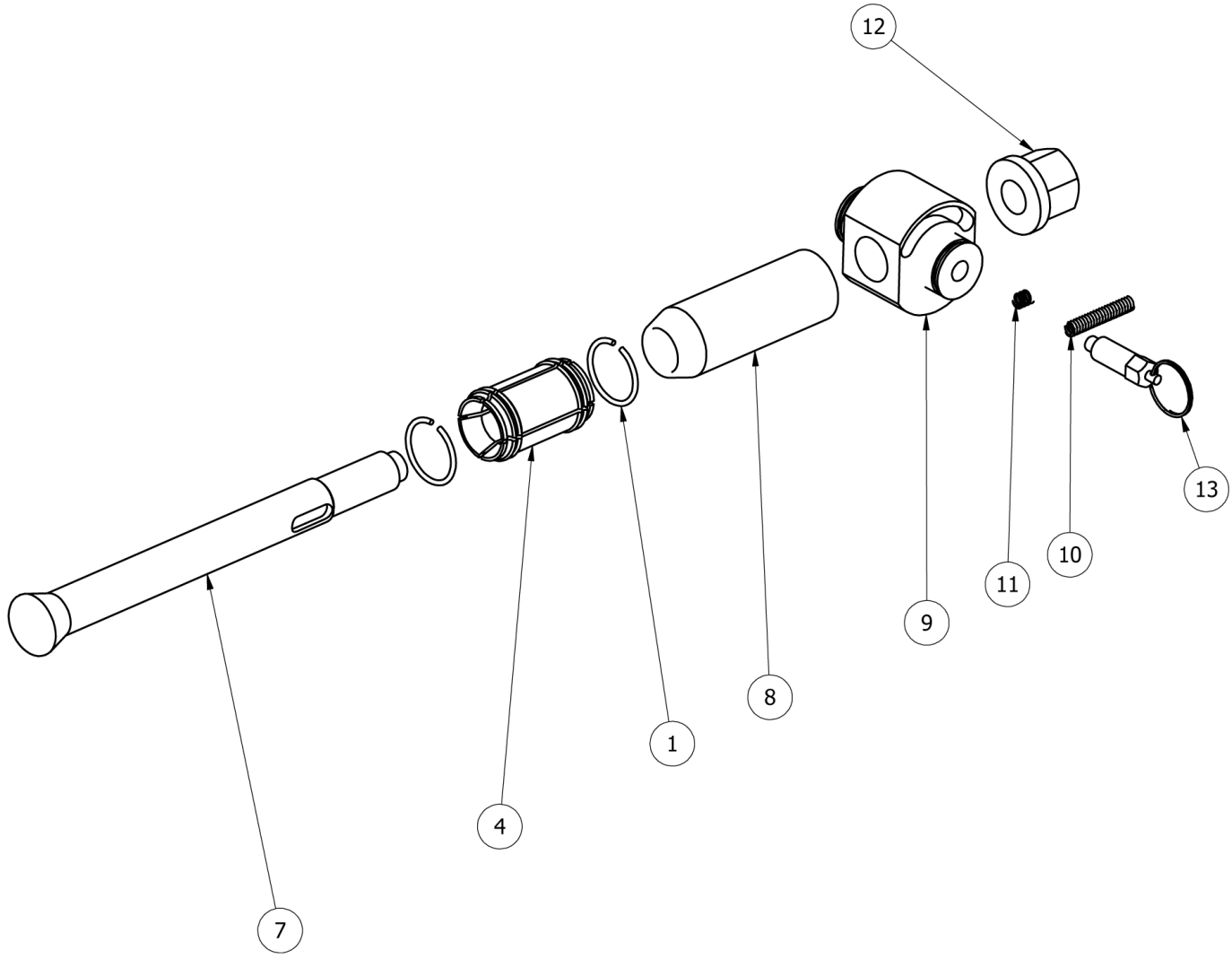
SG11TM PARTS LIST

ITEM NO.	PART NO	DESCRIPTION	QTY.
1		SEE COLLET HEAD PARTS LIST	
2		SEE ACTUATOR PARTS LIST	
3	631301-01	OPEN LEG LH - NO PIN	1
4	632101-01	CANTILEVER	1
5	631501-01	SPIROL RETAINING RING	6
6	631601-01	SPIROL RETAINING RING	4
7	631701-01	CANTILEVER PIN	3
8	631901-01	CLOSED LEG LH - NO PIN	1
9	632001-01	M8 SPRING PLUNGER	1
10	631401-01	SG11TM OPEN LEG RH WITH PIN WELDMENT	1
11	631801-01	SG11TM CLOSED LEG RH WITH PIN WELDMENT	1



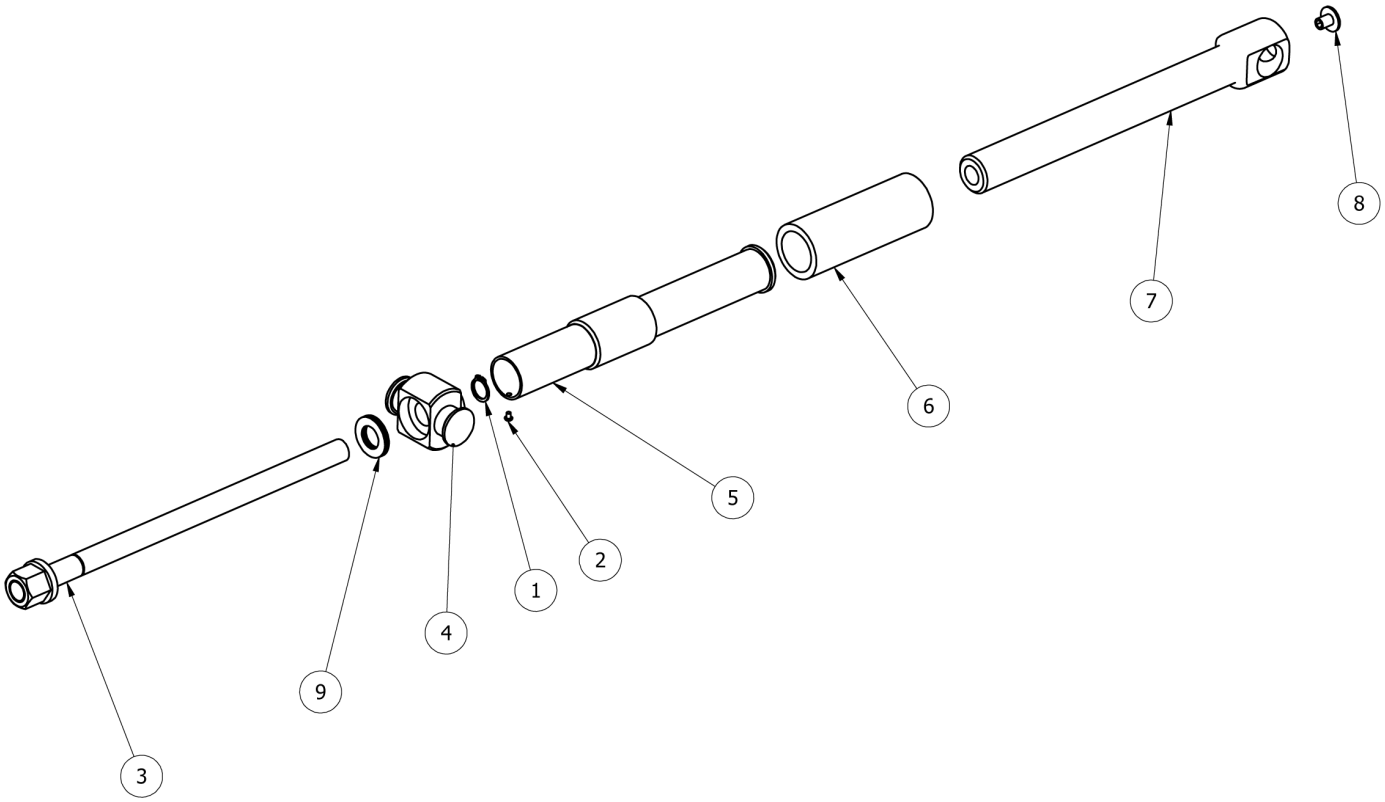
SG11TM COLLET HEAD PARTS LIST

ITEM NO.	PART NO	DESCRIPTION	QTY.
1	631001-01	M30 SPRING RING	4
	631101-01	M33 SPRING RING	4
	631201-01	M36 SPRING RING	4
4	630201-90	M30 COLLET	2
	630301-90	M33 COLLET	2
	630401-90	M36 COLLET	2
7	630101-01	COLLET HOLDER	2
8	630501-01	DRIVE CONE	2
9	630601-01	COLLET UNION	2
10	630701-01	CENTERING SPRING 1	2
	633201-01	CENTERING SPRING 2	2
12	630801-01	M16x2 COLLET NUT	2
13	900502-01	PULL PIN M10	2



SG11TM ACTUATOR PARTS LIST

ITEM NO.	PART NO	DESCRIPTION	QTY.
1	633101-01	CIRCLIP TO SUIT 15MM SHAFT	1
2	622801-01	M3x4mm BUTTON H.SCKT SCREW GD10.9	1
3	632201-01	ACTUATOR BOLT ASSY	1
4	632501-01	OPEN ACTUATOR UNION	1
5	632701-01	ACTUATOR SLEEVE	1
6	632801-01	FOAM GRIP	1
7	632901-01	CLOSED ACTUATOR UNION	1
8	633001-01	M8x10 SCKT FLNG BTN SCREW	1
9	632301-01	THRUST BEARING	1



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