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# Mechanical Gun Release, Shift Up

TC-060

MAN-TC-060 (R11)

## **OWEN OIL TOOLS**

5405 Blindman Crescent  
Red Deer County Alberta Canada T4S 2M4  
Phone: 1-403-340-1017  
Fax: 1-403-340-1415  
Toll Free: 1-888-345-1017  
[www.corelab.com/owen](http://www.corelab.com/owen)

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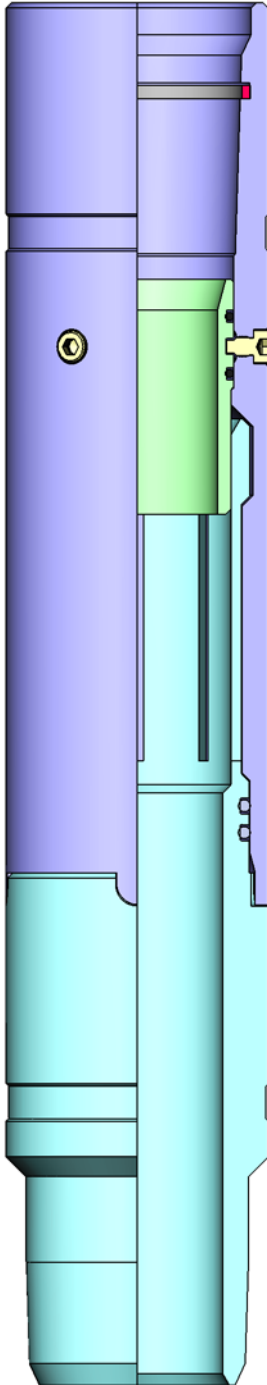
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## Description

The Mechanical Gun Release, Shift Up is a medium duty separation tool for TCP operations where it is desirable to drop the discharged gun system. The guns may be released using the Model B Shifting tool.



The Collet fingers of the Collet Sub snap into an internal retaining groove in the Top Sub. A Shifting Sleeve, held in place by Shear Screws, locks the fingers in the groove. The Model B Shifting Tool is positioned below the Shifting Sleeve with positive keys and jarred up to release the guns. The Shifting Sleeve is then pulled up against the tubing pin and jarred again to collapse the Shifting Tool keys. The Shifting Sleeve remains in the Top Sub of the Gun Release, therefore the restriction is equal to the Sleeve ID. The TC-062 Mechanical Gun Release Fullbore Shift Up should be considered in situations where no tubing restriction is permitted.

## Features and Benefits

- The shift up feature ensures that shifting tools are retracted into a safe position when the guns disengage from the tubing and allows higher jarring forces particularly in deviated wellbores
- This Gun Release is fully sealed which allows pressure testing of the tubing string prior to shifting
- The Top Sub acts as a wireline re-entry guide
- The Shifting Sleeve may be engaged with the Model B shifting tool with positive keys
- For drop bar applications we recommend spacing this tool one full tubing joint from the Firing Head to ensure the drop bar does not recoil after impact and shift the sleeve
- Integral torque tabs provide the ability to rotate the tubing string

**Note:** for extreme underbalance perforating, it is recommended running the Surge Tool Ported Underbalance Sub (or other ported Sub) above this tool.

**Do not torque through this tool for makeup**

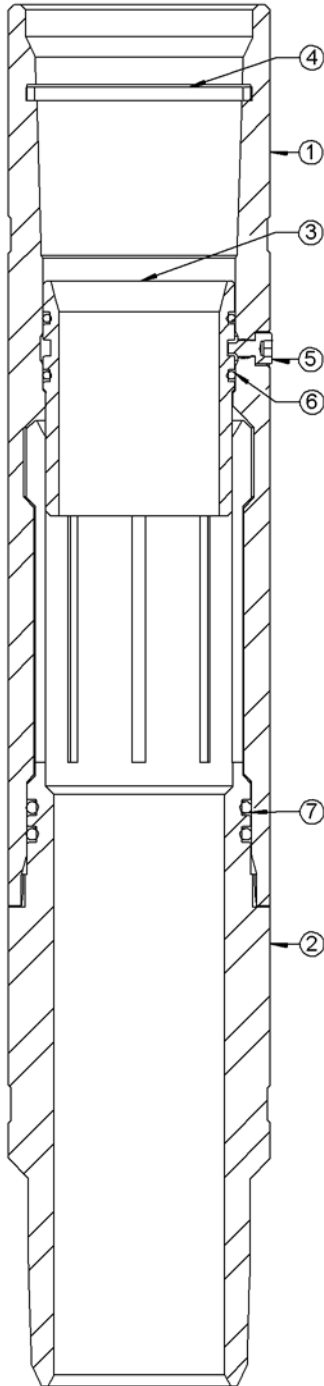
## Specifications

	2-3/8 in (60.3 mm)		2-7/8 in (73.0 mm)		3-1/2 in (88.9 mm)	
Maximum OD	3.093 in	78.6 mm	3.699 in	94.0 mm	4.531 in	115.1 mm
Sleeve ID	1.875 in	47.6 mm	2.340 in	59.4 mm	2.750 in	69.9 mm
	1.810 in	46.0 mm	2.310 in	58.7 mm	2.340 in	59.4 mm
	1.781 in	45.2 mm	2.250 in	57.2 mm	2.310 in	58.7 mm
	1.710 in	43.4 mm	2.125 in	54.0 mm		
	1.645 in	41.8 mm	1.875 in	47.6 mm		
Overall Length	16.19 in	411 mm	17.25 in	438 mm	23.00 in	584 mm
Max Pressure	9,130 psi	62 950 KPa	8,830 psi	60 880 KPa	12,000 psi	82 740 KPa
Tensile	55,200 lb	24 550 daN	79,400 lb	35 300 daN	105,900 lb	47 100 daN
Max Torque (P110)	1890 ft-lb	2560 N.m.	2110 ft-lb	2860 N.m.	5940 ft-lb	8050 N.m.
Max Torque (L80)	1440 ft-lb	1950 N.m.	1610 ft-lb	2180 N.m.	4540 ft-lb	6150 N.m.
Max Temp <sup>2</sup>	250°F (121°C)					
Screw Shear Force	1500 lbf - 2000 lbf per screw					
Connections	2-3/8 in (60.3 mm) EU Box X Pin		2-7/8 in (73.0 mm) EU Box X Pin		3-1/2 in (88.9 mm) EU Box X Pin	
Product Number <sup>1</sup>	TC-060-2375-XXX <sup>3</sup>		TC-060-2875-XXX <sup>3</sup>		TC-060-3500-XXX	
Redress Kit	TC-060-2375-099		TC-060-2875-099		TC-060-3500-099	

<sup>1</sup>The last three digits of the part number are used to select shifting sleeve size. ie-TC-060-2375-187 is the 1.875" Sleeve.

<sup>2</sup>The maximum temperature can be increased to 450°F (230°C) by substituting the 90 durometer Nitrile O-rings with 90 durometer Viton O-rings.

<sup>3</sup>Sour Service (L80) versions are available with an L80 Extension (TC-060-2375-187-L80)



Item	Part Number	Qty	Description
--	<b>TC-060-2375-</b>	--	<b>Mechanical Gun Release Shift Up 2-3/8" EU</b>
1	TC-060-0000-110	↑ 1	Top Sub 2-3/8" EU (P110)
2	TC-060-0001-000	1	Collet Sub 2-3/8" EU
3	TC-060-0002-164	164	Shifting Sleeve 1.645" ID
3	TC-060-0002-171	171	Shifting Sleeve 1.710" ID
3	TC-060-0002-178	178	Shifting Sleeve 1.781" ID
3	TC-060-0002-181	181	Shifting Sleeve 1.810" ID
3	TC-060-0002-187	187	Shifting Sleeve 1.875" ID
4	MI-305-2375-000	1	2-3/8" EU Thread API Seal Ring
5	SF-050-025F-050S	3	Shear Screw 1/4" - 28 UNF x 0.5 LG.
6	OOO-N569-137	2	O-Ring 90 Durometer Nitrile
7	OOO-N569-229	2	O-Ring 90 Durometer Nitrile
--	MAN-TC-060	--	Assembly Manual
--	TC-060-2375-099	--	Redress Kit Gun Release Shift Up 2-3/8" EU

The last three digits of the part number are used to select shifting sleeve size. ie-TC-060-2375-187 is the 1.875" Sleeve.

Item	Part Number	Qty	Description
--	<b>TC-060-2875-</b>	--	<b>Mechanical Gun Release Shift Up 2-7/8" EU</b>
1	TC-060-0004-L80	↑ 1	Top Sub 2-7/8" EU (L80)
2	TC-060-0005-000	1	Collet Sub 2-7/8" EU
3	TC-060-0006-164	164	Shifting Sleeve 1.645" ID
3	TC-060-0006-187	187	Shifting Sleeve 1.875" ID
3	TC-060-0006-206	206	Shifting Sleeve 2.062" ID
3	TC-060-0006-212	212	Shifting Sleeve 2.125" ID
3	TC-060-0006-225	225	Shifting Sleeve 2.250" ID
3	TC-060-0006-231	231	Shifting Sleeve 2.310" ID
3	TC-060-0006-234	234	Shifting Sleeve 2.340" ID
4	MI-305-2875-000	1	Seal Ring 2-7/8 EU
5	SF-050-025F-050S	3	Shear Screw 1/4" - 28 UNF x 0.5 LG.
6	OOO-N569-230	2	O-Ring 90 Durometer Nitrile
7	OOO-N569-234	2	O-Ring 90 Durometer Nitrile
--	MAN-TC-060	--	Assembly Manual
--	TC-060-2875-099	--	Redress Kit Gun Release Shift Up 2-7/8" EU

The last three digits of the part number are used to select shifting sleeve size. ie-TC-060-2875-187 is the 1.875" Sleeve.

Item	Part Number	Qty	Description
--	<b>TC-060-3500-</b>	--	<b>Mechanical Gun Release Shift Up 3-1/2" EU</b>
1	TC-060-0009-000	↑ 1	Top Sub 3-1/2" EU
2	TC-060-0010-000	1	Collet Sub 3-1/2" EU
3	TC-060-0011-231	231	Shifting Sleeve 2.310" ID
3	TC-060-0011-234	234	Shifting Sleeve 2.340" ID
3	TC-060-0011-275	275	Shifting Sleeve 2.750" ID
4	MI-305-3500-000	1	Seal Ring 3-1/2" EU
5	SF-050-025F-050S	3	Shear Screw 1/4" - 28 UNF x 0.5 LG.
6	OOO-N569-234	2	O-Ring 90 Durometer Nitrile
7	OOO-N569-238	2	O-Ring 90 Durometer Nitrile
--	MAN-TC-060	--	Assembly Manual
--	TC-060-3500-099	--	Redress Kit Gun Release Shift Up 3-1/2" EU

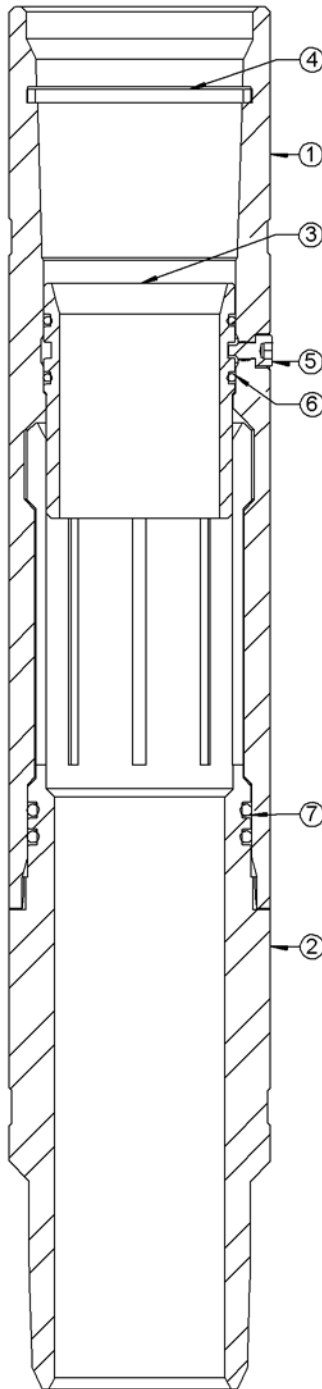
The last three digits of the part number are used to select shifting sleeve size. ie-TC-060-3500-231 is the 2.310" Sleeve.

Item	Part Number	Qty	Description
--	<b>TC-060-2375-099</b>	--	<b>Redress Kit Gun Release Shift Up 2-3/8" EU</b>
4	MI-305-2375-000	1	Seal Ring 2-3/8" EU
5	SF-050-025F-050S	3	Shear Screw 1/4" - 28 UNF x 0.5 LG.
6	OOO-N569-137	2	O-Ring 90 Durometer Nitrile
7	OOO-N569-229	2	O-Ring 90 Durometer Nitrile

Item	Part Number	Qty	Description
--	<b>TC-060-2875-099</b>	--	<b>Redress Kit Gun Release Shift Up 2-7/8" EU</b>
4	MI-305-2875-000	1	Seal Ring 2-7/8" EU
5	SF-050-025F-050S	3	Shear Screw 1/4" - 28 UNF x 0.5 LG.
6	OOO-N569-230	2	O-Ring 90 Durometer Nitrile
7	OOO-N569-234	2	O-Ring 90 Durometer Nitrile

Item	Part Number	Qty	Description
--	<b>TC-060-3500-099</b>	--	<b>Redress Kit Gun Release Shift Up 3-1/2" EU</b>
4	MI-305-3500-000	1	Seal Ring 3-1/2" EU
5	SF-050-025F-050S	3	Shear Screw 1/4" - 28 UNF x 0.5 LG.
6	OOO-N569-234	2	O-Ring 90 Durometer Nitrile
7	OOO-N569-238	2	O-Ring 90 Durometer Nitrile

# Mechanical Gun Release, Shift Up



Item	Part Number	Qty	Description
--	<b>TC-060-2375-L80</b>	--	<b>Mechanical Gun Release Shift Up 2-3/8" EU</b>
1	TC-060-0000-080	1	Top Sub 2-3/8" EU (L80)
2	TC-060-0001-000	1	Collet Sub 2-3/8" EU
3	TC-060-0002-164	164	Shifting Sleeve 1.645" ID
3	TC-060-0002-171	171	Shifting Sleeve 1.710" ID
3	TC-060-0002-178	178	Shifting Sleeve 1.781" ID
3	TC-060-0002-181	181	Shifting Sleeve 1.810" ID
3	TC-060-0002-187	187	Shifting Sleeve 1.875" ID
4	MI-305-2375-000	1	2-3/8" seal ring EU thread
5	SF-050-025F-050S	3	Shear Screw 1/4" - 28 UNF x 0.5 LG.
6	OOO-N569-229	2	O-Ring 90 Durometer Nitrile
7	OOO-N569-137	2	O-Ring 90 Durometer Nitrile
--	MAN-TC-060	--	Assembly Manual
--	TC-060-2375-099	--	Redress Kit Gun Release Shift Up 2-3/8" EU

The last three digits of the part number are used to select shifting sleeve size. ie-TC-060-2375-187-L80 is the 1.875" Sleeve.

Item	Part Number	Qty	Description
--	<b>TC-060-2875-L80</b>	--	<b>Mechanical Gun Release Shift Up 2-7/8" EU</b>
1	TC-060-0004-080	1	Top Sub 2-7/8" EU (L80)
2	TC-060-0005-000	1	Collet Sub 2-7/8" EU
3	TC-060-0006-164	164	Shifting Sleeve 1.645" ID
3	TC-060-0006-187	187	Shifting Sleeve 1.875" ID
3	TC-060-0006-206	206	Shifting Sleeve 2.062" ID
3	TC-060-0006-212	212	Shifting Sleeve 2.125" ID
3	TC-060-0006-225	225	Shifting Sleeve 2.250" ID
3	TC-060-0006-234	234	Shifting Sleeve 2.340" ID
4	MI-305-2875-000	1	2-7/8" EU Thread API Seal Ring
5	SF-050-025F-050S	3	Shear Screw 1/4" - 28 UNF x 0.5 LG.
6	OOO-N569-234	2	O-Ring 90 Durometer Nitrile
7	OOO-N569-229	2	O-Ring 90 Durometer Nitrile
--	MAN-TC-060	--	Assembly Manual
--	TC-060-2875-099	--	Redress Kit Gun Release Shift Up 2-7/8" EU

The last three digits of the part number are used to select shifting sleeve size. ie-TC-060-2875-187-L80 is the 1.875" Sleeve.

## Description

The Owen Oil Tools Mechanical Gun Release, Shift Up is designed for use with the Model B Shifting Tool when dressed with Positive keys **only**.

**Note:** if the Shifting Tool has been dressed with Selective (self releasing) keys, the Gun Release may not function properly. It is not advised to attempt shifting the Gun Release with this configuration.

**Only Positive keys must be used.**

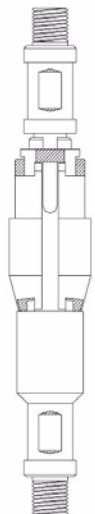
Before running the Gun Release into the wellbore, the maximum operating parameters of the job should be established and compared to the specifications of the Gun Release as indicated in the Specification Table. This will ensure proper operation of the tool under all conditions.

## Operation

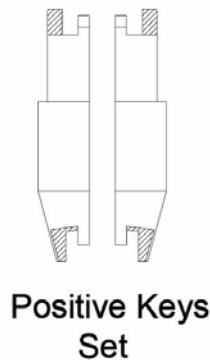
To engage the Shifting Sleeve of the Gun Release, run the Shifting Tool past the Gun Release. Slowly pull up into the Gun Release until the Shifting Tool engages the internal Shifting Sleeve. Several jars will be required to force the Shifting Sleeve upwards allowing the Collet to disengage from the Gun Release. Once the guns have been released, the Shifting Tool may be retrieved from the wellbore. In order to disengage the keys, it is necessary to shear the pin in the Shifting Tool by jarring up again, until the Shift Tool releases. In some cases, it may be advisable to confirm the release of the Gun System by running a Blind Box or Tubing Gauge to tag the top of the discharged Gun System.

As previously mentioned, only Positive Keys may be used on the Model B Shifting Tool for this Gun Release. Consult the Shifting Tool supplier to select the correct Shifting Tool configuration for this Gun Release design. Since the Gun Release is a Shift Up, the square shoulder of the Shifting Tool keys must be facing upwards. It is strongly advised to drift all equipment, including Seating Nipples prior to running the TCP String into the wellbores.

Ensure that the orientation of the Shifting Tool as well as the configuration matches the diagram.



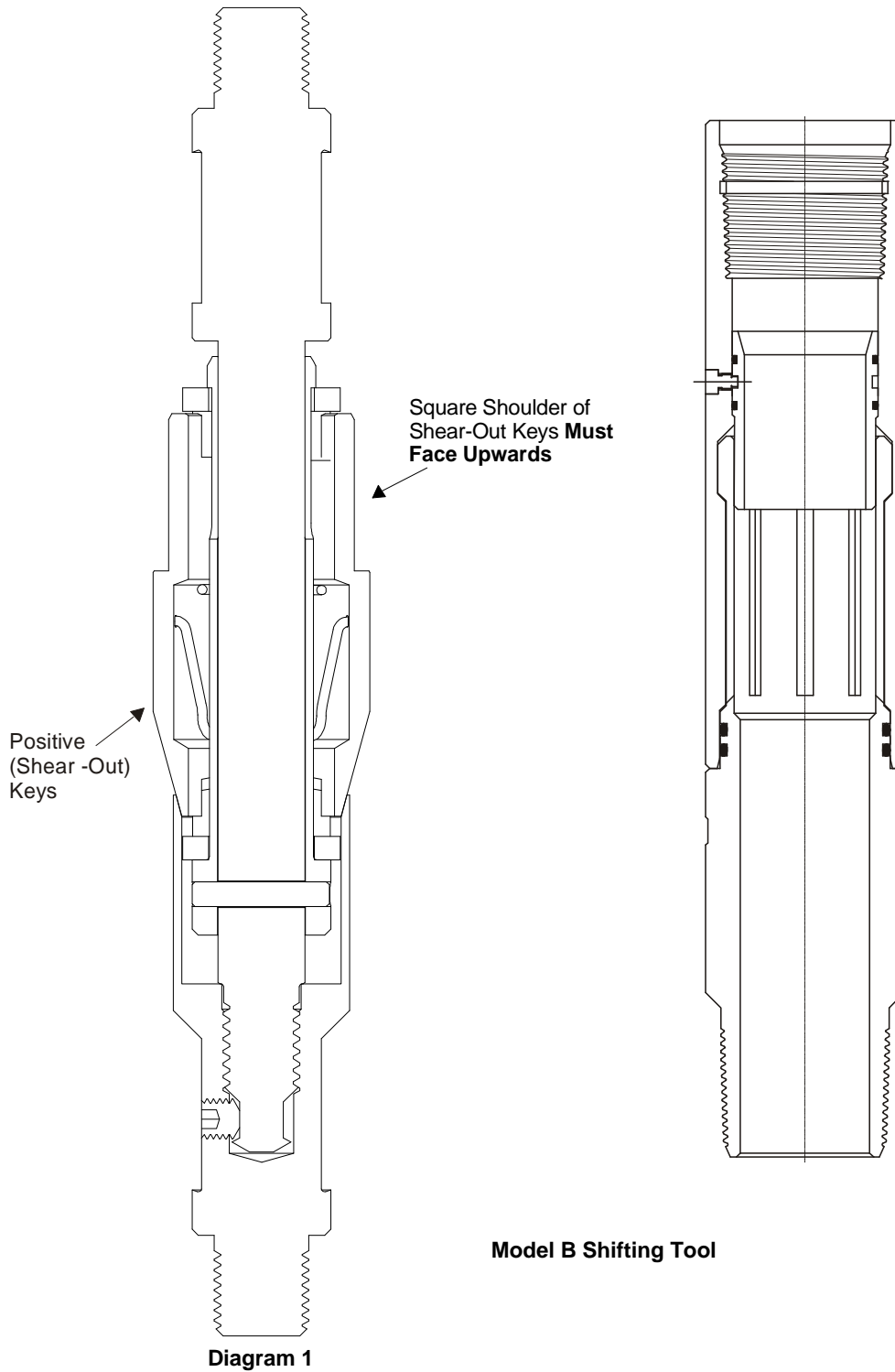
Model 'B' Shifting Tool  
(Positive Keys)

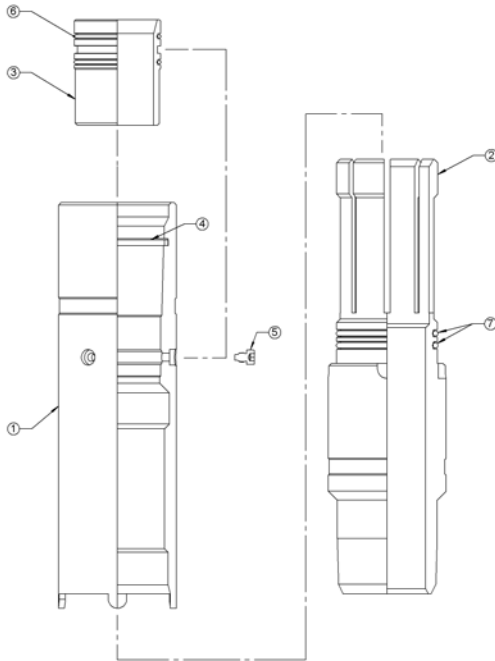


Positive Keys  
Set

Model 'B' Shifting Tool for use with Mechanical Gun Release	
(Positive Keys) Tool Assembly Number	Profile I.D.'s (Shift Up & Shift Down)
WT-030-1500-000	1.520
WT-030-1625-000	1.645, 1.710
WT-030-1710-000	1.781, 1.810
WT-030-1781-000	1.875
WT-030-2125-000	2.062, 2.125
WT-030-2313-000	2.250, 2.310, 2.340
WT-030-2562-000	2.750

Model 'B' Shifting Keys Only (Positive)
WT-030-1500-001
WT-030-1625-001
WT-030-1710-001
WT-030-1781-001
WT-030-2125-001
WT-030-2313-001
WT-030-2562-001





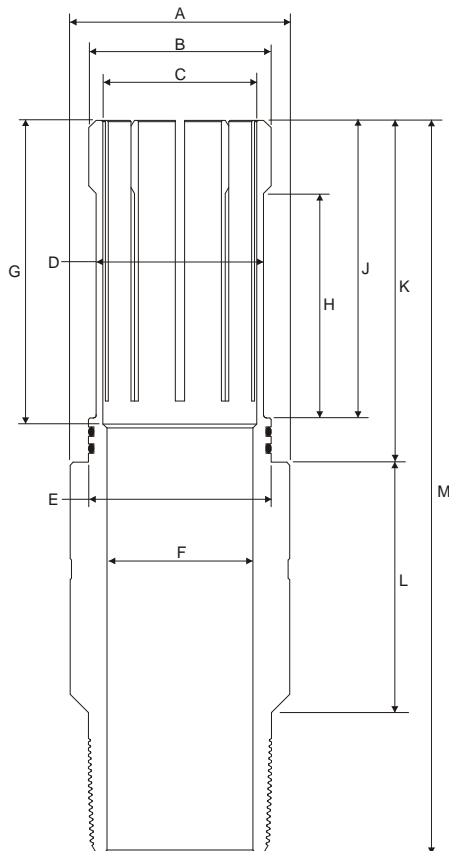
**Step 1:** Grease and install O-rings (item 7) onto Collet Sub (item 2) and O-rings (item 6) onto Shifting Sleeve (item 3).

**Step 2:** Push Collet Sub into bottom of Top Sub (item 1), collet fingers first, until Collet fingers are engaged. The alignment tabs must be aligned with grooves in Collet sub and Collet Sub will shoulder out on top sub when fully engaged.

**Step 3:** Slide shifting sleeve into top sub from box end. The end closest to O-rings goes in last. The shifting sleeve will shoulder out in top sub when installed.

**Step 4:** Visually check that the groove is visible through shear screw hole, then thread a shear screw (item 5) into each hole.

**Step 5:** Grease and install seal ring (item 4) into box thread of top sub.



Fishing Dimensions

	2-3/8" EU	2-7/8" EU	3-1/2" EU
A (+/-0.031)	3.062	3.668	4.500
B	2.640	3.141	3.644
C	2.187	2.687	3.157
D	2.438	2.945	3.429
E	2.620	3.245	3.745
F	1.995	2.441	2.992
G	4.281	4.313	6.219
H	3.156	3.125	4.594
J	4.156	4.125	6.094
K	5.312	5.250	7.250
L	3.562	3.875	5.125
M	11.310	11.625	15.250