
PRODUCT: Torq-Matic Wrench

DATE: MAY 16, 2012

SUBJECT: Tong Cylinder Upgrade

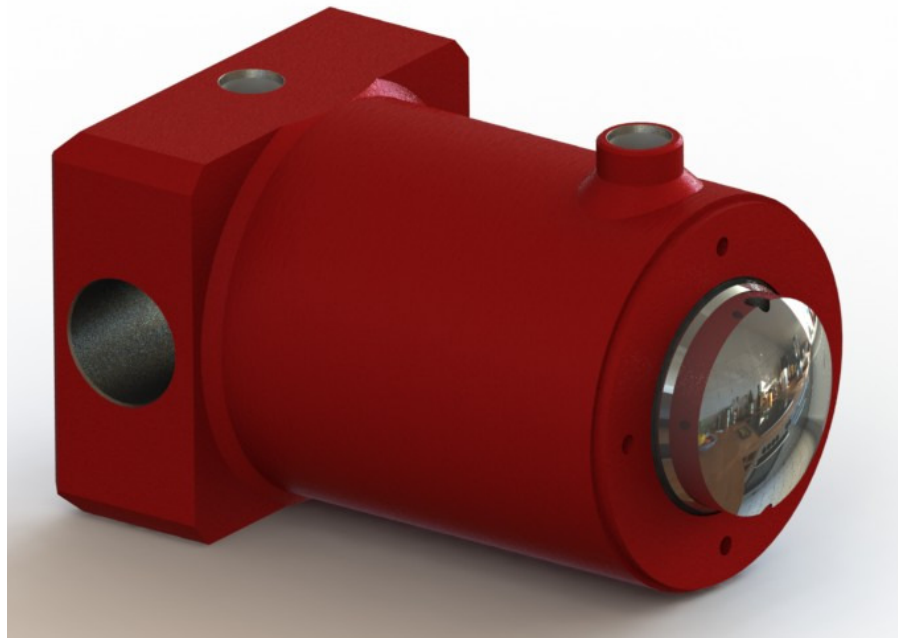
SERIAL NUMBERS: All TM-80 Series Wrenches

DISCUSSION: Heavier duty tong cylinders are now available as an upgrade to the existing upper & lower, left & right tong cylinders used on the TM-80.

Upgrades to the cylinder include:

1. Increased piston thickness and increased diameter of threaded portion of rod - increases threaded surface contact area between rod and piston and prevents rod from backing out.
2. Addition of piston wear ring - reduces frictional resistance and provides better seal between piston and barrel wall.
3. Relocated o-ring on cylinder head – protects o-ring from damage and offers better leak prevention.
4. Internal orifice on rod end – reduces part count and eliminates need for externally installed orifice.

The new cylinder results in a near doubling of the Factor of Safety relative to system hydraulic design pressure over the current cylinder.



RECOMMENDATION: The current cylinder (H10552) will be obsoleted once inventory is depleted.

The new cylinders are currently available for aftermarket sale and will be installed on all new TM-80 wrenches beginning July 2012.

The part number for the new cylinder is H11416.

H11416 Specifications:

Size:

Barrel OD: 7"

Bore ID: 6"

Rod OD: 4"

Stroke: 4.625"

Materials of Construction:

Rod: 17-4 SS CPO

Tube: 1026 DOM HT

Max Operating Pressure:

Extend: 5300 psi (FoS = 2.4)

Retract: 5300 psi (FoS = 2.4)

Connections:

Extend: #12 SAE ORB

Retract: #12 SAE ORB

H11416 should only be ordered independently if replacing an existing H11416 cylinder. Due to the relocation of the extend port, a fitting kit is required with the H11416 cylinder when replacing the current H10552 cylinder to effectively extend the length of the hose.

When ordering a complete set of four replacement cylinders, use part number AY50927 (drawing attached). This kit includes the cylinders and a complete set of adapter fittings.

AY50927			
<u>ID</u>	<u>P/N</u>	<u>Description</u>	<u>Qty</u>
1	H11416	CYL, BORE 6, ROD 4, STRK 4.625, 5300 PSI	4
2	H15-070320-12-12	ELL 45°, MALE 3/4 JIC, MALE 3/4 ORB	5
3	H15-070220-12	ELL 90°, MALE 3/4 JIC, MALE 3/4 ORB	2
4	H15-070432-12	TEE, SWV NUT RUN, 3/4 JIC	4
5	H15-070112-12	CAP, 3/4 JIC	4
6	H15-070120-12-12	ADPT, MALE 3/4 JIC, MALE 3/4 ORB	1

When ordering individual cylinders, a fitting kit (AY50930) must be ordered with each cylinder (H11416). The AY50930 fitting kit contains enough fittings to install the cylinder in any location.

AY50930			
<u>ID</u>	<u>P/N</u>	<u>Description</u>	<u>Qty</u>
2	H15-070320-12-12	ELL 45°, MALE 3/4 JIC, MALE 3/4 ORB	2
3	H15-070220-12	ELL 90°, MALE 3/4 JIC, MALE 3/4 ORB	1
4	H15-070432-12	TEE, SWV NUT RUN, 3/4 JIC	1
5	H15-070112-12	CAP, 3/4 JIC	1
6	H15-070120-12-12	ADPT, MALE 3/4 JIC, MALE 3/4 ORB	1

Note: The orifice installed in the adapter fitting on the rod end port is no longer required.

The replacement seal kit is S12899.

To replace the installed cylinders, the follow the steps below.

Tools Required:

- 1-1/4" open end wrench
- 3/8" Allen wrench
- 1/4" Allen wrench
- Hammer
- Brass drift or wooden rod
- Blue Loctite
- Oil absorbent pads

Procedure:

1. Start the HPU.
2. From the DEVICE TEST screen of the HMI:
 - a. Extend wrench to hole center using the Horizontal IN and Vertical Lift DN buttons.
 - b. Adjust tong assembly height using the Vertical Lift DN or UP buttons to locate the cylinders at a comfortable working height (approximately waist high).
 - c. Use the Torque Cylinder EX button to rotate the upper tong and expose all four cylinder pins.
3. Turn off the HPU.
4. From the DEVICE TEST screen, cycle the Lower Clamp and Upper Clamp OP and CL buttons a few times to bleed pressure from the cylinders. Refer to the Actual Hyd Pressure readout as an indicator as to whether the pressure has been bled off.
5. Disconnect power. Follow local tag out and lock out procedures.
6. Place a bucket(s) and/or oil-absorbent pads under the work area to capture leaking hydraulic oil.
7. With extreme caution, use a 1-1/4" open end wrench to slightly crack open one of the fittings on each of the cylinders to ensure all hydraulic pressure has been bled off. If high pressure appears to still exist, retighten cracked fittings, place valve handles on the clamping cylinder valve sections, and actuate valve handles in and out until all of the residual pressure has been bled out.
8. Loosen the set screws on the cylinder pins using the 1/4" Allen wrench.
9. Use a hammer and a brass drift or sturdy wooden rod to drive out cylinder pins. Avoid using hard metal tools such as steel punches, as this may damage the pin. A second person may be needed for this step in order to catch the pins as they are driven out.
10. Use a 1-1/4" open end wrench to disconnect hydraulic hoses from cylinder ports. Mark each hose section with chalk or marking paint so they can be reconnected correctly.
11. Use a crane or lifting device to help slowly remove the cylinder and jaw weldment as one piece. If no lifting device is available, use two persons to remove the assembly.
12. Use a 3/8" Allen wrench to remove the ram connection bolt.
13. Remove cylinder from the jaw weldment.
14. Install adapter fittings on replacement cylinders. Tighten loosely.
15. Install replacement cylinder in jaw weldment and re-install the ram connection bolt using a small amount of Loctite.
16. Re-insert new assembly into the tong assembly, ensuring cylinder, fittings, and clamp dies are correctly oriented.
17. Reconnect hydraulic hoses.
18. Tighten port fittings on cylinder.
19. Align cylinder pin hole in the cylinder with its corresponding bracket in the tong assembly and re-insert cylinder pin.
20. Tighten set screws.
21. Remove lockout and tagout devices and reconnect power.
22. Start the HPU.
23. Cycle through the make-up / break-out sequence several times to verify functionality.
24. Fully retract the wrench to the park position and turn off the HPU.

INFORMATION:

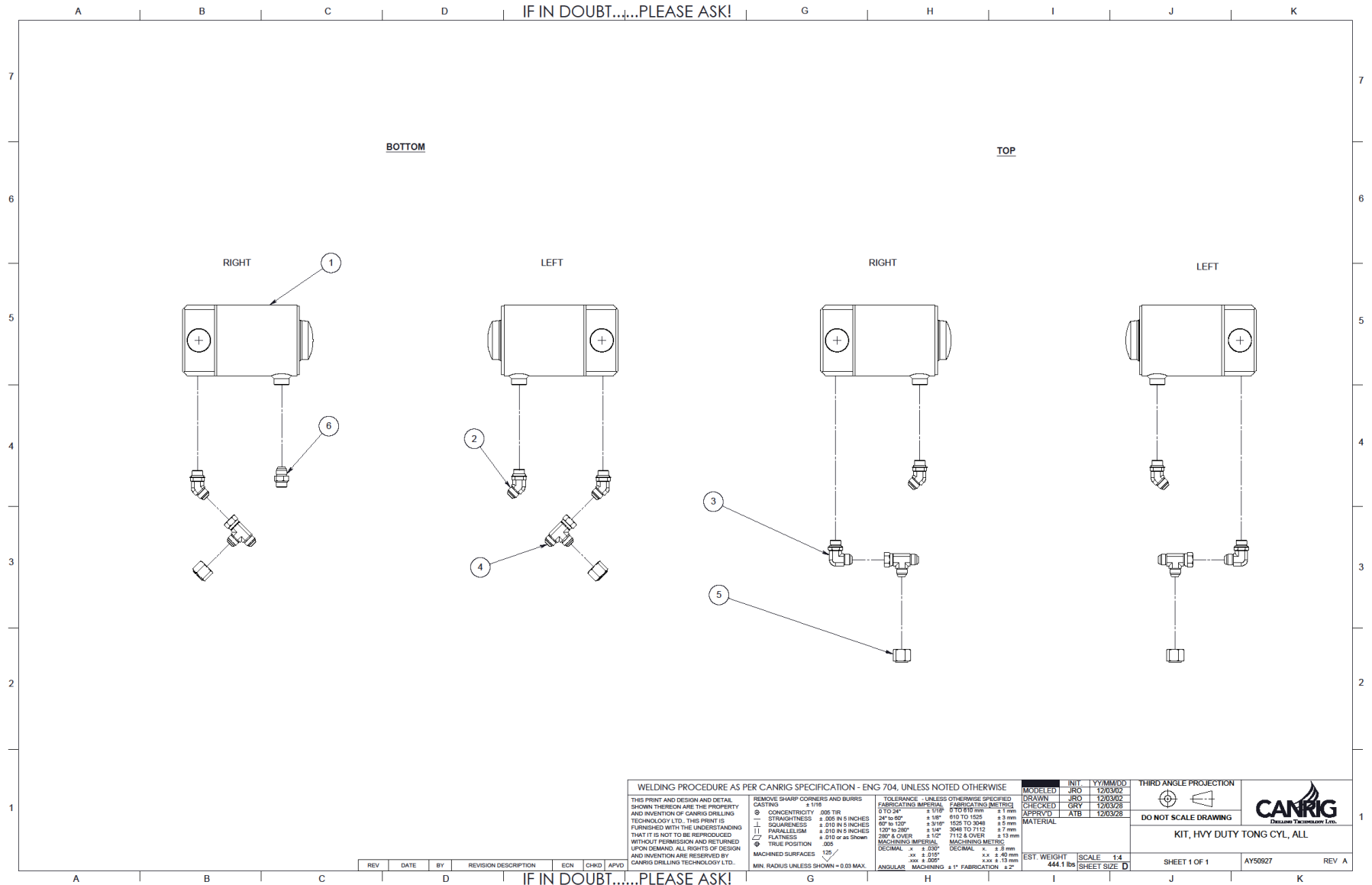
For a complete list of all bulletins go to www.canrig.com

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WELDING PROCEDURE AS PER CANRIG SPECIFICATION - ENG 704, UNLESS NOTED OTHERWISE

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REMOVE SHARP CORNERS AND BURRS	CASTINGS	± 0.10
⊙ CONCENTRICITY	0.05 TR	
— STRAIGHTNESS	± 0.05 IN 5 INCHES	
⊥ SQUARENESS	± 0.10 IN 5 INCHES	
∥ PARALLELISM	± 0.10 IN 5 INCHES	
∠ FLATNESS	± 0.10 or as shown	
⊕ TRUE POSITION	0.05	
MACHINED SURFACES	125/	
MIN. RADIUS UNLESS SHOWN	± 0.03 MAX.	

TOLERANCE - UNLESS OTHERWISE SPECIFIED	
FABRICATING MATERIAL	FABRICATING METRICS
0 TO 24"	± 1/16"
24" to 60"	± 1/8"
60" to 120"	± 3/16"
120" to 200"	± 1/4"
200" & OVER	± 1/2"
DECIMAL	± 0.030
xxx ± 0.005"	± 0.13 mm
ANGULAR	± 1° FABRICATION ± 2°

MODELED	JRG	12/03/02
DRAWN	JRG	12/03/02
CHECKED	GRY	12/03/02
APPROVD	ATB	12/03/28
MATERIAL		
EST. WEIGHT	SCALE	1:4
444.1 LBS	SHEET SIZE	D

THIRD ANGLE PROJECTION

DO NOT SCALE DRAWING

CANRIG
DRILLING TECHNOLOGY LTD.

KIT, HVY DUTY TONG CYL, ALL

SHEET 1 OF 1 AY50927 REV A

REV	DATE	BY	REVISION DESCRIPTION	ECN	CHKD	APVD

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