

Hi-Force® HYDRAULIC TOOLS		<u>OPERATING INSTRUCTIONS FOR HDT HAND TORQUE MULTIPLIER</u>			TDS:- 1205
Prepared by:-	Mark Dalley		Approved by:-	Matthew Hughes	Date: 30/10/12
REV NO:-	002				
ECO:-	3946				

IMPORTANT DO NOT OPERATE BEFORE READING THESE INSTRUCTIONS

The Handtorque multiplier is a precision tool that will exactly multiply the input torque by the specified ratio. To operate the Handtorque multiplier you will need the following:-

POWER DRIVE OR IMPACT QUALITY SOCKETS

REACTION ARM

HI-FORCE OR OTHER QUALITY TORQUE WRENCH

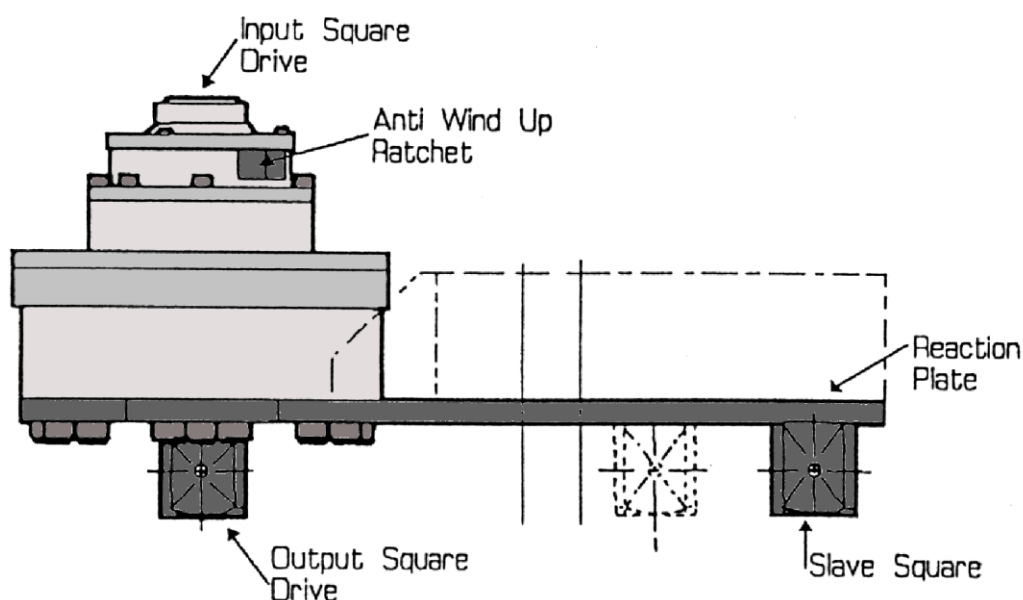


FIG 1

TORQUE REACTION

When the Handtorque is in operation the reaction plate rotates in the opposite direction to the output square drive and must be allowed to rest squarely against a solid object or surface adjacent to the bolt to be tightened. (See figure 2).

Where the standard reaction plate is not suitable, it may be possible to adapt it. Refer to your Hi-Force distributor for advice.

IMPORTANT CARE MUST BE TAKEN TO ENSURE THAT THE REACTION PLATE IS ONLY USED WITHIN THE LIMITATIONS SHOWN IN FIGURE 3.

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For special applications or where extra deep sockets must be used the standard arm may be extended but only within the limitations on figure 3.

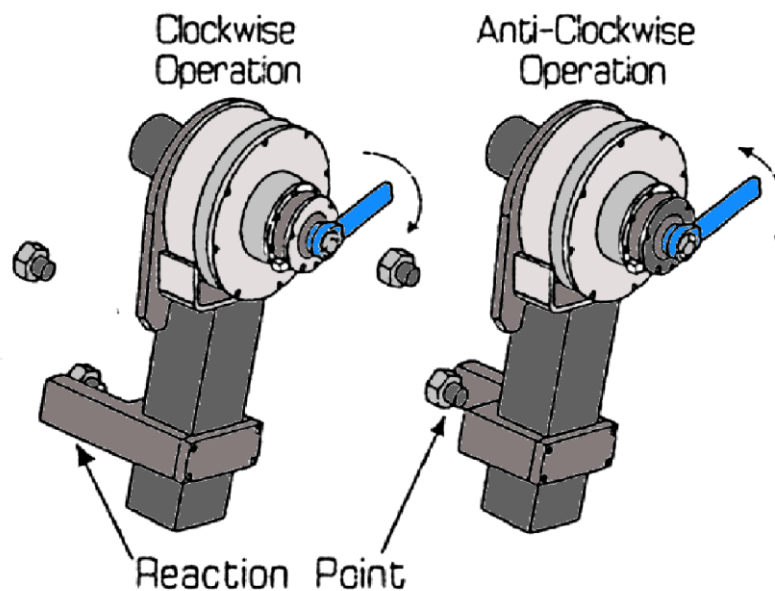


FIG 2

WARNING: FAILURE TO OBSERVE THE LIMITATIONS SHOWN IN FIGURE 2. WHEN MODIFYING STANDARD REACTION PLATES OR MAKING SPECIALS, MAY RESULT IN PREMATURE WEAR OR DAMAGE TO THE WRENCH OUTPUT DRIVE

Standard square drive extensions **MUST NOT** be used, as these will cause serious damage to the wrench output drive. Hi-Force manufactures a range of nose extensions for applications where access is restricted and these are designed to support the final drive correctly.

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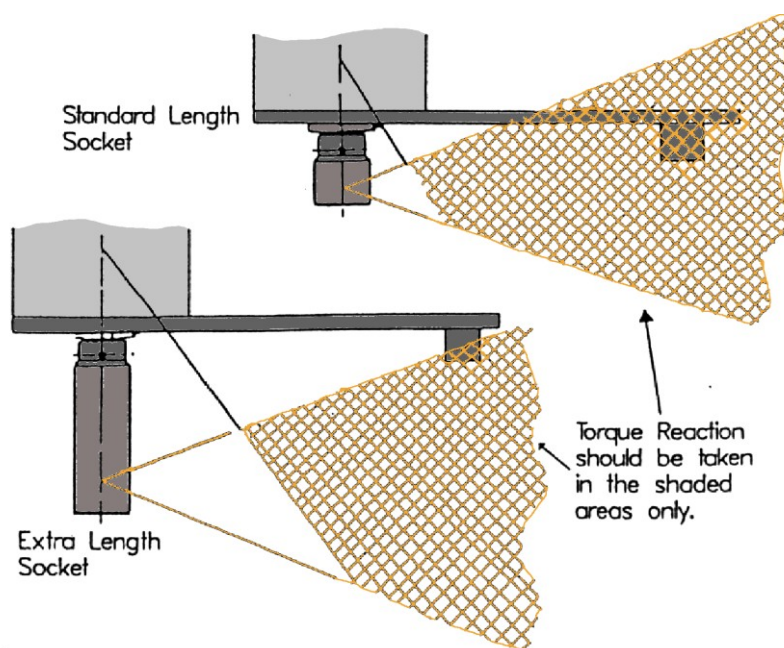


FIG 3

SETTING TORQUE FOR BOLT TIGHTENING

1. Establish the correct torque figure for the bolt from manufacturer instructions or by calculation.
2. Divide the required torque by the ratio of the multiplier. This gives the input torque.
3. Select a suitable torque wrench for the input torque. The wrench should be of high quality and regularly calibrated.

SETTING TORQUE FOR BOLT LOOSENING

1. To ensure that the multiplier is not overloaded, it is desirable to use a torque wrench even for bolt loosening.
2. Divide the multiplier maximum output by the gear ratio. This gives the maximum output by the gear ratio. This gives the maximum input torque.
3. Select a suitable torque wrench for the input torque.

NOTE: *Some torque wrenches will not 'click' or 'break' when used in the anti-clockwise direction.*

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OPERATING THE MULTIPLIER

1. Fit the multiplier with the correct size of power drive or impact quality socket to suit the bolt to be tightened.
2. Fit the multiplier to the bolt with the reaction plate adjacent to the reaction point.

See figure 2.
3. Fit the torque wrench to the multiplier, set as in 'Setting Torque for Bolt Tightening'.
4. Operate the torque wrench in the normal manner until it 'clicks' or 'breaks'. Smooth and even use of the torque wrench will give more accurate results, DO NOT SNATCH.

NOTE: *If the multiplier will not free a frozen nut when the maximum safe input torque is applied, a small lug welded onto the side of the socket which can be struck with a hammer while the maximum torque is being applied, will usually shock the nut free.*

ANTI WIND-UP RATCHET OPERATING INSTRUCTIONS

PURPOSE OF THE ANTI WIND-UP RATCHET

Most multipliers with ratios of 25:1 and over are fitted with an anti wind-up ratchet. The multiplier can be thought of as a spring which must be fully wound before any tightening/untightening work can be applied to the bolt.

The AWUR ensures that the 'springs' stay wound and that any further torque input to the multiplier is applied directly to the bolt.

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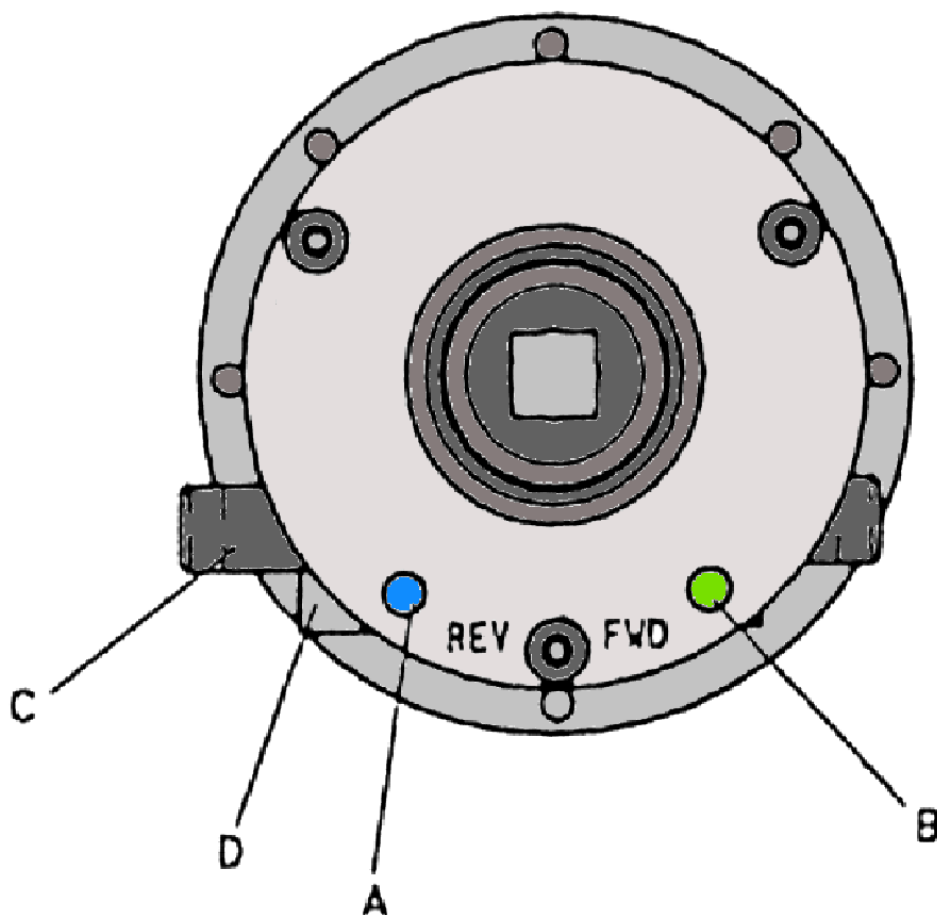


FIG 4

PLEASE READ CAREFULLY

1. Rotate the anti wind-up input gear to ensure required direction of operation has been selected – if incorrect, select direction required as follows:-
 - 1.1 Depress plunger A for bolt tightening. Ensure that the top of the plunger is level with the bottom of the counter bore.
 - 1.2 Push short square retaining block in direction of forward (FWD) arrow.

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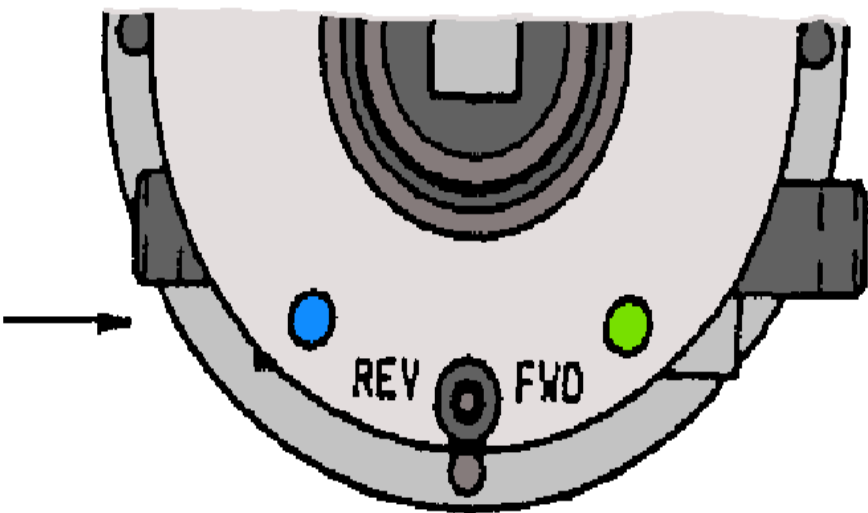


FIG 6

- 1.3 Test direction of rotation and ensure that the ratchet operates freely.
- 1.4 Test direction of rotation and ensure that the ratchet operates freely.

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WARNING: DO NOT USE TOOL IF RATCHET DOES NOT OPERATE FREELY

2. Follow the instructions, page 4 and 5, for settings and operation of the multiplier.
3. To remove the multiplier.

3.1 Loads the torque wrench.

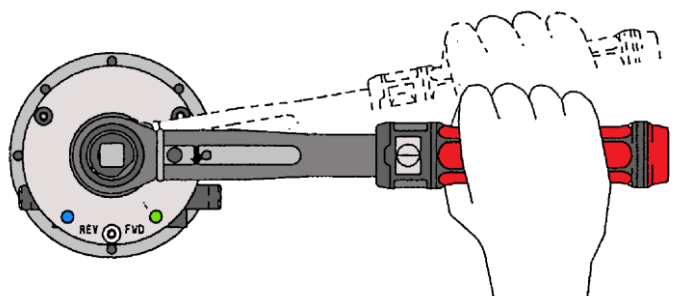


FIG 7

3.2 With the wrench still loaded, push the ratchet pawl in the direction of the 'FREE' arrow.

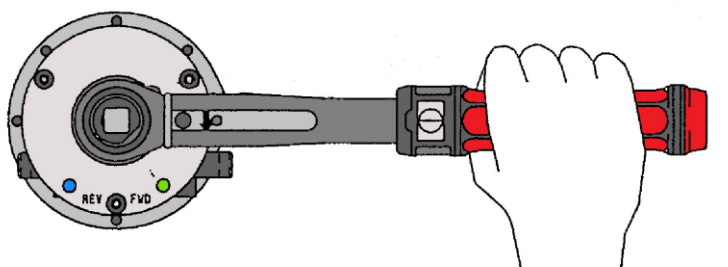


FIG8

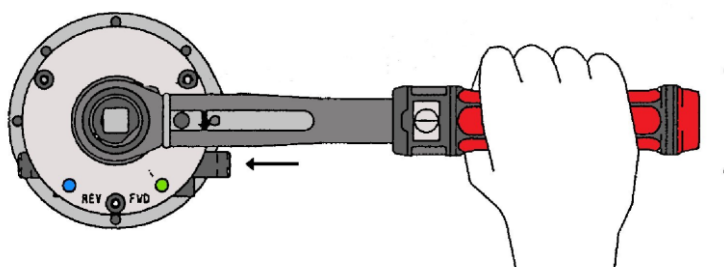


FIG9

3.3 Allow the wrench to rotate slowly until the multiplier comes free.

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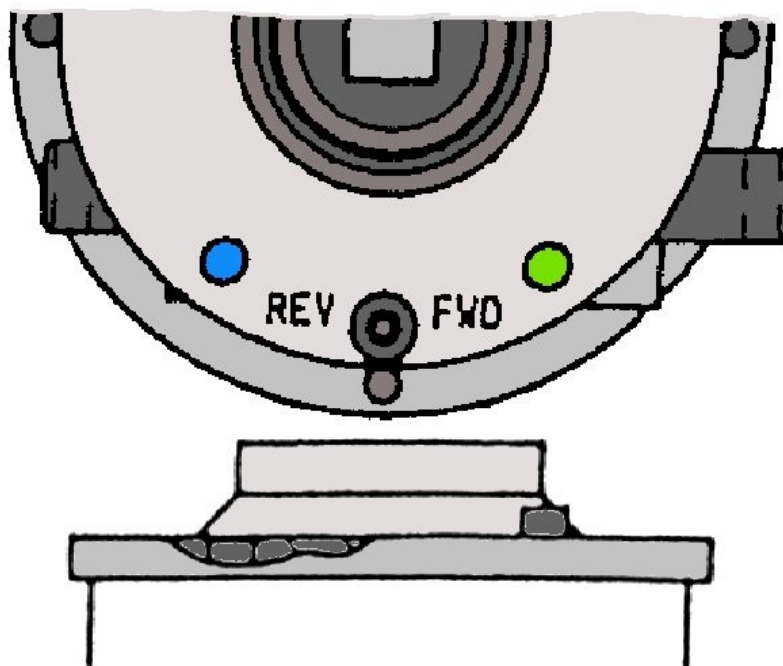


FIG 5

If the wind-up in the gears can not be removed with one sweep of the wrench, re-engage direction lever D as indicated in procedure 1. Re-position the wrench and follow procedure 3, until the wind-up is removed.

4. The tool may now be removed from the fastener.
5. Familiarise yourself with this tool by initially applying low torque's and removing wind-up.

We recommend that the ratchet teeth on the input gear are inspected if the gear box is accidentally overloaded, and after 500 hours use.

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