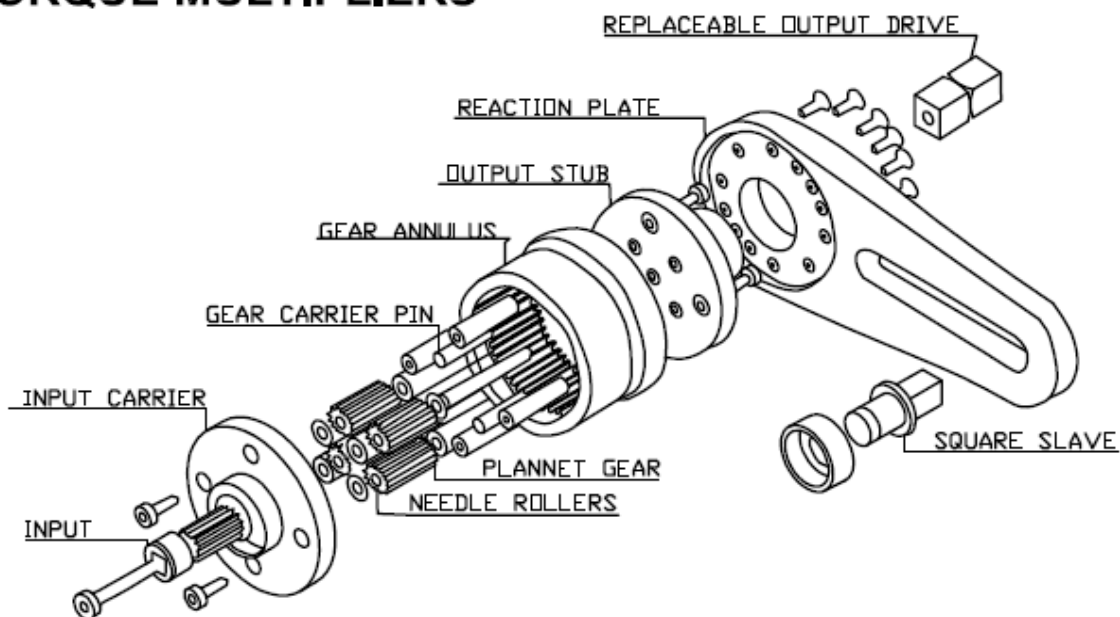




INSTRUCTION MANUAL FOR TRISTAR TORQUE MULTIPLIER

HANDTORQUE TORQUE MULTIPLIERS



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HANDLING INSTRUCTIONS

TRISTAR TORQUE MULTIPLIER are Compact, Alloy Steel, Epicyclic Gear Units which have a velocity ratio of 5:20:1 and an actual power multiplication of 5:1 per stage of gearing.

TRISTAR TORQUE MULTIPLIERS can be interposed between a Standard Torque Wrench (Ratche Type is preferred) and Socket to multiply by 5, 25 or 125 times, the effort that a worker can exert. They are usually used for the controlled tightening of 3/4" Dia Bolts and upwards or for providing very high torques economically.

1. WHAT TORQUE DO YOU WISH TO APPLY?

Try to choose a gear unit which has capacity to spare, in case the Torque specification is increased.

2. WILL THE GEAR UNIT HAVE ROOM TO GO ON THE BOLT?

Dimensions of gear Units are given in the Catalogue. A misalignment of 1/4" per foot is permissible out where the Bolt is very close to an obstruction or head room is restricted, a Torque link type of adaptor can be used to take the Gear Unit clear.

3. WILL YOU NEED AN EXTENSION BETWEEN THE GEAR UNIT AND THE SOCKET?

Where it is necessary to use an extension drive shaft between the output square of the gear Unit and the Socket, you must provide a balance reaction. A Double Ended reaction plate with both sides taking load serves this purpose. Otherwise the gear Unit either forces itself sideways off the nut or the gears are damaged by the leverage exerted by the extension. Reaction also tend to twist under these conditions.

4. WHAT CAN YOU PLACE THE TORQUE REACTION FORCE AGAINST?

Reaction forces decrease the further your reaction point is away from the gear Unit. Reaction forces work in the opposite direction to nut rotation. They may be applied through the reaction plate resting against a solid projection, or by a Socket on the slave square fitting over the head of an adjacent bolt.

REACTION FORCE DECREASES FURTHER THE REACTION UNIT.

i.e for 200 Kgm -200kg at 1 mt. radius or 100 kg at mt. radius
400 kg at 0.5 mt radius

5. WILL YOU HAVE ROOM TO USE A TORQUE WRENCH?

You may need a 25:1 to allow use of a Shorter Torque Wrench.

6. DO YOU NEED A SPECIAL REACTION PLATE?

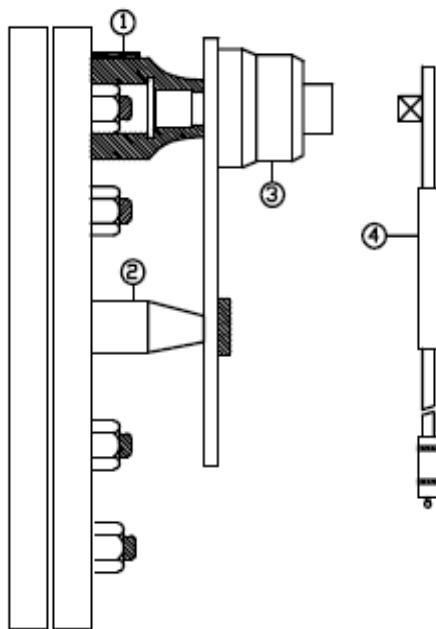
It is also advisable to have Special Reaction Plate to handle Torque in excess of 275 kgm when the reaction point of contact is less than 100mm from the centre of the gear Unit Pieces may be welded into the reaction plate to overcome this problem.



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GETTING THE BEST FROM TORQUE MULTIPLIER

1. Keep Gear Unit as Close to bolt as possible and reaction point as far away as possible.
2. Use Tight - Fitting Socket.
3. Use TRISTAR Torque Wrenches with built In Ratchet Mechanism whenever possible, to provide exact Input torque.
4. For accurate Torque Control and even Bolt Loading - Set Torque Wrench to one-fifth of the required output torque.
Torque Wrench setting (Input) = $\frac{\text{Desired Output of Torque Multiplier}}{\text{Multiplication Factor}}$
5. Check Reaction Plate holding Screws periodically to ensure that they are tight.
6. Air Driven " Stall Torque " type nut runners may be used to provide Input drive to multipliers of 25 : 1 and 125 : 1 Impact Wrenches are not recommended.
7. FOR FROZEN NUTS AND BOLTS



1. Hammering Lug For Frozen Nut.
2. Reaction End Socket.
3. Torque multiplier.
4. Torque Wrench.

If gear will not free a frozen Nut / Bolt when maximum safe Input Torque is applied, a small lug welded onto the surface of the Socket and Struck with a Hammer, while maximum Torque is being applied through the Gear Unit, will usually shock the Nut / Bolt free.