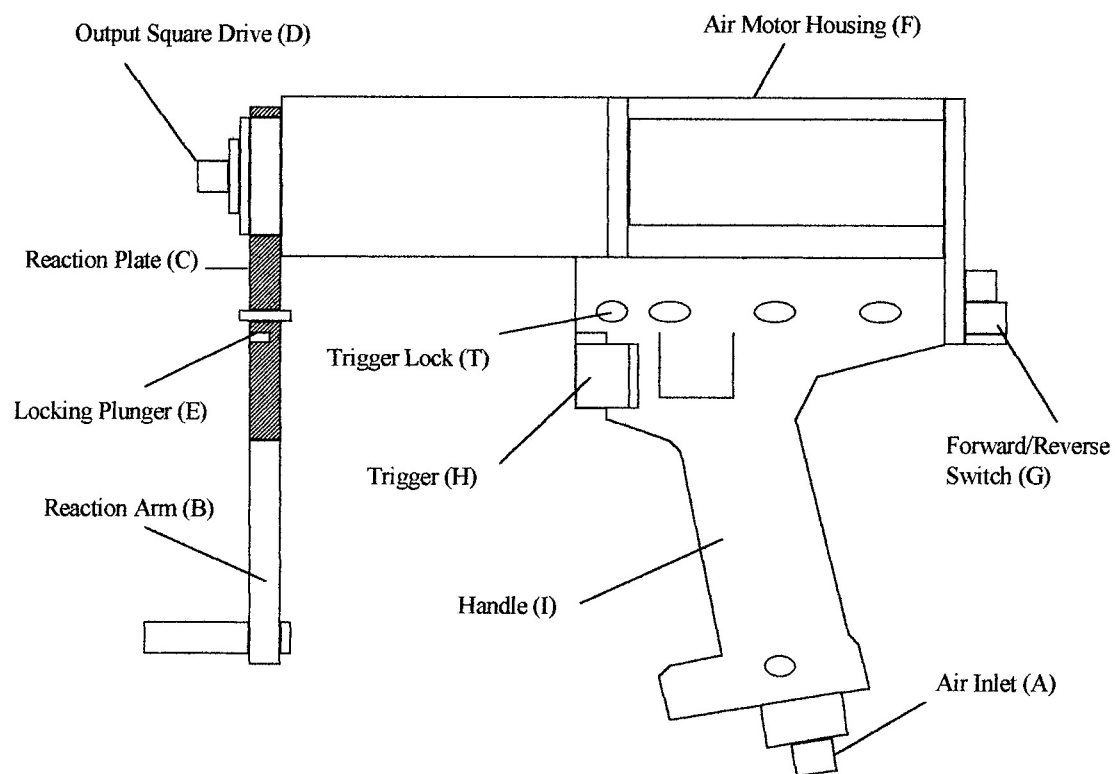


## OPERATING AND MAINTENANCE INSTRUCTIONS PG SERIES PNEUMATIC TORQUE WRENCHES

**WARNING: DO NOT OPERATE THE TOOL BEFORE READING THESE INSTRUCTIONS**

Hi-Force pneumatic torque wrenches are reversible, non impacting, torque controlled bolt tightening tools and must always be operated with the following:-

- Clean dry air supply with minimum flow of 11 litres/sec (23 CFM)
- Suitable FRL Unit ½" Bore (12mm)
- Impact Quality Sockets
- Reaction Arm
- 3 metre air hose complete with fittings.



**WARNING: CARE MUST BE TAKEN TO ENSURE THAT THE REACTION ARM IS ONLY USED WITHIN THE LIMITATIONS SHOWN IN FIGURE 2 BELOW**

For special applications of where extra deep sockets must be used the standard arm may be extended but only within limitations shown.

Alternative reaction arms and blank single and double sided reaction plates are available from Hi-Force

Contact your local distributor for details and technical assistance.

**WARNING: FAILURE TO OBSERVE THE LIMITATIONS SHOWN WHEN MODIFYING STANDARD REACTION ARMS 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 manufacture a range of nose extensions for applications where access is restricted and these are designed to support the final drive correctly.

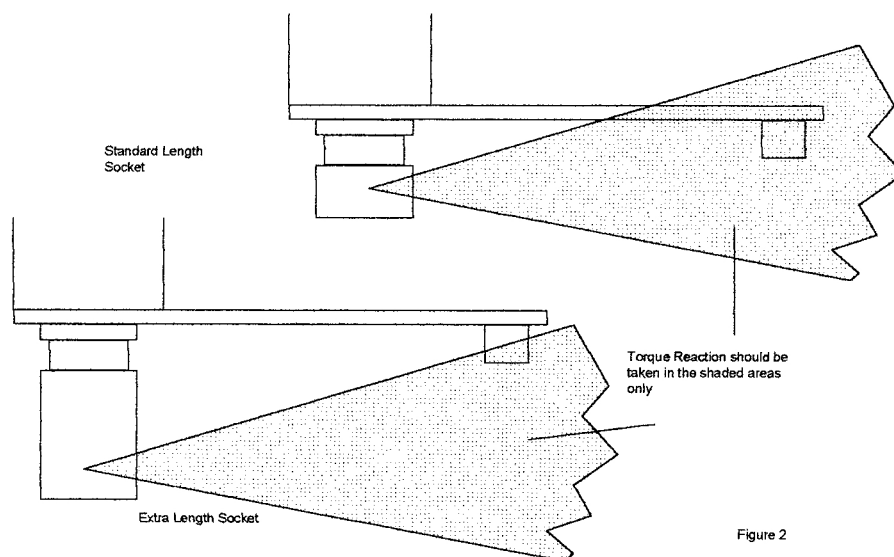


Figure 2

## SETTING TORQUE FRO BOLT TIGHTENING

Every torque wrench is supplied with an **Air pressure graph** which relates torque output to air pressure. Set the torque output as follows:-

1. Ensure the **Forward/Reverse Switch (G.)** is set to '**Forward**'.
2. Establish the air pressure required using the **Air pressure graph**.
3. Adjust the **FRL Control unit** pressure regulator until the correct pressure is shown on the gauge provided.

**IMPORTANT: THE WRENCH MUST BE FREE RUNNING BY FULLY DEPRESSING THE TRIGGER (H.) WHILE ADJUSTING THE AIR PRESSURE TO GIVE THE CORRECT SETTING.**

Annular torque transducers associated instrumentation, giving an accuracy of better than  $\pm 1\%$  F.S.D. , are available as optional extras.

Torque/Angle control and multi-spindle systems are also available for all Hi-Force torque wrenches.

Contact [Sales@hiforce.co.uk](mailto:Sales@hiforce.co.uk) for further details.

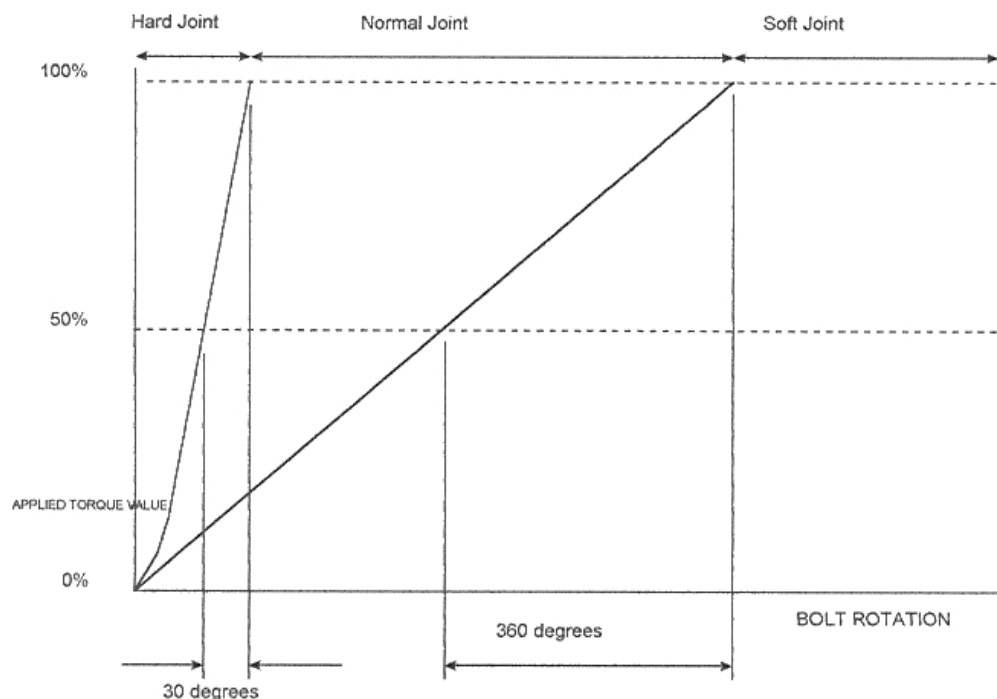


Figure 2

All torque wrenches will be supplied with a standard bracket. A bracket with a lifting eye is also available and can be ordered as an option.

As a safety feature, two lengths of bracket are available to suit different models. Using the specified bracket correctly it is not possible for the operators hand to be trapped as the reaction plate rotates.

### STANDARD BRACKET

| <u>Part no</u> | <u>Fit model</u>                                                   | <u>Length</u> |
|----------------|--------------------------------------------------------------------|---------------|
| 18343.148      | All standard single speed models                                   | 148mm         |
| 18343.220      | All auto two speed models and tools fitted with annular transducer | 220mm         |

### OPERATIONAL LIFTING BRACKET

| <u>Part no</u> | <u>Fits model</u>                                                 | <u>Length</u> |
|----------------|-------------------------------------------------------------------|---------------|
| 18344.148      | All standard single speed models                                  | 148mm         |
| 18344.220      | All auto two speed models and tools fitted with annual transducer |               |

### SETTING TORQUE FOR BOLT LOOSENING

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1. Ensure that the **Forward/Reverse Switch (G.)** is set to '**Reverse**'.
2. Establish maximum air pressure from **Air pressure graph** or tool label and set air pressure as for bolt tightening.

**WARNING: EXCEEDING THE MAXIMUM AIR PRESSURE WILL OVERLOAD THE WRENCH AND MAY CAUSE SERIOUS DAMAGE.**

## **OPERATING THE WRENCH**

1. Fit the wrench with the correct size impact quality socket to suit the bolt to be tightened.
2. Check **Forward/Reverse Switch (G.)** is set correctly.
3. Rotate **Handle (I.)** into convenient position relative to **Reaction arm (B.)**
4. Fit the tool onto the bolt to be tightened with the **Reaction arm (B.)** into contact with the reaction point. Keep hands clear of the reaction arm.
5. Squeeze the **trigger (H.)** partially to bring the **Reaction arm (B.)** into contact with the reaction point. Keep hands clear of the reaction arm.
6. Fully depress **trigger (H.)** and keep fully depressed until wrench stalls. If the **trigger (H.)** is released before the wrench stalls, full torque will not be applied to the bolt.
7. Release **trigger (H.)** and remove tool from bolt.

## **TRIGGER LOCK**

If there is a long run down on the nut or bolt, it may be desirable to the tool on. Operation is as follows:-

1. Set up the tool in the normal way.
2. Depress the trigger to start the tool and move the trigger lock down i.e. away from the gearbox.
3. Release the trigger and the tool will continue to run until it 'stalls' in the normal manner.
4. To disengage the trigger lock, lock, squeeze and release the trigger.

## **TORQUE OUTPUT ACCURACY**

Torque output accuracy, as with all types of powered bolt tightening tools, is dependent on the **Joint Rate** of the fastener. (The **joint rate** being the relationship between rotation and increase in applied torque).

There are three basic joint types defined in international standards (see figure 3).

An example of a typical **Hard Joint** would be a comparatively short bolt tightened directly into a solid component with metal to metal contact between the mating surfaces. A **Soft Joint** would have comparatively long bolts, with a flexible sealing gasket between the mating surfaces. A **Normal Joint** is between these two conditions.

The Air pressure graph supplied with each torque wrench will give output accuracy of +/- 5% of setting on a '**Normal Joint**'.

When used on a '**Hard Joint**' the output will increase by approximately 5%.

On '**Soft Joints**' the output will be reduced by approximately 5%.

## **ASSEMBLY**

1. Blow out all hoses before connecting.
2. Connect the wrench **Air Inlet (A.)** to the output side of the **FRL Control Unit** using the 3 metre hose provided, observing air flow direction arrows. Please note the wrench **Air Inlet (A.)** is free to rotate so it must be held with a spanner when tightening the air hose connection.
3. Connect air supply to the inlet side of the **FRL Control Unit** using a minimum hose size of ½" bore (12mm). Avoid using ½" bore hoses of longer than 5 metres from the supply to the **FRL Control Unit** as this will reduce the performance of the wrench.
4. Check the oil level in lubricator and fill to correct level if required.
5. Attach the **Reaction Arm (B.)** to **Reaction Plate (C.)** adjacent to the **Output Drive (D.)** of wrench ensuring the **Locking Plunger (E.)** is correctly engaged in the **Reaction Arm (B.)**
6. Fit lifting bracket (where supplied) to top of the **Air Motor Housing (F.)** adjust the position of the hanger so the wrench balances correctly and tighten the socket screws securely.

## TORQUE REACTION

When the torque wrench is in operation the **Reaction Arm (B.)** rotates in the opposite direction to the **Output Square Drive (D.)** and must be allowed to rest squarely against a solid object or surface adjacent to the bolt to be tightened. (see figure 1.).

**WARNING: ALWAYS KEEP HANDS CLEAR OF THE REACTION ARM WHEN THE TOOL IS IN USE OR SERIOUS INJURY MAY RESULT.**

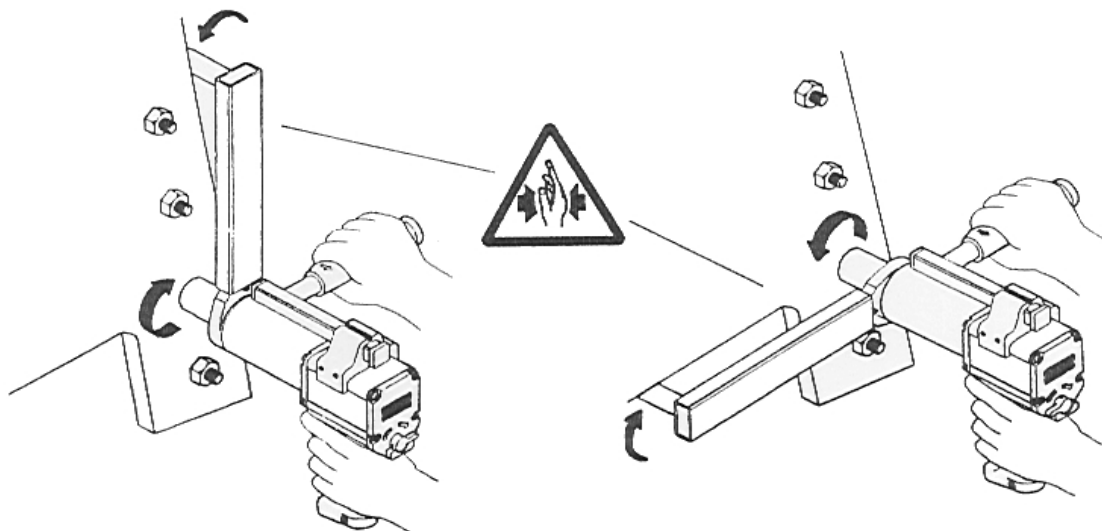


Figure 1

The standard reaction arm will enable the wrench to be used on most applications but the rectangular tube can be shortened from the reaction plate end and the plunger hole re-drilled if required.