

This 'Original instructions' document assumes that the operator carrying out any operation with this product is trained and competent to do so. This manual does not attempt to cover all details or variations in the equipment. Nor does this manual claim to provide for every possible contingency met in connection with the installation, operation, or maintenance thereof. Should further information be desired, or should a particular problem arise which is not covered in sufficient detail, the matter should be referred to Hi-Force.

# **OPERATING INSTRUCTION MANUAL**

## **TWP SERIES | PNEUMATIC TORQUE WRENCH**



This manual applies to the Hi-Force TWP Pistol grip, pneumatic torque multiplier range. It contains the latest product information available at the time of publication and approval. Information pertaining to the servicing of the torque wrench is contained in the servicing instructions which are available on the Hi-Force website. The right is reserved to make changes at any time without notice.

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## 1.0 Inspection upon Receipt

Upon receipt of the product, visually inspect the item for any evidence of shipping damage. Please note: the warranty does not cover shipping damage. Notify the courier immediately if shipping damage is found and refrain from putting the product into service. The carrier is responsible for repair and replacement costs resulting from damage that occurred in transit.

## 2.0 Safety Precautions

### 2.1 Introduction



Read and follow all the instructions and safety warnings carefully before handling, installation, or use of any pneumatic equipment/tool. Failure to do so could lead to equipment damage, equipment failure, personal injury or even death. Hi-Force will not be held responsible for any damage to the equipment, injury or death resulting from the unsafe use of, lack of maintenance to, or incorrect operation of the product. If in doubt on the correct use of any Hi-Force equipment, contact your nearest Hi-Force office or distributor. Only qualified personnel should be allowed to operate hydraulic equipment/tool. If an operator has not been trained on high-pressure pneumatic equipment and its safe usage, consult your local Hi-Force sales office or distributor who can offer training courses for operators.

### 2.2 Work Area Safety

- Keep work areas clean and well lit. cluttered spaces and inadequate lighting can result in unnecessary accidents.
- Keep bystanders clear of any pneumatic tool activity. Personnel working in close-range should be made aware of high-pressure pneumatic work before commencing.

### 2.3 General Hydraulic System Safety Precautions



**WARNING!** Failure to observe and obey the following safety precautions could result in property damage, significant personal injury, or death.



- When operating any pneumatic equipment, all operators should ensure that all necessary personal protective equipment (PPE) is worn, as specified by their employer. Steel toe-cap safety shoes, safety glasses/visor, ear protection, and protective gloves should be always worn. All relevant risk assessments should be completed before the use of the equipment.
- Keep pneumatic equipment away from open flames and direct heat.
- **NEVER** use a coupler as a tool handle, especially if the system is pressurised.
- Inspect hoses regularly for damage and wear.
- **NEVER** use hoses that are frayed, kinked, braided or leaking.
- **NEVER** handle a pressurised compressed air hose. Compressed air escaping under pressure from a ruptured hose can penetrate the skin and lead to a significant medical emergency, and in some cases, death. Should this incident occur, seek out medical attention immediately.
- Seek medical attention immediately if a Pneumatic injection injury (no matter how minor) occurs.
- The system operating pressure **MUST NOT** exceed the pressure rating of the lowest-rated

**NOTE:** Images contained within this document are for illustrative purposes **ONLY**.

**Good Practice:** Use a pressure gauge to monitor the entire system.

- **NEVER** pressurise an unconnected male coupler/s.
- **NEVER** attempt to disconnect a hose from a Pneumatic system until the system's pressure has been completely released. Doing so can result in that pressure becoming trapped within the system and relieving trapped pressure can be dangerous.
- **NEVER** try to relieve trapped compressed air in the system by loosening or attempting to remove the coupler. Trapped compressed air can cause a loosened coupler to dislodge unexpectedly with great force. This action could result in serious personal injury or death.
- Loosening a coupler under pressure can result in the escape of compressed air at high pressure, which can penetrate the skin and cause significant injury or death.
- **NEVER** attempt to solve, or clean-up leaks in the system while the system is pressurised.
- Immediately replace any worn or damaged parts using genuine Hi-Force parts only.
- **DO NOT** use any pneumatic equipment/tools if you are under the influence of alcohol, drugs or medication. Lack of attention whilst operating high-pressure hydraulic tools can result in personal injury or death.



## **CAUTION!**

**Failure to observe and obey the following safety precautions could result in property damage, equipment damage or minor/moderate personal injury.**

- **NEVER** lift, carry, or move any pneumatic components by the hose or hoses connected to them.
- Avoid damaging pneumatic hoses. **ALWAYS** route hoses to ensure that they are free from sharp bends and kinks. Using a sharply bent or kinked hose will result in severe backpressure, which can lead to hose failure.
- **NEVER** use a coupler/s to lift, carry or position a tool.
- Servicing of pneumatic equipment/tools must only be undertaken by a qualified technician.
- **DO NOT** drop or place heavy objects on a pneumatic hose, as this may cause internal damage, which could result in rupture of the pressurised hose. A ruptured hose could cause significant damage to components and possible severe injury to personal operating nearby.
- **DO NOT** let familiarity gained with any pneumatic tools allow you to become complacent. Complacency with any tooling can result in a lack of discipline toward working guidelines and safety principles.
- **DO NOT** remove any labels from the product. Replace any damaged or unreadable labels immediately.
- Avoid loose clothing and jewellery that could get caught in moving parts, tie back long hair.

### **2.4 Pneumatic Pump Specific Safety Precautions**



## **WARNING!**

**Failure to observe and obey the following safety precautions could result in property damage, serious personal injury, or death.**

- **NEVER** exceed the maximum rated pressure of any pneumatic equipment.
- Make sure all equipment connected to the product is in good working condition.
- **NEVER** invert the product or lay it on its side, either in use, in transport or in storage.

- **DO NOT** weld any items to the product unit or modify it in any way from its delivered condition. Your warranty may be invalidated, and it could lead to serious personal injury.
- **NEVER** attempt to connect or disconnect a tool/hose/component while the system/product is under pressure.
- **NEVER** operate the pump without both pneumatic hoses and a suitable torque wrench connected to it.
- **NEVER** leave a pressurised systems unattended. If you must leave the area, release the pressure.
- **ALWAYS** disconnect the product from the air supply when carrying out maintenance or adjustments.



## **CAUTION!**

**Failure to observe and obey the following safety precautions could result in property damage, equipment damage or minor/moderate personal injury.**

- **ALWAYS** stand the product on a stable, level surface during operation.

### **3.0 Declaration of Incorporation/Conformity**

Hi-Force declares that this product has been tested and complies with the standards and declarations as set out in the Declaration of Incorporation/Conformity (DoI/DoC). The DoI/DoC is included as Annex A to this instruction document and is supplied with all shipments of this product.

### **4.0 Operating Parameters**

The Hi-Force Pneumatic Torque Wrench is a hand-operated power tool and must be used exclusively for tightening and unscrewing bolted connections.

**Never** combine the wrench with other tools, such as impact screw drivers or drill.

The minimum and maximum torques can be taken from the table corresponding to the torque multiplier and the corresponding setting value must be selected.

The torque wrench must be used only with the reaction arms supplied as standard by Hi-Force.

Consult Hi-Force, before modifying any support arm, as an uncontrolled operating state (overturning moment) can occur, and lead to the risk of accidents.

Any modification to the tool or associated parts without prior written permission from Hi-Force, will be deemed as improper use and all warranty and guarantees on the tool are declared invalid.

Use of the tool for any applications other than its intended purpose is deemed to be improper use and warranty will be void.

Any unauthorized conversions or modifications of the device are prohibited on safety grounds.

All operating and maintenance provisions contained within this operating manual must be complied with.

#### **4.1 Emissions**

The continuous sound pressure level according to DIN 45635 is 84 dB(A).

The vibration is below 2.5 m/s<sup>2</sup>.

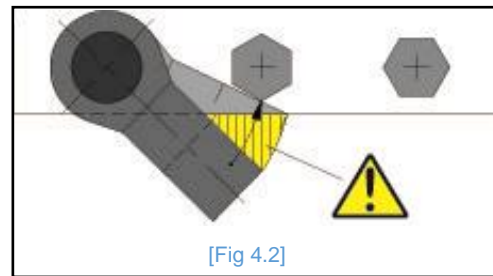
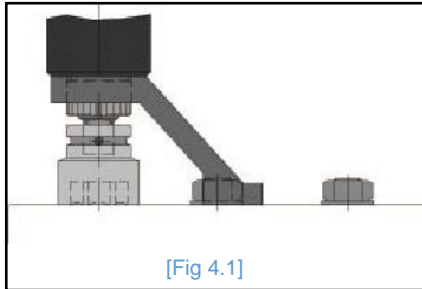
## 4.2 Risk Assessment

Incorrect use poses the risk of crushing, shearing and serious damage to the torque wrench.

### Risk of crushing and shearing

A jam and shear risk are possible between support arm and abutment (fig. 4.1 & 4.2).

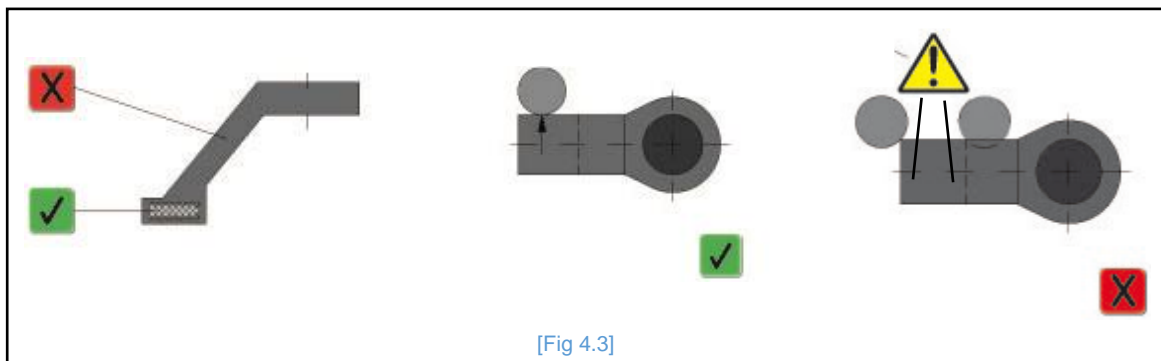
The support arm must find a close rest!



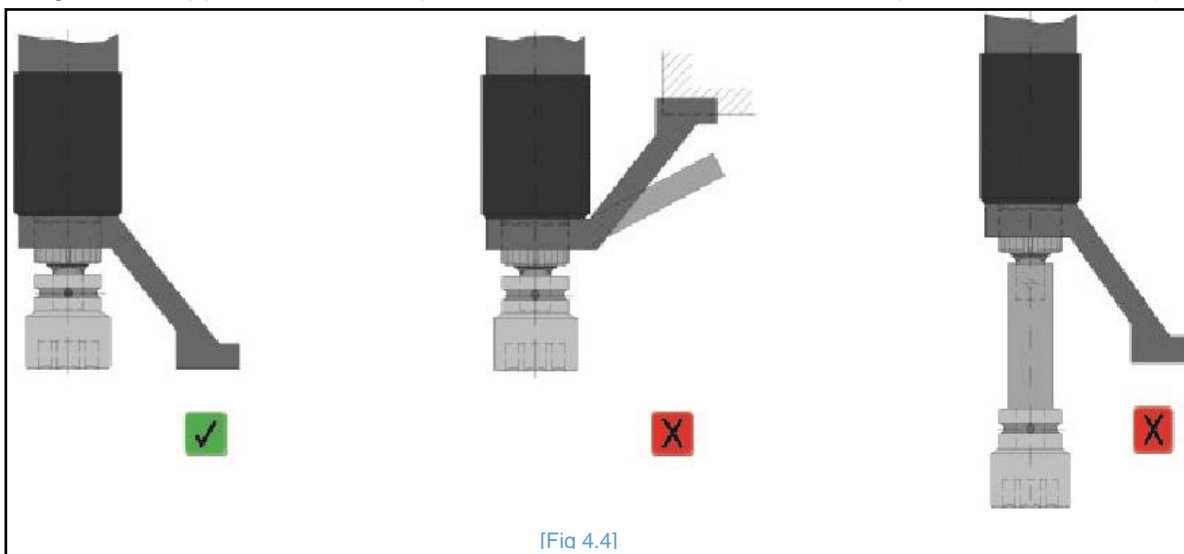
### Risk of tool breakage.

Incorrectly applied support arms can fracture (Fig 4.3).

The support arms should always be applied in opposition to the direction of rotation of the torque wrench.

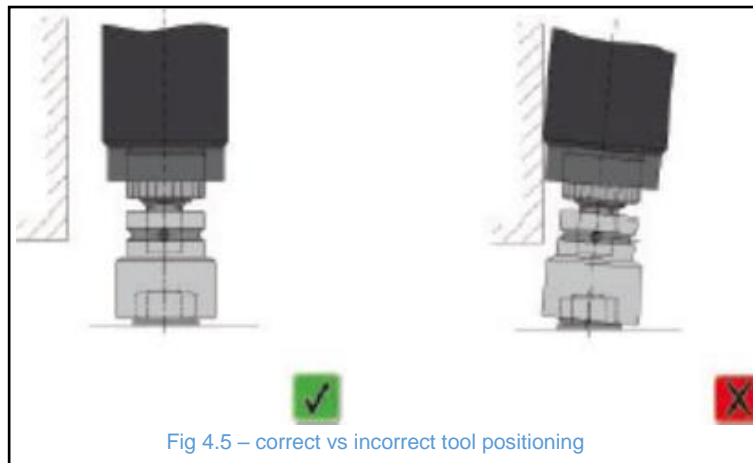


The risk of overturning moment, by extension of the impact socket, modification of the support arm or reverse fitting of the support arm. The impact socket can fracture, and the torque wrench can fail (Fig 4.4).



Do not put the wrench onto the bolted connection in an inclined position, for example due to a lack of space (fig. 4.5).

This leads to a jam risk; the impact socket can burst.



### 4.3 Other Hazards

A risk of crushing between the pistol-grip and surrounding components. The pistol-grip and /or driving unit can rotate.

The impact socket and the support arm can become detached if they are not correctly fixed in position. Always lock the impact socket and the support arm, with the locking pin and the rubber collar (fig. 6). Only use impact sockets which conform to DIN 3129 (Sockets) power torque wrenches.

### Keep the hose of compressed air supply away from the support arm!

If there is a cut in the supply of the compressed air, put the wrench safely away. After return of the air supply, loosen the last bolt again and repeat the tightening procedure.

The exhaust air of the pneumatic wrench can contain oil!

Direct inhalation can be noxious!

Dose the oiler according to the operating instructions.

Cut the supply of compressed air, before working on the wrench.

Do not disconnect the air supply with the tool working at full operating pressure.

## 5.0 Specifications

### 5.1 Torque Multiplier Specification

Refer to the identification plate on the pump for model identification.

Table 5.1					
TWP   Pneumatic Torque Multiplier					
Model Number	Torque Capacity*		Square Drive Size	R.P.M. at Max Pressure	Weight [Kg]
	[Nm]	[lbf.ft]			
TWP09S	200-900	150-670	¾"	24	3.2
TWP15S	300-1500	220-1110	1"	12	4.7
TWP22S	500-2200	370-1620	1"	7	5.1
TWP32S	800-3200	590-2360	1"	4	5.8
TWP40S	850-4200	620-3100	1"	4	5.8
TWP60S	1200-60000	880-4400	1 ½"	4	7.7

\*Minimum torque value at 1.5 bar, Maximum torque value at 8 bar airline pressure. Weight is without reaction arm.



## 6.0 Component Identification

### 6.1 Component Identification - TWP-S

1	Pistol Grip Body	5	Square Drive
2a	Toggle Switch (Right)	6	Socket (Output Force)
2b	Toggle Switch (Left)	7	Reaction/Support Arm
3	Torque Setting label	8	Air Inlet
4	Spline		



Fig 6.0 - Pistol grip, pneumatic torque multiplier



## 6.2 Component Identification – Air Control Unit

9	Pressure Reduction Valve	13	Air Supply
10	Pressure Gauge	14	Oiler
11	Water Trap	15	Hose
12	Air Control Unit Complete		

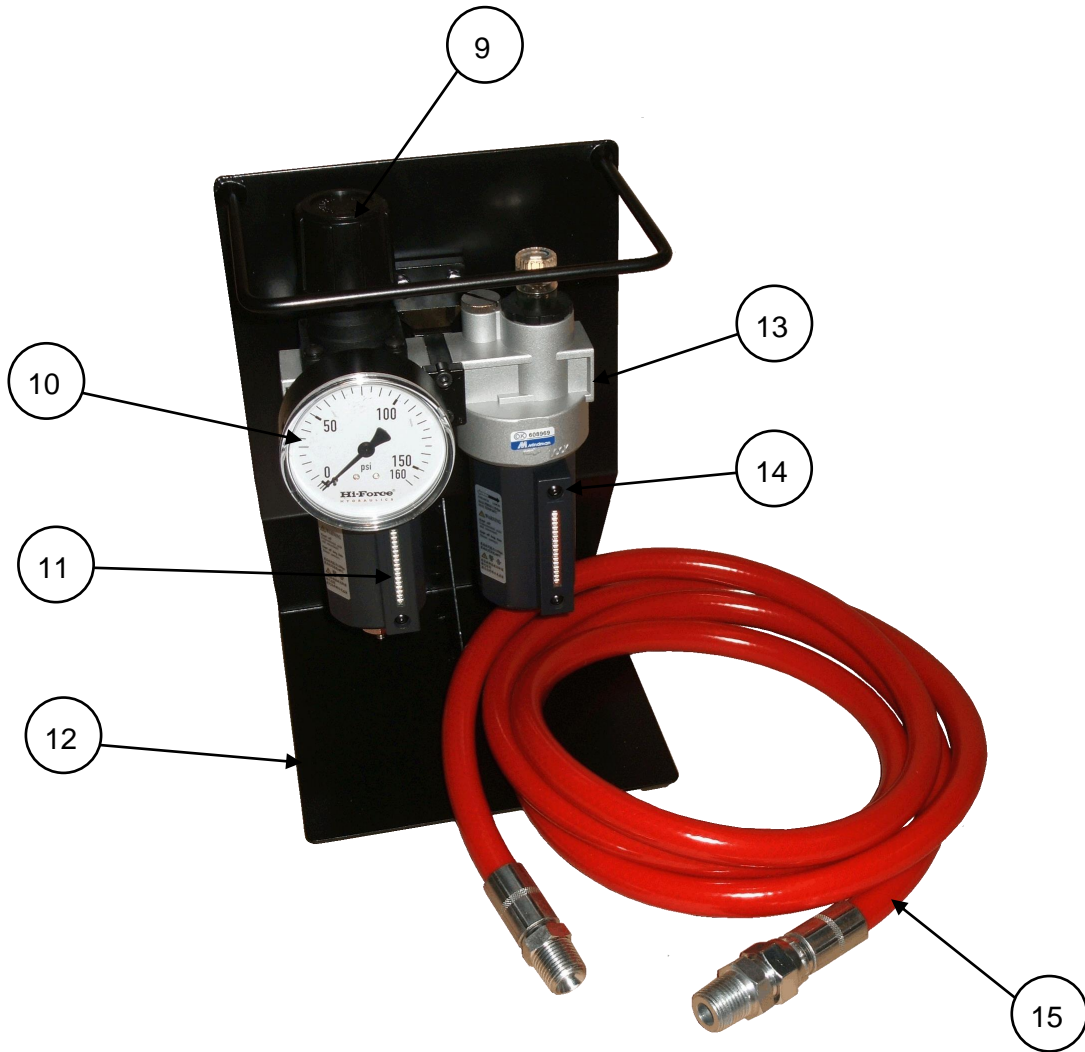


Fig 6.1 – Air Control Unit

## 7.0 Installation/Setup

### 7.1 Before First Use / Preparation

Immediately after unpacking, examine the unit for signs of transit damage and if found contact the shipping company.

### 7.2 Technical Data

Consumption of compressed air: 20 l/s at 6.3 bar

Nominal capacity: 0.85 KW

Min. and max. torque values are recorded in table 5.1

### 7.3 Operation

The wrench should only be put into operation using the air control unit with pressure reduction valve, oiler, filter and water trap.

### 7.4 Tool Set-Up (See figure 7.1)

Connect the air control unit (12) by a hose of min. NW 13 (13) to the compressed air supply. The hose (15) from the air control unit (12) to the wrench is 4m long and is permanently installed on the control unit (12). The length of the hose (15) may not be altered.

Put the support arm (18) onto the spline (16) of the wrench. Secure the support arm in place using the retaining ring (22). Then put the impact socket (21) on to the square drive (17). Fix the impact socket (21) and support arm (18) with locking pin (20) and rubber collar (19), see fig. 7.1.

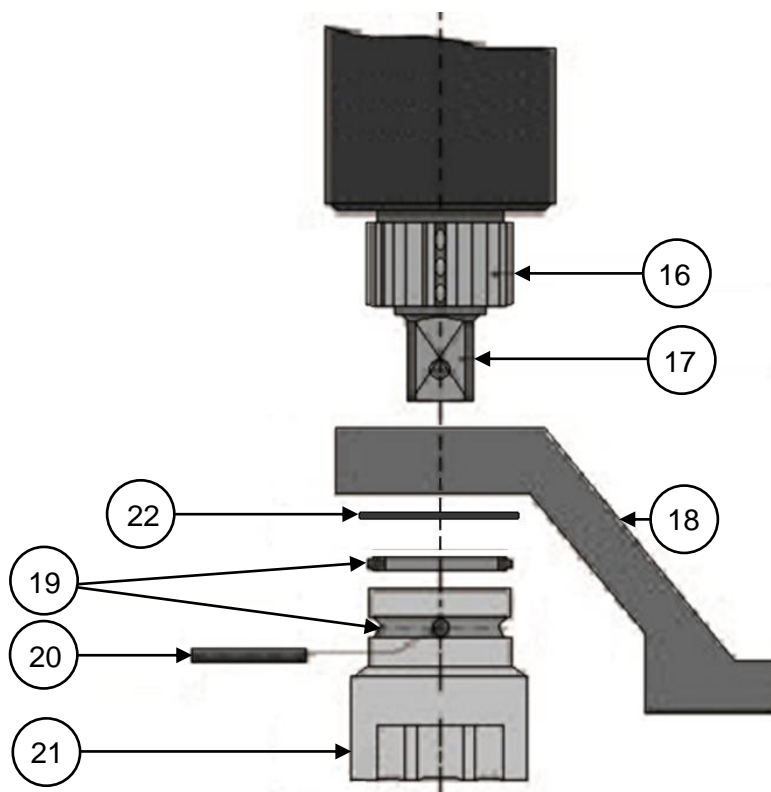


Fig 7.1 - Pistol grip, pneumatic torque multiplier set up.

Put the wrench onto the bolted connection set with the pre-selected torque (see TORQUE SETTING). For the tightening procedure move the support arm (18) against the abutment. For the loosening procedure turn the support (18) slowly towards the abutment by starting the motor. If necessary, start motor at intervals! Make sure the support arm has a tight rest against the abutment. The reaction torque must be absorbed by the support arm at the level of the socket.

### **ATTENTION!**

**⚠ CAUTION!** The support arms will always move for abutment against the direction of rotation of the wrench.

Press the trigger (2) on the pistol grip (1) according to the direction of rotation required and hold it depressed until the preselected torque is reached. When the torque is reached, the wrench will come to a standstill.

Then run the wrench briefly in the opposite direction, so that the support arm (18) is removed from the abutment.

The wrench can now be moved onto the next bolted connection and tightened as described above.

## **7.5 Torque Setting**

Read off the required torque from the chart (3) fixed to the motor housing and set the necessary air pressure on the pressure gauge (10) by means of the pressure reduction valve (9) while the wrench is running under no-load conditions (dynamic pressure).

Between the numbers (e.g. 3 and 4) the torque can be adjusted continuously (inter-polation).

The wrench should only be operated using the air control unit (12) with water trap (11), oiler (14) and hose (15) from Hi-Force, this is necessary to guarantee the precision of the torque values.

The precision of the torque values is only guaranteed if the torque wrench is used with the original Hi-Force air control unit.

Oiler setting: 1 drop/20 seconds. Oil type: HL 25 DIN 51524 - ISO VG32.

The exhaust pipe (8) of the pneumatic motor must always be slightly oiled.

Non-observance of this will result in loss of capacity, malfunction, and fluctuations in torque.

## **7.6 Tightening & Unscrewing Bolts**

### **7.6.1 Tightening Bolts**

Put the wrench onto the bolted connection set with the pre-selected torque (see 7.5 Torque Setting). For a tightening procedure move the support arm (8) to the abutment.

For a loosening procedure turn the support arm (8) slowly towards the abutment by starting the motor. If necessary, start motor at intervals!

Make sure the support arm has a tight rest against the abutment.

The reaction moment must be absorbed by the support arm at the level of the socket.

The support arms will always move for abutment, against the direction of rotation of the wrench.

Keep the toggle switch (2) on the pistol-grip (1) pressed down until the pre-set torque is reached. When the required torque is reached, the motor cuts out automatically. Then change the direction of rotation at the right / left switch, press again shortly the toggle switch (2), so that the support arm (18) is released from the abutment.

Now choose again the required direction of rotation, put the wrench onto the next bolted connection and tighten the bolt as the procedure described above.

## **7.6.2 Unscrewing Bolts**

Select the required direction of rotation, using the reversing switch (2), above the toggle switch (2) on the pistol grip (1).

If the torque wrench switches off, the torque adjuster setting must be set higher, or the higher speed must be selected.

## **7.7 Important Technical Notes**

To achieve constant and accurate repetition of the cut-off points, the bolt must be tightened in one operation without interrupting the procedure from the motor start until the wrench cuts off. Before increasing the torque, the rated speed must be reached. The speed when running idle is in accordance with the selected torque (dynamic air pressure

### **ATTENTION !**

**⚠ CAUTION!** If the tightening procedure is stopped too soon, this bolt must be loosened again. Then repeat the tightening procedure! A bolt which has already been tightened to the required torque must not be tightened again with the same torque: This will lead to excess torque being applied.

A precise repetition of the cut-off points requires constant monitoring of the air pressure and flow.

Fluctuations in air pressure and/or unstable air supply can result in impermissible fluctuations in the tightening torque!

At constant pressure and flow the accuracy of repetition for the cut-off points lies within a tolerance of +/- 5%.

The calibrated torque values at the different settings are for a bolt with a short length of grip. Bolted connections of other types can result in a different torque.

After the gears have been run in and thereafter once a year, it is necessary to check and possibly re-calibrate the torques.

After using the wrench, store it in a dry and clean place!

In general - when making bolted connections - observe instructions of the manufacturer or the prescriptions of the engineering in the first place.

## **8.0 Maintenance and Storage**

The gear parts of the wrench are maintenance-free.

All repairs must be made by the manufacturer or its authorized service workshop, as - after the exchange of parts - the accuracy of the torque values must be checked, and the wrench must be recalibrated.

Use only genuine Hi-Force accessories and genuine Hi-Force spare parts.

Hi-Force is not responsible for any personal injury or machine damage that occur due to the use of non-genuine Hi-Force accessories and spare parts or repairs carried out by unauthorized service workshops.

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