

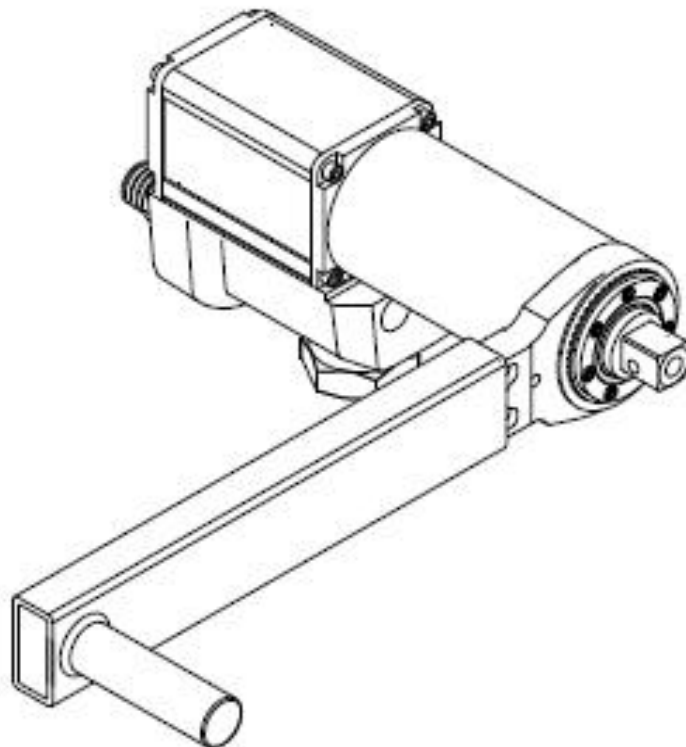


PNEUTORQUE®
PT 72mm Series
500/1000/1500/2000/4500
REMOTE CONTROL AIR MOTOR

OPERATORS HANDBOOK (PART NUMBER 34310)

Issue 1

(ENGLISH)



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MODELS COVERED BY HANDBOOK:- _____

This handbook covers all PT 72mm series remote control tools, including the following:

PART NUMBER	MODEL	DRIVE SQUARE	MAXIMUM TORQUE
18031	PT 500 Remote	3/4"	500 N.m
18031.AUT	PT 500 Remote Auto 2 speed		
18030	PT 1000 Remote	3/4"	1000 N.m
18030.AUT	PT 1000 Remote Auto 2 speed		
18032	PT 1000 Remote	1"	1000 N.m
18032.AUT	PT 1000 Remote Auto 2 speed		
18029	PT 1500 Remote	1"	1500 N.m
18029.AUT	PT 1500 Remote Auto 2 speed		
18034	PT 2000 Remote	1"	2000 N.m
18034.AUT	PT 2000 Remote Auto 2 speed		
18038.X	PT 4500 Remote	1"	4500 N.m
18038.XAUT	PT 4500 Remote Auto 2 speed		

PT 72mm tools are also available with a pistol grip handle, see operators handbook part number 34309.

SAFETY

IMPORTANT: DO NOT OPERATE THE TOOL BEFORE READING THESE INSTRUCTIONS. FAILURE TO DO SO MAY RESULT IN PERSONAL INJURY OR DAMAGE TO THE TOOL.

This tool is intended for use with threaded fasteners. Any other use is not recommended.

The use of ear protectors is recommended.

Do not use tool in potentially explosive atmosphere as these tools contain grease, which may cause an explosion hazard in the presence of pure oxygen. These tools also contain aluminium alloy components which may cause a hazard in certain explosive environments.

Be aware of unexpected tool movement due to reaction forces as this may cause injuries. Failure of the drive square may also cause unexpected tool movement.

Isolate the tool from all energy sources before changing or adjusting the drive square or socket.



There is a risk of crushing between the reaction bar and work piece.

Keep hands away from reaction bar.

Keep hands away from tool output.

Keep loose clothing, hair, etc. from being caught in any rotating part of the tool.

These tools require a reaction bar. See section on Torque Reaction.

Ensure all hoses are correctly fitted before switching on the mains air supply. This avoids the risk of injury by whipping air hoses.

Unexpected direction of inserted tool movement can cause a hazardous situation.

Use only sockets and adaptors which are in good condition and are intended for use with power tools.

Pneutorque® wrenches are reversible, non impacting, torque controlled threaded fastener tightening tools and must always be operated with the following:-

- Clean dry air supply with a minimum flow of 11 litres/sec (23 CFM).
- Lubro Control Unit or similar Filter, Regulator and Lubricator Unit 1/2" Bore (12 mm).
- Impact or high quality sockets.
- Reaction Arm.
- Air Control System.
- Tool mounting fixture.

INTRODUCTION

The Pneutorque® 72mm series are air driven power tools designed for applying torque to threaded fasteners. Remote control versions have no direction/shut-off control on the tool but rely on external pneumatic circuitry to provide this function. This opens up numerous application possibilities for the Pneutorque ranging from simple stall shut-off in a hazardous working environment to sophisticated, multi-spindle torque and angle shut-off systems.

Together with the external pneumatic circuitry an external pressure regulator (Lubro control unit) is needed; this allows the air pressure to be adjusted to determine the stall torque from the graph provided. There are models to cover torque capacities of 500 N.m to 4500 N.m.

PARTS INCLUDED:-

PART NUMBER	DESCRIPTION	PT 500 to PT 2000	PT 4500
180** ****	Pneutorque® remote	✓	✓
16673	Reaction Arm		✓
18290	Reaction Plate	✓	
18298	Reaction Arm	✓	
26482	Reaction Plate Retaining Circlip		✓
26486	Reaction Plate Retaining Circlip	✓	
34310	Operators Handbook	v	✓
34209	Air pressure graph	✓	✓

ACCESSORIES:-

PART NUMBER	DESCRIPTION	PT 500 to PT 2000	PT 4500
18349.006	6" Nose Extension	✓	
18349.009	9" Nose Extension	✓	
18349.012	12" Nose Extension	✓	
18349.015	15" Nose Extension	✓	
18349.018	18" Nose Extension	✓	
18221	¾" Drive Square	✓	
18220	1" Drive Square	✓	
18292	Single-sided Reaction Plate	✓	
18293	Double-sided Reaction Plate	✓	
18286	Lifting Arm	✓	
18452	1" Square		✓
28704	Silencer	✓	✓
16036	Lubro Control Unit	✓	✓

FEATURES AND FUNCTIONS

REPLACEABLE DRIVE SQUARE

All tools are fitted with a 3/4 " (19mm) or 1" (25mm) drive square that can be replaced.

CLOCKWISE / COUNTER-CLOCKWISE CONTROL

Capable of releasing threaded fasteners as well as tightening.

COMPATIBLE WITH MEASUREMENT PRODUCTS

Torque transducers and angle encoders are available for most models. These form the basis of sophisticated control systems giving repeatability of up to +/- 2%.

AUTOMATIC TWO SPEED (.AUT)

Automatic two speed gearbox versions reduce the run down time.

SET UP INSTRUCTIONS

TORQUE REACTION

The reaction arm is used to take the torque reaction force (which is equal and opposite to the tool output) and can also be used to mount the tool.

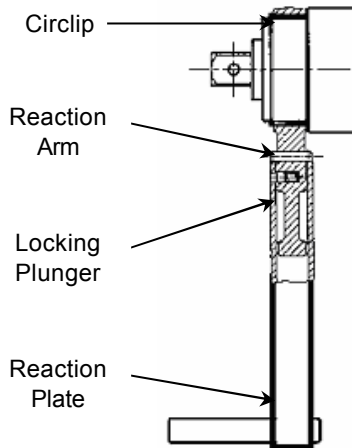


Figure 1
PT 500 – 2000 reaction

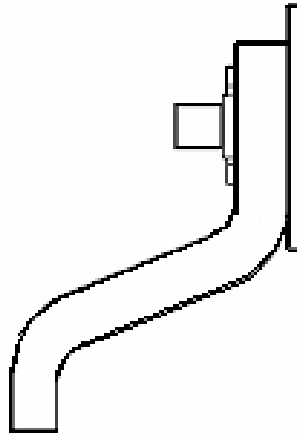


Figure 2
PT 4500 reaction

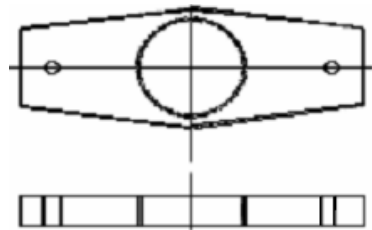


Figure 3
Double-sided reaction plate option

The remote control tools are supplied with a reaction arm as standard (Figure 1 & Figure 2). Other types of reaction arm (like the double-sided reaction plate shown in Figure 3) are available.

Securely mount the reaction, ensure the locking plunger is correctly engaged in the Reaction Arm. Position the tool in the reaction arm and fit circlip to hold in place. When the Pneutorque® is in operation the reaction arm rotates in the opposite direction to the output drive square and must be fixed securely.

For special applications or where extra length sockets must be used, the standard arm may be extended but only within the limitations shown on Figure 4.



WARNING: CARE MUST BE TAKEN TO ENSURE THAT THE REACTION ARM IS ONLY USED WITHIN THE LIMITATIONS SHOWN IN FIGURE 4.



WARNING: FAILURE TO OBSERVE THE LIMITATIONS SHOWN IN FIGURE 4 WHEN MODIFYING STANDARD REACTION ARMS MAY RESULT IN PREMATURE WEAR OR DAMAGE TO THE TOOL.

Standard drive square extensions **MUST NOT** be used as these will cause serious damage to the tool output drive. A range of nose extensions is available for applications where access is restricted. These are designed to support the final drive correctly.

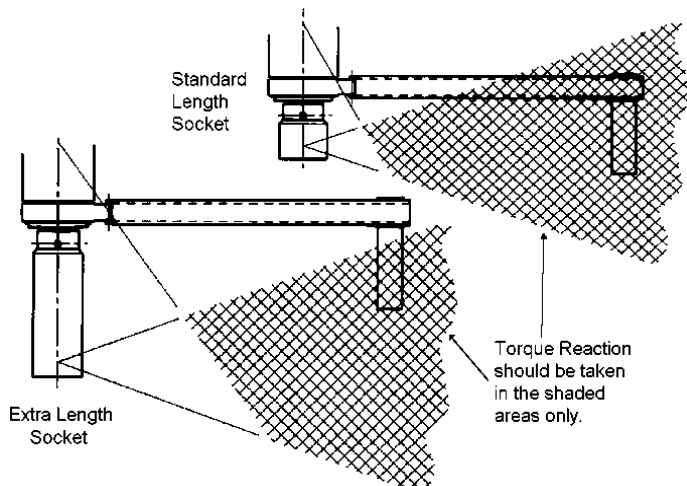


Figure 4
Effect of long sockets.

TOOL CONTROL SYSTEMS

The remote control air motor requires a separate external pneumatic circuit (not supplied) for on/off and clockwise / anticlockwise control of the tool. The direction of tool rotation is determined by pressurising either the clockwise or anti-clockwise air inlet ports.

A Lubro Control Unit (Part Number 16036 - not supplied) is required to lubricate the air and control the air pressure so the correct torque is applied. Check the oil level in the Lubro Control Unit and fill to the correct level. (See MAINTENANCE section).

Ensure air hoses are clean and free from dirt before connecting. The air supply hoses and control valves must be 1/2" bore (12mm) and the hose from the supply to the control system must not be longer than 5 metres or the tools performance will be impaired. If the supply hose must be longer than 5 metres then 3/4" bore must be used.

Examples of pneumatic control circuits are shown in Figure 5 and Figure 6.

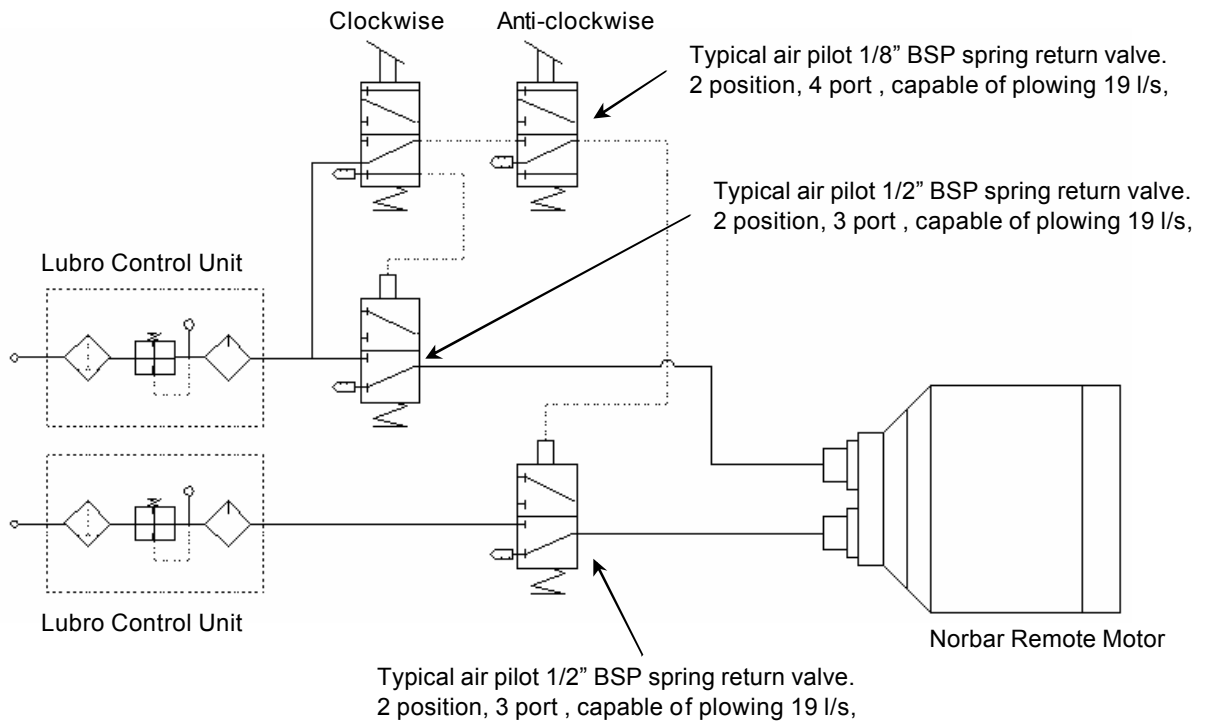


Figure 5
Example of pneumatic circuit

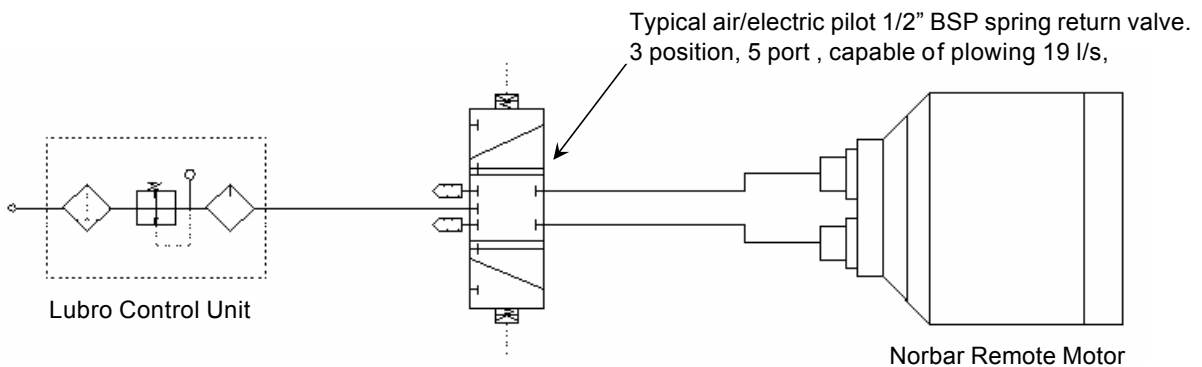


Figure 6
Example of pneumatic circuit



WARNING: TO AVOID HAZARD FROM WHIPPING AIR HOSES MAKE ALL CONNECTIONS TO THE TOOL BEFORE TURNING ON THE AIR SUPPLY.

INPUT PORTS

The input ports are located at the rear of the tool covered by plastic protection caps (# 16199). Connect the clockwise supply and anti-clockwise supply to the 1/2" BSP connectors as shown in Figure 7. Alternative input ports are located under the tool; to use these ports swap the grub screws in the alternative input ports for the 1/2" BSP male/male connectors in the rear input ports.

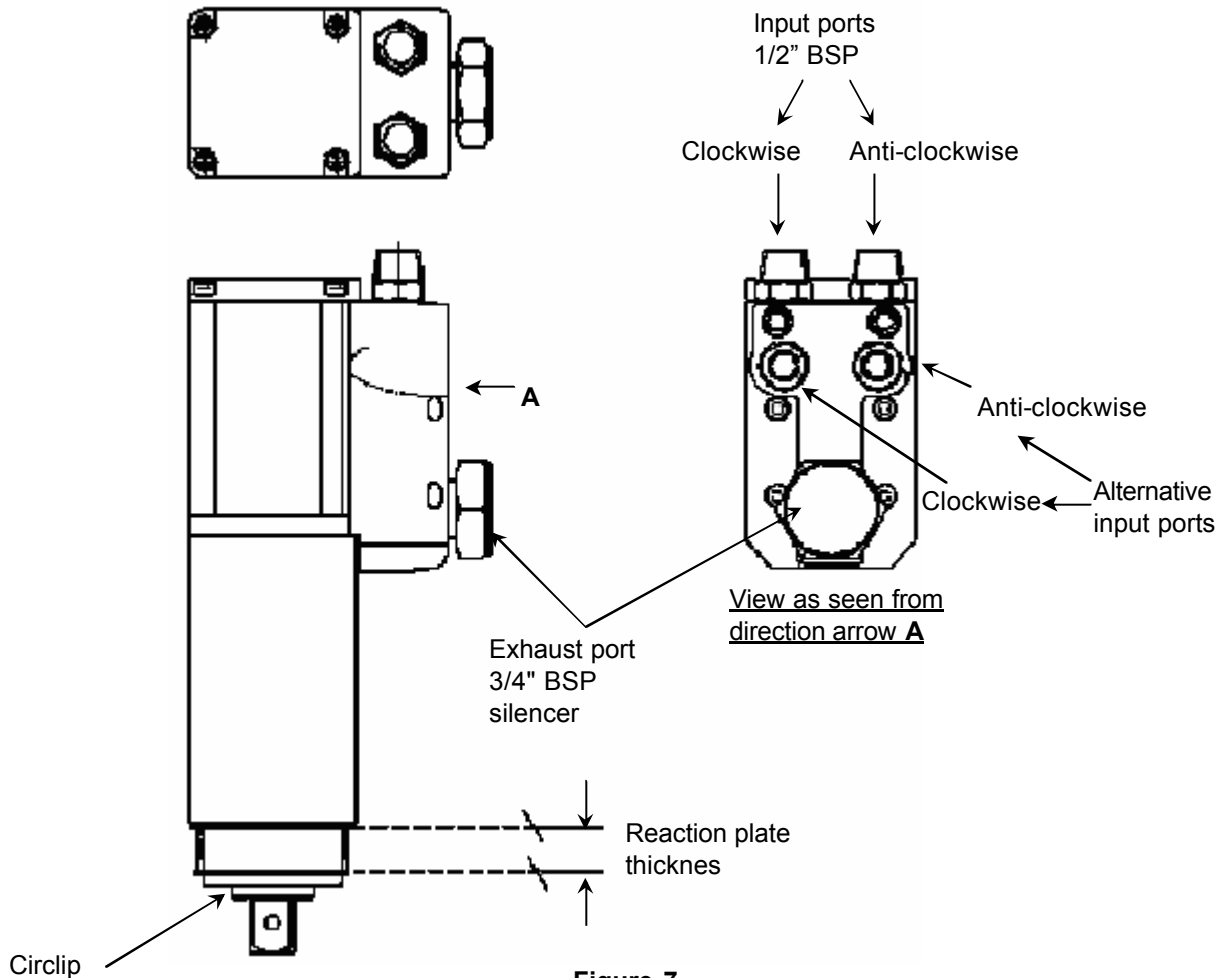


Figure 7
Tool features

EXHAUST PORT

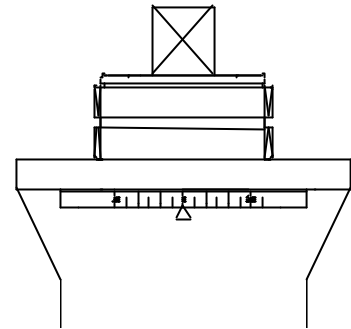
The exhaust port, located under the tool, is common to both inlet ports. If required an exhaust hose can be connected, this will reduce the sound pressure level. The exhaust hose size must not be reduced from 3/4" (19mm) or the tool performance will be reduced.

TIP: As with any pneumatic tool a fine oil mist is present in the exhaust air.
 Please ensure the exhaust air cannot cause a hazard

SETTING PROTRACTOR

The PT4500 tools have an integral angle protractor for easy torque and angle tightening. Adjust protractor when required.

Figure 8
Angle Protractor



SETTING TORQUE FOR FASTENER TIGHTENING

Every Pneutorque is supplied with an Air Pressure Graph which relates torque output to air pressure. Set the torque output as follows:-

1. Ensure the control system is set for the required rotation.
2. Establish the air pressure required using the Air Pressure Graph.
3. With the tool running, adjust the pressure regulator until the correct pressure is shown on the gauge.

IMPORTANT: THE TOOL MUST BE FREE RUNNING WHILE ADJUSTING THE AIR PRESSURE TO GIVE THE CORRECT SETTING.

WHILE THE TOOL IS FREE RUNNING CHECK THAT THE LUBRO CONTROL UNIT IS SUPPLYING APPROXIMATELY SIX DROPS OF OIL PER MINUTE.

SETTING TORQUE FOR FASTENER LOOSENING

1. Ensure that the control system is set for the required rotation.
2. Establish maximum air pressure from Air Pressure Graph or tool label.
3. Adjust the pressure regulator until the correct pressure is achieved.

WARNING: EXCEEDING THE MAXIMUM AIR PRESSURE WILL OVER LOAD THE TOOL AND MAY CAUSE SERIOUS DAMAGE.



WARNING: EXCEEDING THE MAXIMUM AIR PRESSURE WILL CAUSE OVERLOADING AND MAY LEAD TO SERIOUS DAMAGE.



WARNING: CHANGING THE MAINS AIR PRESSURE AFTER SETTING THE PRESSURE REGULATOR WILL CHANGE THE STALL TORQUE VALUE.

OPERATING INSTRUCTIONS



WARNING: KEEP HANDS CLEAR OF THE REACTION ARM AND DRIVE SOCKET.



WARNING: WHEN USING THIS TOOL IT MUST BE SUPPORTED AT ALL TIMES IN ORDER TO PREVENT UNEXPECTED RELEASE IN THE EVENT OF FASTENER OR COMPONENT FAILURE.



WARNING: CHANGING THE MAINS AIR PRESSURE AFTER SETTING THE PRESSURE REGULATOR WILL CHANGE THE STALL TORQUE VALUE.

TIGHTENING

1. Fit Pneutorque® with the correct size impact or high quality socket.
2. Ensure the external control circuit is correctly set.
3. Fit the tool onto the fastener. Locate reaction arm adjacent to the reaction point.
4. Start the tool and allow it to continuously tighten the fastener. Full torque only be applied when the motor stalls.
5. For angle tightening (PT 4500) complete the following:
 - a. Set angle protractor to 0°.
 - b. Operate external control system and monitor angle, air pressure may need to be increased.
 - c. Stop external control system at required angle.

TIP: If the air pressure is increased to enable angle tightening, ensure it is reset to value required for torque tightening.
Do not use excessive air pressure.

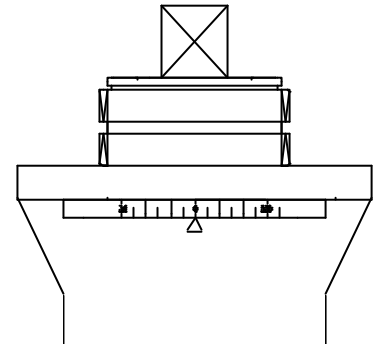


Figure 9
Angle protractor

6. Stop tool and remove from fastener.

RELEASING

1. Fit Pneutorque® with the correct size impact or high quality socket.
2. Ensure external control circuit is correctly set.
3. Fit the tool onto the fastener. Locate reaction arm adjacent to the reaction point.
4. Start the tool to release the fastener.

TIP: If unable to release the fastener increase the air pressure to the tool. Do not exceed the maximum air pressure.



WARNING: EXCEEDING THE MAXIMUM AIR PRESSURE WILL CAUSE OVERLOADING AND MAY LEAD TO SERIOUS DAMAGE.

5. Remove tool from fastener.

MAINTENANCE

To maintain optimum performance and safety, regular maintenance needs to be carried out. The only user maintenance required on these tools is the replacement of drive squares and the silencer. Any other maintenance or repairs should be carried out by Norbar or a Norbar approved agent and should form part of a service. Service intervals will depend on the type of usage of the tools and the environment in which they are being used.

AIR LUBRICATION:-

Add Shell Tellus 15 or equivalent good quality hydraulic oil to the Lubro Control Unit.

To check the oil consumption run the tool continuously and check the lubro control unit is supplying approximately six drops of oil per minute.

GEARBOX:-

Under normal operating conditions it is not necessary to re-grease the gearbox. The gearbox contains BP Energrease LS-EP1 or equivalent good quality grease.

SILENCER:-

The silencer (#28704) must be changed every 12 months. This may be more frequent for high tool usage or dirty environments.

DRIVE SQUARE:- _____

To avoid internal damage (especially due to torque overload), the output drive square has been designed to shear first. This saves major internal damage and allows easy square removal.

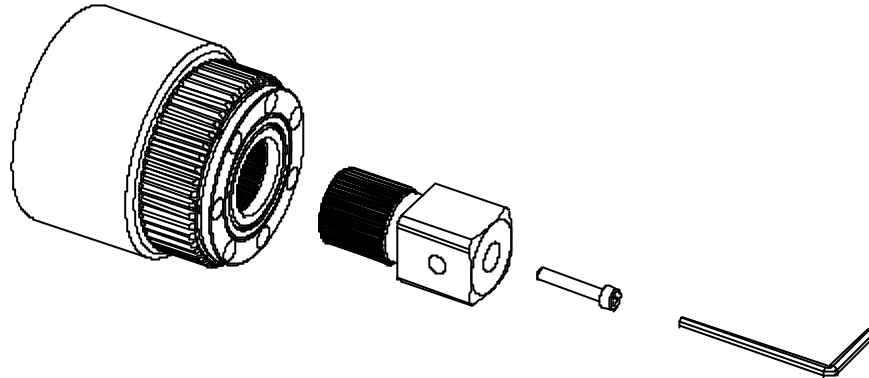


Figure 10
Square drive replacement

The drive square can be replaced with either a 3/4 " drive square (#18221) or a 1" drive square (#18220). A new retaining screw (#25352.45) is supplied with the square.

To replace drive square:

1. Use 4mm hexagon key to remove screw.
2. Remove drive square.
3. Fit new drive square.
4. Fit new screw and tighten to 8 N.m - 9 N.m.

TIP: If the square has sheared it may be necessary to use pliers to remove the broken parts.

NOTE: The PT 4500 REMOTE tools have a different style of drive square; this is designed to be changed by Norbar or a Norbar distributor.

CLEANING:- _____

Keep the tool in a clean condition to aid safety. Do not use abrasives or solvent based cleaners.

DISPOSAL :- _____

RECYCLING CONSIDERATIONS

COMPONENT	MATERIAL
Tool body	Aluminium casting with epoxy finish.
Annulus	Alloy steel with nickel plate finish.
Reaction plate	Alloy steel with epoxy powder finish.

SPECIFICATIONS

PART NUMBER	MODEL	RANGE		DRIVE SQUARE	DIMENSIONS (mm)
		N.m	lbf.ft		
18031	PT 500	90 – 500	66 – 370	3/4"	290.2 x 72 wide x 111
18031.AUT	PT 500 Auto 2 speed	203 – 500	150 – 370	3/4"	362.2 x 72 wide x 111
18030	PT 1000	190 – 1000	140 – 740	3/4"	290.2 x 72 wide x 111
18030.AUT	PT 1000 Auto 2 speed	488 – 1000	360 – 740	3/4"	362.2 x 72 wide x 111
18032	PT 1000	190 – 1000	140 – 740	1"	290.2 x 72 wide x 111
18032.AUT	PT 1000 Auto 2 speed	488 – 1000	360 – 740	1"	362.2 x 72 wide x 111
18029	PT 1500	300 – 1500	220 – 1110	1"	290.2 x 72 wide x 111
18029.AUT	PT 1500 Auto 2 speed	760 – 1500	560 – 1110	1"	362.2 x 72 wide x 111
18034	PT 2000	400 – 2000	300 – 1450	1"	290.2 x 72 wide x 111
18034.AUT	PT 2000 Auto 2 speed	1000 – 2000	750 – 1450	1"	362.2 x 72 wide x 111
18038.X	PT 4500	900 – 4500	660 – 3300	1"	390 x 140 wide x 293
18038.XAUT	PT 4500 Auto 2 speed	2400 – 4500	1750 – 3300	1"	462 x 140 wide x 293

Repeatability: ± 5% (up to ± 2% with torque transducer control in system).

Protractor increments 5° (where fitted).

Air Supply: Maximum pressure – 6.0 bar (For maximum torque capacity).
Air consumption – 11 litre per sec (l/s) [23 CFM].

PART NUMBER	VELOCITY RATIO		TOOL SPEED (rev/min) [Free running at maximum air pressure]	
	High speed	Low speed	High speed	Low speed
18031 / .AUT	29.752:1	162.284:1	170	35
18030 / .AUT	66.292:1	361.590:1	75	15
18032 / .AUT	66.292:1	361.590:1	75	15
18029 / .AUT	115.508:1	630.044:1	45	9
18034 / .AUT	162.284:1	85.185:1	30	6
18038X / .XAUT	361.590:1	1972.311:1	15	3

Recommended Lubrication: Shell Tellus 15 for the Lubro Control Unit.

Temperature Range: 0°C to +50°C (operating). -20°C to +60°C (storage).

Maximum Operating Humidity: 85% Relative Humidity @30°C.

	PT 500 - 2000	PT 500 - 2000 AUT	PT 4500	PT 4500 AUT
TOOL WEIGHT	6.4 kg (14.1 lb)	8.7 kg (19.2 lb)	13.7 kg (30.2 lb)	16 kg (35.3 lb)
REACTION WEIGHT	1.7 kg (3.8 lb)	1.7 kg (3.8 lb)	4.0 kg (8.8 lb)	4.0 kg (8.8 lb)

Sound Pressure Level: 81 dBA measured at 1m equivalent continuous A weighted sound.
Tested to BS ISO 3744: 1994 Acoustics – Determination of sound power levels of noise sources using sound pressure – Engineering method in an essentially free field over a reflecting plane. Test conducted in free running condition with a supply pressure of 6.0 bar.

Environment: Indoor & dry outdoor use within a light industrial environment.

Due to continuous improvement all specifications are subject to change without prior notice.

Declaration of Incorporation

Manufactured by Norbar Torque Tools Ltd.,
Beaumont Road, Banbury, Oxfordshire, OX16 1XJ.

The Directives covered by this Declaration

Safety of Machinery Directive, 98/37/EEC.

The Equipment Covered by this Declaration

Equipment: Pneutorque® Remote Control 72mm Series.

Model Name (s): PT 500 , PT 500 AUT,
PT 1000 , PT 1000 AUT.
PT 1500 , PT 1500 AUT.
PT 2000 , PT 2000 AUT.
PT 4500 , PT 4500 AUT.

Part Numbers: 18***.***

The Basis on which Conformity is being Declared

The equipment identified above is in compliance with the protection requirements of the above directive, and the following standards have been applied:-

BS EN ISO 12100-1:2003 Safety of machinery. Basic concepts, general principles for design.
Basic terminology, methodology

BS EN ISO 12100-2:2003 Safety of machinery. Basic concepts, general principles for design.
Technical principles

The machine must not be put into service until the machine into which it is to be incorporated has been deemed to conform with the applicable directives.

The technical documentation required to demonstrate that the products meet the requirements of the above Directives has been compiled and is available for inspection by the relevant enforcement authorities.

Signed:  **Full Name:** Trevor Lester.

Date: 20th October 2005 **Authority:** Compliance Engineer

TROUBLE SHOOTING

The following is only a guide, for more complex faults please contact your local Norbar distributor or Norbar directly.

PROBLEM	LIKELY SOLUTIONS
Tool output does not rotate when control system operated.	Check air supply is functioning & connected. Check air pressure setting (at least 1 bar). Check correct setting of control system. Output drive square sheared, needs replacing. Gear train or air motor is damaged.
Drive square sheared.	See maintenance section to replace.
Tool does not stall.	Tool has not achieved torque, increase air pressure. Fastener sheared or thread stripped. Gear train or air motor is damaged.

GLOSSARY OF TERMS

WORD OR TERM	MEANING
Air pressure graph	Graph to show air pressure setting for required torque.
AUT	Auto two speed.
CFM	Cubic Feet per minute, measure of air flow.
BSP	British Standard Pipe, this is a thread size.
Lubro Control Unit	Unit to provide filtering and lubrication along with pressure regulation. Not supplied with tool.
Pneutorque®	Product name.
Reaction Arm	Device to counteract applied torque.