

PNEUTORQUE[®]
STANDARD & SMALL DIAMETER SERIES
STALL TOOLS
REMOTE CONTROL AIR MOTOR



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PART NUMBERS COVERED BY THIS MANUAL

This manual covers all Pneutorque® (PT) Remote Standard and Small Diameter series tools; including the following:

Model (Standard Series)	Part Number			Square	Maximum Torque
	Single Speed	Manual Two Speed	Automatic Two Speed		
PT 1	16031.X	16031.XMTS	16031.XAUT	¾"	680 N·m
PT 1	16011.X	16011.XMTS	16011.XAUT	1"	680 N·m
PT 1A	16098.X	16098.XMTS	16098.XAUT	¾"	1200 N·m
PT 1A	16097.X	16097.XMTS	16097.XAUT	1"	1200 N·m
PT 2	16008.X	16008.XMTS	16008.XAUT	¾"	1700 N·m
PT 2	16013.X	16013.XMTS	16013.XAUT	1"	1700 N·m
PT 5	16015.X	16015.XMTS	16015.XAUT	1"	3400 N·m
PT 6	16017.X	16017.XMTS	16017.XAUT	1 ½"	3400 N·m
PT 7	16066.X	16066.XMTS	16066.XAUT	1 ½"	6000 N·m
PT 7 SD	16087.X	16087.XMTS	16087.XAUT	1 ½"	6000 N·m
PT 9	16072.X	16072.XMTS	16072.XAUT	1 ½"	9500 N·m
PT 11	16046.X	16046.XMTS	-	2 ½"	20000 N·m
PT 12	18086.X	18086.XMTS	-	2 ½"	34000 N·m
PT 13	16052.X	16052.XMTS	-	2 ½"	47000 N·m
PT 14	16045.X	16045.XMTS	-	3 ½"	100000 N·m
PT 15	18089.X	18089.XMTS	-	Note A	150000 N·m
PT 16	18090.X	18090.XMTS	-	Note A	200000 N·m
PT 17	18088.X	18088.XMTS	-	Note A	250000 N·m
PT 18	-	16054.XMTS	-	Note A	300000 N·m

NOTE A: The output drive and reaction components must be engineered specifically for each customer application. Consult Norbar.

Model (Small Diameter Series)	Part Number			Square	Maximum Torque
	Single Speed	Manual Two Speed	Automatic Two Speed		
PT 2700	18027.X	18027.XMTS	18027.XAUT	1"	2700 N·m
PT 5500	18028.X	18028.XMTS	18028.XAUT	1 ½"	5500 N·m

Pneutorque® Remote Standard and Small Diameter series tools are also supplied with a handle. These are given a part number without an 'X' suffix and are covered by the operators manual part number 34317.

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 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[®] tools are reversible, non impacting, torque controlled bolt tightening tools and must always be operated with the following:

- Clean dry air supply with a minimum flow of 19 litres/sec (40 ft³/m [CFM]).
- Lubro Control Unit or similar Filter, Regulator and Lubricator Unit ½" Bore (12 mm).
- Impact or high quality sockets.
- Reaction Arm.

INTRODUCTION

The Pneutorque® (PT) Standard Series and Small Diameter Series are air driven power tools designed for applying torque to threaded fasteners. Remote control versions require a tool control system (not supplied as standard) to provide the on / off and clockwise / anti-clockwise control of the tool. 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 tool control system, an external pressure regulator (Lubro control unit) is needed; this allows the air pressure to be adjusted to determine the stall torque required from the graph provided. There are PT models to cover torque capacities of 680 N·m to 300000 N·m.

Parts Included

Model	Part Number					
	Reaction Plate / Arm	Reaction Foot	Lifting Ring	Lubro Control Unit	Torque Wrench	Transporting Trolley
PT 1 & PT 2	16420	-	-	-	-	-
PT 5 & PT 6	16544	-	-	-	-	-
PT 7	16263	16344	-	-	-	-
PT 7 SD	16433	16344	-	-	-	-
PT 9	16387	16394	-	-	-	-
PT 11	16322	-	16348	16074	-	-
PT 12	18994	-	19030/1	16074	-	-
PT 13	16330	-	16311	16074	13049	16326
PT 14	16308	-	16311	16074	13049	16326
PT 15	Note A	-	-	16074	-	-
PT 16	Note A	-	16311	16074	13050	-
PT 17	Note A	-	16311	16074	13050	-
PT 18	Note A	-	16311	16074	13050	-
PT 2700	16672	-	-	-	-	-
PT 4500	16673	-	-	-	-	-

All tools include Operators Manual (Part number 34318), Calibration Certificate & Air pressure graph (Part number 34208)

NOTE A: The output drive and reaction components must be engineered specifically for each customer application. Consult Norbar.

Accessories

Part	Part Number
Replacement drive square	See Maintenance
Air Filter	18280
Silencer	16457
Lubro Control Unit	16074
Telescopic nose assembly (85.5 mm to 120.5 mm) for PT1 & PT2 only	16495
Straight 350mm Reaction Plate (PT 2700 only)	16686
Straight 350mm Reaction Plate (PT 5500 only)	16687
Transducers	Consult Norbar

FEATURES AND FUNCTIONS

Replaceable Drive Square

To avoid internal damage (especially due to torque overload), the output drive square has been designed to shear first. Tools are fitted with drive square that can easily be replaced, alternative drive sizes are also available.

Clockwise / Anti-Clockwise Control

Capable of tightening and releasing threaded fasteners.

Automatic Two Speed (AUT)

The automatic two speed gearbox option can reduce the fastener run down time. The initial run down is at 5 times normal operating speed before it automatically changes gear to apply the final torque.

Manual Two Speed (MTS)

The manual two speed gearbox option allows manual selection of 'slow' or 'fast' speeds, fast speed can reduce the fastener run down time. The difference in gearbox ratios between slow and fast speeds is approximately factor of 5.

Optional Transducers

Electronic torque transducers can be directly fitted for precise torque monitoring, giving repeatability of up to +/- 2%.

Optional Angle Encoder

It is possible to fit an angle encoder to the PT. This measures the 6 air motor veins and gives an output calculated by the following formula:

$$\text{Angle (degrees)} = \frac{6 \times \text{Velocity Ratio}}{360}$$

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. The remote control tools are supplied with a reaction arm as standard (see Figure 1, 2, 3, 4 & 5). For other types of reaction arm see Accessories.

Position the tool in the reaction arm and fix in place as detailed below.

Standard Series

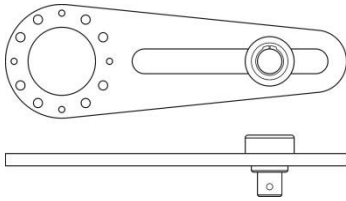


FIGURE 1 – Typical reaction with sliding 'slave square' for PT 1 to PT 5

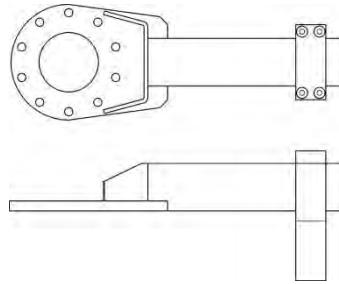


FIGURE 2 – Typical reaction (with adjustable foot) for PT 7 and PT 9

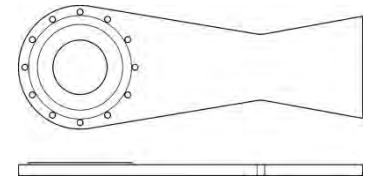


FIGURE 3 – Typical reaction for PT 11

Fit the reaction plate to the tool using the bolts provided.

Torque the bolts to the value specified on reaction arm, if no torque is specified use the following table:

Model	Reaction Plate / Arm	Fixing Bolt Size	Fixing Bolt Torque
PT 1 & PT 2	16420	2BA	9 N·m
PT 5 & PT 6	16544	¼" BSF	19 N·m
PT 7	16263	M10	83 N·m
PT 7 SD	16433	½" BSW	Hand tight
PT 9	16387	⅜" BSF	75 N·m
PT 11	16322	M10	83 N·m
PT 12	18994	M12	150 N·m
PT 13	16330	M16	310 N·m
PT 14	16308	M16	310 N·m
PT 15	-	-	-
PT 16	-	M20	400 N·m
PT 17	-	M20	400 N·m
PT 18	-	M20	400 N·m

NOTE: It is recommended to check the reaction plate bolts are correctly tightened every week.

Small Diameter Series

Use the circlip to hold the reaction arm in place.

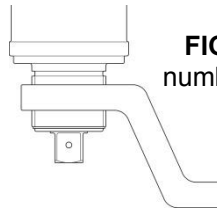


FIGURE 4 – Typical reaction for PT 2700 (Part number 16672) and PT 5500 (Part number 16673)

The length is 350mm and this may be modified to suit the required application. Use the circlip to hold the reaction arm in place.

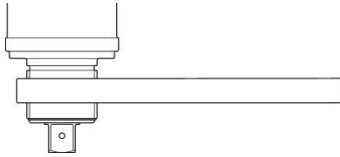


FIGURE 5 – An alternative straight reaction plate is available for the PT 2700 (Part number 16686) and PT 5500 (Part number 16687)

Securely mount the reaction arm.

TIP: Take the reaction as far away from the multiplier as practical.



WARNING: IF THE REACTION PLATE IS EXTENDED FORWARD OF THE DRIVE SQUARE, LARGER INDUCED BENDING STRESS WILL RESULT, SO THE PLATE MAY NO LONGER BE STRONG ENOUGH.

It is essential the reaction plate rests squarely against a solid object or surface adjacent to the fastener to be tightened. The contact area must be within the shaded area of Figure 6, with the contact area as large as possible.

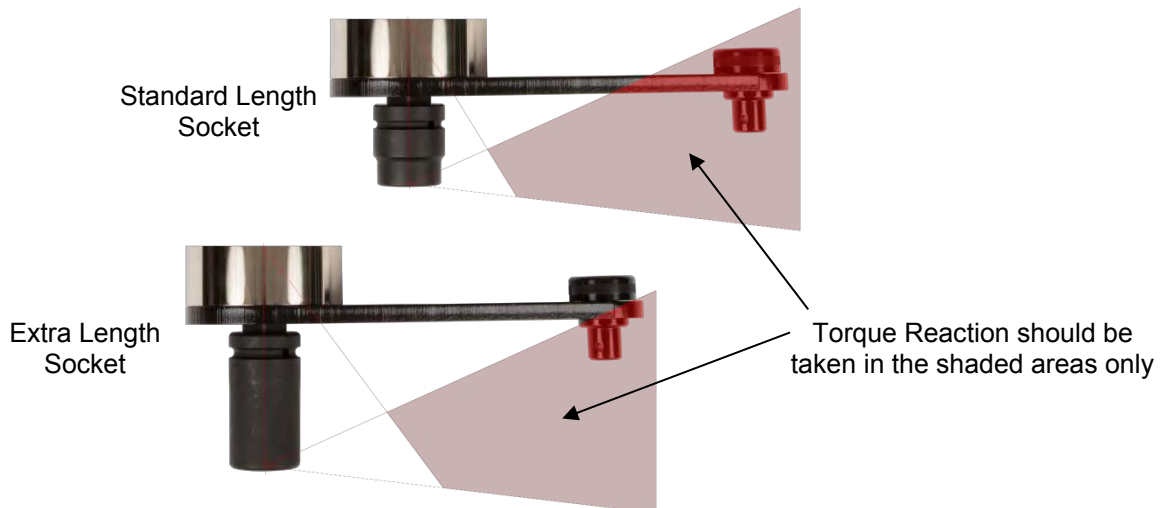


FIGURE 6 – Reaction limitations



WARNING: CARE MUST BE TAKEN TO ENSURE THAT THE REACTION ARM IS ONLY USED WITHIN THE LIMITATIONS SHOWN IN FIGURE 6.

For special applications or where extra deep sockets must be used the standard arm may be extended but only within the limitations shown on Figure 6. Alternative reaction devices are available.



WARNING: FAILURE TO OBSERVE THE LIMITATIONS SHOWN IN FIGURE 6 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.

When the Pneutorque[®] is in operation the reaction arm rotates in the opposite direction to the output drive square. The reaction arm must be allowed to rest squarely against a solid object or surface adjacent to the bolt to be tightened. (See Figure 7 & 8).



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



FIGURE 7 – Clockwise (FWD) reaction



FIGURE 8 – Anti-clockwise (REV) reaction

TIP: To extend tool life ensure the reaction point remains square to the multiplier; this will minimise stress on the output square. If the multiplier tilts under load, the reaction may not remain square.

TIP: To help socket location with PT 1 & PT 2 tools in remote or multi-spindle applications use a Telescopic Nose Assembly, Part number 16495.

Examples of Tool Control Systems

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

A Lubro Control Unit (Part Number 16074 – supplied where specified) 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 $\frac{1}{2}$ " 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 $\frac{3}{4}$ " bore must be used.

Examples of tool control systems are shown in Figure 9 and Figure 10.

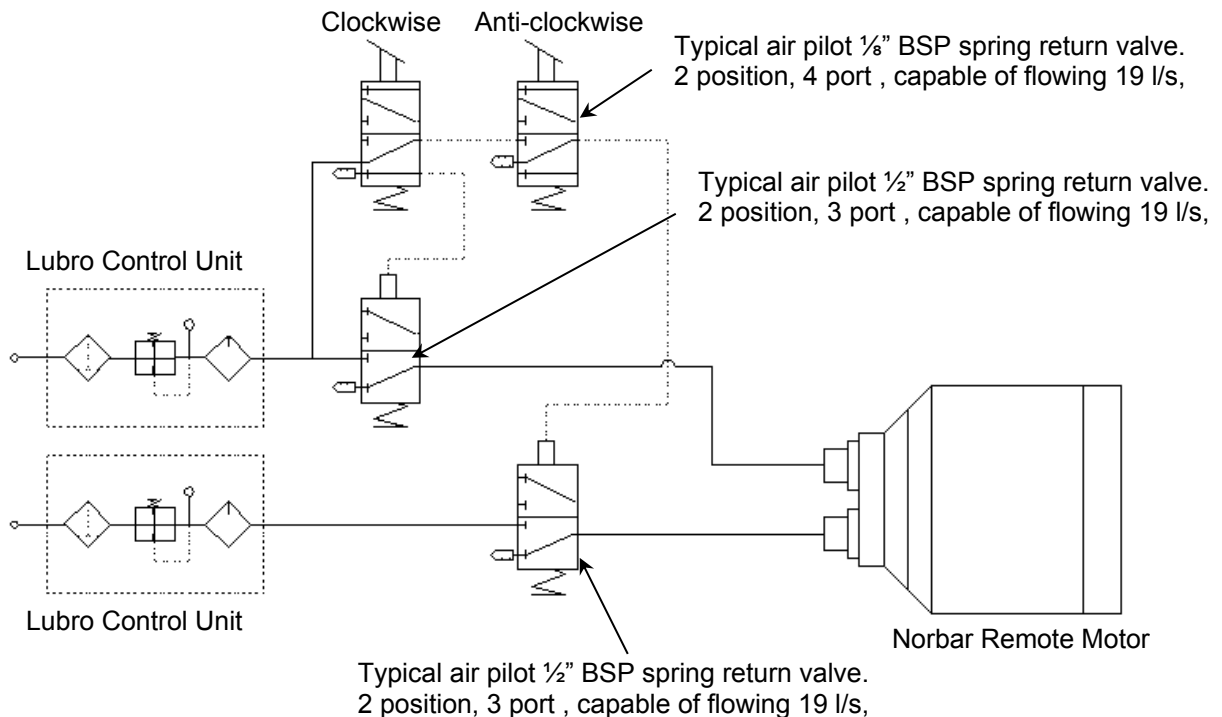


FIGURE 9 – Example of tool control system

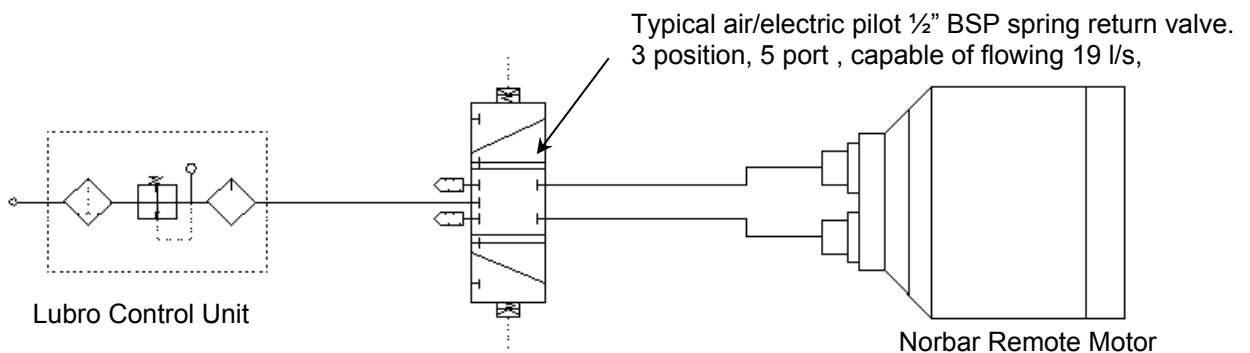


FIGURE 10 – Example of tool control system



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 and covered by plastic protection caps (# 16199). Connect the air supply to the clockwise (FWD) and anti-clockwise (REV) ½" BSP connectors as shown in Figure 11.

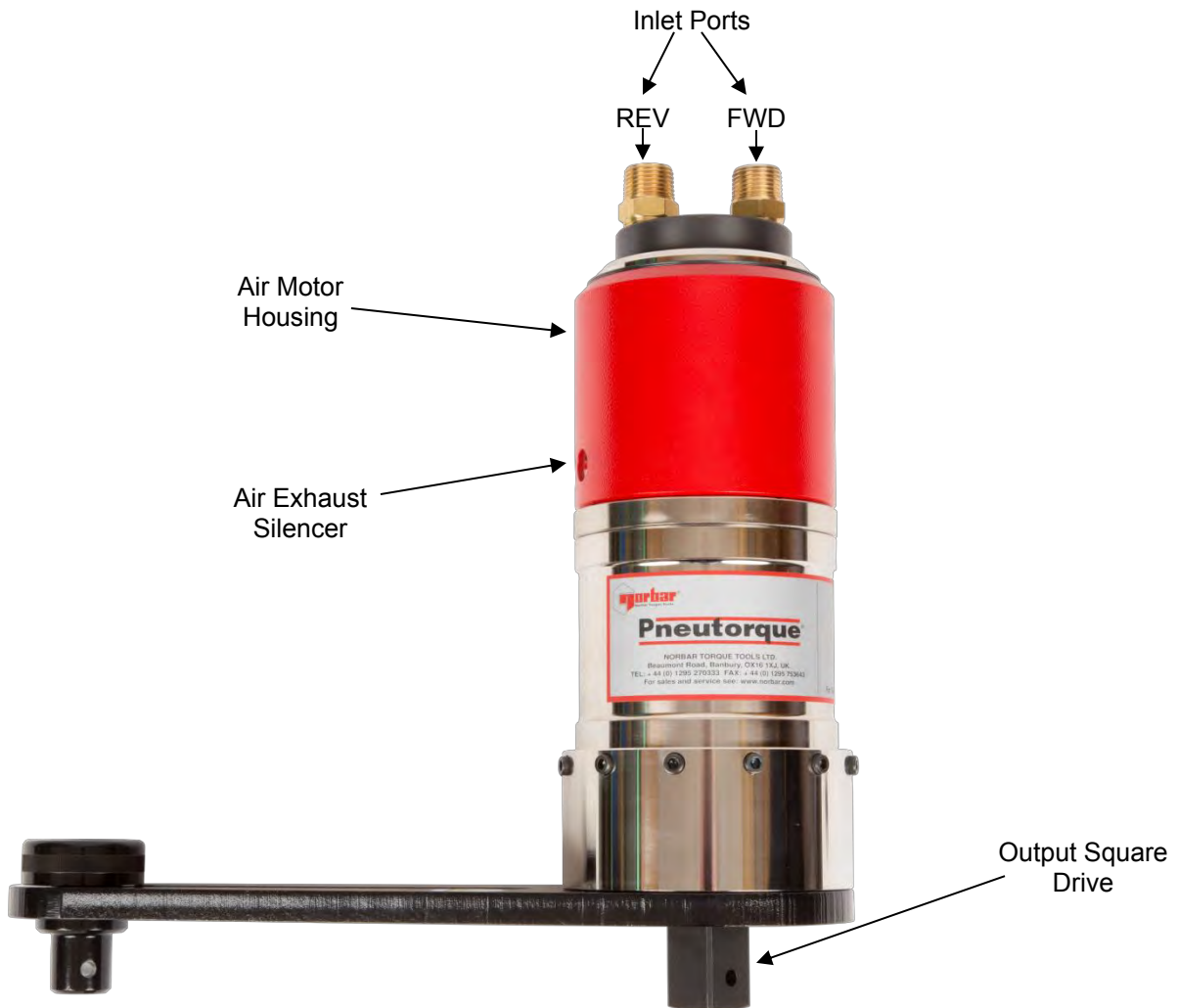


FIGURE 11 – Tool features

Exhaust Port

The exhaust port, located on the side of the tool, is common to both inlet ports.

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 Torque for Fastener Tightening

The tool stall torque is determined by the air pressure set on an external Lubro Control Unit (Part Number 16074 - supplied where specified).

Tools are supplied with an Air Pressure Graph which relates the torque output to the air inlet pressure. Set the torque output as follows:

1. Ensure the tool control system is set for the required rotation.
2. For Manual two speed tools (Part number *****.XMTS) select 'SLOW' speed.
3. Establish the air pressure required using the Air Pressure Graph.
4. Ensure the drive square is able to free run.
5. With the tool running, adjust the air pressure regulator until the correct pressure is shown on the air pressure 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 LUBRO CONTROL UNIT IS SUPPLYING APPROXIMATELY SIX DROPS OF OIL PER MINUTE.

Setting Torque for Fastener Loosening

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



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



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

OPERATING INSTRUCTIONS



WARNING: KEEP HANDS CLEAR OF THE REACTION ARM.



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 tool control system is correctly set.
3. Fit the tool onto the fastener. Locate reaction arm adjacent to the reaction point.
4. Complete the following instructions for SINGLE SPEED, AUTOMATIC TWO SPEED or MANUAL TWO SPEED tools:



Single Speed (Part Number with 'X' suffix)

5. Start the tool and allow it to continuously tighten the fastener. Full torque will only be applied when the motor stalls.
6. Stop tool and remove from fastener.

Manual Two Speed (Part Number "*****.XMTS")

NOTE: 'FAST' speed is for initially running up of the fastener and 'SLOW' speed for applying the final torque.

5. Set speed selector to 'FAST'.

TIP: To change the speed (see Figure 12):

- A. Ensure tool is not running.
- B. Pull selection knob out.
- C. Move knob to required speed setting.
- D. Ensure selection knob is fully engaged in recess.

6. Start the tool and allow it to continuously tighten the fastener.
7. When the tool motor stalls, stop the tool.

NOTE: The final torque has NOT been applied yet.

8. Set speed selector to 'SLOW'.
9. Start the tool and allow it to continuously tighten the fastener. Full torque will only be applied when the motor stalls.

NOTE: The air pressure calibration graph is only correct in the 'SLOW' setting.



FIGURE 12 – 'FAST' speed above, 'SLOW' speed below.



10. Stop tool and remove from fastener.

TIP: Where there are several fasteners in the joint, eg. a flange, it may be desirable to tighten all of the fasteners with the tool in 'FAST' gear. Then set the gear selector to 'SLOW' and apply final torque.

Automatic Two Speed (Part Number "*****.XAUT")

NOTE: These tools operate at a 'FAST' speed (approximately 5 times faster than normal) until torque is detected, then the tool automatically changes to 'SLOW' speed for the final tightening of the fastener.

5. Start the tool and allow it to continuously tighten the fastener.
Full torque will only be applied when the motor stalls.

6. Stop tool and remove from fastener.

TIP: If the tool will not release from the bolt, run tool in the opposite direction for a fraction of a second.

NOTE: If the air pressure is released before the tool stalls, full torque will NOT be applied to the fastener.

TIP: If additional angle tightening is required, the air pressure may be increased.
Do not exceed the maximum air pressure for the tool.
Ensure the air pressure is reset to the required value for future torque tightening.

Releasing

1. Fit Pneutorque® with the correct size impact or high quality socket.

2. Ensure external tool control system 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 for the tool.



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

5. Remove tool from fastener.



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

MAINTENANCE

To maintain optimum performance and safety, regular maintenance needs to be carried out. This section details the user maintenance required; 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. The maximum recommended maintenance and recalibration interval is 12 months.

TIP: Steps the operator can take to reduce the amount of maintenance required include:

1. Use the tool in a clean environment.
2. Use an air compressor fitted with a dryer.
3. Ensure the Lubro Control Unit has sufficient hydraulic oil.
4. Ensure the Lubro Control Unit delivers hydraulic oil at the correct rate.
5. Ensure the Lubro Control Unit is regularly maintained, see product manual.
6. Maintain the correct torque reaction.

Reaction Plate

Every week check that the bolts fastening the reaction plate are tightened to the torque stamped onto the reaction plate.

Air Lubrication

Add Shell Tellus S2M 32 or equivalent good quality hydraulic oil to the Lubro control unit.

Gearbox

Under normal operating conditions it is not necessary to re-grease the gearbox. The gearbox contains Shell Gadus S2 V220 or equivalent good quality grease.

Silencer

The silencer (#16457) should be changed every 12 months. This may be more frequent for high tool usage or dirty environments.

To change silencer:

1. Remove circlip from end of sleeve.
2. Slide sleeve to access silencer.
3. Change silencer.
4. Refit sleeve and circlip.



FIGURE 13 – Silencer location

Filter

The air filter (#18280) should be changed every 12 months. This may be more frequent for high tool usage or dirty environments.

To change filter:

1. Switch off air supply to tool.
2. Remove inlet air hose.
3. Remove filter from inside tool air inlet.
4. Fit new filter.
5. Refit inlet air hose.

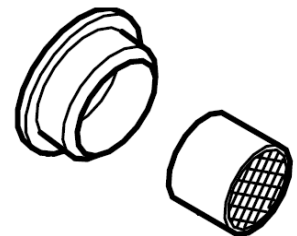


FIGURE 14 – Air filter

TIP: To help removal use a small screwdriver or a pair of internal circlip pliers.

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.

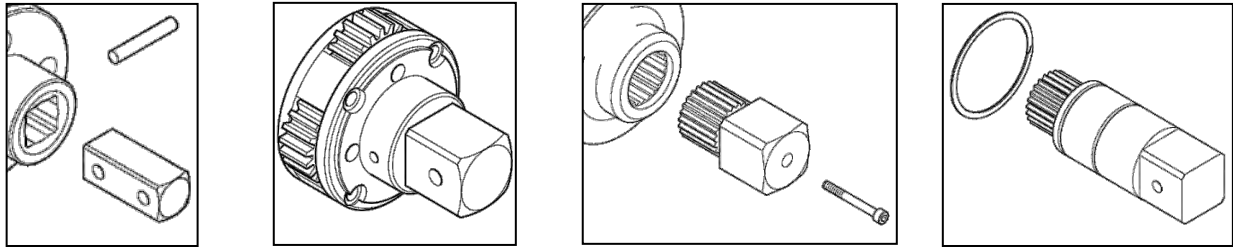


FIGURE 15 – Drive square fixing (left to right): Pin, Carrier Assembly , Screw and circlip.

Tool	Square Size	Drive Square Part Number	Fixing	Screw Torque (N·m)
PT 1 / PT 2	¾"	# 16424	Pin (# 26228)	-
PT 1 / PT 2	1"	# 16425	Pin (# 26228)	-
PT 5	1"	# 16549	Pin (#26242)	-
PT 6	1 ½"	# 16548	Carrier assembly.	-
PT 7 / PT 7SD	1 ½"	# 16295	M5 screw (# 25352.45)	8 – 9
PT 9	1 ½"	# 16611	M5 screw (# 25352.40)	8 – 9
PT 11	2 ½"	# 16323	M6 screw (# 25353.60)	16 – 18
PT 12	2 ½"	# 16310	M6 screw (# 25353.60) + Circlip (# 26432)	16 – 18
PT 13	2 ½"	# 16310	M6 screw (# 25353.60) + Circlip (# 26432)	16 – 18
PT 14	3 ½"	# 16309	M6 screw (# 25353.60)	16 – 18
PT 15	-	-	Application specific	-
PT 16	-	-	Application specific	-
PT 17	-	-	Application specific	-
PT 18	-	-	Application specific	-
PT 2700	1"	# 16661	Circlip (# 26490)	-
PT 5500	1 ½"	# 16446	Circlip (# 26482)	-

NOTE: The drive squares are designed to be replaced by a competent service engineer with standard tools, only the PT 5500 needs specialist equipment (including a press) to replace the drive square. A new fixing screw is recommended on reassembly.

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

Cleaning

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

Disposal

Recycling considerations:

Component	Material
Sleeve	Aluminium casting with epoxy finish.
Annulus	Alloy steel with nickel plate finish.
Reaction plate	Alloy steel with epoxy powder finish

SPECIFICATIONS

General

Repeatability:	± 5% for a given joint.
Air Supply:	Maximum pressure 6.0 bar (For maximum torque capacity). Air consumption 19 litres / sec (40 ft ³ /m [CFM]).
Recommended Lubrication:	Shell Tellus S2M 32 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 at 30°C.
Maximum Vibration at Handle:	< 2.5m/s ² . Tested in accordance with ISO 8662-7 Hand Held portable tools – Measurement of vibrations at the handle.
Sound Pressure Level:	85 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.

Small Diameter

Model	Torque		Free Speed (At maximum air pressure)		Velocity Ratio	
	Minimum	Maximum	Single speed	XMTS / XAUT	Slow speed	Fast speed (XMTS / XAUT)
PT 2700	880 N·m (650 lbf·ft)	2700 N·m (2000 lbf·ft)	5 rev/min	25 rev/min	885.185:1	162.284:1
PT 5500 / PT 5500 MTS	1200 N·m (885 lbf·ft)	5500 N·m (4000 lbf·ft)	2.5 rev/min	12.5 rev/min	1590.322:1	291.559:1
PT 5500 AUT	1762 N·m (1300 lbf·ft)	5500 N·m (4000 lbf·ft)	-	12.5 rev/min	-	291.559:1

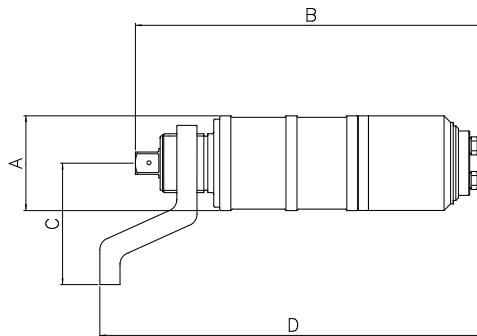


FIGURE 16 – Small diameter tool

Model	Dimensions (mm)					Weight (kg)	
	A	B	C	D (Minimum)	D (Maximum)	Tool	Reaction
PT 2700	108	361	140	393	422	14.5	2
PT 2700 MTS	108	448	140	480	509	18.0	2
PT 2700 AUT	108	430	140	462	491	18.0	2
PT 5500	119	436	154	490	516	17.9	4
PT 5500 MTS	119	522	154	576	602	21.4	4
PT 5500 AUT	119	505	154	559	585	21.4	4

Standard Series

Model	Torque		Free Speed (At maximum air pressure)		Velocity Ratio	
	Minimum	Maximum	Single Speed	XMTS / XAUT	Slow Speed	Fast Speed (XMTS / AUT)
PT 1	160 N·m (120 lbf·ft)	680 N·m (500 lbf·ft)	30 rev/min	150 rev/min	162.284:1	29.752:1
PT 1A	270 N·m (200 lbf·ft)	1200 N·m (900 lbf·ft)	15 rev/min	75 rev/min	333.332:1	61.111:1
PT 2	515 N·m (380 lbf·ft)	1700 N·m (1250 lbf·ft)	9 rev/min	45 rev/min	508.019:1	93.137:1
PT 5	880 N·m (650 lbf·ft)	3400 N·m (2500 lbf·ft)	5 rev/min	25 rev/min	885.185:1	162.284:1
PT 6	880 N·m (650 lbf·ft)	3400 N·m (2500 lbf·ft)	5 rev/min	25 rev/min	885.185:1	162.284:1
PT 7	1762 N·m (1300 lbf·ft)	6000 N·m (4500 lbf·ft)	2.5 rev/min	12.5 rev/min	2032.481:1	372.622:1
PT 9	2710 N·m (200 lbf·ft)	9500 N·m (7000 lbf·ft)	1.8 rev/min	9 rev/min	2771.015:1	508.019:1
PT 11	4400 N·m (3250 lbf·ft)	20000 N·m (14700 lbf·ft)	1.2 rev/min	6 rev/min	4720.989:1	865.515:1
PT 12	9500 N·m (7000 lbf·ft)	34000 N·m (25000 lbf·ft)	0.5 rev/min	2.5 rev/min	10490.271:1	1923.232:1
PT 13	13550 N·m (10000 lbf·ft)	47000 N·m (35000 lbf·ft)	0.3 rev/min	1.5 rev/min	14778.748:1	2709.437:1
PT 14	22375 N·m (16500 lbf·ft)	100000 N·m (73500 lbf·ft)	0.2 rev/min	1 rev/min	25178.608:1	4616.078:1
PT 15	35000 N·m (25825 lbf·ft)	150000 N·m (110500 lbf·ft)	0.1 rev/min	0.5 rev/min	47373.29:1	8685.18:1
PT 16	46500 N·m (34400 lbf·ft)	200000 N·m (147500 lbf·ft)	0.08 rev/min	0.4 rev/min	66739.35:1	12235.65:1
PT 17	58250 N·m (42990 lbf·ft)	250000 N·m (184300 lbf·ft)	0.07 rev/min	0.35 rev/min	76828.14:1	14085.28:1
PT 18	70000 N·m (51630 lbf·ft)	300000 N·m (221270 lbf·ft)	0.06 rev/min	0.3 rev/min	83918.27:1	15385.14:1

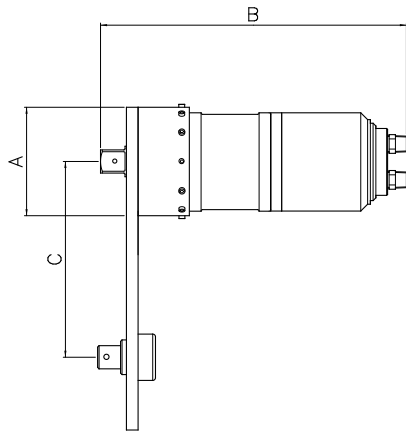


FIGURE 17 – Smaller standard series tools

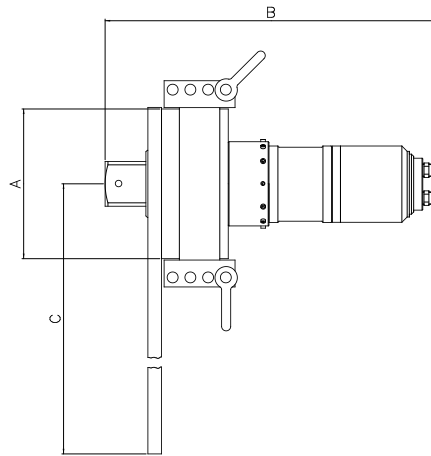


FIGURE 18 – Larger standard series tools

Model	Dimensions (mm)						Weight (kg)		
	A	B			C Minimum	C Maximum	Tool		Reaction
		Single Speed	MTS	AUT			Single Speed	XMTS / XAUT	
PT 1 (3/4")	108	292	378	361	83	217	10.6	14.1	2.2
PT 1 (1")	108	298	384	366	83	217	10.6	14.1	2.2
PT 1A	108	298	384	366	83	217	11.1	14.6	2.2
PT 2	108	298	384	366	83	217	11.1	14.6	2.2
PT 5	119	348	434	417	86	264	14.0	17.5	2.5
PT 6	119	354	440	423	86	264	14.0	17.5	2.5
PT 7	144	381	467	450	146	333	17.9	23.2	6.3
PT 9	184	376	462	445	169	351	24.4	27.9	8.3
PT 11	212	470	556	-	-	500	38.6	42.1	13.3
PT 12	240	593	679	-	Blank plate		49.8	53.3	6.5
PT 13	315	553	639	-	Blank plate		102.2	105.7	6.9
PT 14	315	650	736	-	Blank plate		119.4	122.9	10.4
PT 15	-	-	-	-	Application specific		-	-	-
PT 16	410	704	790	-	Application specific		266.5	270	-
PT 17	410	777	863	-	Application specific		281.5	285	-
PT 18	520	774	860	-	Application specific		376.5	380	-

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

NOTE: If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment could be impaired.

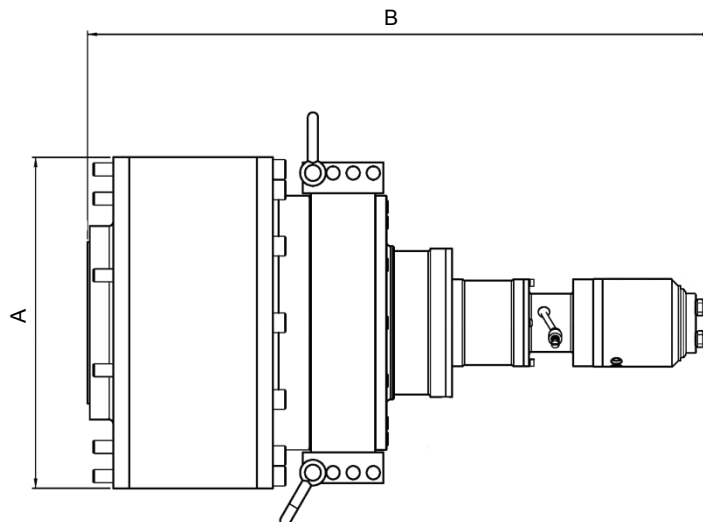


FIGURE 19 – PT 15 – 18



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Declaration of Incorporation

The following apparatus:

Pneutorque® Remote Control Standard & Small Diameter tools.

Model Names (Part Numbers): PT 1 (16011.X*** & 16031.X***), PT 1A (16097.X*** & 16098.X***),
PT 2 (16008.X*** & 16013.X***), PT 5 (16015.X***), PT 6 (16017.X***),
PT 7 (16066.X*** & 16087.X***), PT 9 (16072.X***), PT 11 (16046.X***),
PT 12 (18086.X***), PT 13 (16052.X***), PT 14 (16045.X***),
PT 15(18089.X***), PT 16 (18090.X***), PT 17 (18088.X***),
PT 18 (16054.X***), PT 2700 (18027.X***) & PT 5500 (18028.X***).

Is in compliance with the protection requirements of the following directives:

Machinery Directive 2006/42/EC.

The following standards have been applied:

BS EN ISO 12100:2010 Safety of machinery. General principles for design.
Risk assessment and risk reduction

The basis on which conformity is being declared:

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

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

Signed:

Full Name:

Trevor Mark Lester B.Eng.

Date:

6th June 2013

Authority:

Compliance Engineer

Place:

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

United Kingdom | Australia | United States of America
New Zealand | Singapore | China | India



Registered in England No 380480 | VAT No GB 110 1000 05

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 required). Check correct setting of control system. Output drive square sheared, see maintenance section to replace. Gear train or air motor is damaged, return for repair.
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, return for repair.

GLOSSARY OF TERMS

Word or Term	Meaning
Air pressure graph	Graph to show air pressure setting for required torque.
BSP	British Standard Pipe, this is a thread size.
CFM	Cubic Feet per minute (ft ³ /m), a measure of air flow.
Lubro Control Unit	Unit to provide filtering and lubrication along with pressure regulation. A Lubro Control Unit is supplied with some Pneutorques.
PT	Pneutorque [®] ; the product name.
Reaction Arm	Device to counteract applied torque.
SD	Small Diameter
Tool Control System	Pneumatic circuit to control operation of remote PT.
Velocity Ratio	The gearing ratio of the PT.
XAUT	Auto Two speed. X = Remote.
XMTS	Manual Two Speed. X = Remote.

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