1. DESCRIPTION AND SPECIFICATIONS

1.1 The 3900A Pneumatic Power Drive converts pneumatic power to torque by means of a rotary vane air motor and multiple stages of planetary gearing.

1.2 When used in conjunction with a 390 Series Torque Multiplier the 3900A can be used to tighten or loosen many types and sizes of fasteners.

1.3 Specifications:
- Maximum Output Torque – 200 lbf-ft (271 N-m)
- Maximum Running Air Pressure – 60 psig
- Free Speed – 70 rpm
- Overall Length – 16-1/4” (413 mm)
- Width – 3-1/8” (79mm)
- Height – 4-3/4” (121mm)
- Weight – 11 pounds
- Output Drive – ½” Square Male
- Output Rotation – CW and CCW

2. TORQUE MULTIPLIER ATTACHMENT

2.1 The 3900A can be used to drive any of the 390 Series Torque Multipliers.

2.2 If the Torque Multiplier has an input torque holding device (selector pawl), be sure to lock it in the neutral position before connecting it to the 3900A Pneumatic Power Drive (see Torque Multiplier Operating Instructions).

2.3 Insert output square drive of the 3900A into the female input square drive of the Torque Multiplier.

2.4 Select the side of the spacer block which will properly interface the Torque Multiplier which is to be used. (Shortest dimension will fit the 391A Torque Multiplier, intermediate dimension will fit the 392B Torque Multiplier and the longest dimension will fit the 393A Torque Multiplier.)

2.5 Insert the spacer block between the Torque Multiplier and the 3900A such that the hole in the torque multiplier reaction stub lines up with the appropriate hole in the spacer block and the slot in the 3900A anchor bracket.

2.6 Insert socket head cap screw into Torque Multiplier reaction stub hole and push through the spacer block and 3900A anchor bracket slot. Place flat washer and lock washer on the end of the bolt and screw on the retaining nut.

2.7 Tighten retaining nut to a torque of 30 to 35 lbf-ft.
3. **Operation**

3.1 Attach an air hose to the ½ NPT female fitting located on the rear of the 3900A Pneumatic Power Drive.

3.2 Set directional control for direction of rotation desired and check rotation by depressing the actuating lever and visually noting the direction in which the output drive is turning.

3.3 Consult the air pressure/torque output chart and with the air tool free running, set the air pressure for the approximate output torque desired.

**NOTE:** Because of variations in bolt length, type of joint, length of hose and variations in the type of fittings used on the hose, the exact air pressure required for a given torque output can only be determined by trial and error for any given application. See example.

3.4 Attach the appropriate impact type socket on the male output square drive and then place the unit onto the nut to be tightened.

3.5 If the unit is to be used to loosen a nut, set the regulator to produce the maximum rated output Torque for the attached Torque Multiplier. (See Chart).

3.6 When tightening a nut, fully depress the on/off lever and allow the tool to turn until the air motor stalls. Then remove the 3900A. Releasing the on/off lever before stall or not depressing the on/off lever fully will result in inaccurate torque values.

4. **TYPICAL PIPING INSTALLATION**

4.1 To insure accurate and consistent results, the same basic installation and maintenance rules must be followed as for any air operated tool installation.

4.2 Clean, dry air is of prime importance in any air tool installation. Therefore, an air filter and strainer must be put into the air line.

4.3 In order to achieve optimum performance and service life out of your Pneumatic Torque Wrench, a lubricator must also be put in the air line. The lubricator should be kept filled with SAE 10 turbine type, non-detergent oil.

4.4 The size and length of the air hose, and the type of fittings used on the air hose, will affect the torque performance and air tool rpm. For any given application it is best to hold these items constant.

**EXAMPLE OF RECOMMENDED PROCEDURE FOR SETTING AIR PRESSURE**

In this example the operator has a number of 1-1/2-6 nuts to tighten on a flange. The specified tightening torque is 2370 lbf-ft which will be obtained by using a 393B Torque Multiplier coupled with a 3900A Pneumatic Drive.

**STEP PROCEDURE**

1. Determine the necessary input torque to the 393A to produce 2370 lbf-ft of torque.

\[
\begin{align*}
\text{Tightening Torque} & = 393A \\
\text{Input Torque Ratio of Multiplier} & = 393 \text{A}
\end{align*}
\]

\[
\begin{align*}
\text{Torque} & = 2370 \text{ lbf-ft} \\
18.5 & \text{ lbf-ft}
\end{align*}
\]

2. Install the 393B with the appropriate socket on the nut. Set the selector pawl on the 393B to tighten. Tighten the nut with a torque wrench until the input torque calculated in Step 1 is obtained.

3. Mark position of the socket with respect to the flange. Reverse the selector pawl and loosen the nut. Lock the 393B selector pawl in the neutral position and attach the 3900A to the 393B. DO NOT remove the socket from the nut unless its location with respect to the mark on the flange is noted.

4. Refer to the “Air Pressure vs Torque” graph for the 3900A and, since this graph is only a guide due to the number of variables associated with each joint, select an air pressure which will result in a torque equal to approximately 80 percent of the value determined in Step 1.

\[
128 \times 80\% = 102 \text{ lbf-ft}
\]

From the graph the pressure for 102 lbf-ft torque is 27.5 psig.

5. With the 3900A and the 393B free running, set the air pressure regulator to 27.5 psig.
Operating Instructions

6. Reinstall the unit and socket on the nut and tighten the nut until the air motor stalls.

7. Compare the marks previously made on the socket and flange (Step 3). If the marks are aligned with each other the air pressure for 2370 lbf-ft is correctly set. If the marks do not match determine the air pressure for the next trial based on the results of the first trial. For example, if the torque obtained in Step 5 is slightly lower than the predicted torque, increase the air pressure slightly, and loosen the nut.

8. Once the desired pressure has been obtained all of the remaining nuts may be tightened in rapid succession.

Repeat Steps 6 and 7. If the torque is slightly more than predicted then loosen the nut and decrease the air pressure slightly and repeat Steps 6 and 7 until the desired torque is reached.

IMPORTANT: Because of variations in air supply systems, fasteners and fastener lubrication, settings from the chart are approximate and should be confirmed in the actual application.

3900A PRESSURE VS. TORQUE

INPUT PRESSURE (psig)

OUTPUT TORQUE (lbf-ft)