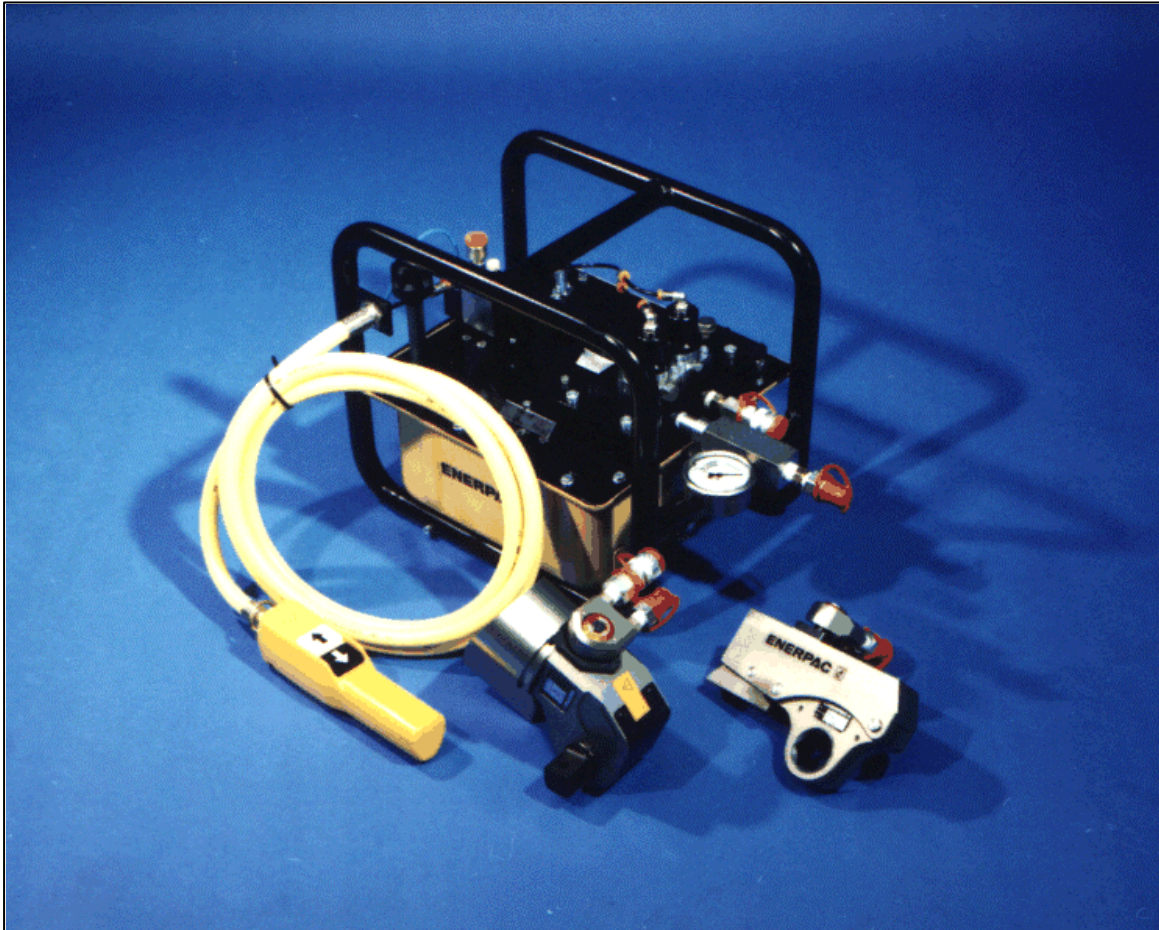


Topside Torque Wrench System



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Introduction

The Torque Wrench system has been developed for use on topside applications where speed reliability and simple operation are essential. They are hydraulically operated tools being connected to a hydraulic pump via hydraulic hose assembly.

The tensioning tool comprises of either a Torque Wrench & Socket on standard square drive models or a Torque Wrench Drive Unit and Cassette Head on Low Profile Models. In each case the Socket or Cassette Head is located over the bolts nut. Pressure is applied to the wrench via the pump unit and generates a torsional force. This force is transmitted through the socket or Cassette Head and turns the nut down the helix of the thread, which in turn creates a clamping force on the joint.

Safety Notes

The Torque Wrench system must only be used for the purpose for which it is intended. That is the tightening and loosening of stud assemblies. The tools should not be used for any other purpose or modified or adapted to other application without prior consultation with B & A Hydraulics. The following safety notes are not an exhaustive list but serve to provide a framework for considerations to be observed whilst using the equipment.

1. Read the operating instruction manual
2. Always wear personal protective equipment - eye protection is essential
3. Never position your hand under the wrench's reaction arm
4. Never position yourself in-line with a bolt being torqued
5. Never exceed the equipment's stated maximum working pressure
6. Do not pressurise UN-COUPLED male 'Quick Disconnect Couplings'.
7. Never attempt to tighten or loosen any part of the hydraulic system while it is still under pressure.
8. If in doubt - ASK.

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Preliminary System Checks

Prior to using any B & A Hydraulics Torquing Equipment ensure the following requirements have been met:

TORQUE WRENCH

The correct size of Torque Wrench has been selected for the application.

The correct size of Socket / Insert has been selected for the nut

The Torque wrench is in the correct mode for tightening / loosening

The Correct length of Stud is protruding from the bolt's nut.

HOSE WHIPS

The Hoses are in good condition and have not incurred any damage. Look for any crushing, cuts or kinks in the hose.

AIR DRIVEN PUMP

The pump unit reservoir is filled with hydraulic oil.

There is an air supply capable of delivering 100 - 120 PSI @ 56 C.F.M available.

The pump unit is in good condition and has not incurred any damage.

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Flange Checks

Prior to Bolt Tensioning ensure the following Flange Checks have been made.

Flanges

The Flanges to be tensioned are the correct mating flanges

Both Flanges are free from damage

Both Flange faces are clean and free from debris

Gaskets

The correct Gasket has been selected

The Gasket is free from damage

Stud Bolts

The correct number and size of Stud Bolts for the flange have been selected

Each Stud Bolt has one drilled and one plain nut.

Both the Stud Bolts and nuts are free from damage.

On completion of the above checks the flanges are ready for assembly.

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Flange Assembly

Pull the flanges together using B & A Hydraulics Hydraulic Flange Pullers until there is a gap of approximately 2 1/2 - 3 inches.

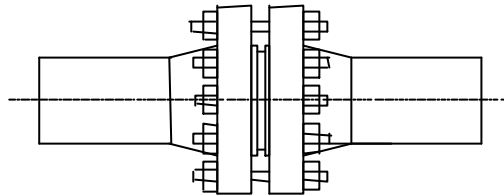
Insert the Gasket

Continue to pull up the flanges using the Flange Pullers until the flanges are firmly together and the gasket seated.

Insert the stud bolts in 4 opposite facing bolt holes i.e. at 12, 3, 6 & 9 o'clock, and hand tighten the nuts.

Remove the Flange Pulling Equipment.

Insert the remaining bolts as per diagram below.



Ensure the stud bolts do not have extra length protruding as this will not allow the Sockets to be fitted. If long stud protrusion is unavoidable then use a low profile tool & cassette head.

Perform a 'snugging pass' on all bolts as above.

Check the Flange gap is even by taking measurements at 12, 3, 6 & 9 o'clock positions.

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System Set-Up

Hydraulic Pump Unit - Setting the Stall Pressure:

Connect air supply line to the air line connection (1/2" NPT female).

Ensure the Torque Wrench is connected to the pump via the hose assembly.

Lift the knob on the air pressure regulator and ensure the air pressure is approximately 100 - 120 PSI (turn adjusting knob clockwise to increase pressure.)

Depress and hold the Advance button (top). The wrench will advance and pressure will build up on the pressure gauge.

Note pressure on the gauge and release the advance button. The wrench will automatically re-stroke. Adjust the pump to the required pressure by turning the Pressure Adjustment Valve Screw clockwise to increase pressure or anti clockwise to decrease pressure. (The pressure adjustment screw is located to the side of the pump on top of the reservoir)

Depress the Advance button (top) and the Pressure Release Button (bottom) simultaneously to release the hydraulic pressure.

Stop the Air to the pump unit and repeatedly depress the Pressure Release button to dissipate the air within the pump.

The system unit is now ready for use.

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System Operation

Make-up

Ensure the pump is set for the to the operating pressure for Pass 1

Depress and hold the Advance button - this will advance the wrench and tighten the nut.

Once the torque wrench is fully advanced (the socket stops turning), release the Advance button and the wrench will automatically re-stroke.

Once the wrench is fully re-stroked. Repeat this procedure until the nut is fully tightened.

Repeat this procedure on each nut (following the star pattern see Notes on Torquing Procedure).

Once all the nuts have been tightened, release the pressure and set the pump to stall at the 2nd Pass pressure.

Repeat the above procedure for passes 2, 3 & 4.

On completion stop the pump and release the pressure.

Disconnect the Torque Wrench from the hoses , disconnect the Hoses from the Pump.

Break Out

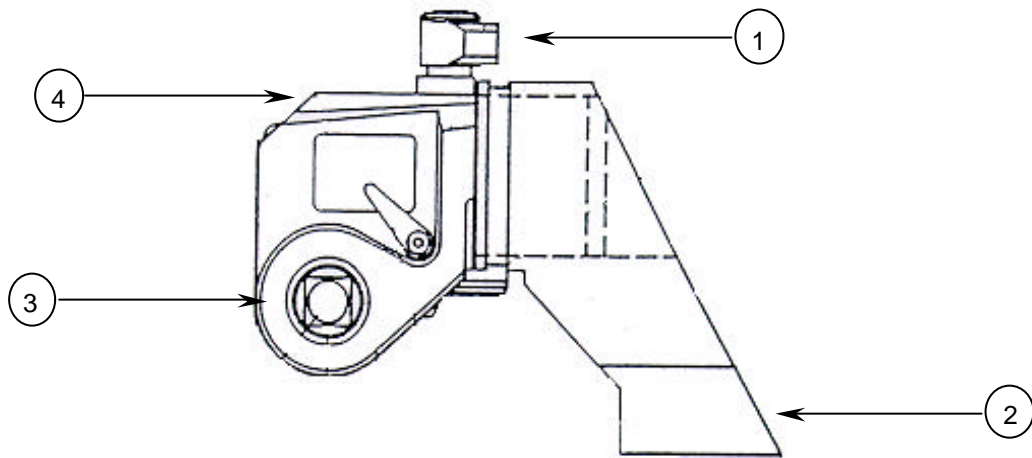
To break out nuts set the wrench to loosening position.

Set the pump to stall at the break out pressure.

The same procedure is used other than only 1 pass is usually required.

Appendix 1 - Torque Wrench

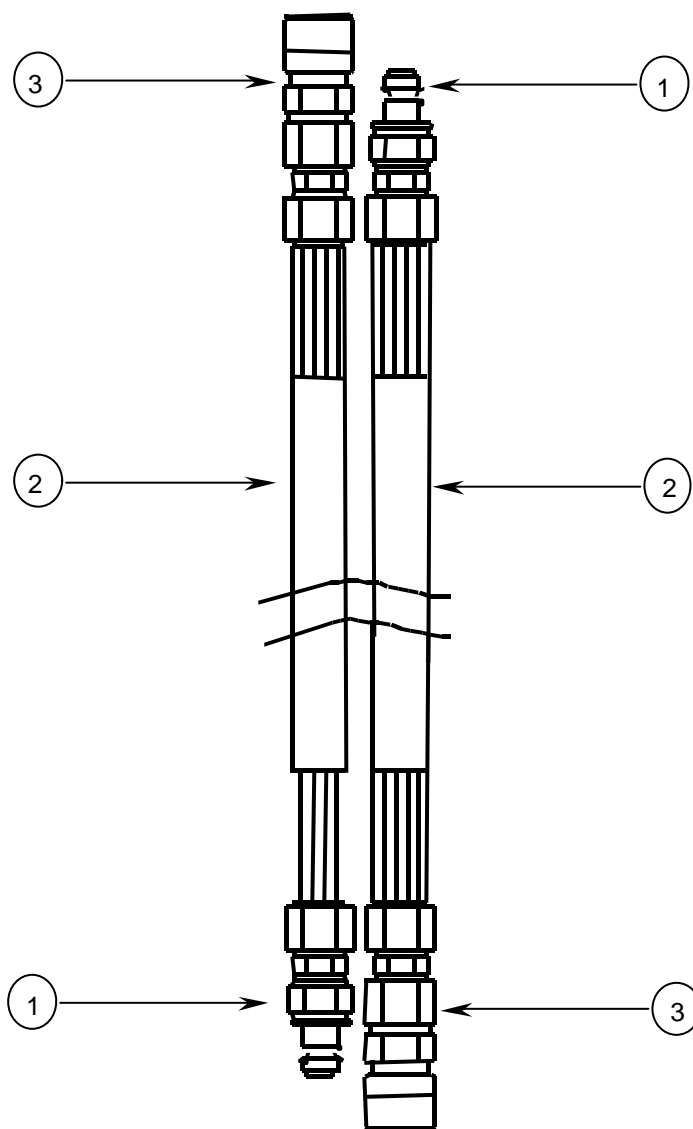
| Item No | Description | Qty |
|---------|---|-----|
| 1 | Uni- Swivel Coupling Connector c/w Q/D Fittings | 1 |
| 2 | 360 Degree rotational Reaction Arm | 1 |
| 3 | Square Drive or Low Profile Head Attachment | 2 |
| 4 | Tool Body | 1 |



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Appendix 2 - Twin Hose Assembly

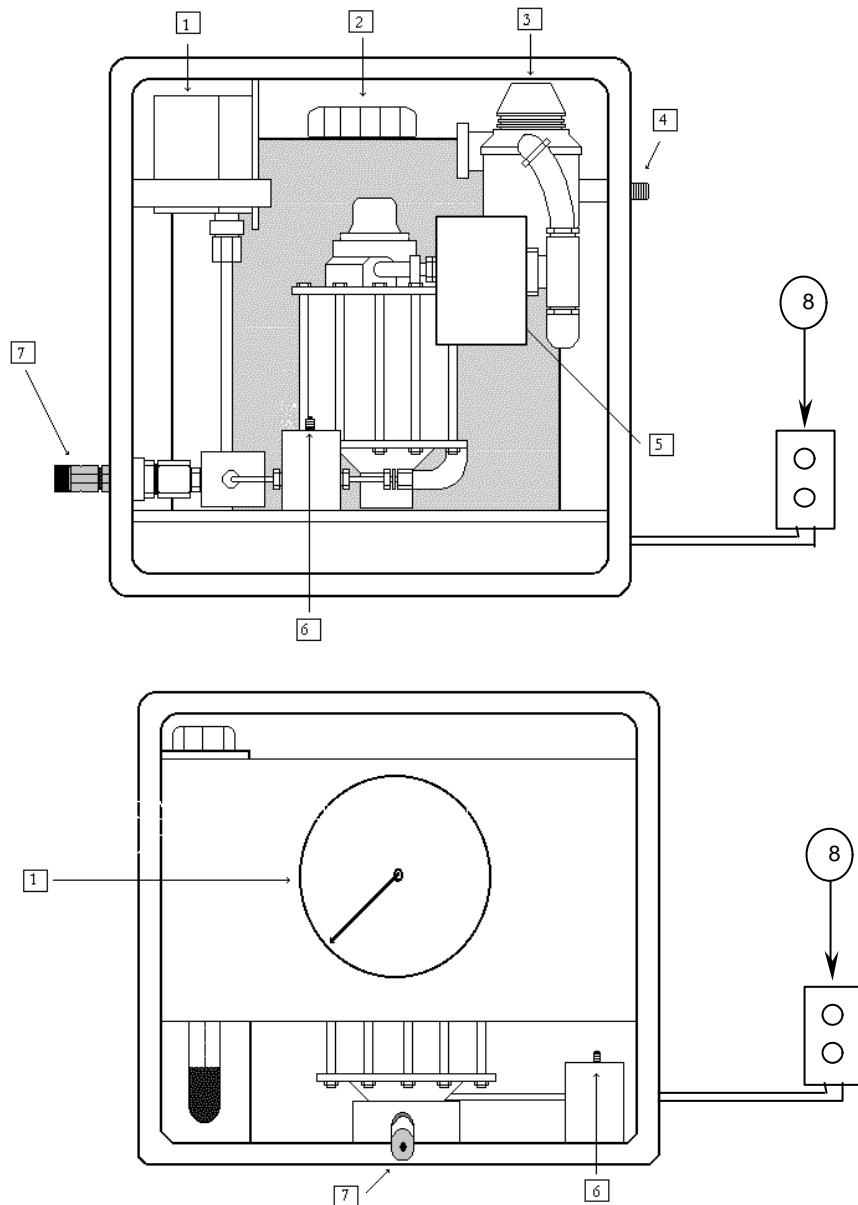
| Item No | Description | Qty |
|---------|----------------------------------|-----|
| 1 | Male Q/D Coupling Assembly | 2 |
| 2 | Twinned Hose 10,000 Psi MWP Hose | 2 |
| 3 | Female Q/D Coupling Assembly | 2 |



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Appendix 3 - Pump Unit

| Item No | Description | Qty |
|---------|---|-----|
| 1 | Pressure Gauge | 1 |
| 2 | Pump Reservoir Filler | 1 |
| 3 | Air Pressure Regulator | 1 |
| 4 | Air Line Connection (1/2" NPT female) | 1 |
| 5 | Solenoid Valve System | 1 |
| 6 | Hydraulic Release Valve | 1 |
| 7 | Coupling Manifold | 1 |
| 8 | Pendant Control Valve | 1 |



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