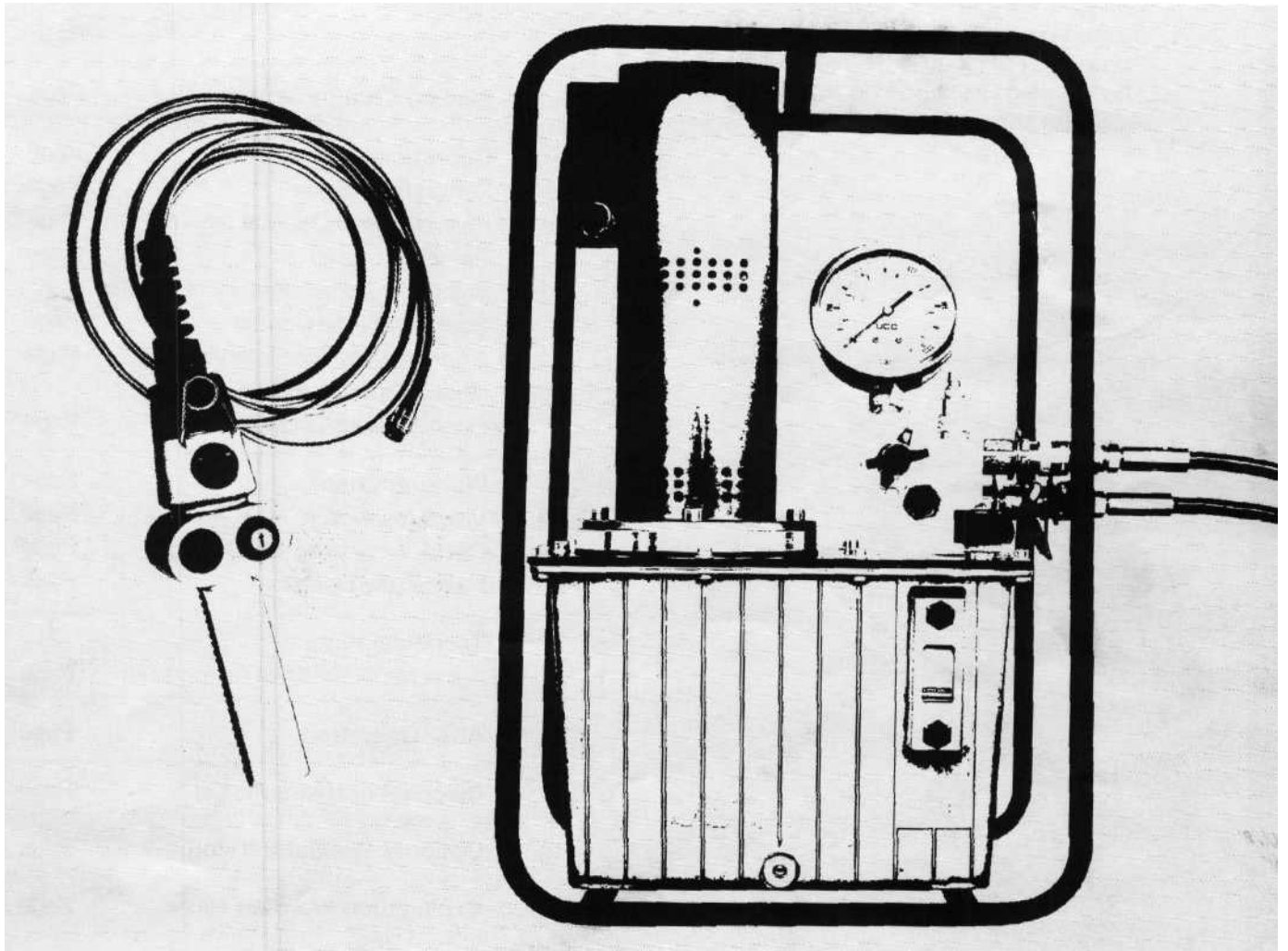
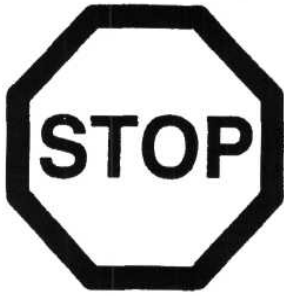


TITAN
TECHNOLOGIES INTERNATIONAL, INC.

Operation Manual WT-P-DUO & WT-PC1



**Electrical Hydraulic
Pumps**



Read this Manual carefully before putting **your Titan WT-P-DUO / WT-PC1** into operation. The Warning Hints (See Page 11) must strictly be adhered to.

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A Initial Control and Packaging

IMPORTANT!



Visually inspect all components for shipping damage. If any damage is found, notify the carrier immediately. All returns must be in original packaging in order to avoid damage. Retain packaging.

B General Description of the Titan WT-P-Duo / WT-PC1 - Electrical-Hydraulic Pump

The frequency controlled motor produces a corresponding hydraulic pressure using a radial piston pump. The pressure is then being transferred to the user via hydraulic hoses. This hydraulic pump is especially designed for hydraulic torque wrenches, which generate appropriate torque by means of a hydraulic cylinder / piston and a lever.

1. Technical Data

WT-P-DUO

Driving power : electrical
Voltage : 100-253 V/45-66 Hz
Nominal sensitivity : 2 kW maximum
Oil Flow : low pressure
10,5l/min at 0-100bar
: high pressure
1,1 l/min at 100-700 bar
Tank capacity : approx. 7 l
Weight incl. oil : approx. 26 kg
Measures : 330 x 250 x 530 mm
(L x W x H)

WT-PC1

Driving power : electrical
Voltage : 100-253 V/45-66 Hz
Nominal Sensitivity : 2 kW maximum
Oil Flow : low pressure
9,5 l/min at 80 -700 bar
high pressure
1,0 l/min at 80 - 700 bar
Tank capacity : approx. 7 l
Weight incl. oil : approx. 24,5 kg
Measures : 330 x 250 x 450 mm
(L x W x H)

Hydraulic oil : HLP 46 (additional hydraulic-oil grades resp. organic oil upon request)

NOTE!



Pre-torque-and reverse torque pressure are fixed, if desired, it can be adjusted by the manufacturer.

2.0 Safety Hints

2.1 Operation of the Equipment in Accordance with its Specified Use

The Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic

Pump may only be used to run Hydraulic Torque Wrenches which are operated with a twin line hydraulic system rated for 700 bar pressure with this tool.

No other pneumatic oil grades than those specified in this manual may be used. All hydraulic connection equipment must be rated for 700 bar pressure.

Any other use of equipment is not in accordance with the pump safety requirements.

2.2 Operators Responsibilities

The Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump

must not be operated or serviced unless the operator has read the Operation Manual and fully understands it. Minimum operator age is 18 years!

The equipment must not be operated or serviced unless the operator fully understands the purpose, consequences and procedures of each step. If you have any questions concerning safety precautions or fields of application, please consult your **Titan Rep.**

WARNING!



Inappropriate operation, operation of equipment not in accordance with its specified use or use by unauthorized personnel could result in injury to the operator or damage to the Hydraulic Pump and other material assets.

NOTE!



Operator takes responsibility for a third party.

WARNING!



The **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump** is not for use in explosive environments or in the presence of combustible materials e.g. gas, steam, dust etc. Please observe local laws and regulations when using the tool outdoors or in wet areas. Keep the **Titan – WT-P-Duo / WT-PC1 Electrical Hydraulic Pump** dry. In case of power failure or disturbances on the Hydraulic Pump, the cables or the electrical connections turn off the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump** immediately.

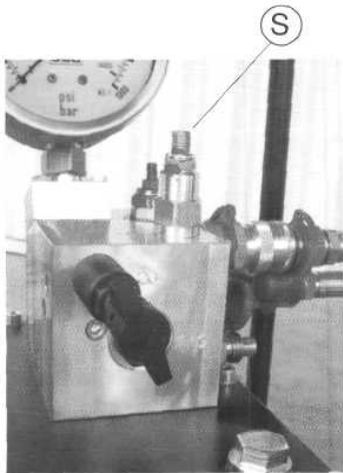
NOTE!



Should the **Titan WT-P-Duo / WT-PC1 Electrical Hydraulic Pump** be used in damp atmospheres or when it rains, we recommend our **Electrical Hydraulic Pump** Version "IP 54". For further information please contact your **Titan - Partner**.



For safety reasons customers modifications of the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump** are strictly prohibited.



IMPORTANT

Distortion or loosening of screwings or setting screws (S) may considerably impair the functions of the Hydraulic Pump and result in damage to the tool. Screwings are secured with lacquer resp. sealed. If this equipment is serviced by any other than an authorized person, this guarantee is rendered null and void.

2.3 Possible Risks

WARNING!



Make certain hydraulic couplings are coupled safe and correctly in order to avoid escaping oil under pressure. Keep hydraulic couplings clean. Do not damage connection fittings.

IMPORTANT!

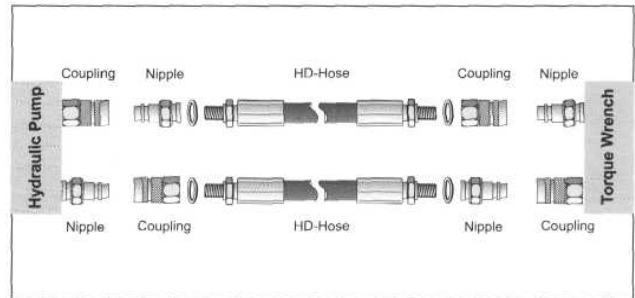


Do not extend hydraulic hoses without intermediate coupling.

WARNING!



Reversing of the couplers for the purpose of extension results in reverse flow and reverse control of the hydraulic tool. Non-compliance with these regulations may lead to faulty functions and damage to the tool or may result in major injuries to the operator. (The pole side of the hydraulic cylinder is not equipped for this load.)



CAUTION!



Leaking oil is harmful to the environment. Make sure to catch oil and dispose of it properly.

WARNING!



The **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump** may only be used if voltage is compatible with the electrical capacity of the pump. Make sure hydraulic connections are positioned correctly and safely. Hydraulic tool must meet the minimum safety requirements.

CAUTION!



Always disconnect power before maintaining electrical parts of the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump**. Repairs of electrical parts should only be performed by authorized personnel.

IMPORTANT!



In case of power failure or disturbances on the **Titan WT-P-Duo / WT-PC1-Electrical Hydraulic Pump** turn off engine immediately (see Page 7, Drwg. 2) and put down hydraulic torque wrench safely. Position the **Titan WT-P-Duo / WT-PC1-Electrical Hydraulic Pump** correctly so that the tool can not be tilted. If necessary secure tool when operating in a certain height.

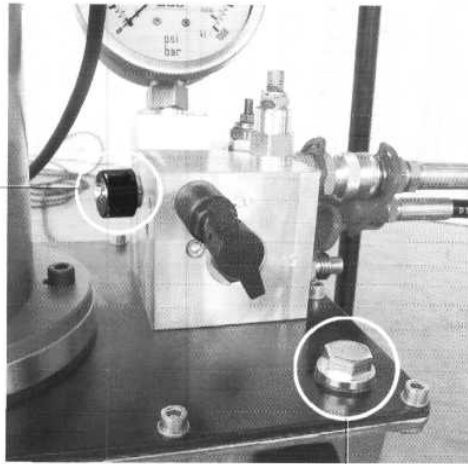
3. Emission

Continuous sound pressure level according to DIN 45635 is below 75 dB(A). Vibration of the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump** is below 2,5 m/s.

4. Placing Tool in Service



Loosen transport safety screw (A) at the tank and replace it with the ventilation screwing (B) at the valve block, before placing the tool into service (Drwg.1).



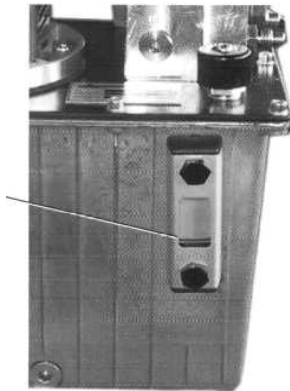
Drwg. 1

NOTE!

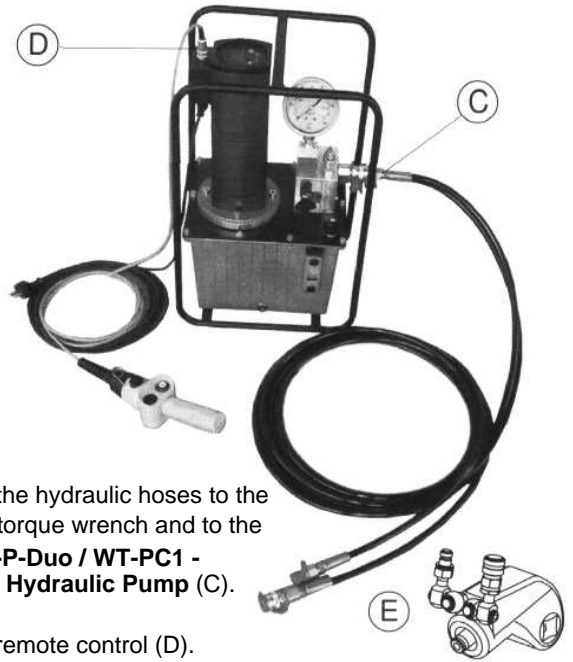


Check oil level in the showcase. The red mark indicates the minimum and must not be fall below.

If required the Hydraulic Oil (Oil grades see Point 1 Technical Data) can be refilled after removing the screwing (A).



Regularly check **high pressure hoses and all couplings** as well as fittings and connections before setting the tool into operation. Make certain hydraulic couplings are free of dirt before operating the tool. Particles of dirt within the hydraulic system may result in disturbances, faulty functions and break down of motor. Make certain that hydraulic hoses are placed in large radius in order to avoid injuries. The hoses may not be bent, treaded or damaged.



1. Attach the hydraulic hoses to the hydraulic torque wrench and to the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump (C)**.

2. Attach remote control (D). Make sure that all couplings are fully engaged and safe to ensure that the hydraulic oil can flow.

NOTE!



Hydraulic hoses must be equipped in pairs with alternating couplers and nipples, in order to regulate pre- (pressure) and reverse running distinctively to the piston or to the pole side of the hydraulic cylinder (also see Point 8. Technical Hints, Page 9).

WARNING!

Interrupting the back of the cables leads to a high pressure at the pole side of the hydraulic cylinder which may result in damage to the tool or major injuries to the operator.

NOTE!



Please observe local laws and regulations when drawing up **screw connections**.



When using an **Hydraulic Torque Wrench** you must adhere to the corresponding **operation manual**.

ATTENTION!



Before placing the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump** into service check working order using a pressure of max. 100 bar.

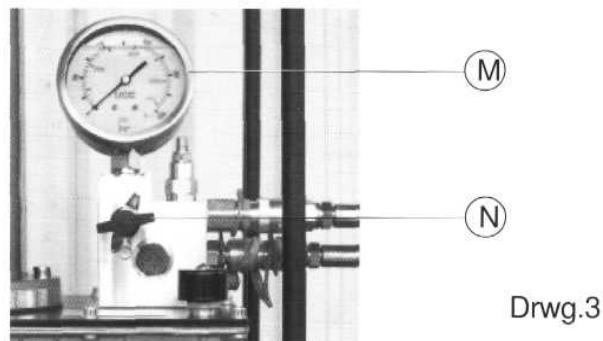
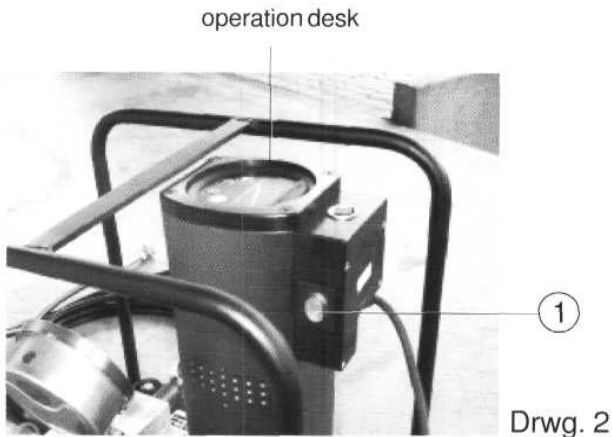
5. Operation

Switching on the tool

By pressing the ON/OFF button (1) (Drwg. 2) the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump** is switched on or off -

ON = green light is flashing = checks working order.

OFF = green light is not flashing



5.1 Setting the Torque

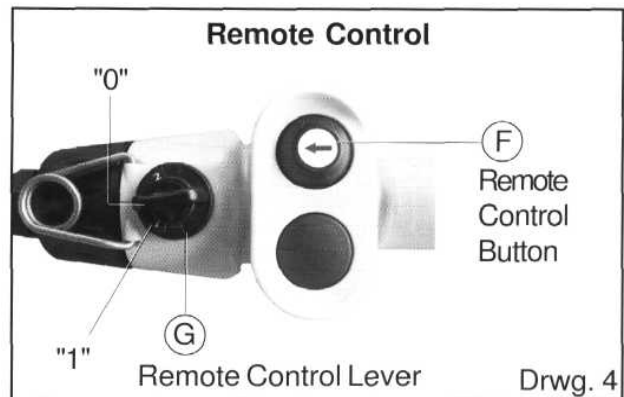
Use the enclosed torque chart to determine the necessary pressure of the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump**.

Turn on the motor (1), press remote control button (F) and hold. Simultaneously adjust spindle (N) until desired pressure is displayed on the gauge (M). Depress remote control button (F), block spindle (N) and thus secure it against independent twisting (Drwg 2-4).

5.2. Possibilities to Operate the Tool

You may choose between 3 possibilities to operate the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump**:

- Manual operation with remote control button (F) (Drwg. 4) as well as (G) -switch setting "0", (Drwg. 4)
- Automatic adjustment via time control with remote control (G) -switch setting "1", (Drwg. 4)
- **Emergency operation** = manual operation on operation desk of motor (Drwg. 2 and Drwg. 5, see Page 8)



5.2.1 Manual Operation with Remote Control

Turn remote control lever (G) to "0". After turning on the motor and determining the desired torque, using the enclosed torque chart, a rotating movement of hydraulic torque drive is reached by pressing and loosening the remote control button (F), resulting in the corresponding torque. Keep pressing remote control button (F) until the drive of hydraulic wrench stops turning and preset pressure is reached. Afterwards press remote control button (F) once more, until pre-set pressure is reached in order to make sure that final torque is achieved at screw connection and hydraulic torque wrench does not stop until it reaches the stop of hydraulic piston (Drwg. 4). Please note display of gauge (6) on the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump** to make sure pre-set pressure has been obtained (Drwg. 3).

When loosening screw connections repeatedly it will be loosened completely.

ATTENTION!

Adjust hydraulic torque wrench according to required torque **LOOSENING or TIGHTENING** of screwed connection. (See Operation Manual of the corresponding Hydraulic Torque Wrench.)

ATTENTION!

If remote control is not activated, the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump** turns off automatically after approx. 3-5 sec. Restart the tool by pressing the remote control button (F) (Drwg. 4).

5.5.2 Automatic Adjustment with Remote Control via Time Control

After starting the motor and adjusting corresponding pressure according to enclosed torque chart, the function "AUTOMATIC" is displayed by switching over the remote control lever (G) to "1" (Drwg. 4). This automatic control is based on a time control, whereas 19 different time intervals correspond to different sizes of hydraulic torque wrenches. Assignment to the corresponding type of hydraulic tool can be made manually on the spot. Thus 19 different sizes of hydraulic torque wrenches can be controlled automatically.

Experience shows that correct time regulation is usually carried out when idling and should be adjusted to corresponding size of hydraulic torque wrench until the sequences of the individual cycles run optimized. (Adjustment see Chapter 5.2.2.1.).

This AUTOMATIC adjustment should be kept activated, until drive of hydraulic tool stops turning, provided pressure on adjusted value or adjusted pressure is set up correctly.

Set remote control lever (G) to starting position "0" (Drwg. 4).

Press remote control button repeatedly (F) (Drwg. 4) until pre-set pressure is reached, in order to make certain that torque has been transferred to screw connection and hydraulic torque wrench does not stop until it reaches the stop of hydraulic piston.

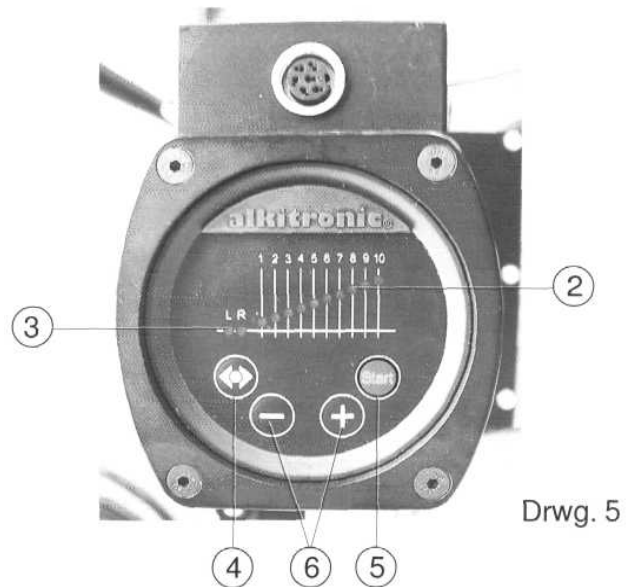
NOTE!



Small hydraulic torque wrench sizes correspond to a short hydraulic cycle and thus a short time interval = Position 1 at operation desk (2) (Drwg. 5). Large hydraulic tool sizes correspond more likely to a large hydraulic cycle, as more hydraulic oil has to be extracted through the larger hydraulic cylinder whereas it corresponds to a longer time interval = Position 10 at operation desk (2) (Drwg. 5). Usually high torques or high pressure on hydraulic torque wrenches require higher time intervals. These corresponding time intervals are easily adjustable on the spot. (See Chapter 5.2.2.1.)

5.2.2.1 Adjustment of Different Time Intervals

By pressing remote control button + or - (6) adjustment, displayed as red light-emitting diodes, can be adjusted upwards or downwards (Drwg. 5). An intermediate value is displayed when two light-emitting diodes are shown simultaneously.



5.2.3 Emergency Operation = Manual Operation on Operation Desk of Motor

After turning on the motor and determining corresponding pressure according to enclosed torque chart, you may also finish screwing (LOOSENING or TIGHTENING) with the EMERGENCY REMOTE CONTROL in case the remote control is out of order.

Rotation of the motor and resulting flow of hydraulic pump are achieved by pressing the remote control button (4).

This is shown through light-emitting diodes "L" (left) and "R" (right) (3).

By pressing the "START" button (5) the motor is being started - hydraulic cylinder of hydraulic torque wrench is extended - remote control button (4) reverses flow. Pressing remote control button (5) again hydraulic cylinder is retracted (Drwg.5).

You may repeat this procedure until desired and pre-set pressure or resulting torque of screw connection is reached or screwing connection is being loosened.

6. Working Check

6.1 Visual Inspection

Check connections see Drwg. 6 - correct connection scheme

6.2 Check for Sealing and Soiling



Regularly check high pressure hoses and all couplings as well as fittings and connections before setting the tool into operation.

Make certain hydraulic couplings are free of dirt before operating the tool.

Particles of dirt within the hydraulic system may result in disturbances, faulty functions and break down of motor. Faulty parts must be replaced by authorized personnel only.

6.3 Meeting the Deadline

In order to insure precise torque, check accuracy of manometer (M) (Drwg. 3) at least once a year.



Provided the **Titan WT-P-Duo / WT-PC1 - Electrical Hydraulic Pump** is used frequently we recommend an oil change once a year (see Technical Data: recommended oil grades).

NOTE!



For safety reasons replace all hydraulic hoses regularly every 5 years. According to the legal regulations maintenance of the **Titan WT-P-Duo / WT-PC1 - Electrical Hydraulic Pump** on a regular basis is essential. Maintenance should be made only by authorized personnel. Adhere to this Operation Manual and follow the instructions when using a hydraulic tool.

7. Technical Hints

ATTENTION!



An automatic switch off of temperature is integrated in the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump** in order to avoid a **rise in temperature**.

In case the Hydraulic Pump has turned off due to high temperature (**all light-emitting diodes on operation desk are flashing**, Drwg. 5), the tool is ready for use again after a short period of cooling (LEDs have stopped flashing).

8. After Operation



After finishing operation with the **Titan WT-P-Duo / WT-PC1 -Electrical Hydraulic Pump** replace transport safety screw with the ventilation screwing in order to avoid leaking oil (See Page 6, Drwg. 1). Keep tool clean and dry after each operation process.

9. Disposal of Hydraulic Oil

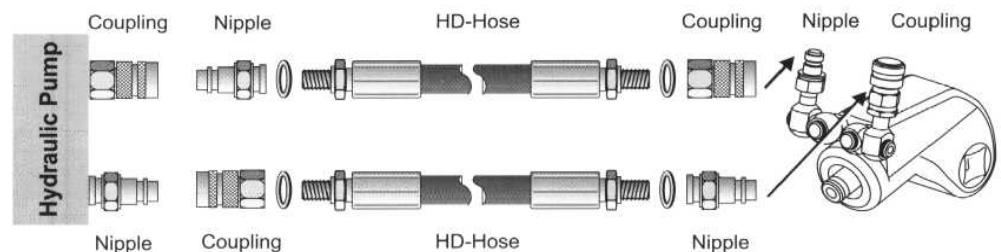
WARNING!



Used hydraulic oil is to be disposed properly. It must not get into the earth or into the sewerage system under any circumstances. Before opening the outlet screw make sure a suitable oil pan is provided. Spilled oil is to be cleaned up immediately.

Correct Connection Scheme:

- Hydraulic Pump
- HD-Hose
- Hydraulic Wrench



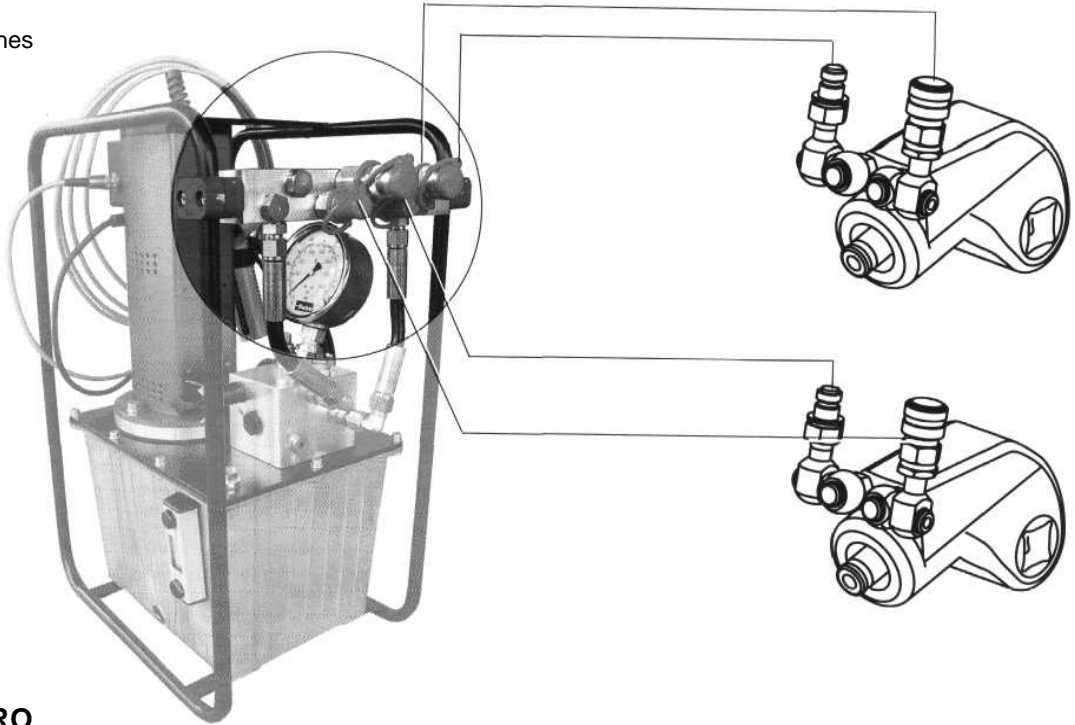
Drwg. 6

10. Optional Special Versions

(All three operating modes like the standardized EHP are also possible with the versions "DUO" and "QUATTRO")

WT-P-DUO

For simultaneous operation of two Hydraulic Wrenches



WT-P-QUATTRO

For simultaneous operation up to four Hydraulic Wrenches

