



PLARAD®

Pneumatic Nutsetter

GB

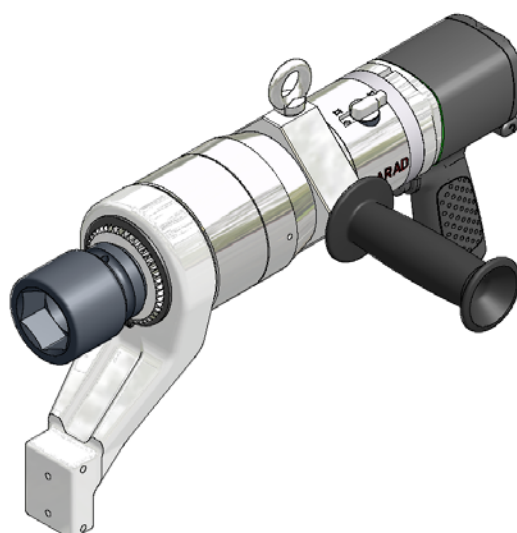
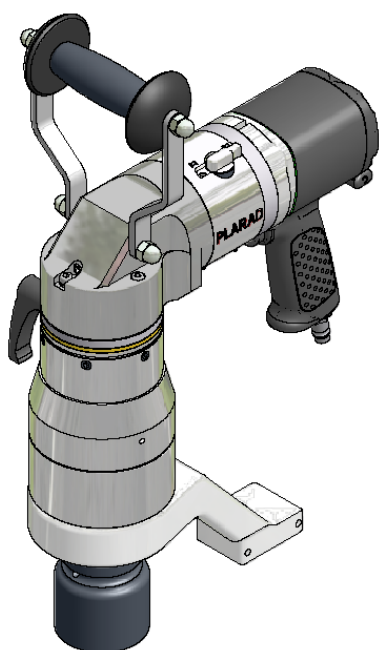
DPA / DPA-W

DPM / DPM-W

Translation of the original

Operating Instructions

Keep for future reference



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1. MANUFACTURER

Maschinenfabrik Wagner GmbH & Co. KG
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2. NOTES

2.1. CE Mark

The products bear the CE Marking. The declaration of conformity certifies that the products meet the safety requirements set forth in the directives of the European Union.

2.2. Directives

The product meets the requirements of the EU Machinery Directive 2006/42/EC.

2.3. Notes Concerning the Operating Instructions

These operating instructions contain important notes concerning operation, operating site and connection of the unit. Be sure to read these notes carefully before operating the unit.

This will help protect you and will provide access to important information concerning proper connection, use and safety of the unit.

The operating instructions are part of the unit. Keep them readily available near the unit. Proper adherence to the operating instructions is a precondition for intended use and proper operation. When selling the unit, be sure to pass the operating instructions on to the new owner.

Please note that the product supplied may differ in some details from the illustrations and the technical data presented in these operating instructions.

The information presented in these operating instructions corresponds to the status at the date of printing. We reserve the right to make amendments at any time without prior notice.

2.4. Notes Concerning the Workplace

Safety of the operator and trouble-free operation are guaranteed only if original PLARAD components are employed. This is especially true of unit parts and spare parts.

If other components are used, Maschinenfabrik Wagner cannot accept any liability for safe operation and reliable function.

2.5. Basic Safety Notes

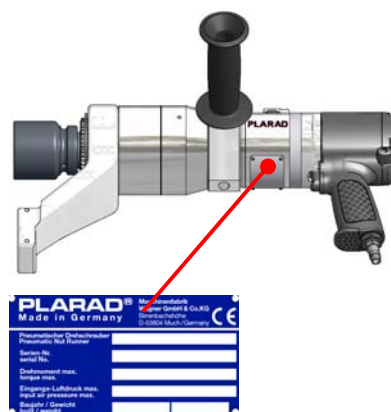
When operating the unit, be sure to observe locally applicable laws and regulations.

Before operating the unit, check that it is functioning safely and is in proper condition. The operator must be familiar with the operation of the unit. Before taking the unit into service check the unit and the hoses for damages. Do not continue using defective units or units with defective hoses or couplings! Replace defective hoses and connections before continuing to use the unit.

Before commencing with repair or maintenance work, be sure to separate the nutsetter from the compressed air supply.

2.6. Product Identification

A nameplate identifies the nutsetter.



2.7. Symbols and Warnings



CE Mark



Observe assembly and operating instructions



Use ear protection



Wear eye protection



Use foot protection



Warning concerning a crushing hazard



Warning of hazards. The type of hazard is indicated by the text next to the symbol



Service tag with note concerning next check-up

3. PRODUCT INFORMATION

3.1. Process Description

The nutsetter allows tightening of screwed joints. The tightening torque is controlled.

Type DPA, optionally DPA-W

The nutsetter is equipped with a two-stage automatic and air-pressure dependent torque setting. It operates with right and left-hand rotation. When idling and at low torque, it operates in high-gear with high speed. On smoothly rotating joints, the nut can thus be turned on or off at six times the load speed. As soon as the resistance increases, however, the two-stage automatic controller switches over to the load-gear at low speed and high torque.

When the set torque is reached, the automatic switches off the nutsetter.

In case of hard-to-turn joints or during loosening, the two-stage automatic immediately switches the nutsetter to the load-gear with lower speed and high torque.

Once the bolt or nut has sufficiently loosened, you may switch the nutsetter over to the opposite direction of rotation and then back to the loosening direction. The gearbox switches over to high-gear.



Important!

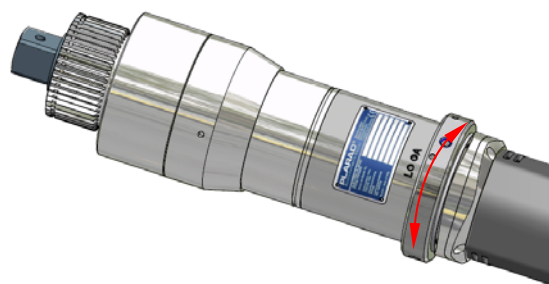
To ensure the nutsetter will not shut off prematurely during tightening, you may set the two-gear automatic to the load-gear. To do so, turn the knurled ring at the nutsetter DPA from "A" to "L". Switch over from "A" to "L" while the motor is running. You can use the shifting pin to do so. Push the shifting pin into the bore in the knurled ring and use the pin as a lever.

Position "A" - automatic operation:

The nutsetter automatically switches over from high-gear to load-gear and vice versa, as soon as the set torque is reached.

Position "L" – load-gear:

The nutsetter operates in the load gear permanently.



Type DPM, optionally DPM-W

The nutsetter is equipped with a manual-shift gearbox. Turning the knob to "1" engages high-gear. Turning the knob to "2" engages load-gear.

The DPM and DPM-W versions cover a larger torque range in position "1" (high-gear) than the DPA or DPA-W versions.

3.2. Intended Use

The Plarad nutsetter is a hand-guided tool and may be used exclusively for tightening and loosening of screwed joints. It must be used professionally exclusively.

Only use suitable sockets/bits meant for use with power tools to work on the joint.

If tools other than sockets for use with power tools are to be used, the manufacturer must inspect these and approve their use. Ensure proper, positive engagement of socket and bolt. Also ensure proper positive engagement of the drive square on the nutsetter and the connecting seat of the socket.

The nutsetter is suitable for indoor and outdoor operation at ambient temperatures of -20 to +50 °C. If these values cannot be adhered to, contact the manufacturer before starting operation.

The nutsetter must be operated exclusively at a compressed air supply that meets the conditions set forth in chapter 5

“Technical Data” and chapter 5.1 “Pneumatic Energy Supply”.

The nutsetter is not suitable for use as a continuously operating drive system!

Have assembly, readjustment, changes, extensions and repairs of the unit performed exclusively by Maschinenfabrik Wagner or service partners authorised by Maschinenfabrik Wagner. Exclusively use the unit as described in these operating instructions. This only will allow safe, reliable operation. Unauthorised alterations may cause unexpected hazard.

Safety of the operator and trouble-free operation are guaranteed only if original PLARAD components are employed. This is especially true of unit parts and spare parts.

If other components are used, Maschinenfabrik Wagner cannot accept any liability for safe operation and reliable function.

3.3. Improper Use

Any other use or use beyond these conditions is considered improper use. The risk lies solely with the owner/operator.

3.4. Applicable Additional Operating Instructions

- EC safety datasheet for MOBILTEMP SHC 100 (EXXONMOBIL)
- EC safety datasheet for Shell Cassida Fluid HF 32
- Ingersoll-Rand compressed-air impact nutsetter, type designation: 2130 XP or 2131 PSP

4. SCOPE OF DELIVERY

Operating instructions with EC Declaration of Conformity, torque table, optionally with test certificate

4.1. Accessories

- Retaining ring for reaction arm
- Locking clip for socket

5. TECHNICAL DATA

Performance range:	See enclosed torque table
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Maximum operating pressure:	8 bar
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Flow rate:	5.5 l/s at 4 bar
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Weight:	See nameplate
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Vibration emission:	ah < 2.5 m/s ²
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Sound pressure level:	73 to 95 dB(A) (depends on the flow pressure/torque setting)
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Grease:	MOBILTEMP SHC 100
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Mist oil:	Shell Cassida Fluid HF 32
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If you are using grease other than the one specified above, it must meet the specifications set forth in the applicable additional instructions.

The dimensions of the unit are indicated in the technical datasheets available from our website www.plarad.de.

All data is also applicable to the nutsetters DPA-W and DPM-W, equipped with an angle drive.

5.1. Pneumatic Energy Supply

A compressed air maintenance unit with water separator (filter), pressure regulator and oiler is required for operation of PLARAD DP nutsetters. Install the maintenance unit between compressed air supply and nutsetter in the orientation indicated by the arrow in the sketch below:

Filter → Pressure Regulator → Oiler

The length of the connecting hose must not exceed 3 m. The minimum interior diameter of the connecting hose is 13 mm. Longer and thinner hoses will negatively influence the flow pressure and flow rate. We recommend using a PLARAD maintenance unit, part number B17.010.1.01001.



Attention!

The nutsetter must be operated exclusively at a compressed air supply meeting the specifications in chapter 5 “Technical Data”.

5.2. Filter

Regularly drain the condensate, latest when the "Max. Level" mark at the water separator has been reached.

Clean the sintered filter as follows if it is contaminated:

1. Loosen the screws.
2. Remove the vessel.
3. Remove the fastening nut from the sintered filter.
4. Remove the sintered filter.
5. Wash the sintered filter in solvent or suitable washing solution, move it in the liquid and then dry it.
6. Re-install the sintered filter. Ensure correct sealing.

5.3. Pressure Regulator

Lightly grease the O-rings at the sealing cone and pin from time to time as described below:

1. Shut of the compressed air supply and depressurise the unit.
2. Unscrew the cap (knurled nut).
3. Remove the sealing cone.
4. Lightly grease the O-ring and pin.

Take the compressed air line into service as follows:

1. Before taking the compressed air supply line into service, depressurise the pressure regulator by turning out the control knob.
2. Turn the control knob back in until the pressure gauge of the pressure regulator indicates the desired operating pressure.

5.4. Oiler

The minimum operating pressure is 0.5 bar. During operation, adjust the oil volume at the dosing screw as needed. The number of drops dosed is visible at the sightglass.

A volume of 1 mm³ oil per 1 m³ compressed air is sufficient to keep wear low and reach the correct speed and optimum torque.

Recommended oil types:

- SHELL Cassida Fluid HF 32
- AVIA Avilup RSL 46
- BP Energol HPL 46
- ESSO Nuto H
- TEXACO Rando Oil HD C 38

Regularly check the level at the oiler and refill oil latest when the "Min.-Level" mark is reached. To refill oil proceed as follows:

1. Remove the plug screw.
2. Fill the vessel to the level mark and then close it.
3. You can refill oil during operation, it is not necessary to shut off the compressed air supply.

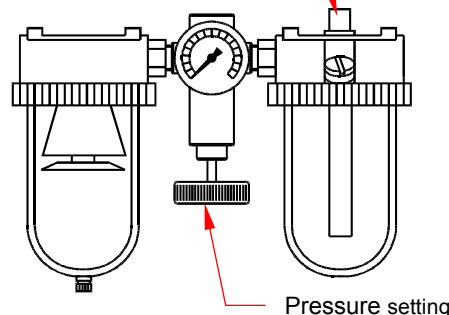


Attention!

Unsuitable cleaning agents damage the plastic vessel of the maintenance unit! Clean the plastic vessel exclusively with water, petroleum (paraffin oil) or cleaning benzene (gasoline for cleaning purposes).

- **Do not use petrol (gasoline fuel). Do not use cleaning agents containing benzol, acetone or tri-substances.**
- **Do not thin down or mix the oil with liquids which contain softeners, alcohol or Glysantin.**

Dosage of lubricating oil



6. FUNCTIONAL DESCRIPTION

6.1. Preparing the Nutsetter



Attention!

Only components, which do not negatively influence the function and safety of the nutsetter, may be used.

- If in doubt, contact the manufacturer.

1. Push the reaction arm over the serrated seat on the nutsetter.



2. Secure the reaction arm with a retaining ring.



3. Plug a socket (nut) onto the square drive adapter at the nutsetter and secure it. Exclusively use sockets for use with power tools.



4. Secure the socket.



Nutsetter with reaction arm and socket locked.

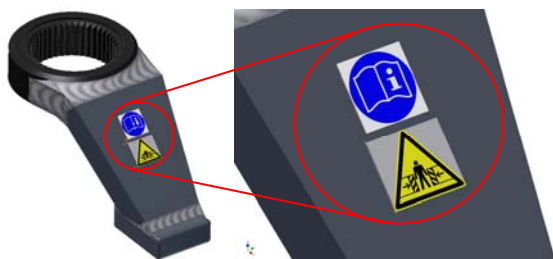




Warning!

Unlocked components or nutsetters can be ejected from the joint.

- **Secure the reaction arm and the socket (nut) prior to taking into service!**
- **Observe the notes and warnings on the nutsetter.**



6.2. Setting the Torque

Set the torque at the pressure regulator of the maintenance unit.

1. Turn the knob at the pressure regulator to change the air pressure and the torque.
2. Read the air pressure setting at the pressure gauge of the maintenance unit. Be sure the dynamic flow pressure and not the back pressure is regulated.

The values indicated in the torque tables supplied have been found on our test stand and relate to a joint of medium hardness to ISO 5393 at normal ambient temperature. As the temperature changes, the torque range may change.

3. Check the torque on the actual joint before tightening all bolts requiring identical settings. Best use a rotating electronic transducer to perform measurements. You may also use a certified torque wrench.
4. If required, please request our quotation for torque measuring equipment.



Important!

The nutsetter will only reach the set torque if an angle of at least 30° is available for tightening from start of tightening to shut-off.

6.3. Safety Joint

The safety joint between the drive motor and the gearbox allows turning the handle to any desired direction, even while the nutsetter is operating. The reactive force will not act on the hand.



6.4. Supporting the Reaction Torque

Torques can only be generated, if the reactive forces are compensated for. A reaction arm on the nutsetter serves this purpose.

A standard reaction arm is included with the nutsetter. The nutsetter may only be used with the reaction arm installed.




Warning!

A crushing hazard occurs between the reaction arm and its contact surface. The reaction arm attached to the nutsetter may cause severe injury by crushing.

- **Do not reach with your hands between reaction arm and contact surface.**
- **Do not place hands/feet near the contact surface.**

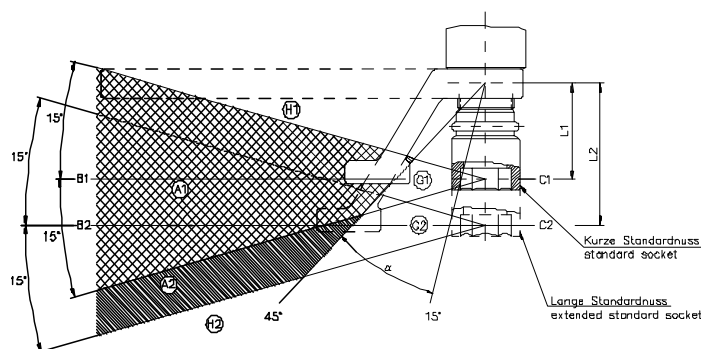
Exclusively use reaction arms and extensions approved by PLARAD.

On request, suitable reaction arms - also customised versions - can be supplied. Reaction arms and feet may not be altered beyond the approved dimensions indicated by us. If the reaction arm is altered, the performance table originally supplied may become invalid.

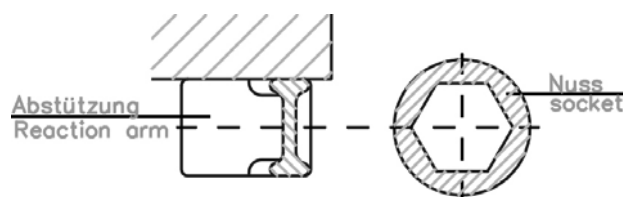
 **Warning!**

If the nutsetter is not sufficiently supported, it may slip off and be ejected from the joint.

- **The contact point at the joint must be such that the reaction arm cannot slip off the contact surface!**



Ensure full surface contact of the reaction arm!



The location of the support surface depends on the respective length "L1 and L2" of the sockets. The ideal contact line is on the line "B1 - C1" or "B2 - C2". In this area, the force acting on the reaction arm is lowest.

If the contact point is outside the angle of $\pm 15^\circ$ (area "H1 and H2"), the sockets may wear quickly. The torque accuracy decreases.

If the contact point lies within the angle “ α ” in the range “G1 and G2”, the drive square can be overloaded and the reaction arm may be deformed.

Warning!

If the reaction arm contacts the work only in one spot or at the edges of the foot, the force acting on the nutsetter will be excessive. This may cause the reaction arm to slip off the bolt. Tightening accessories may break and the nutsetter be ejected from the joint.

- **Do not burden the reaction arm at its corners!**

To ensure the drive square, the bearing and the reaction arm of the nutsetter are not overloaded, the contact point at the reaction arm must be in the dashed area "A1 or A2" (see figure).

7. OPERATION



Warning!

Hazard due to dropping of the nutsetter!



- **Lift larger nutsetters with suitable lifting equipment only.**
- **When working overhead, secure the nutsetter; operators must wear head protection and safety shoes.**



Warning!

Impaired hearing due to noise.

- **Depending on the nutsetter settings and the noise exposition of the operator wear well-adapted personal hearing protectors.**
- **The owner of the nutsetter is responsible for correct selection and provision of personal protective equipment.**



Attention!

Check that the torque table for the unit is available. The serial number of the correct torque table is indicated on the unit's nameplate and in the "Technical Data-sheet for Nutsetter".

When setting the torque, be sure not to exceed the maximum admissible torques for the nutsetter and the accessories. The maximum admissible torque is indicated on the nutsetter and the accessories.



Attention!

Before, during and after operating the nutsetter, please observe the table "Checklist for operation" on page 11.

7.1. Checklist for Operation

Before operation	During operation	After operation
<p>Visual inspection:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Approved consumables and accessories <input type="checkbox"/> All parts correctly assembled or connected <p>Functional check-up:</p> <ul style="list-style-type: none"> <input type="checkbox"/> All moving parts okay <input type="checkbox"/> Socket and reaction arm approved for the application <input type="checkbox"/> Supply lines and couplings ready to operate <input type="checkbox"/> No leakage at the drive square <input type="checkbox"/> No leakage at the connecting points of drive, intermediate transmission and planetary gear <input type="checkbox"/> Sense of rotation correct <input type="checkbox"/> Functional inspection of maintenance unit, compressed air oiler, filter and pressure regulator 	<p>Screwed joint:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Torque set correctly (see chapter 6.2) <input type="checkbox"/> Socket approved for the application (admissible torque, size) <p>Application</p> <ul style="list-style-type: none"> <input type="checkbox"/> Contact point strong enough <input type="checkbox"/> Positive engagement of reaction arm and contact point (see chapter 6.4) 	<p>Visual inspection:</p> <ul style="list-style-type: none"> <input type="checkbox"/> No damage of screwed joint and contact point <input type="checkbox"/> No damage of nutsetter and accessories <p>Functional check-up:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Upon completion of the work flush the air motor with thin-bodied oil or ensure corrosion protection by other measures <input type="checkbox"/> Clean nutsetter <input type="checkbox"/> All moving parts okay <input type="checkbox"/> Socket and reaction arm not damaged <input type="checkbox"/> Supply lines and couplings ready to operate <input type="checkbox"/> No leakage at the drive square <input type="checkbox"/> No leakage at the connecting points of drive, intermediate transmission and planetary gear

7.2. Bolting Process

1. Push the reaction arm over the serrated seat on the nutsetter and secure it.
2. Plug a socket (nut) onto the square drive adapter at the nutsetter and secure it. Use only sockets suitable for power tools!
3. Connect the nutsetter to the compressed air supply via a compressed air maintenance unit.
4. Select the sense of rotation at the hand lever.
5. Press the start button and set the flow pressure at the compressed air maintenance unit so that the desired torque can be reached as per the nutsetter's torque table.
6. Apply the nutsetter with socket to the bolt head or nut to be tightened.
7. Attach the reaction arm to the contact point in opposite direction to the sense of rotation of the nutsetter. Lock the angle drive of a DPA-W/DPM-W nutsetter to the planetary gear in this position by closing the clamping lever (see figure below).



Clamping lever

8. Press the start button to start the nutsetter.



Warning!

During the work, components or the screwed joint may tear off. The nutsetter may then be ejected from the joint.

- **Load nutsetters and accessories only within the admissible torque limits. The admissible torques for standard operating conditions are indicated on the units and the accessories.**

7.3. Tightening



Warning!

If the nutsetter is not sufficiently supported, it may slip off and be ejected from the joint.

- **The contact point at the joint must be such that the reaction arm cannot slip off the contact surface!**

Automatic nutsetter DPA, optionally DPA-W

1. Set the sense of rotation at the selector switch or control valve.
2. Press the start button and hold it pressed until the nutsetter shuts off automatically.
3. If required, check the torque reached using suitable equipment.



Attention!

Uncontrolled increase of torque by multiple tightening. The bolt or the accessories may break and then be ejected.

- **When the set torque has been reached and the nutsetter has shut off automatically, do not start it once more on the same joint.**

Manual nutsetter DPM, optionally DPM-W

1. Set the sense of rotation at the selector switch or control valve.
2. Select the desired gear at the knob: "1" = high-gear; "2" = load-gear. Begin tightening bolts in gear "1".
3. Press the start button and hold it pressed until the nutsetter shuts off automatically.
4. Upon standstill in gear "1" switch over to gear "2", to achieve higher torque.
5. If required, check the torque reached using suitable equipment.



Important!

During operation you may switch over from gear "1" to gear "2"; this will not do any damage.

**Attention!**

Uncontrolled increase of torque by multiple tightening. The bolt or the accessories may break and then be ejected.

- **When the set torque has been reached and the nutsetter has shut off automatically, do not start it once more on the same joint.**

7.4. Loosening

The torque required to loosen a screwed joint may often be higher than the torque that was applied to tighten it. In such a situation the standard sockets and accessories often are not strong enough to withstand the forces occurring. In most cases the output of the unit also exceeds the load bearing capacity of the accessories.

Note that the accessory parts may only be loaded to the maximum torque indicated on them.

**Important!**

Pneumatic nutsetters cannot be used to check and retighten pre-tightened bolts.

- **Loosen tightened bolt.**
- **Retighten the bolt, ensuring that a rotation angle of at least 30° is reached.**

Automatic nutsetter DPA, optionally DPA-W

1. Set a suitable torque at the maintenance unit.
2. Set the sense of rotation at the selector switch or control valve.
3. Press the start button and hold it pressed until the bolt or nut has been loosened. Do not press the start button repeatedly!

**Important!**

If the nutsetter does not automatically switch over to high-gear, although the torque required to loosen the bolt has lowered, you may cause it to switch over as follows:

- **Briefly switch the nutsetter over to the opposite sense of rotation, and then switch it back to the loosening direction.**
- **This causes the gearbox to switch over to high-gear.**

Manual nutsetter DPM, optionally DPM-W

1. Set a suitable torque at the maintenance unit.
2. Set the sense of rotation at the selector switch or control valve.
3. Select the load-gear at the knob:
"2" = load-gear.
4. Press the start button and hold it pressed until the bolt or nut has been loosened. Do not press the start button repeatedly!

7.5. Operating Guidelines

Operating mode	Please observe	Possible consequences of non-observance	Remedy
Continuous load	Load the nutsetter only up to max. 75 % of its torque performance	Damage to gearbox or drive	Choose stronger unit if required
Re-tightening pre-tightened bolts	The nutsetter is not suitable for this application	Damage from overload	Loosen the bolt and then retighten it, to ensure a rotation angle of min. 30° is reached
Repeated switch-on after torque-controlled shut-off	Not allowed, this will lead to a substantial increase of the tightening torque	Damage to gearbox from overload	
Switch-over from gear "1" to gear "2"	Automatically in type "A" nutsetters Manually in type "M" nutsetters by operating the shifting knob at the intermediate transmission	Faulty torque if the torque range is not observed	Note the applicable torque range indicated in the torque table!
Reaction support	Observe the guidelines in these operating instructions	Overload of the drive square by bending forces Deformation of the reaction arm Reduced torque output or inaccurate torques	Ensure reaction arm or supporting conditions meet the specifications in these operating instructions
Working with a maintenance unit	Mandatory for use of PLARAD nutsetters Observe maximum admissible pressure specified in the torque table Fill the oiler only with the approved oil type	Defect of nutsetter from overload Defect of drive motor	Use a PLARAD maintenance unit
Hose connection	Use only hoses, which are max. 3 m long Be sure to use hoses with interior diameter of 13 mm	Performance loss of nutsetter	Use required hose type
Normal operation	Observe maintenance intervals specified in the operating instructions	Functional defects of nutsetter Damage to gearbox	Ensure correct lubrication and take note of wear

8. MAINTENANCE/SERVICE

8.1. General Considerations

The nutsetter must be serviced to maintain its function and safety.



Attention!

Service work may only be performed by the manufacturer.

Have assembly, readjustment, changes, extensions and repairs of the unit performed exclusively by Maschinenfabrik Wagner or service partners authorised by Maschinenfabrik Wagner.

Safety of the operator and trouble-free operation are guaranteed only if original PLARAD components are employed. This is especially true of unit parts and spare parts.

If other components are used, Maschinenfabrik Wagner cannot accept any liability for safe operation and reliable function.

8.2. Service Intervals

Depending on the frequency of use, the nutsetter must be serviced regularly. The service intervals here given are for orientation only. Determine the correct service interval for your operating conditions by discussing these with our representatives or service technicians.

Service may be performed in our service/repair workshop upon prior consultation with our representatives.

Every 60 operating hours

- Every 60 operating hours check the friction bearings of the air motor and lubricate them if required
- Regularly check the lamellas and friction bearings of the air motor

Every 3 months

- extreme operating conditions
- frequent use
- multi-shift operation
- constant operation in upper torque range

Every 6 months

- normal operating conditions
- medium frequency of use
- operation at mid torque-range

Every 12 months

- infrequent use

Cleaning:

- clean surface of nutsetter
- remove superficial rust

Visual inspection:

- damage
- leakage

Functional check-up:

- all moving parts okay
- drive and reaction arm without damage
- no leakage at the drive square
- no leakage at the hose connections

Functional check-up by the manufacturer (every 300 operating hours):

- Re-lubricate the friction bearings of the air motor
- Check the grease filling, replace grease if required
- Check the seals, replace if required
- Check all friction bearings, replace if required
- Calibrate the nutsetter
- Functional test

Storage:

- Prior to longer operating intermissions generously grease all interior parts of the air motor to prevent rust formation
- Store the nutsetter only in dry rooms

8.3. Lubrication

Regular lubrication is required to ensure optimum running and torque accuracy. During regular inspections grease planetary gears, needle bearings and ball bearings.

Recommended lubricant for planetary gear and intermediate transmission:

MOBILTEMP SHC 100

9. INSTRUCTIONS FOR DISPOSAL

Dispose of the nutsetter according to the locally applicable regulations.