

INSTRUCTION FOR INSTALATION, USE AND MAINTENANCE OF WORM GEAR BOXES: TSN 030 444, TS 031 444, ZAP, MZP a MPZ 80

The worm gear units are design to drive the machine tools and devices where because of the low speed and requested moment the usual motors are inefficient. The transmissions are delivered with a three phase asynchronous motor, short-circuited rotor and IP 54 shielding as per IEC 34-5 (STN 35 000) as standard equipment.

The motors' housing has a flange shape. A commercial-technical catalogue determines the motor flange size for a particular transmission type or it is produced to the customer's demand.

SAFETY

When in operation a surface transmission temperature can exceed a safety value of 70°C depending on the power take-off. This factor must be taken into account in order to keep the operator's work safe.

STORAGE

The transmissions must be stored in dust-free surroundings and protected against aggressive gas penetration. Sudden temperature changes must not occur in the storage areas to avoid dew formation on the transmission. The transmission without anti-corrosion protection recovery can be stored for a period of 6 months.

INSTALLATION

- The transmission must be thoroughly checked and degreased.
- The transmission is to be fixed on machined base surface with the roughness of $R_a = 6.3$ and 0.1 mm deflection. Axial alignment of the shafts must be secured when connecting the transmission to the driven machine using a shaft joint. The transmission should only be clamped to such a position for which it is designed.
- It is necessary to use the assembly tools for mounting the pulleys, gears, joints or when slipping a transmission hollow shaft on the driven machine shaft.
- It is forbidden to assemble the transmissions by striking – bumping.
- The motors must be connected according to the electrical schematic fitted from inside of the terminal block lid. The electric motor must be properly grounded. The voltage that is indicated on motor label must match that of the mains. Fuses or the circuit breakers must protect the motors. Before the motor is put into operation the insulating condition of the winding is to be checked for any damage during storage or transportation.
- If not agreed otherwise, the transmission is provided with Shell Tivela Compound A plastic grease as a permanent filling from the factory.

The winding is to be dried at the low insulating resistance. The transmission must be fitted in such a position so that the cooling air can have free access to the motor.

When filling the oil it is recommended to use oil of the 220 viscosity class (as per ISO VC) in the case that the worm is immersed in an oil bath at the lower ambient temperatures (under 20°C) or in the high worm speed (above 1400 rev/min⁻¹). We recommend oil of 320 or 460 viscosity class for upper the worm, higher ambient temperatures and lower speed. the oil of 680 viscosity class is to be used for the input speed under 300 rev/min⁻¹.

The recommended grease quantities are shown in the commercial-technical catalogue. The transmissions, which are modified for oil filling, are equipped with feeding, draining and inspection holes. An inspection hole position also determines the required quantity of oil.

Warning! Before the oil-filled transmission is put into operation it is essential to check the oil level of the transmission.

RUNNING-IN

The transmission are supplied after being tested by a test run without a load. To attain the optimum gear set parameters the test run is compulsory. It is necessary that the following procedure is adhered to before the transmission is fully loaded:

- Use stepped load running-in from 50% until a full load is reached within at least 30 hours.

If the procedure must be interrupted, full-load running-in with an interrupted run and a long interval is possible but not recommended. The intervals must be in such a length so that the transmission cools down to the ambient temperature. The run time is to be gradually prolonged from a few minutes to a constant load. During the running-in it is necessary to observe the surface temperature of the gearbox housing – it should not exceed temperature of 80°C.

The transmission will reach its optimum (catalogue-presented) parameters after 300-500 hours of operation.

OPERATION AND MAINTENANCE

The grease-filled transmission need no maintenance. The lubricant, which is provided by manufacturer, is designed for the life of the transmission. There is no necessity to exchange nor inspect it.

If mineral oils are used to lubricate the transmission we recommend the first exchange after 500 hours of the run following the used oil characteristic

IN OPERATION IT IS NECESSARY TO OBSERVE

- transmission sealing, especially that of the shafts,
- temperature rise of the gearbox housing. The temperature should not exceed 80°C,
- sudden increase of noise,
- transmission mount – tighten the mounting screws.

An expert must fix the investigated faults.

SPARE PARTS

The producer only supplies the endless screw and worm wheel to the transmissions. When placing an order, the marking of the transmission must be indicated according to the catalogue or label data.

GUARANTEE

The guarantee terms are shown in the product contract of purchase.

CONCLUSION

The worm gear unit will serve reliably if:

- the catalogue defined hints to choose the transmission type were adhered to,
- during operation there will be no exceeding of the transmission output parameters.