

Selection and calculation

Examples: Direction of rotation

Fig. 1:
Illustration of direction of rotation

Fig. 2:
Direction of rotation of a worm gear screw jack (N) for "lifting" motion, top view.

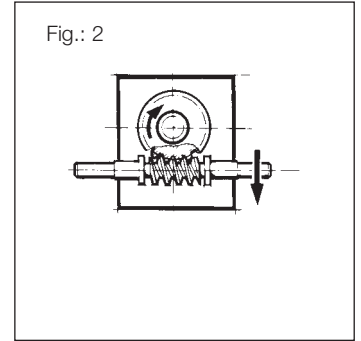
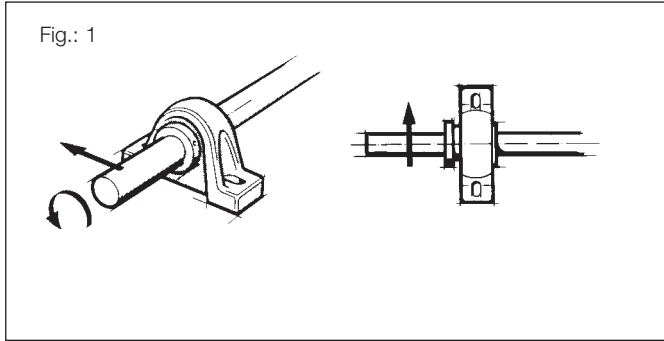


Fig. 3:
Jack system with four worm gear screw jacks and two bevel gear-boxes

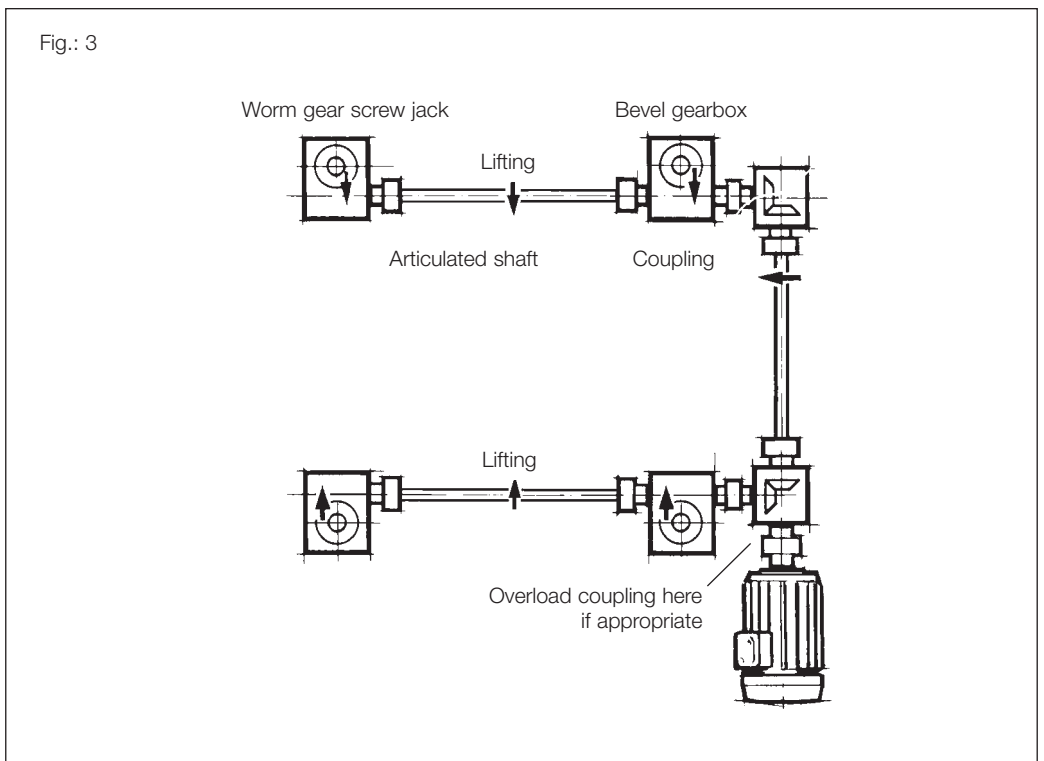
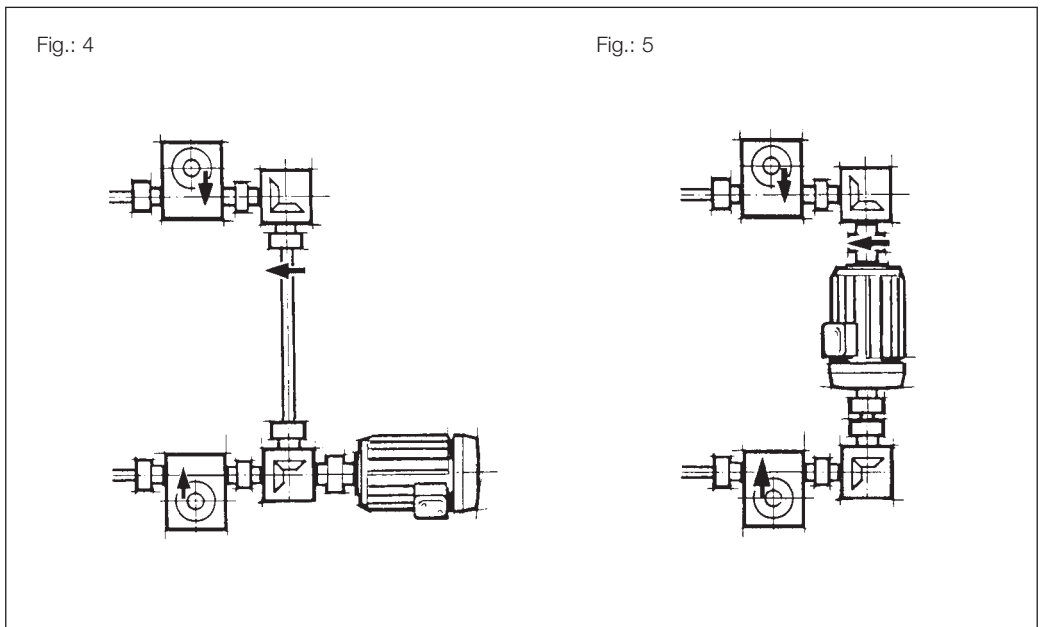


Fig. 4:
Jack system, variant 1:
Different position of drive motor,
but only ratio 1:1 possible.
Overload coupling also possible.

Fig. 5:
Jack system, variant 2:
Very economical, but overload
coupling not possible.



Assembly and maintenance

Assembly of worm gear screw jack systems

Direction of rotation: Before starting assembly work, the direction of rotation of all worm gear screw jacks, bevel gearboxes and the drive motor must be checked with regard to the feed direction of each individual worm gear screw jack.

Alignment errors: All components must be carefully aligned during assembly. Alignment errors and stresses increase power consumption and lead to overheating and premature wear. Before a drive unit is attached, each worm gear screw jack should be turned through its entire length by hand without load. Variations in the amount of force required and/or axial marks on the outside diameter of the screw indicate alignment errors between the worm gear screw jack and its additional guides. In this case, the relevant mounting bolts must be loosened and the worm gear screw jack turned through by hand again. If the amount of force required is now constant throughout, the appropriate components must be aligned. If not, the alignment error must be localized by loosening additional mounting bolts.

Test run: The direction of rotation of the complete system and correct operation of the limit switches must be checked again before attaching the drive motor. In the case of version N (translating screw jack), check that the screw is lubricated with grease from the interior of the gearbox and relubricate if necessary. In the case of version R (rotating screw jack), the jack screw should be coated with suitable grease to provide lubrication for lifting operation. The first test runs can then be carried out without load.

A maximum operating time of 30 % can not be exceeded at trial runs under weight for worm gear screw jacks with trapezoidal screws.

Operation: The loads, speeds and operating conditions specified for the worm gear screw jacks and transmission components must not be exceeded even briefly. Failure to observe this condition will invalidate all claims under guarantee.

Maintenance of worm gear screw jacks

Safety: All mounting bolts must be retightened after a short period of operation. The wear of the screw nut (worm gear) must be checked by measuring the thread backlash after approx. 200 hours of operation or sooner if operating conditions are harsh. The screw nut (worm gear) must be replaced if the axial backlash with a single-start thread is more than one-quarter of the thread pitch.

Lubrication: The worm gear screw jacks are lubricated by the manufacturer and are ready for operation on delivery. They version N/V must be lubricated via their grease nipples with one of the greases specified below at intervals of 30 - 50 operating hours. The screw should be cleaned and greased at the same time. The service life of screw and screw nut can be extended by applying screw spray, particularly before being greased for the first time. We recommend that the gearbox be cleaned to remove old grease and refilled with fresh grease after approx. 700 operating hours or 18 months. The worm gear screw jacks can be dismantled relatively easily:

- Unscrew the two threaded pins securing the bearing cover.
- Unscrew the screw and remove the screw protection if necessary.
- Unscrew the bearing cover with the aid of an open-ended spanner.

Proceed as follows to refit the bearing cover: fit the bearing cover firmly (using approx. ten times the force shown in the table of "Guideline values for fitting bearing cover"). Then release it and refit it with the guideline value from the table, checking the axial backlash and smooth running.

Standard grease:
Lithogrease G 421
Zeller + Gmelin, Aalen

Recommended greases:
Castrol Spheerol BM2
Mobil Mobilgrease XHP
Shell retinax HD2

Guideline values for fitting bearing cover

Type	Torque [Nm]
MULI 1	5
MULI 2	9
MULI 3	13
MULI 4	32
MULI 5	60
JUMBO 1	70
JUMBO 2	150
JUMBO 3	150
JUMBO 4	220
JUMBO 5	300