



### Mounting Instructions

#### Servo-Worm Reducers

Five mounting faces with tapped holes are provided for mounting in any position. In order to accommodate all external forces (see page 22), we recommend mounting the unit on the largest contact face, i.e. one of the two cover sides. Mounting the unit so the input worm shaft is vertical or under the output shaft is ideal for lubrication; mounting the unit so the input worm shaft is above the output shaft will reduce the driving capacity of the unit by about 10 %.

#### Input Motor Coupling

The input motor coupling is delivered pre-assembled. Before attaching it to the motor shaft, all contact surfaces must be cleaned and protected by applying a thin oil film. An internal snap ring inside the coupling positions it on the motor shaft, preventing any axial movement of the coupling. To assemble the coupling onto the motor shaft, following these recommendations:

1. Slide the coupling onto the motor shaft until it bottoms out on the snap ring.
2. Tighten the clamping screws slightly and check the coupling for runout.
3. Tighten the screws alternating crosswise using the torque value shown in the table opposite, ensuring that the gap between the coupling and contact face remains even.
4. A final check of the runout is recommended at the end of the coupling.

Order Code	Torque
65 43 ..	5.2 lb.ft.
65 44 ..	7.4 lb.ft.
65 46 ..	7.4 lb.ft.
65 47 ..	18.5 lb.ft.

#### Servo-Motor

Insert the motor with the mounted coupling into the pilot diameter of the motor mounting flange and bolt it to the gearbox. This should be done with the gearbox input shaft vertically up and the motor shaft vertically down.

#### Output Pinion Shafts

Clean the pinion shaft and hollow shaft extension and then grease or oil them lightly.

For output shafts with the key connection, the internal snap ring, washer and screw provided serve to lock the output shaft axially. Insert the internal snap ring in the groove of the hollow shaft and slide the output drive shaft into the desired side of the hollow shaft until it bottoms out. The washer and screw are attached to the output shaft from the other side of the gearbox. The internal snap ring must be clamped between the washer and the end of the output shaft.



#### Compression Coupling

Slide the compression coupling onto the hollow shaft extension of the gearbox (do not tighten the screws beforehand!). Insert the output shaft into the desired side of the hollow shaft until it bottoms out. Tighten the screws one after the other (not alternating crosswise) in several passes to the torque indicated in the table.

Order Code	Torque
80 83 030	3 lb.ft.
80 84 036	9 lb.ft.
80 85 050	9 lb.ft.
80 86 062	9 lb.ft.
80 87 080	22 lb.ft.



### Maintenance

#### Adjustment of Angular Backlash of Gearbox

The units are assembled at the factory with the minimum amount of backlash. After prolonged use, the backlash level may increase due to wear. It can be reset to the factory setting by moving the eccentrically supported output shaft (the worm wheel). To achieve this, we recommend the following:

1. Unscrew the hexagon socket head screws of the two end covers, without removing the screws, in order to avoid oil leakage.
2. Turn both end covers towards the next higher number marked on the housing, ensuring that both covers are moved by the same amount.
3. Check the backlash by turning the worm shaft until the worm wheel has made at least one complete revolution. If necessary, adjust the end covers further by one step.
4. Evenly retighten the hexagon socket head screws alternately crosswise. A slight change in the gear center distance (in relation to the rest of the unit) must be compensated by adjusting the mounting of the gearbox.

#### Lubricant Change

At the factory, the units are filled with a synthetic lubricant and test run. They are delivered ready for use. A check of the lubricant level once a month – more frequently during the first weeks of operation – is recommended. Under normal load conditions and with single shift working, it is recommended that the lubricant be changed every four years; with 2 or 3 shift working, the lubricant should be changed annually. To do this, the unit must be emptied, flushed through and then refilled to the oil-level hole approximately in the middle of the gearbox, using one of the lubricants listed below. Important: Synthetic lubricants must not be mixed with mineral oils. For oil quantities, see table below.

We recommend the following synthetic lubricants:  
 Shell Tivela WB, BP Energol SG-XP 220,  
 ARAL Degol GS 220, Klüber Synth GH 6 – 220.

#### Shell Tivela WB, 1 liter – Order Code: 65 90 000.

Center distance	Oil quantity
$a_o = 50$ mm	0.3 liter
$a_o = 63$ mm	0.5 liter
$a_o = 80$ mm	1.2 liters
$a_o = 100$ mm	2.0 liters
$a_o = 125$ mm	4.0 liters

### Spare Parts

Description	Input Radial seal	Output Radial seal	Special angular contact ball bearing	Deep groove ball bearing	Tapered roller bearing
Pieces per unit	1	2	2	1	2
<b>a = 50</b>	A20x47x7	A40x62x7	7204 B	6303	32008
Order code	921 33 069	921 33 122	911 92 001	911 04 030	911 41 040
<b>a = 63</b>	A25x62x10	A45x72x8	7305 B	6205	33109
Order code	921 33 086	921 03 133	911 92 002	911 03 050	911 39 001
<b>a = 80</b>	A50x90x10	A50x80x8	7308 B	6307	33210
Order code	921 33 144	921 03 143	911 92 003	911 04 070	911 40 090
<b>a = 100</b>	A50x90x10	A70x100x10	7308 B	6307	33014
Order code	921 33 144	921 03 186	911 92 003	911 04 070	911 38 005
<b>a = 125</b>	A45x65x10	A85x130x10	7311 B	6310	33217
Order code	921 33 132	921 00 202	911 92 011	911 04 100	911 43 085