



Web-Tech Australia Pty Ltd

Model WT1700 Weighfeeder

Installation, Operation & Maintenance Manual

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Web-Tech Australia Pty Ltd

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Rev.	Date	Details	By

INTRODUCTION

The Web-Tech 1700 series of weighfeeders consist of a range of medium to heavy duty belt weighfeeders capable of handling various products at throughput rates from 0.1 tph. to 40 tph.

The 1700 series can be ordered as an enclosed or open unit. Depending on the application, the belt will be either fitted with "Flexowall" belt edging or left flat. If the application requires flexowall, then the inlet chute will be split to facilitate the removal of the belt for service.

A wide variety of motor and gearbox assemblies can be applied to the 1700 series, shaft mounted right angle drive and helical inline chain driven being the most common. Those applications which require turn downs in excess of approximately 12:1 can be fitted with DC motors. Judicious use of motors, gearboxes and drive sprockets often allow the use of AC motors even where moderate turn downs may be required.

Inverters are not normally supplied by Web-Tech as our customers have a wide range of preferences. However, we can supply these devices if requested.

The weighing element is a single roll type, utilising a flexure arrangement and a shearbeam load cell. Normally, the load cell is rated for the expected maximum load +10 – 20% overload.

Speed sensing is provided by a digital encoder mounted on the non-driven pulley and sized to provide no more than 800 Hz to the electronic integrator when the belt is running at full speed.

Both the load cell and encoder are energised by the electronic integrator and field wiring terminates into junction boxes on the feeder stringers.

The electronic integrator has been designed to provide all the control signals required to run a weighfeeder. It requires 240VAC at 0.5A or 110 VAC at 1A to power it. Menu driven routines allow operators to enter variables, calibrate the feeder (zero and span) and control the P.I.D. loop output.

Please read all sections of the manual before placing the weighfeeder into service.

DELIVERY/UNPACKING

Your weighfeeder has been crated for protection during transit. The electronic integrator is normally packed separately. Upon delivery, please ensure that all components have arrived and have not been subject to any form of damage.

The basic components are:

- Weighfeeder complete with Gearmotor, Loadcell(s) and Belt Speed Sensor (Tacho)
- Masterweigh Integrator
- Masterweigh Enclosure
- Calibration Bar(s) or chain

Optional:

- Speed Controller (A.C. Inverter or D.C. Controller)
- Remote instruments
- Spare Parts
- Scraper Conveyor

If in doubt about any aspect of the delivery, contact:

**Web-Tech Australia Pty Ltd
11 Electronics Street
Eight Mile Plains
Brisbane Qld 4113
Australia**

**Ph: 61 7 3841 2844
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Unpacking:

1. If the crate shows signs of damage, report to carriers and Web-Tech. Remove the top and sides of the crate (if applicable).
2. Remove any small items of equipment also in the crate.
3. Lift the feeder clear of the crate using web slings or the lifting points provided. Care must be taken at this point to avoid damage to machine.
4. Carefully examine the feeder for signs of damage at this point. Look also for parts that may have worked loose during transit. Phone Web-Tech if in doubt.
5. Carefully locate weighfeeder into its operating position.

INSTALLATION

1. After the weighfeeder has been placed into position, check the level of weighfeeder in all directions and pack under the mounting feet if necessary.

2. Do not "pull up" any gaps between mounting feet and support structure, as this may induce twisting into the weighfeeder frame. Always shim up any gaps. (Note: The feeder is a precision instrument and must not under any instances support any ancillary structures, inlet or discharge chutes).

3. Bolt up infeed and discharge connections. Use some form of sealant or rubber between flanges. Once again, make sure that no loads are transferred to any part of the feeder during this operation.

4. Protect conveyor belt if welding or oxy work is carried out in the area. Note if the loadcell is in place remove it before welding.

5. Remove covers from "ACCESS" side (if an enclosed model) of weightfeeder (opposite side to gearmotor).

6. Support the weight of the belt steering mechanism with one hand (Caution – the mechanism is heavy) and remove the steering mechanism transit pin. Gently lower the steering mechanism onto the belts. Keep the pin in a known location (eg. Inside the Masterweigh enclosure), as it is used during belt removal.

7. Check the following:

- a. All idler rolls are located correctly and are vertically aligned.
- b. All fasteners are tight.
- c. No foreign material is on the belt or in inlet chute.

Procedures for Checking of Vertical Alignment and Rectification:

(Note: The following procedure will have been carried out at the factory prior to shipment. However, settlement can occur and often does occur during shipment which will cause vertical alignment errors.)

Refer to Drawing 1700-04.

(The feeder must be level before proceeding). Vertical alignment is critical if accurate and reproducible results are to be obtained. The following procedure must be used to check the vertical alignment.

1. Tie off two (using 30kg breaking strain fishing line) stringlines at the head and tail pulley either side of the belt, making sure that the lines traverse the weigh area. The head and tail pulleys will be lower than the carry rolls (the tail only about 1mm) as measured from the middle of the roll. The stringlines should be tied off very tight.

Note: If stringline is unavailable, use a 2-metre rule, edge onto the rolls for the above test.

2. Look along both lines for vertical height discrepancies (-0mm/+0.25mm) use the jacking screws provided to obtain the above tolerances.
3. Once the vertical alignment has been checked and verified, for all carry rolls, remove the line.

Note: The striker bar must be in contact with the loadcell prior to any alignment taking place.

Now proceed to the wiring up of the system.

ELECTRONIC/ELECTRICAL INSTALLATION

Wiring:

(Refer to Drawing Nos. WTMW1-01, LCJBOX-01 and TACH-01)

It should be noted that there are many wiring permutations that can be adopted. They are determined by the configuration of your system. Make sure the above drawings cover your particular configuration prior to proceeding.

Web-Tech mentions types of cable that can be used between certain components on its feeder in its drawings. We only mention these cables as references only.

If an inverter is used and Web-Tech supplied the unit, the wiring diagram will be found in the accompanying manual.

Note: Full consideration must be given to the relevant state/country wiring codes when installing medium and high voltage wiring.

Wiring between the Tachometer and the local junction box and between the loadcell and the local J-Box will have been done at the factory.

Before wiring up the feeder to the integrator, wire in the 240/110v to the power supply PCB, making sure the voltage switch is set to the correct voltage.

Now wire up both the loadcell and tachometer to the integrator. If the distance the wire has to run between the feeder and the integrator is in excess of 50 metres - consult the factory.

**DO NOT RUN THIS WIRING
ALONGSIDE ANY CABLES CARRYING
HIGH OR MEDIUM VOLTAGES. IF IN
DOUBT - CONSULT THE FACTORY**

Masterweigh controls the feeders flow rate by adjusting the belt speed. This is done via a 4/20mA current loop, which should now be wired to the inverter.

DO NOT POWER UP AT THIS POINT.

CHECK YOUR WIRING AGAIN.

NOW POWER UP.

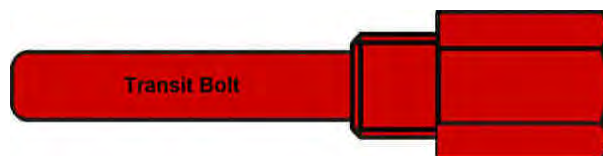
The weighfeeder is now ready for field commissioning.

The 1700 weigh feeder series is fitted with a dual/axis flexure style weigh frame. For servicing ease the load cell is fitted to the outside of a stringer.

To protect the loadcell during transportation a transit bolt has been fitted to the stringer. The pin screws into the stringer and engages with the weigh frame, thus, preventing load being applied to the loadcell. This bolt must be removed prior to running the feeder.

When removing the bolt make sure the frame does not drop onto the loadcell load wire.

The bolt and lock nut fitted to the stringer Acts as an overload stop and has been set at the factory.



FIELD COMMISSIONING

Field Commissioning:

Field Commissioning consists of the following steps:

1. Run the belt empty and check belt tracking.
2. Check tracking when belt is full.
3. Zero the feeder and calibrate against static calibration bars.
4. Check Calibration against material test.

1. Belt Tracking (Empty):

The weighfeeder has been run in the factory for approximately 8 hours prior to shipping. However, the weighfeeder should be run without material for approximately 4 hours to prove that the tracking is correct.

Set Masterweigh 1 PID output to manual and ramp up the P.I.D., 4/20mA output to 100%. (Menu 13).

Comprehensive details relating to the operation of Masterweigh can be found in the "Operation" section of this manual.

Note: If the belt runs in the wrong direction, stop the belt and swap over any two phases at the motor. "Be Careful": isolate, tag out etc.

Observe the belt running at 100% output. If the belt steering mechanism is working to track the belt (this is evident by noting if either of the two vertical rolls of the belt steering mechanism are constantly in contact with the belt), then apply some tension to the belt via the telescopes. (See Drawing 1700-01 and 1700-03 for details).

Make small adjustments and allow time (at least 10 revolutions) before making any further adjustments.

DO NOT OVERTENSION THE BELT.

The ideal tension is just sufficient to drive without slippage under load.

Tighten locknuts on take-ups when completed.

2. Checking of Tracking (with belt full of material).

It is essential that the belt tracking be checked when carrying material. It is normal that for some applications, the belt will track slightly different when empty to when carrying material.

If adjustment is required, adjust take-ups as per the previous "Belt Tracking (Empty)" instructions.

3. Zeroing the Feeder

The calibration of the weighfeeder has been carried out at the factory, however, it must be checked after installation.

A data sheet should have been supplied with the other documentation in this manual. This data sheet shows the value of the calibration weights, as well as the values that have been programmed into each of the Masterweigh menus.

Check all menus to see that the programmed information is as per the data sheets. If they agree, carry out zero and span calibration procedure as per the Masterweigh section in this manual. (Getting Started Zero and Getting Started Spanning/Calibration)

FIELD COMMISSIONING (CONTD)

4. Material Test:

If possible, a material test should be carried out to confirm static calibration.

A material test involves weighing a known amount of material prior to or after passing over the weighfeeder, and comparing the results obtained from the weighfeeder.

The quantity of material required depends on the capacity. A "rule of thumb" value would be six (6) minutes running time at maximum capacity eg:

Capacity = 10 tph

Therefore $\frac{10,000\text{kg}/60 \text{ mins}}{6 \text{ mins}} = 1000\text{kg}$

If a correction factor is required to the calibration after the material test is carried out, the static calibration bar(s) should have the same factor applied to their result ie; if calibration bar(s) were originally calculated as representing 75% of capacity and material tests proved that weighfeeder was weighing 2% light, then the calibration bar(s) actually represented 77% of capacity.

The target values for the "Fixed Weight Calibrate" menu of Masterweigh must be altered accordingly. The easiest method to apply the correction to the calibration bars is to place them on the feeder immediately after performing an empirical calibration, then starting a fixed weight calibration. At the end of the calibration, observe the "Accumulated Mass total:" and write it down, then PRESS ABORT. Now enter the observed mass total as the new Target Weight.

Refer to Masterweigh manual for details regarding material calibration under "Empirical Calibration".

MAINTENANCE

Periodic Maintenance:

The maintenance schedule varies depending on the application and environment that the weighfeeder operates in.

The following is a guide only and may be varied to suit conditions.

Daily Interval:

- ◆ Check Belt Tracking
- ◆ Clean any material spillage/build up from around weighfeeder.

Monthly Interval:

- ◆ Check oil level in gearbox
- ◆ Check condition of belt and repair any damage
- ◆ Remove any build up from around pulleys and idler rolls
- ◆ Check height weights of and condition of skirts on inlet chute and side skirts.
- ◆ Check belt has sufficient tension
- ◆ Grease all bearings including those on scraper conveyor (if supplied)
- ◆ Lubricate drive chain if sprocket drive belt type.
- ◆ Lubricate chain on scraper conveyor (if supplied)
- ◆ Check tightness of all fasteners
- ◆ Re-calibrate weighfeeder

Yearly Interval:

- ◆ Check wear on all mechanical items, particularly inlet chute and shear gate.
- ◆ Drain and replace oil in gearbox(s) – (refer to SEW manual) check loadcell tare output

Belt Changing:

Belt Removal

(Refer to 1700-01) Two or three man job!

The 1700 series of weighfeeders are of a cantilevered design. That is, supports on the opposite side to the motor can be removed, without the system collapsing or being damaged. (If the correct procedures are adhered to).

This feature allows for easy belt changing.

After familiarising yourself with the layout of the feeder and the relevant terminology, follow the following procedures:

1. Set Masterweigh into the manual mode via Menu 13.

2. Close off the material feed and run the belt until it is completely empty.

NOW SWITCH OFF THE POWER AND TAG OUT

3 If the feeder is an enclosed model, remove the doors from the access side, and remove the door support pillars. The support pillars are bolted at the top and bottom.

4. If your feeder is fitted with flexowall belt edging for material containment, then follow the following procedure: (If not, proceed to 4.)

Remove the lower portion of the split inlet chute, which is bolted to the upper section. The lower section should then be completely removed and stored.

5. Remove the carry side belt scraper.

6. Lift the belt steering mechanism and lock it into its transit position by passing the transit pin through the hole in the stringer and into the hole in the steering mechanism arm.

7. Slacken the telescopers right back to the minimum extension point.

MAINTENANCE

MAINTENANCE (CONT'D)

Belt Removal (Cont'd):

8. Remove the belt skirts and if a flat belt is installed, slide the inlet chute skirts up.

9. Locate and remove the support structure on the opposite side of the feeder to the motor. This is achieved by removing the sealing plugs and accessing the fixing bolts that are inside the R.H.S. the bolts should be removed using a socket and extension bar.

10. At this point the support legs can be removed by gently tapping out using a soft mallet. The feeder will drop slightly to one side when the legs are removed.

11. Pull off the belt now, making sure that the bottom of the belt does not foul on the belt steering mechanism.

Belt Replacement:

CHECK THE NEW BELT FOR BELT TRAVEL ARROWS AND CORRECTLY ORIENTATE

1. Using at least three people, offer the belt up to the pulleys.

Hint: If talcum powder is applied to the inside of the belt, it will act as a lubricant and assist belt installation over the pulleys.

2. Simultaneously rotate and push the belt until it is centred over the pulleys. Make sure that the bottom of the belt does not foul the belt steering mechanism.

3. Replace the legs using the removal procedure in reverse. **IF THE LEG WILL NOT FIT IN, OWING TO SAG, USE A PORTABLE JACK TO GENTLY LIFT UNTIL THE LEGS JUST FIT INTO PLACE.**

4. Fit the remainder of the ancillaries in reverse order to the disassembly procedure.

5. Refer to drawing 1700-01

The correct belt tension is achieved by alternately tensioning each telescoper until the aligning mark on the belt tensioning drive is aligned with the apex of the diamond on the side rail.

6. Finally, the procedures for belt tracking that were discussed earlier in the manual in the Field Commissioning section should be observed.

Gearbox Maintenance:

Refer to SEW maintenance manual

OPTIONAL EQUIPMENT

Speed Controller:

Web-Tech weighfeeders may be supplied with either an A.C. or D.C. speed controller. The speed controller is used to either manually control the belt speed and therefore material throughput, or can be used in an "Automatic" mode whereby the speed of the belt is automatically adjusted by the Masterweigh controller to maintain a setpoint of material throughput.

A separate manual is supplied for the speed controller. Please follow the manufacturers' instruction regarding installation/set up.

Scraper Conveyor: (If Applicable)

Scraper conveyors are optionally supplied on Web-Tech weighfeeders. The function of the scraper conveyor is to remove any accumulated material from the floor of the weighfeeder. The scraper conveyor has been run at the factory and should be ready for operation.

Electrical Connection:

The scraper conveyor is driven by a 3-phase A.C. motor from an appropriate supply. The direction of the scraper conveyor should have the scraper blades drag material to the discharge end.

The motor should not be connected in parallel to the conveyor drive motor if an inverter is used in conjunction with the drive motor.

Mechanical Maintenance:

Daily Interval:

- ◆ Check tracking of scraper conveyor chains
- ◆ Check condition of scraper blades

Monthly Interval:

- ◆ Check out level in gearbox
- ◆ Check chain tension
- ◆ Grease all bearings
- ◆ Lubricate chain/sprockets (use Dry Lubricants)

Yearly Interval:

- ◆ Drain & replace oil in gearbox (see SEW manual for type and quantity)
- ◆ Check all mechanical items for wear

Chain Tension: - (If Applicable)

The scraper conveyor does not require much tension to operate correctly. Adjust take-ups so that scarper blades are horizontal, and apply approximately the same amount of force on the floor at both ends of the scraper blades.

Chain Tracking: (If Applicable)

If the scraper chains are tracking to one side, and the sprocket teeth are continually in contact with the side links of the chains, track the chains by adjusting the take-ups in the same manner as tracking the conveyor belt.

OPTIONAL EQUIPMENT (CONT'D)

Remote Instruments:

Chart Recorder/Rate Meter:

A Chart Recorder or Rate Meter may be supplied to record/indicate the rate of material passing over the weighfeeder. Either one of the instruments should be connected to the "Rate Output" channel (4-20mA) on Masterweigh. Multiple instruments can be connected Refer to the Masterweigh connection diagram/manual for connection details.

Refer to the manufacturers' instructions for installation procedure for Chart Recorder or Rate Meter.

Contact Web-Tech if spare pens/paper are required for the Chart Recorder.

Totaliser:-A Totaliser may be supplied to record the accumulated tonnage that has passed over the weighfeeder. The remote totaliser should be connected to the "Pulse Output" of the Masterweigh Integrator. Refer to the Masterweigh connection diagram/manual for connection details.

GETTING STARTED

NOTE: The following procedures will normally have been carried out at the factory. Only carry out the following procedures if major repairs have been carried out on the feeder or the electronics has lost memory.

This section includes a minimum of basic information to get you started. Detailed procedures are to be found in "Masterweigh Operation".

The set up sequence is:

- ◆ Enter pulses/revolution
- ◆ Zero
- ◆ Span
- ◆ Fine tuning

Most Weighfeeders require to be zeroed and spanned. The time required to zero and span a system is determined by the belt-speed and length. It is recommended that a minimum time of the greater of 5 revolutions or about 5 minutes be used. Note, the longer the time and hence more belt revolutions, the better.

Entering Pulses per Revolution:

To input this time into Masterweigh, mark the weighfeeder belt with chalk, or paint a particular point on the belt. If there is already a distinguishing mark on the belt use that. Select a static point that can be easily used as a reference point to start and stop counting belt revolutions. Set the Weighfeeder running.

Masterweigh should now be switched on. Press "Menu" key and then ". / + " to advance to Menu Entry No. 2. If the instrument is new, it may show the following:

Menu Entry : 2
Pulses per rev = 1000 Revs = 5

This is a factory entry and will change to the application values when entered. To gain access to change these values to your application, press the "Enter" key. The display will now change to the following:

Manual Entry of Pulses/Rev
Press Enter to Continue

This entry is used when the number of pulses per revolution is known and is not applicable to a new installation. Press the "Enter" key to advance and the display will change to the following:

Manual Entry of No. of Revs
Press Enter to Continue

Once again, this entry is not normally used in a new installation. Press the "Enter" key to advance and the display will change to the following:

To start belt pulse count, Press E
Pulses counted = 0 Time = 0

You should now wait until the mark on the belt coincides with the selected reference point and as they coincide press the "Enter" key. The display will now change to the following:

To stop belt pulse count, Press E
Pulses counted = yyyy Time = xxx

xxx = Time elapsed since pressing the "Enter" key.

GETTING STARTED (CONT'D)

Now Masterweigh is counting the pulses coming from the tachometer and the elapsed time. When the minimum time or the minimum number of belt revolutions has occurred, then the "Enter" key is again pressed when the mark on the belt passes the reference point.

Note: Web-Tech advises using 5 belt revolutions, assuming that 5 belt revolutions take longer than 5 minutes, and that full belt revolutions only are used.

The display will now change to the following:

Enter number of belt revolutions? 9
Pulses counted = yyyy Time = xxxx

Where yyyy = number of pulses counted.
xxxx = the elapsed time in seconds.

You should now enter the number of complete belt revolutions. When the correct number of revolutions have been entered, press the "Enter" key and Masterweigh will calculate the number of pulses per revolution and the display will change to the following:

Pulses per belt revolution =xxxx
Press E to Save, otherwise press A

By pressing the "Enter/E" key the calculated data is stored in Masterweigh memory and will be used as a time base for zeroing and spanning/calibrating.

The display will now return to Menu 2 entry display showing the new data. If the A key was pressed no calculations would be done and the display would show previously stored data.

Zeroing Masterweigh:

Advance to Menu No. 3 by pressing the + key. The display will now look like the following:

Menu Entry : 3
Zero cal = 0.010 mV 0.010 mV

Press the "Enter" key to gain access to the menu. The display will now look like the following:

Manual entry of zero error, 0.000
or press Enter to continue

At this point you could enter that value you found in Menu 8 earlier. If you don't remember, don't worry, as Masterweigh will calculate it later.

Note that the entry of data at this point only assists Masterweigh in finding an average zero and does NOT negate the requirement to run the zero test. Press enter again, the display will change to the following:

Press E to continue
Mass rate = a.aaa

Where a.aaa shows the current mass rate zero error if the belt is running.

This data is raw, that is, not adjusted by the computer and will be changing frequently. This information is mostly used by technicians.

GETTING STARTED (CONT'D)

Press the "Enter" key again and the display will change to the following:

(Zero reset) To start zero cal, Press E Mass rate = 0.000 Revs = 0.0
--

Masterweigh is now ready to zero and will, as soon as the "Enter" key is pressed again. Masterweigh did not start executing its zeroing immediately because it gives time to make sure that the belt is empty (most important). After confirming that the belt is empty, press the "Enter" key to start the zeroing. The display will now change to the following:

To abort calibration, Press A Mass rate = a.aaa Revs = x.x
--

Where,

a.aaa = the zero error.

x.x = the number of revolutions completed.

Once Masterweigh has completed the test the display will change to the following:

To calculate new calibration, Press E Mass total = z.zzz Revs = x.x

Where,

z.zzz = the totalised value of the mass rate found during the routine.

x.x = the number of belt revolutions.

By pressing the "Enter" key at this point, Masterweigh will calculate a new zero. If something went wrong during the test, eg. material did accidentally get onto the belt, pressing the "Abort/A" key will cancel the test.

Following the pressing of the "Enter" key, Masterweigh will display the zero as a voltage output from the load-cell and once again give you the ability to cancel out the result.

Masterweigh will also cancel the tests if the results from that test fall outside preset limits. See the section "Load Zero Calibration" in Masterweigh Operation.

Spanning/Calibration:

There are three ways of calibrating/spanning Masterweigh:

- ◆ By passing material over the belt, weighing that material and then entering that value into Masterweigh via Menu 5.
- ◆ Using a weigh chain.
- ◆ Using supplied calibration bars.

This part of the manual will deal only with method 2.

Refer to the calibration data sheet supplied with your system and the sample sheet at the rear of this manual.

The calibration chains supplied have been manufactured to weigh approximately 70% of the load that the weighframe will carry when the maximum flow rate (as detailed in the client's data sheet) is achieved.

With the belt stopped, attach the calibration chain support arm to the feeder, and hook all of the supplied calibration chains onto the support arm.

Now set the weighfeeder running and advance Masterweigh to Menu 4 and enter that Menu by pressing the "Enter" key.

GETTING STARTED (CONT'D)

The display will change to the following:

Manual entry of span factor, 0.000
or press Enter to continue

Normally with a new installation data would not be available at this stage, as Masterweigh calculates this parameter, however this entry is useful if span adjusting is required at a later date.

Press the "Enter" key and the display will change to the following:

Current weight = 60.000 tonnes
Enter target weight? 0.000 tonnes

After entering your target weight and pressing the "Enter" key, the display will change to the following:

Press E to continue
Mass rate = mmmm

Where mmmm = the current mass rate prior to span adjustment.

On pressing E once again the display changes to the following:

To start span calibration, Press E
Mass rate = 0.000 Revs = 0.0

This display indicates that Masterweigh is ready to start and requires that the "Enter" key be pressed again.

On pressing the "Enter" key the display will change to the following:

To abort span calibration, Press A
Mass rate = m.mmm Revs = r.r

Where,

m.mmm = the current mass rate prior to calibration

r.r = the belt revs that have elapsed.

When Masterweigh has timed out, the display will automatically change to the following:

To calculate new calibration, Press E
Mass total = tt.ttt Revs = r.r

Where tt.ttt = Mass total

r.r = Number of revs.

On pressing the "Enter" key Masterweigh uses the target weight and the found mass total to calculate it's new span factor.

NOTE: The above calibration data will not be stored in the Masterweigh working memory until the following key sequence has been carried out.

1. Press "Menu"

2. Press "E/Enter" key.

If "A/Abort" is pressed instead of "E/Enter" then the new calibration information is lost and Masterweigh uses previous data. The same loss occurs if power is lost during calibration.

GETTING STARTED (CONT'D)

Fine Tuning

Now that the system is running it can be fine-tuned.

a) Null Level

Most conveyor belts have sections that are much heavier or lighter than the average weight of the belt. To stop Masterweigh adding small amounts of weight to its total during those periods when the belt is running empty, Masterweigh has a menu entry that is called "Null". The joint in the belt is a major cause of small amounts of weight being added to the totaliser and the effects of the joint can be seen by entering Menu 6. The display will change to the following:

Enter a new null level? 0.000 Mass rate = 0.165 tonnes/hour
--

By running the belt empty (in this menu) the raw empty belt mass rate can be observed. As the joint or any other belt abnormality passes the weighing element, observe the highest mass rate value achieved over a few belt revolutions and enter a null value just higher than the mass rate noted.

b) Autozero Tracking

Material sometimes builds up on the conveyor belt and the weigh area, even though belt scrapers are used, and Masterweigh's weigh area is narrow. Masterweigh can automatically compensate for these build-ups if Menu 7 is activated.

Advance Masterweigh to Menu 7. At the point of entry Masterweigh displays the following, if no entry has been previously entered:

Menu Entry : 7 Zero track if < 20.0 for 4 revs

This display tells us that Masterweigh will automatically performs a zero calibration when the recorded mass rate is less than 20 tonnes per hour and stays below that value for the duration of five belt revolutions. Should material start to flow, Masterweigh immediately cancels the Autozeroing and works with previously set values.

As some conveyors experience surges of material, then run empty, as part of the plant's normal operating conditions, Masterweigh can, if instructed, delay any autozeroing process for a predetermined time.

You can program the Masterweigh so that it will initiate an automatic zero calibration if the mass rate has been below a threshold (The auto zero level) for a qualifying delay, then the Masterweigh will perform an automatic zero calibration over a number of belt revolutions.

To enter the Autozero menu, press the "Enter" key and the display will change to the following:

Auto zero level = 20.000 tonnes/hour Enter new level ? 0.000

At this point a new mass rate threshold level can be entered.

On pressing the "Enter" key again, the display will change to the following:

Auto zero period = 5 revs Enter new period?
--

It is best to set this to the same number of belt revolutions as when the zero and span were set. However, fewer whole revolutions can be used if preferred. (Note, by entering 0 into this entry, the Autozero mode is switched off).

If the "Enter" key is pressed once again, the display will change to the following:

Delay before auto zeroing = 60 secs Enter new delay ? 0
--

Enter the new delay time the system should wait before initiating an auto-zero.

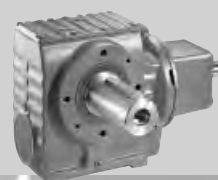
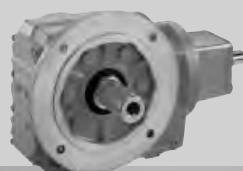
Note: When the autozero is running, a lower case "z" appears on the display. When load is detected it will be switched off.

Should an "E" appear where the "z" normally appears, it means that the signal from the load-cell has gone negative with respect to the normal load-cell output. The lower the autozero tracking level selected, the more sensitive Masterweigh is to detecting a relatively negative signal. the appearance of the "E" during normal operation signifies to the operator that the weighframe should be inspected for mechanical damage or positional change. The "E" can also appear if the conveyor belt is damaged, with pieces missing etc.

Gear Units
R..7, F..7, K..7, S..7 Series, Spiroplan® W

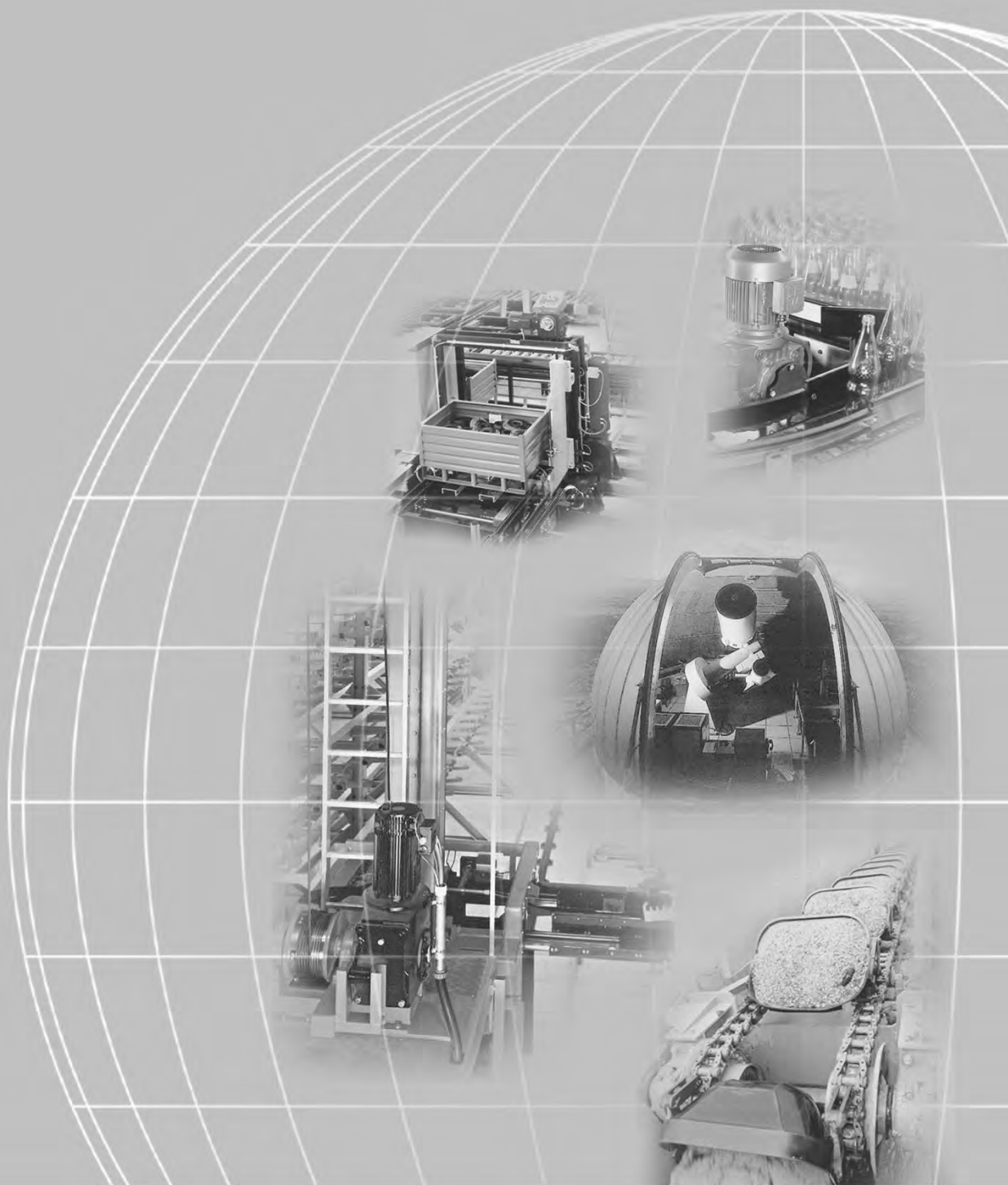
Edition

05/2001



Operating Instructions










10503013 / EN



SEW-EURODRIVE





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1 Important Notes

Safety and warning notes

Please note the safety and warning notes in this publication!



Electrical hazard

Could result in: death or severe injuries.



Imminent danger

Could result in: death or severe injuries.



Dangerous situation

Could result in: slight or minor injuries.



Damaging situation

Could result in: damage of drive and operating environment.



Operating hints and useful information.



Close adherence to the Operating Instructions is the prerequisite for fault-free operation and fulfillment of any rights to claim under guarantee. Please start reading the Operating Instructions prior to operating the drive!

Keep Operating Instructions in vicinity of unit since it contains important information on service procedures.



- **Adjust lubricant fill amount and position of breather valve when changing mounting position (see section "Lubricants" and "Mounting Positions").**
- **Please see notes in section "Setup" / "Setup of Gear Unit!"**

Disposal



(please observe the most current regulations):

- Dispose of housing parts, gears, shafts and anti-friction bearing of gear units as steel scrap. The same applies to gray cast iron parts unless there is separate collection service.
- Some worm gears are made of non-ferrous metals and must be disposed of accordingly.
- Collect waste oil and dispose according to local guidelines.

Changes to edition 04/2000 are indicated by gray bars in the margin



2 Safety Notes

Preliminary remarks

The following safety notes are principally concerned with the use of gear units.

If using **geared motors**, please also refer to the safety notes for motors in the corresponding operating instructions.

Please also take account of the supplementary safety notes in the individual chapters of these operating instructions.

General

During and after operation, geared motors and gear units have live and moving parts and their surfaces may be hot.

All work related to transport, putting into storage, setting up/mounting, connection, startup, maintenance and repair may only be carried out by qualified specialists in accordance with

- the corresponding detailed operating instructions booklet(s) and wiring diagrams
- the warning and safety signs on the gear unit/geared motor
- the specific regulations and requirements for the system and
- national/regional regulations governing safety and the prevention of accidents

Severe injuries and damage to property may result from

- incorrect use
- incorrect installation or operation
- removal of required protective covers or the housing when this is not permitted

Designated use

These geared motors/gear units are intended for industrial systems. They correspond to the applicable standards and regulations.

The technical data and the information about permitted conditions are to be found on the nameplate and in the documentation.

It is essential for all specified information to be observed!

Transportation / Storage

Inspect the delivered goods for any shipping damage as soon as you receive the delivery. Inform the shipping company immediately. It may be necessary to preclude startup.

Tighten installed transportation lugs firmly. They are only designed for the weight of the geared motor/gear unit; do not attach any additional loads.

The installed lifting eyebolts meet DIN 580. The loads and guidelines listed in the standard have to be observed. If there are two transportation or lifting eyebolts installed on the geared motor, you have to use both of them for transportation. The direction of the tensile force is not to exceed an angle of 45° to meet the guidelines set forth in DIN 580.

Use suitable, sufficiently rated handling equipment if necessary. Remove any transport fixtures prior to startup.

**Setup /
Installation**

See notes in sections "Setup" and "Installation/Removal!"

**Startup /
Operation**

Check whether the direction of rotation is correct in **decoupled** status (also listen out for unusual grinding noises as the shaft rotates).

Secure the shaft keys for test mode without output elements. Do not render monitoring and protection equipment inoperative even for test mode.

Switch off the geared motor if in doubt whenever changes occur in relation to standard operation (e.g. increased temperature, noise, vibration). Determine the cause; contact SEW if necessary.

**Inspection /
Maintenance**

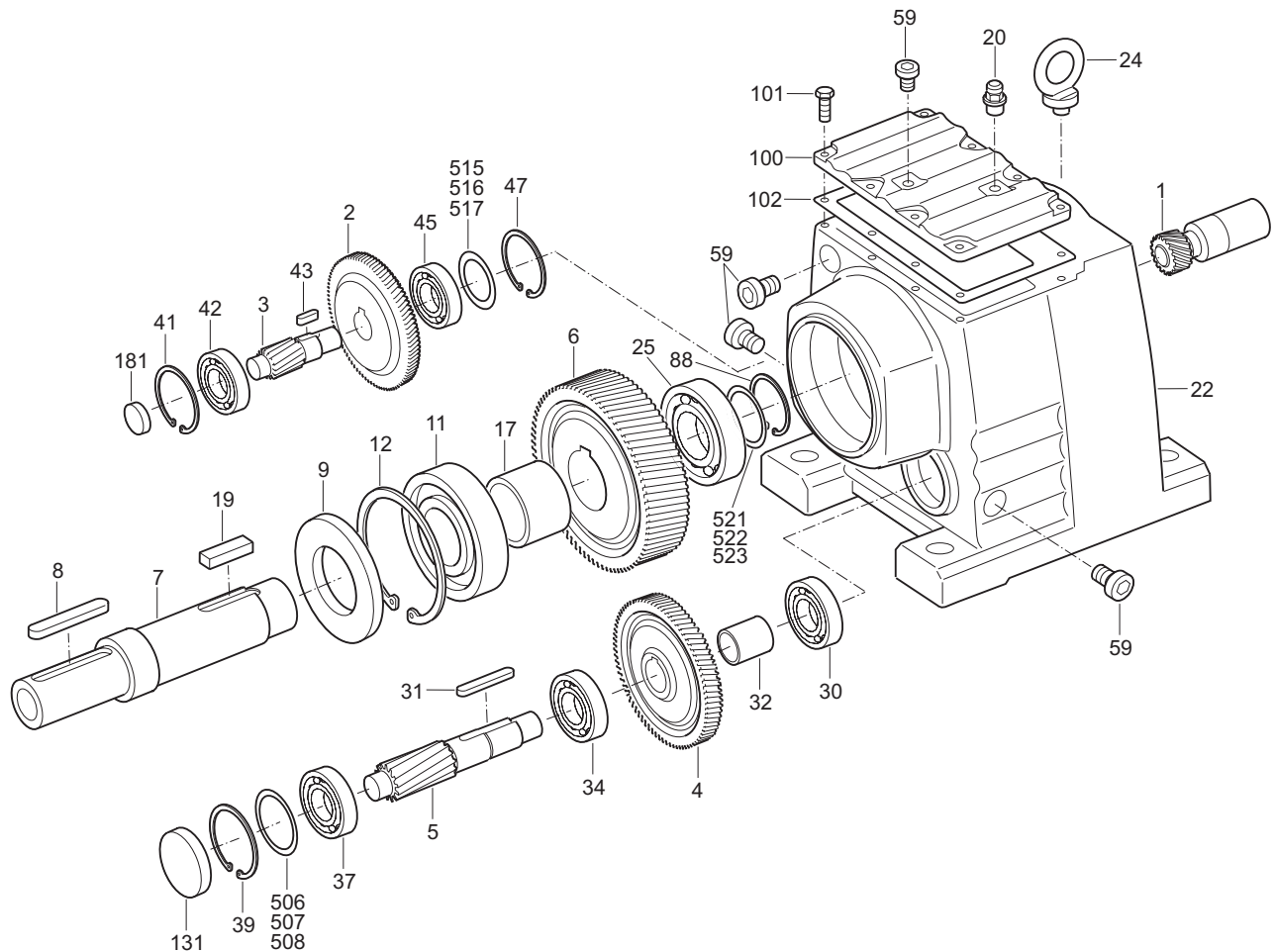
See notes in section "Inspection/Maintenance!"

3 Gear Unit Design



The following illustrations represent design principles. They are merely reference tools for the spare parts lists. Deviations according to gear unit size and design are possible!

3.1 Basic design of a helical gear unit



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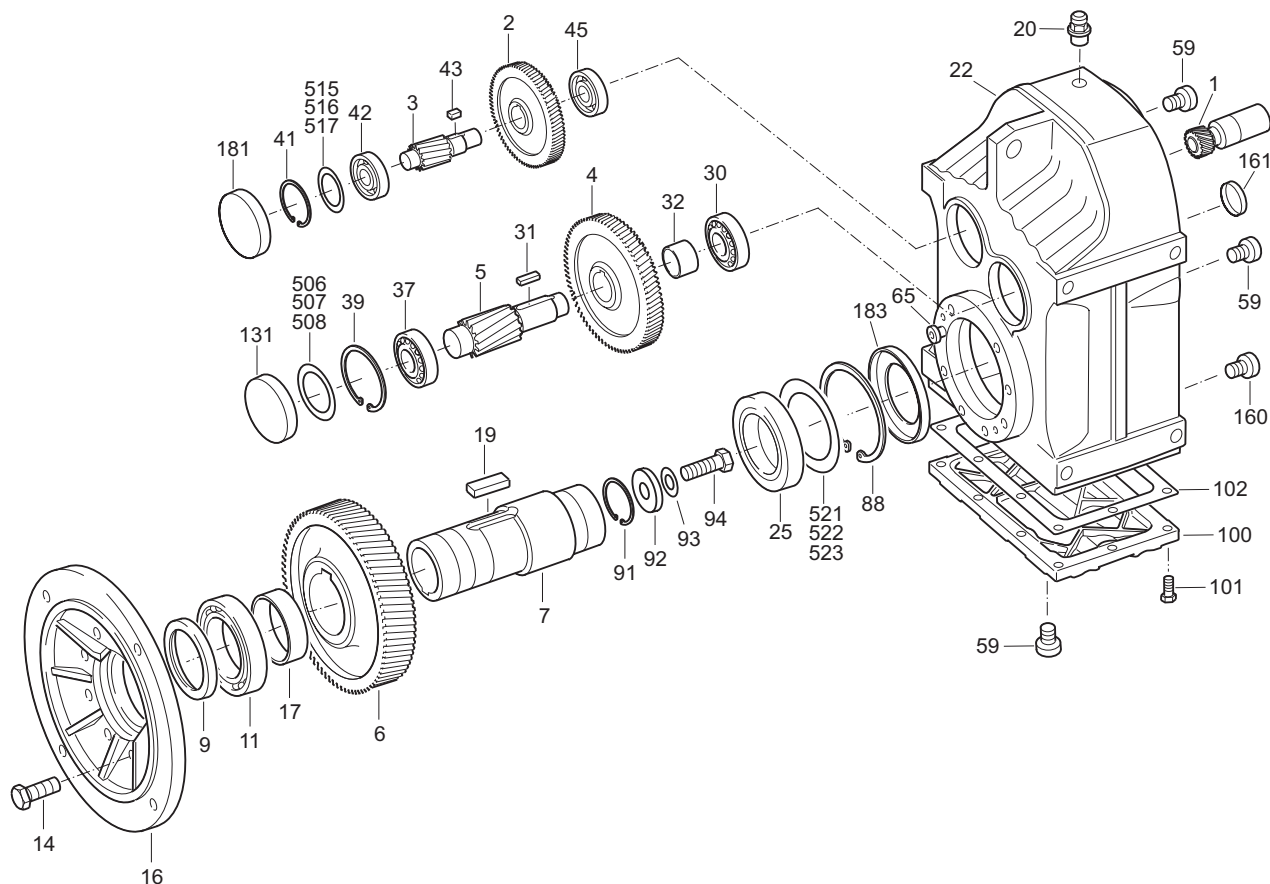
Fig. 1: Basic structure of helical gear units

Legend

1 Pinion	19 Key	42 Deep groove ball bearing	507 Shim
2 Gear	20 Breather valve	43 Key	508 Shim
3 Pinion shaft	22 Gear unit housing	45 Deep groove ball bearing	515 Shim
4 Gear	24 Lifting eyebolt	47 Circlip	516 Shim
5 Pinion shaft	25 Cylinder ball bearing	59 Screw plug	517 Shim
6 Gear	30 Deep groove ball bearing	88 Circlip	521 Shim
7 Output shaft	31 Key	100 Cover	522 Shim
8 Key	32 Spacer tube	101 Hex head screw	523 Shim
9 Oil seal	34 Cylinder ball bearing	102 Gasket	
11 Deep groove ball bearing	37 Deep groove ball bearing	131 Cap	
12 Circlip	39 Circlip	181 Cap	
17 Spacer tube	41 Circlip	506 Shim	



3.2 Basic design of a parallel shaft helical gear unit



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Fig. 2: Basic design of a parallel shaft helical gear unit

Legend

1 Pinion	22 Gear unit housing	91 Circlip	184 Oil seal
2 Gear	25 Deep groove ball bearing	92 Disc	506 Shim
3 Pinion shaft	30 Tapered roller bearing	93 Lock washer	507 Shim
4 Gear	31 Lockwasher	94 Hex head screw	508 Shim
5 Pinion shaft	32 Spacer tube	100 Cover	515 Shim
6 Gear	37 Tapered roller bearing	101 Hex head screw	516 Shim
7 Hollow shaft	39 Circlip	102 Gasket	517 Shim
9 Oil seal	41 Circlip	131 Cap	521 Shim
11 Deep groove ball bearing	42 Deep groove ball bearing	160 Plug	522 Shim
14 Hex head screw	43 Key	161 Cap	523 Shim
16 Output flange	45 Deep groove ball bearing	165 Plug	
17 Spacer tube	59 Screw plug	168 Protection cap	
19 Key	81 O-ring	181 Cap	
20 Breather valve	88 Circlip	183 Oil seal	



3.3 Basic design of a helical-bevel gear unit

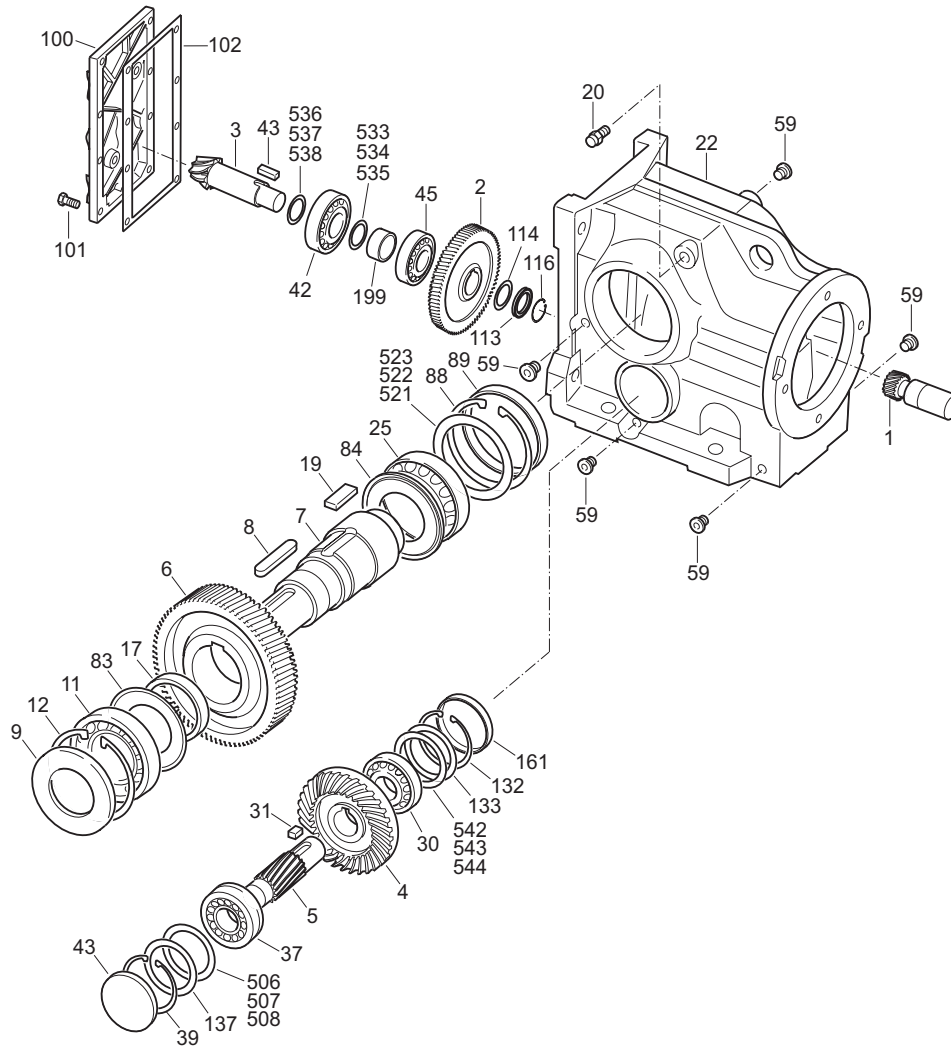


Fig.3: Basic design of a helical-bevel gear unit

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Legend

1 Pinion	25 Tapered roller bearing	102 Adhesive and sealant	523 Shim
2 Gear	30 Tapered roller bearing	113 Wing nut	533 Shim
3 Pinion shaft	31 Key	114 Locking plate	534 Shim
4 Gear	37 Tapered roller bearing	116 Thread retention	535 Shim
5 Pinion shaft	39 Circlip	119 Spacer tube	536 Shim
6 Gear	42 Tapered roller bearing	131 Cap	537 Shim
7 Output shaft	43 Key	132 Circlip	538 Shim
8 Key	45 Tapered roller bearing	133 Spacer	542 Shim
9 Oil seal	59 Screw plug	137 Spacer	543 Shim
11 Tapered roller bearing	83 Nilos ring	161 Cap	544 Shim
12 Circlip	84 Nilos ring	506 Shim	
17 Spacer tube	88 Circlip	507 Shim	
19 Key	89 Cap	508 Shim	
20 Breather valve	100 Gear unit cover	521 Shim	
22 Gear unit housing	101 Hex head screw	522 Shim	



3.4 Base design of a helical-worm gear unit

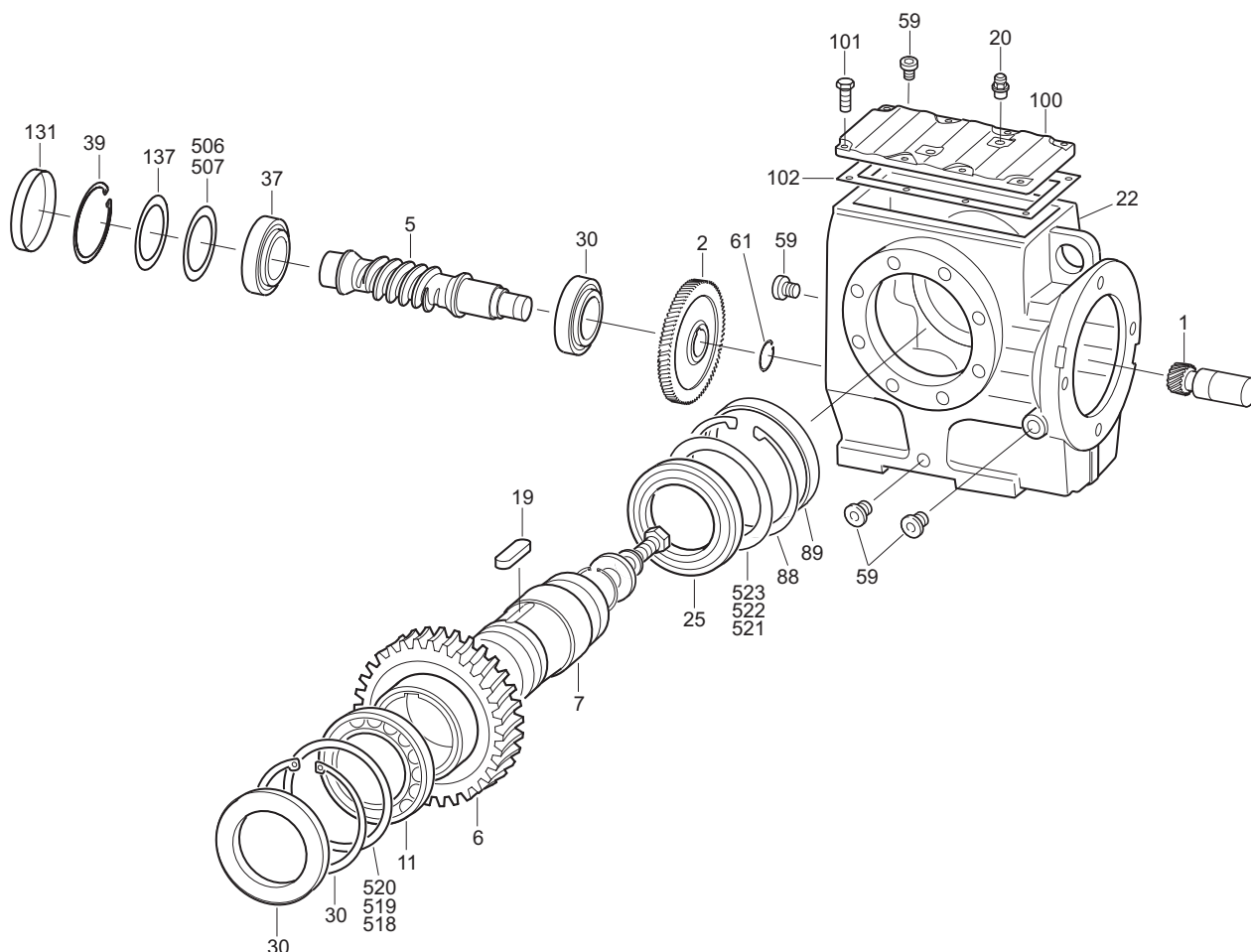


Fig. 4: Basic design of a helical-worm gear unit

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Legend

1	Pinion	19	Key	61	Circlip	507	Shim
2	Gear	20	Breather valve	88	Circlip	518	Shim
5	Worm	22	Gear unit housing	89	Cap	519	Shim
6	Worm gear	25	Tapered roller bearing	100	Gear unit housing	520	Shim
7	Output shaft	30	Tapered roller bearing	101	Hex head screw	521	Shim
9	Oil seal	37	Tapered roller bearing	131	Cap	522	Shim
11	Tapered roller bearing	39	Circlip	137	Spacer	523	Shim
12	Circlip	59	Screw plug	506	Shim		



3.5 Basic design of a SPIROPLAN® gear unit

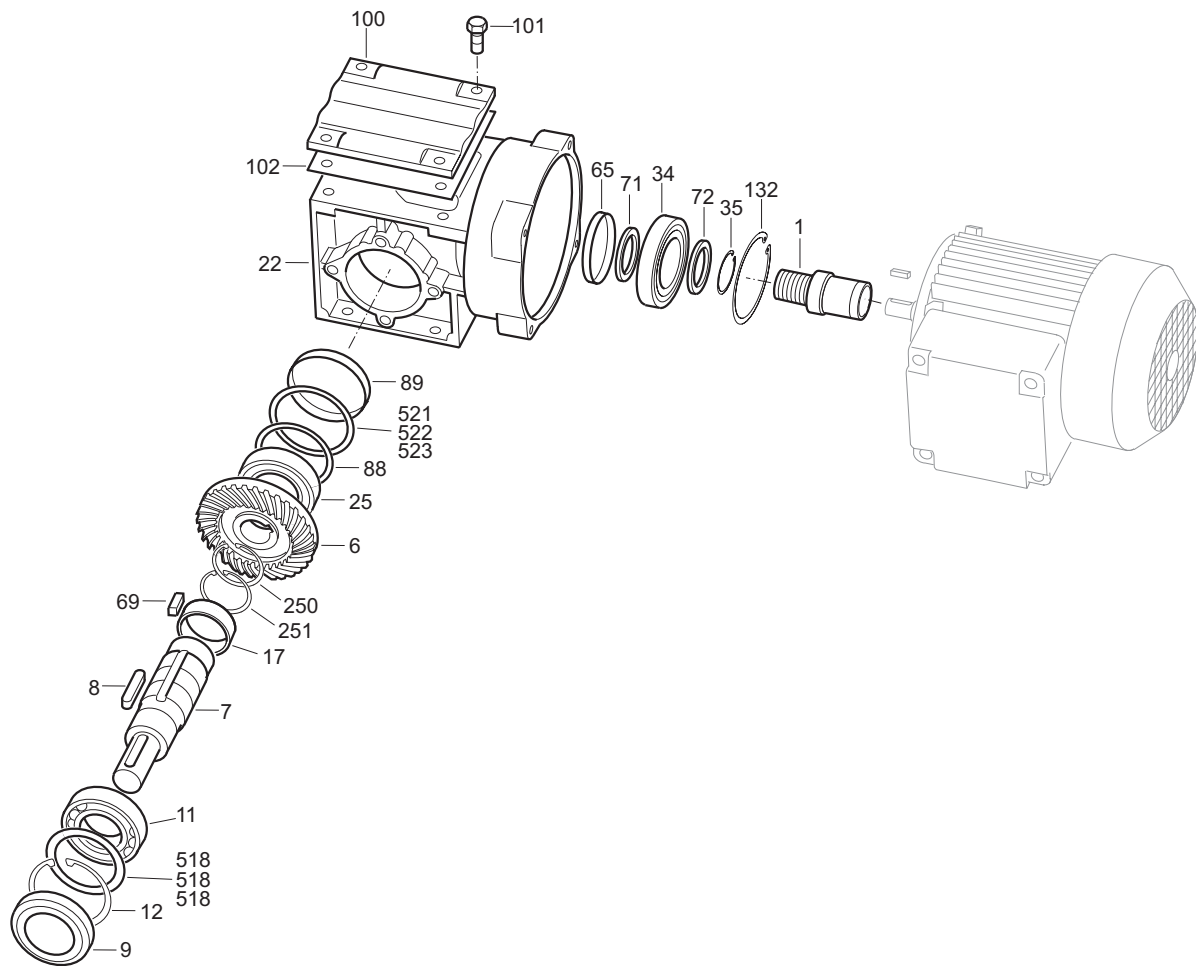


Fig. 5: Basic design of a SPIROPLAN® gear unit

03488AXX

Legend

1 Pinion	19 Key	88 Circlip	251 Circlip
6 Gear	22 Gear unit housing	89 Cap	518 Shim
7 Output shaft	25 Deep groove ball bearing	100 Gear unit cover	519 Shim
8 Key	34 Deep groove ball bearing	101 Hex head screw	520 Shim
9 Oil seals	35 Circlip	102 Gasket	521 Shim
11 Deep groove ball bearing	65 Oil seal	132 Circlip	522 Shim
12 Circlip	71 Spacer	183 Oil ring	523 Shim
17 Spacer tube	72 Spacer	250 Circlip	



4 Mechanical Installation

4.1 Required tools / material

- Set of spanners
- Torque wrench (for shrink discs, AQ motor adapter, input shaft assembly with centering shoulder)
- Mounting device
- Shims and distance rings, if necessary
- Fastening devices for input and output elements
- Lubricant (e.g. NOCO[®] fluid)
- Agent for securing screws, e.g. Loctite 243 (for input shaft assembly with centering shoulder)

Mounting tolerances

Shaft end	Flanges
Diameter tolerance according to DIN 748 <ul style="list-style-type: none"> • ISO k6 for solid shafts with $\varnothing \leq 50$ mm • ISO m6 for solid shafts with $\varnothing > 50$ mm • ISO H7 for hollow shafts • Center hole according to DIN 332, shape DR.. 	Centering shoulder tolerance according to DIN 42948 <ul style="list-style-type: none"> • ISO j6 with $b_1 \leq 230$ mm • ISO h6 with $b_1 > 230$ mm

4.2 Before you begin

The drive may only be installed if

- the entries on the name plate of the drive match the mains power supply,
- the drive is undamaged (no damage caused by transport or storage) and
- it is certain that the following requirements have been fulfilled:
 - **with standard gear units:**
ambient temperature according to lubricant table in section lubricants (see standard), no oil, acid, gas, vapors, radiation, etc.
 - **with special versions:**
drive configured in accordance with the ambient conditions
 - **with helical worm/Spiroplan[®] W gear units:**
no large external mass moments of inertia which could exert a retrodriving load on the gear unit
[where h' (retrodriving) = $2 - 1/\eta < 0.5$ self-locking]

4.3 Preliminary work

The output shafts and flange surfaces must be thoroughly cleaned of anti-corrosion agents, contamination or such like (use a commercially available solvent). Do not let the solvent come into contact with the sealing lips of the oil seals – material damage!

Long-term storage of gear units

Gear units of the “extended storage” type have

- a mineral oil fill (CLP) or synthetic oil fill (CLPHC) suitable for the mounting position so the unit is ready to run. However, you should still check the oil level prior to startup (see section “Inspection/Maintenance” / “Inspection/Maintenance work”).
- a higher oil level with synthetic oil CLP PG). Correct the oil level prior to startup (see section “Inspection/Maintenance” / “Inspection/Maintenance work”).



4.4 Installing the gear unit

The gear unit or geared motor must be mounted/installed in the specified mounting position on a level¹, vibration-absorbing and torsionally rigid support structure (Spiroplan® gear units are not dependent on mounting position). Do not tighten housing legs and mounting flanges against each other and pay attention to the approved overhung and axial loads

Use only bolts of 8.8 quality for installation of the geared motors

Use bolts of **10.9 quality** for fastening of flanges to transmit the rated torques listed in the catalog for the following helical geared motors in flange design (RF..) and in foot/flange version (R..F):

- RF37, R37F with flange-Ø 120 mm
- RF47, R47F with flange-Ø 140 mm
- RF57, R57F with flange-Ø 160 mm



Oil check screws, drain screws and breather valves have to be freely accessible!

At this point of assembly, please check that the oil filling is as prescribed for the mounting position (see "Lubricants" / "Lubricant fill levels" or data on nameplate). **In case of mounting position change, adjust lubricant filling quantities accordingly.**

Please consult our service department, if the mounting position for K gear units is changed to M5 or M6 or within these mounting positions.

Please consult our service department, if the mounting position of S units in sizes S47 ... S97 is to be changed to mounting position M2.

Use plastic inserts (2 – 3 mm thick) if there is a risk of electrochemical corrosion between the gear unit and the driven machine (connection between different metals such as cast iron and high-grade steel)! Also fit the bolts with plastic washers! Ground the housing additionally – use the grounding bolts on the motor.

Gear units are supplied in corrosion-resistant versions for use in damp areas or in the open air. Any damage to the paintwork (e.g. on the breather valve) must be repaired.

Installation in damp areas or in the open

1. Maximum permitted flatness error for flange mounting (approximate values with reference to DIN ISO 1101): with → flange 120...600 mm max. error 0.2...0.5 mm

**Gear unit venting**

No ventilation is required for R17, R27 and F27 gear units in mounting positions M1, M3, M5 and M6 as well as Spiroplan® W gear units.

All other gear units are delivered by SEW ready for the mounting position with the breather valve and transport fixture fitted.

Exceptions:

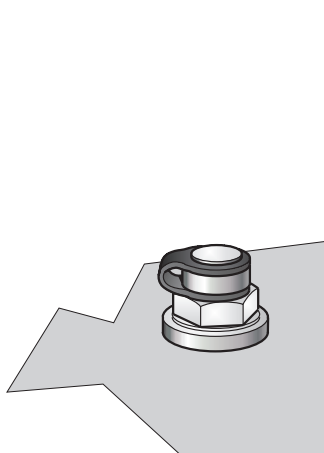
Gear units for long-term storage, in pivoting or inclined mounting positions are supplied with a screw plug installed in the provided vent hole. Prior to startup, the customer must replace screw plug at the highest location by the supplied breather valve.

- **With geared motors** for long-term storage, pivoting or inclined mounting positions, the supplied breather valve is located in the **motor terminal box**.
- **With gear head units** that have to be vented on the input side, the breather valve is supplied in a plastic bag.
- **No breather valve will be supplied for gear units in enclosed design.**

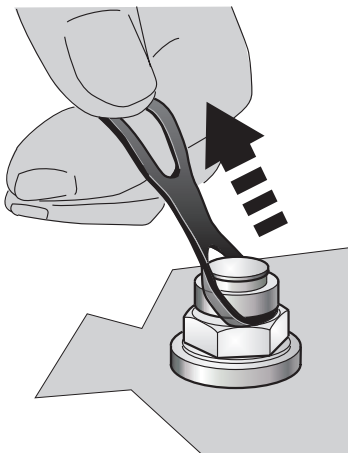
Activating the breather valve

Usually the breather valve is activated in the plant. Should this not be the case, the transport fixture must be removed from the breather valve prior to the startup of the gear unit!

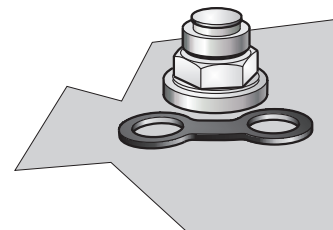
1. Breather valve with transport fixture
2. Remove transport fixture
3. Activate breather valve



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02055BXX

Painting the gear unit

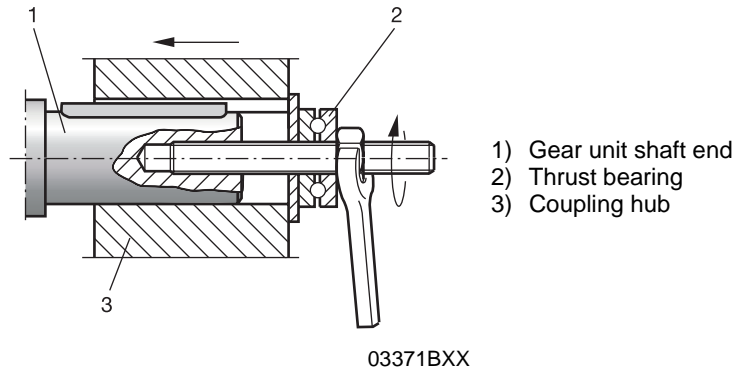
Cover breather valve and oil seals with protective tape prior to painting or partly repainting the drive. Remove adhesive strips when the paint job is finished.



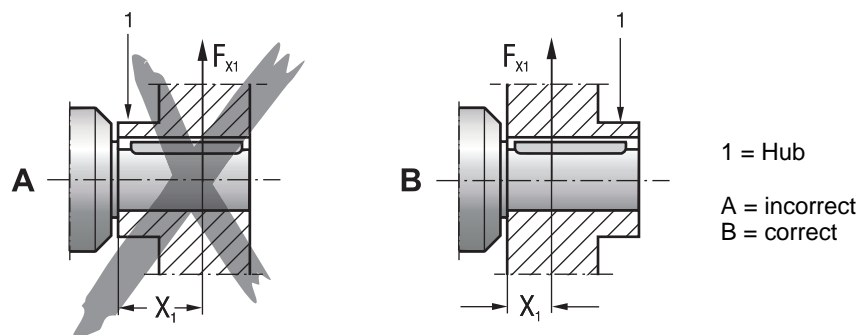
4.5 Gear units with solid shaft

Installation of input and output elements

The following illustration is an example of a mounting device for mounting couplings or hubs onto gear unit or motor shaft ends. It may be possible to dispense with the thrust bearing on the mounting device.



The following illustration displays the correct mounting arrangement **B** of a gear wheel or sprocket to prevent excessively high overhung loads.



03369BXX



- Only use a mounting device (see Fig. 1) for installing input and output elements. Use the center bore and the thread on the shaft end for positioning purposes.
- **Never drive belt pulleys, couplings, pinions, etc. onto the shaft end by hitting them with a hammer (damage to bearings, housing and the shaft!).**
- **In the case of belt pulleys, make sure the belt is tensioned correctly (in accordance with the manufacturer's instructions).**
- Power transmission elements should be balanced after fitting and must not give rise to any impermissible radial or axial forces (see Fig. 2 / permitted values see the "Geared Motors" catalog).



Note:

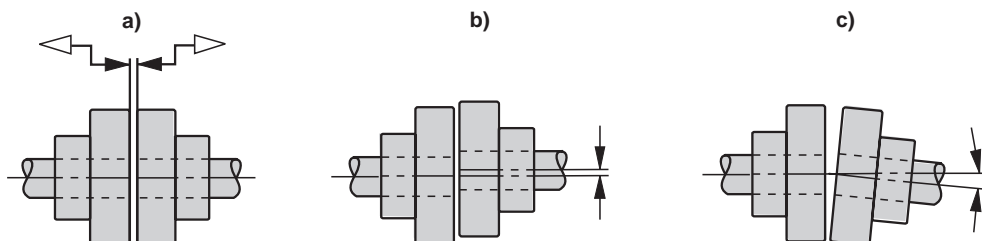
Assembly is easier if you first apply lubricant to the output element or heat it up briefly (to 80-100 °C).



Installation of couplings

Harmonize the following factors according to the manufacturer's recommendation when installing couplings:

- a) maximum and minimum distance
- b) axial misalignment
- c) angular misalignment

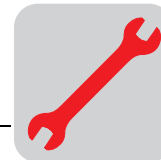


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Fig. 6: Distance and misalignment with coupling installation



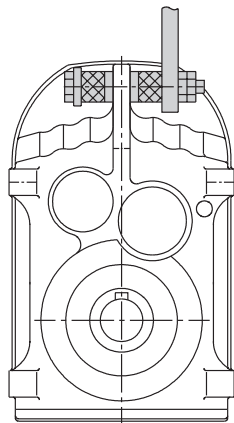
Drive and output elements such as belt pulleys, couplings, etc. must be equipped with a touchguard!



4.6 Installation of torque arms for shaft-mounted gear units

Do not strain torque arms during installation!

**Parallel shaft
helical gear units**

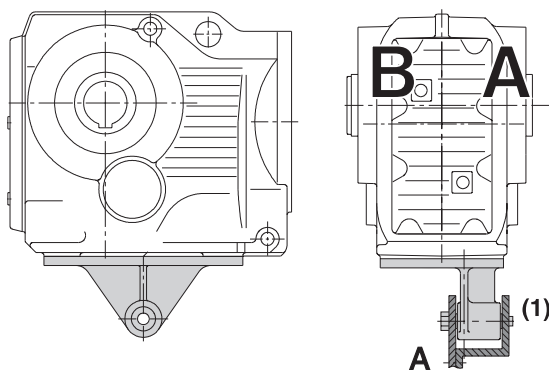


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Fig. 7: Torque arm for parallel shaft gear units

**Helical-bevel gear
units**

- Bushing with bearings on both ends → (1)
- Install connection end B as a mirror image of A



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Fig. 8: Torque arm for helical-bevel gear units



Helical-worm gear units

- Bushing with bearings on both ends → (1)

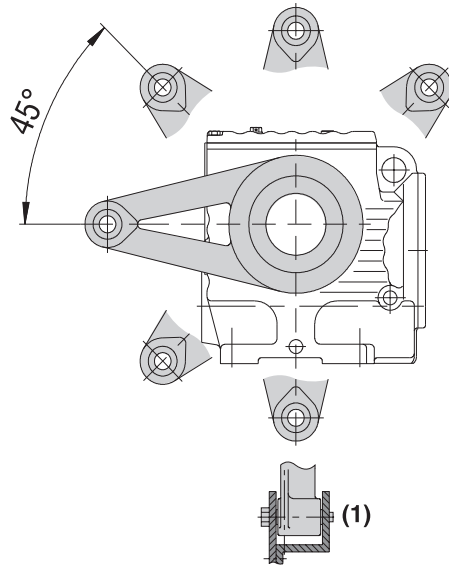


Fig. 9: Torque arm for helical-worm gear units

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SPIROPLAN® W gear units

- Bushing with bearings on both ends → (1)

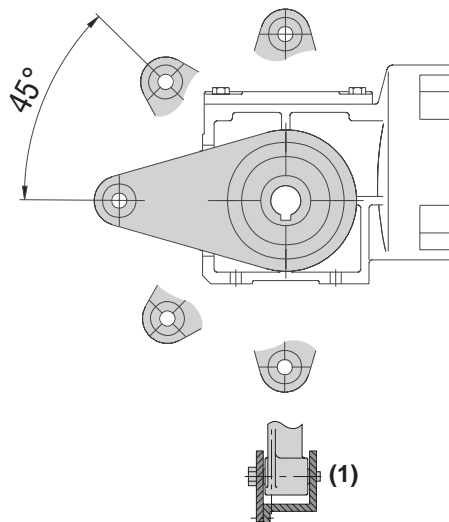


Fig. 10: Torque arm for SPIROPLAN® W gear units

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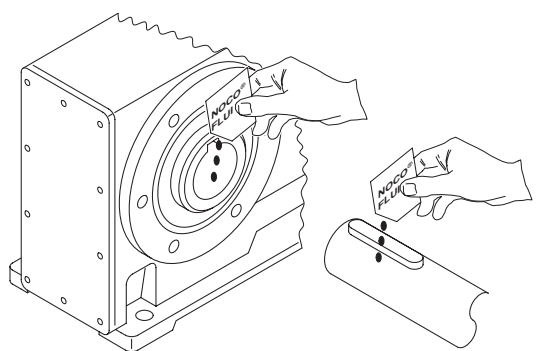
4.7 Installation/removal of shaft-mounted gear units with key or splines



Note the construction notes in the Geared Motors catalog when designing the customer shaft!

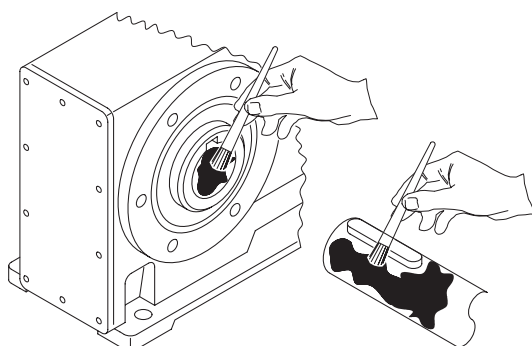
Installation notes

1. Apply NOCO® fluid



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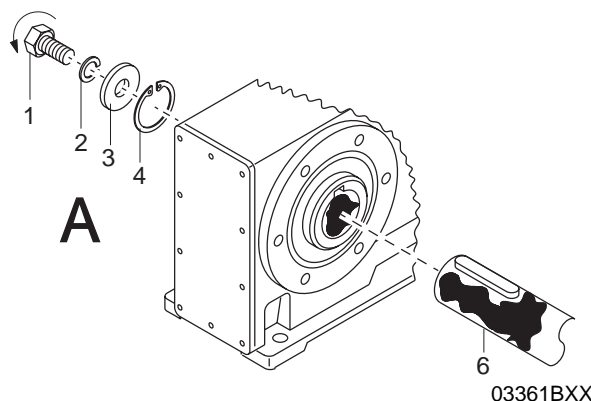
2. Distribute NOCO® fluid evenly



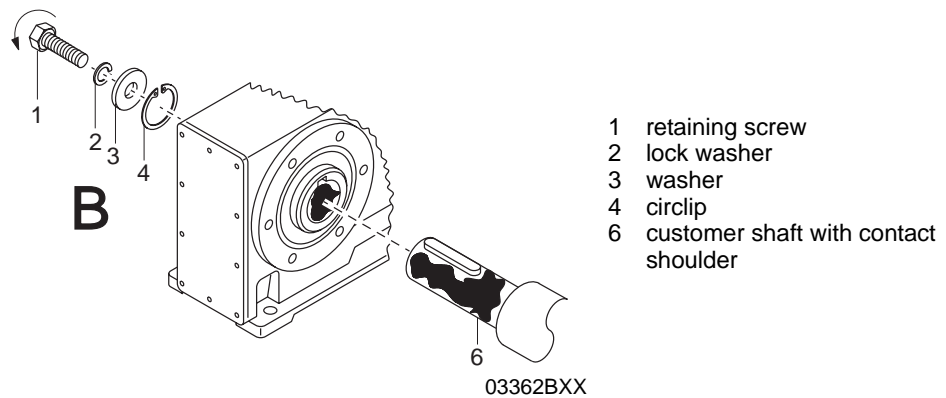
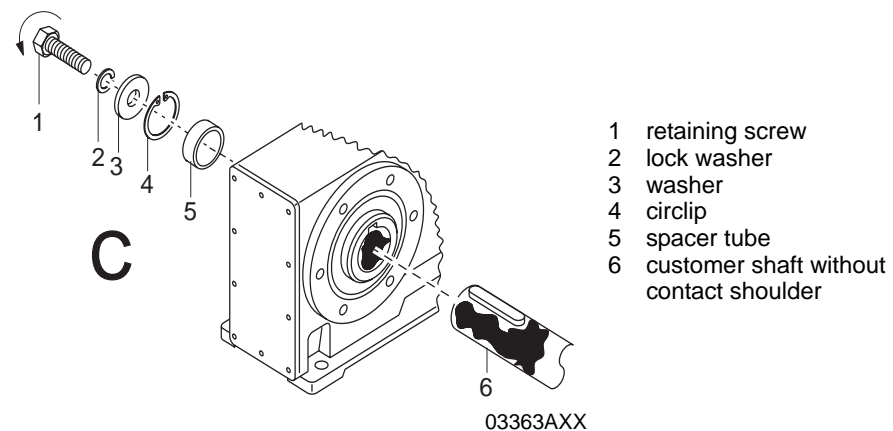
02043AXX

3. Install shaft and secure axially
(installation will be made easier by using a mounting device)

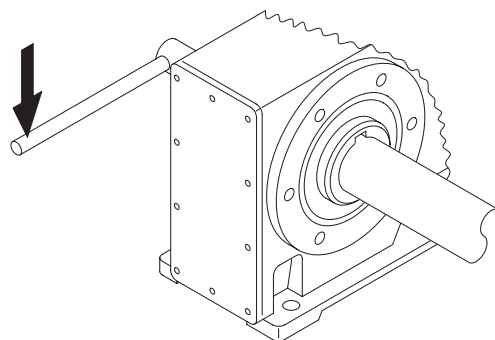
3A: Installation with standard components



- 1 short retaining screw
(standard components)
- 2 lock washer
- 3 washer
- 4 circlip
- 6 customer shaft

**3B: Installation with SEW installation/removal kit (→ page 22)**– Customer shaft **with** contact shoulder**3C: Installation with SEW installation/removal kit (→ page 22)**– Customer shaft **without** contact shoulder

4. Tighten retaining screw with corresponding torque (see table).



Screw	Torque [Nm]
M5	5
M6	8
M10/12	20
M16	40
M30	80
M24	200

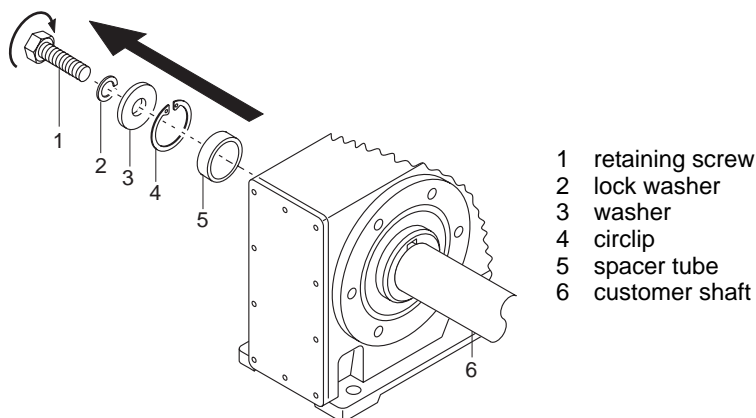
**Note:**

We recommend you also loosen the customer shaft between the two contact surfaces to prevent contact corrosion!

**Removal notes**

The description applies only to gear units that were installed with the SWE mounting/removal kit (→ page 22) (see previous description, points 3B or 3C)

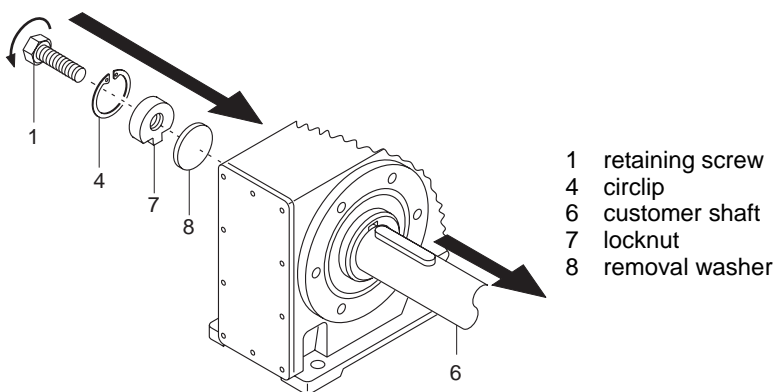
1. Loosen the retaining screw 1.
2. Remove parts 2 to 4 and the spacer tube 5, if installed.



- 1 retaining screw
- 2 lock washer
- 3 washer
- 4 circlip
- 5 spacer tube
- 6 customer shaft

03366AXX

3. Install the removal washer 8 and the locknut 7 from the SEW installation/removal kit between customer shaft 6 and circlip 4.
4. Reinstall the circlip 4.
5. Reinstall the retaining screw 1. You can now remove the gear unit from the shaft by tightening the screw.



- 1 retaining screw
- 4 circlip
- 6 customer shaft
- 7 locknut
- 8 removal washer

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SEW installation/ removal kit

The SEW installation/removal kit is available with the indicated part number.

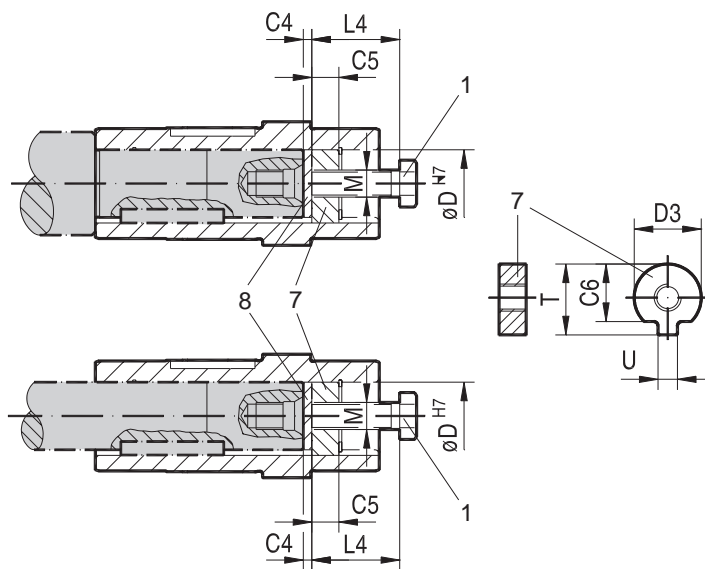


Fig. 11: SEW installation/removal kit

03394CXX

- 1 retaining screw
- 7 locknut for removal
- 8 removal washer

Type	D ^{H7} [mm]	M ¹⁾	C4 [mm]	C5 [mm]	C6 [mm]	U ^{-0.5} [mm]	T ^{-0.5} [mm]	D3 ^{-0.5} [mm]	L4 [mm]	Part number installation/ removal kit
WA..10	16	M5	5	5	12	4.5	18	15.7	50	643 712 5
WA..20	18	M6	5	6	13.5	5.5	20.5	17.7	25	643 682 X
WA..20, WA..30, SA..37	20	M6	5	6	15.5	5.5	22.5	19.7	25	643 683 8
FA..27, SA..47	25	M10	5	10	20	7.5	28	24.7	35	643 684 6
FA..37, KA..37, SA..47, SA..57	30	M10	5	10	25	7.5	33	29.7	35	643 685 4
FA..47, KA..47, SA..57	35	M12	5	12	29	9.5	38	34.7	45	643 686 2
FA..57, KA..57, FA..67, KA..67, SA..67	40	M16	5	12	34	11.5	41.9	39.7	50	643 687 0
SA..67	45	M16	5	12	38.5	13.5	48.5	44.7	50	643 688 9
FA..77, KA..77, SA..77	50	M16	5	12	43.5	13.5	53.5	49.7	50	643 689 7
FA..87, KA..87, SA..77, SA..87	60	M20	5	16	56	17.5	64	59.7	60	643 690 0
FA..97, KA..97, SA..87, SA..97	70	M20	5	16	65.5	19.5	74.5	69.7	60	643 691 9
FA..107, KA..107, SA..97	90	M24	5	20	80	24.5	95	89.7	70	643 692 7
FA..127, KA..127	100	M24	5	20	89	27.5	106	99.7	70	643 693 5
FA..157, KA..157	120	M24	5	20	107	31	127	119.7	70	643 694 3

1) retaining screw



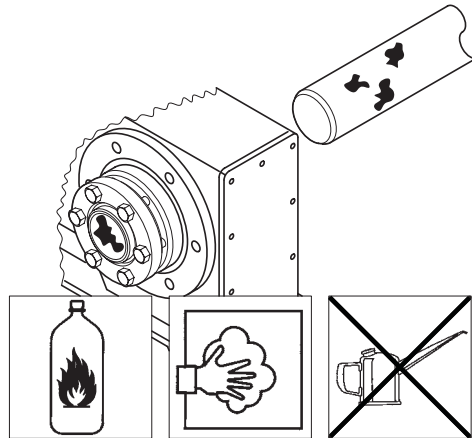
4.8 Installation/removal of shaft-mounted gear units with shrink disc

Installation notes

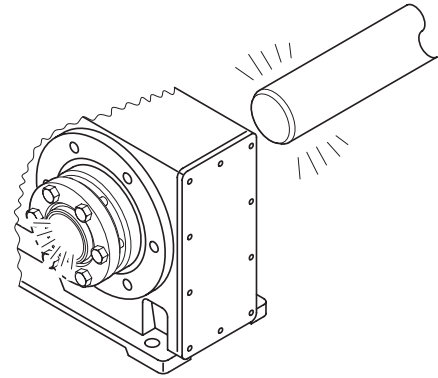
- Do not tighten locking screws unless shaft is installed - hollow shaft could be deformed!

1. Thoroughly remove grease from hollow shaft bore and drive shaft.

2. Degreased hollow shaft/drive shaft



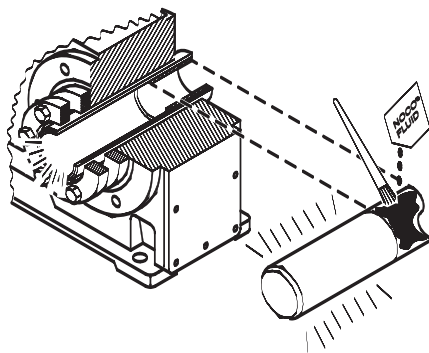
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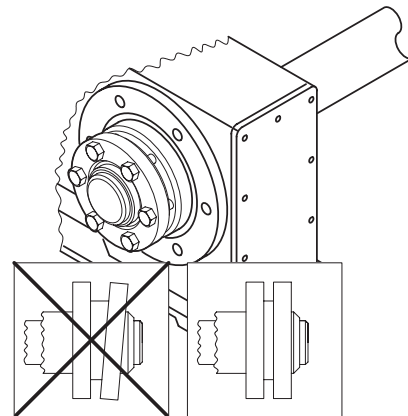
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3. Apply NOCO® fluid in the bushing area onto the input shaft¹⁾.

4. Install shaft, making sure that the locking collars of the shrink disc are evenly spaced²⁾.



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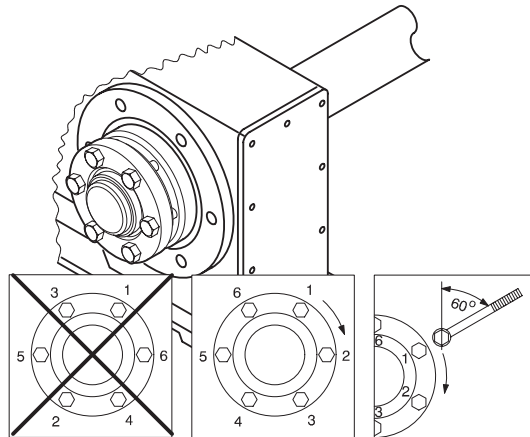
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- 1) The clamping area of the shrink disc must always be kept free from grease! Therefore, never apply NOCO® fluid directly onto the bushing, since the paste can enter the clamping area of the shrink disc when installing the input shaft.
- 2) After installation, grease the outer surface of the hollow shaft in the shrink disc area to protect the shaft against corrosion.



5. Tighten the locking screws by working round several times from one screw to the next (not diagonally). See table for tightening torques.



01819AXX

Gear unit type			Screw	Nm	max. ¹⁾
FH27	SH37		M5	5	60°
KH37...77	FH37...77	SH47...77	M6	12	
KH87/97	FH87/97	SH87/97	M8	30	
KH107	FH107		M10	59	
KH127/157	FH127		M12	100	

1) maximum tightening angle per cycle

Notes on removal of shrink disc

1. Unscrew the locking screws evenly one after the other. To avoid tilting and jamming of the locking collars, each locking screw may only be unscrewed by about one quarter turn in the initial cycle. Do not fully unscrew the locking screws!
2. Remove the shaft or pull the hub off the shaft (it is necessary to remove any rust which may have formed between the hub and the end of the shaft).
3. Pull the shrink disc off the hub..



Caution!

There is a risk of injuries if the shrink disc is not removed correctly!

Cleaning and lubricating the shrink disc

There is no need to take apart and re-grease disassembled shrink discs before they are screwed back on.

The shrink disc only needs to be cleaned and re-greased if it is contaminated.

Use one of the following solid lubricants for the tapered surfaces.

Lubricant (Mo S2)	Available as
Molykote 321 (lube coat)	spray
Molykote Spray (powder spray)	spray
Molykote G Rapid	spray or paste
Aemasol MO 19P	spray or paste
AemasolDIO-sétral 57 N (lube coat)	spray

Grease the locking screws with a multipurpose grease such as Molykote BR 2 or similar.



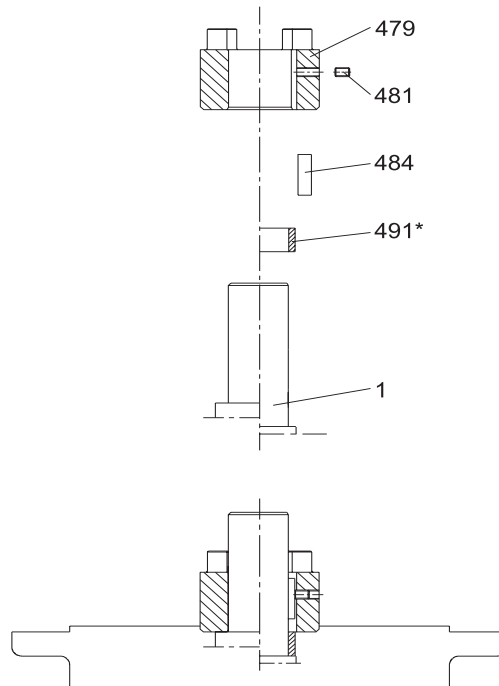
4.9 Installation of the AM adapter coupling

IEC adapters

AM63 - 225 /

NEMA adapters

AM56 - 365



* = NEMA adapters only
1 = motor shaft

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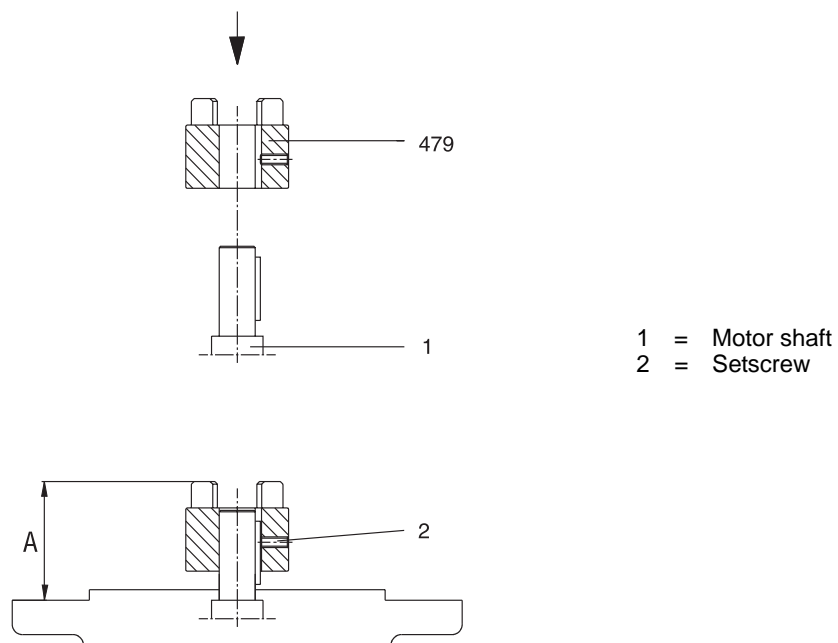
1. Clean motor shaft and flange surfaces of motor and adapter.
2. **IEC adapters:** Remove motor shaft key and replace with supplied key (484).
NEMA adapters: Remove motor shaft key, slide spacer tube (491) on motor shaft and install supplied key (484).
3. Heat coupling half (479) to approx. 80 - 100°C; slide coupling half on motor shaft.
IEC adapters: until rest on motor shaft shoulder.
NEMA adapters: until rest on spacer tube.
4. Secure key and coupling half with setscrew (481) on motor shaft .
5. Mount motor to adapter; the gearing of the coupling half and the geared adapter shaft must enmesh.



Note: We recommend applying Noco[®] fluid on the motor shaft prior to installation of the coupling half to prevent contact corrosion.



**IEC adapters
AM250/AM280**



02047CXX

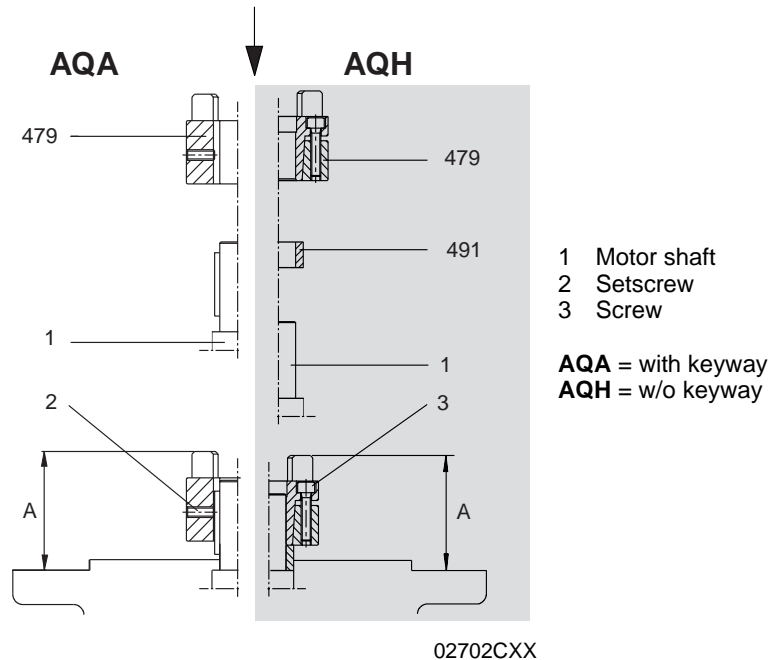
1. Clean motor shaft and flange surfaces of motor and adapter.
2. Remove motor shaft key and replace with supplied key (**size AM280 only**).
3. Heat coupling half (479) (to 80 °C - 100 °C) and slide on motor shaft (A = 139 mm).
4. Fasten coupling half with setscrew and check position (distance "A").
5. Mount motor on adapter; the gearing of the coupling half and the geared adapter shaft must enmesh.



Note: We recommend applying Noco[®] fluid on the motor shaft prior to installation of the coupling half to prevent contact corrosion.



4.10 Installation of the AQ adapter coupling



1. Clean motor shaft and flange surfaces of motor and adapter.
2. **AQH design:** Slide spacer tube (491) on motor shaft.
3. **AQH design:** Loosen screws of coupling half (479) and conical connection.
4. Heat coupling half (80° C - 100° C) and slide on motor shaft.
 - AQH design:** until rest on spacer tube (491).
 - AQA design:** until distance "A" (see table)
5. **AQH design:** Fasten screws of coupling half evenly by working round several times in sequence until all screws have been tightened to the TT tightening torque.
 - AQA design:** Secure coupling half with setscrew.
6. Check position of coupling half (distance "A" see table).

Mount motor to adapter; the jaws of both coupling halves must enmesh. The insertion force required to join the coupling halves. The insertion force required to join the coupling halves is suspended after final assembly thereby causing danger of axial load on the adjacent bearing.

Setting dimensions, tightening torques

Type	Coupling size	Distance "A" [mm]	Bolts DIN 912 ¹⁾	Tightening torque TT ¹⁾ [Nm]
AQA /AQH 80 /1/2/3	19/24	44.5	M4	3
AQA /AQH 100 /1/2		39		
AQA /AQH 100 /3/4		53		
AQA /AQH 115 /1/2		62		
AQA /AQH 115 /3	24/28	62	M5	6
AQA /AQH 140 /1/2		62		
AQA /AQH 140 /3	28/38	74.5	M5	6
AQA /AQH 190 /1/2		76.5		
AQA /AQH 190 /3	38/45	100	M6	10

1) in versions without keyway only (AQH)

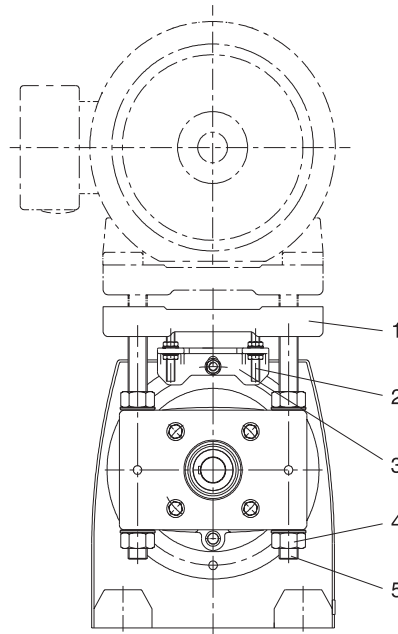


4.11 Installation on the AD input shaft assembly

See section "Installation of input and output shafts" for installation of input elements.

**Version with
motor mounting
platform AD../P**

Installation of motor and adjustment of motor mounting platform



- 1 Motor mounting platform
- 2 Setscrew (AD6/P / AD7/P only)
- 3 Support (AD6/P / AD7/P only)
- 4 Nut
- 5 Threaded column

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1. Adjust motor mounting platform to required mounting position by evenly tightening the adjusting nuts. For the lowest possible adjustment position of helical gear units, remove eyebolts/transport lugs if there are any; touch up any damage to protective coating.
2. Align motor on motor mounting plate (shaft extensions must be aligned) and secure it.
3. Mount drive elements onto input shaft extension and install motor shaft, align these to each other; correct motor position where necessary.
4. Install traction mechanisms (V-belts, chains, ...) and tighten by evenly adjusting the motor mounting plate. The motor mounting plate and columns must not be tightened against each other.
5. Secure threaded columns with the nuts not used for adjustment purposes.

**AD6/P and AD7/P
only:**

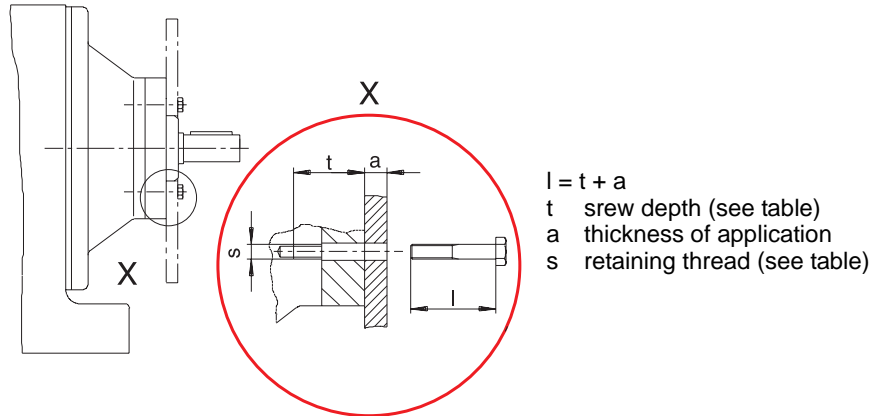
Loosen nuts and stud bolts before readjustment so that the stud bolts can be moved freely in the support axially. Tighten nuts after the final position has been accomplished. Do not adjust the motor mounting platform by using the support.



**AD../ZR design
with centering
shoulder**

Installing components on the input shaft assembly with centering shoulder

1. The bolts must be available in the correct length to fasten the installed components.
The length of the new bolts results from:



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The calculated screw length must be rounded down to the next smallest standard length.

2. Remove retaining screw from centering shoulder.
3. Clean contact surface and centering shoulder.
4. Clean the threads of the new screws and apply an adhesive agent (e.g. Loctite 243) to the first turns on the screw.
5. Set component onto centering shoulder and fasten retaining screws with indicated tightening torque T_t (see table).

Type	Depth of screw t	Retaining thread s	Tightening torque T_A [Nm]
AD2/ZR	25.5	M8	25
AD3/ZR	31.5	M10	48
AD4/ZR	36	M12	86
AD5/ZR	44	M12	86
AD6/ZR	48.5	M16	210
AD7/ZR	49	M20	410
AD8/ZR	42	M12	86

**AD../RS version
with backstop**

Check the direction of rotation prior to installation or startup. In case of the wrong direction of rotation, please consult our technical department.

The backstop is maintenance-free and does not require any additional maintenance work.



5 Startup

5.1 Startup of helical-worm and Spiroplan® W gear units



Note: The direction of rotation for the output shaft has been changed from CW to CCW for helical-worm gear units S..7 series compared to the S..2 series. Switch two motor feeder cables to change the direction of rotation.

Running-in period

Spiroplan® and helical-worm gear units require a running-in period of at least 24 hours before reaching their maximum efficiency. A separate running-in period is required for each direction of rotation if the gear unit is operated in both directions of rotation. The table displays the average power reduction during the running-in period.

No. of starts	Helical-worm		Spiroplan®	
	power reduction	i range	power reduction	i range
1 start	approx. 12%	app. 50...280	approx. 15%	approx. 40...75
2 starts	approx. 6%	app. 20...75	approx. 10%	approx. 20...30
3 starts	approx. 3%	app. 20...90	approx. 8%	approx. 15
4 starts	-	-	approx. 8%	approx. 10
5 starts	approx. 3%	app. 6...25	approx. 5%	approx. 8
6 starts	approx. 2%	app. 7...25	-	-

5.2 Startup of helical, parallel shaft helical and helical-bevel gear units

There are no special startup notes that have to be observed for helical gear units, parallel shaft helical gear units and helical-bevel gear units, if the gear units have been mounted according to the section "Mechanical Installation."



6 Troubleshooting

6.1 Gear unit problems

Problem	Possible cause	Remedy
Unusual, regular running noise	A Meshing/grinding noise: bearing damage B Knocking noise: irregularity in the gearing	A Check oil (see Inspection and Maintenance), replace bearing B Call customer service
Unusual, irregular running noise	Foreign bodies in the oil	<ul style="list-style-type: none"> Check oil (see Inspection and Maintenance) Stop the drive, call customer service
Oil leaking ¹⁾ <ul style="list-style-type: none"> from the gear unit cover from the motor flange from motor oil seal from gear unit flange from the output end oil seal 	A Defective rubber gasket on gear unit cover B Defective gasket C Gear unit not vented	A Retighten screws on gear unit cover and observe gear unit. Oil still leaking: Call customer service B Call customer service C Vent the gear unit (see Mounting Positions)
Oil leaking from the breather valve	A Too much oil B Drive installed in incorrect mounting position C Frequent cold starts (oil foaming) and / or high oil level	A Correct oil level (see Inspection and Maintenance) B Fit the breather valve correctly (see Mounting Positions) and adjust oil level (see Lubricants)
Output shaft is not rotating although the motor is running or the input shaft is rotating	Shaft hub connection interrupted in the gear unit	Send in gear unit/geared motor for repair

1) It is normal for small amounts of oil/grease to leak out of the oil seal during the running-in period (24 hour running time) (also see DIN 3761).

Please have the following information available if you require assistance of our customer service:

- Nameplate data (complete)
- Type and extent of problem
- Time and circumstances of problem
- Possible cause



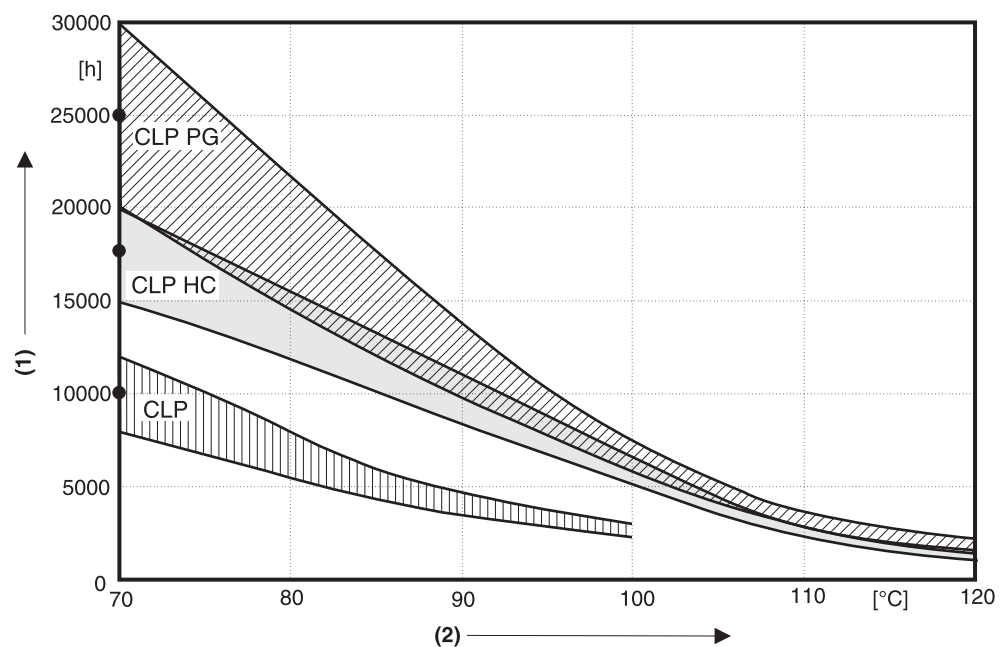
7 Inspection and Maintenance

7.1 Inspection and maintenance periods

Time period	What to do?
<ul style="list-style-type: none"> every 3000 operating hours, at least every six months 	<ul style="list-style-type: none"> Check oil
<ul style="list-style-type: none"> depending on operating conditions (see following illustration), at least every three years 	<ul style="list-style-type: none"> Replace mineral oil Replace bearing grease
<ul style="list-style-type: none"> depending on operating conditions (see following illustration), at least every five years 	<ul style="list-style-type: none"> Replace synthetic oil Replace bearing grease
<ul style="list-style-type: none"> R17, R27, F27 and Spiroplan® gear units are lubricated for life and do not require maintenance 	
<ul style="list-style-type: none"> different (depending on external influences) 	<ul style="list-style-type: none"> Touch up or replace surface/corrosion protection coat

7.2 Lubricant replacement schedule

Change oil more often in special version and under more demanding/aggressive ambient conditions!



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Fig. 12: Replacement schedule for standard gear units operating under normal ambient conditions.

- (1) Operating hours
 (2) Oil bath steady-state temperature
 • Average value depending on oil type at 70° C



7.3 Inspection/maintenance of gear units

Do not mix synthetic lubricants with each other nor with mineral lubricants!
Mineral oil is the standard lubricant.

The position of the oil level plug, oil drain plug and the breather valve is dependent on the mounting position.

Checking the oil level



1. De-energize the drive and secure against unintentional switch-on!

Wait until the gear unit has cooled down – Danger of burns!

2. See section "Setup of gear unit" for change in mounting position!
3. For gear units with oil level plug: remove oil level plug, check fill level and correct if necessary, install oil level plug

Check oil



1. De-energize the drive and secure against unintentional switch-on!

Wait until gear unit has cooled down - Danger of burns!

2. Remove some oil from the oil drain plug
3. Check oil consistency
 - viscosity
 - if the oil is visibly contaminated, it is recommended to change it sooner than recommended by the maintenance intervals listed under the heading "Inspection and maintenance periods" on page 32
4. For gear units with an oil level plug: remove oil level plug, check oil fill level and correct if necessary, install oil level plug

Changing the oil



Only change the oil when the gear unit is at operating temperature.

1. De-energize the drive and secure against unintentional switch-on!

Wait until the gear unit has cooled down – Danger of burns!

Note: Gear unit must still be warm, otherwise the high viscosity of excessively cold oil will make it harder to drain the oil correctly.

2. Place a container underneath the oil drain plug
3. Remove oil level plug, breather plug/valve and oil drain plug
4. Drain oil completely
5. Install oil drain plug
6. Fill new oil of the same type through the breather hole, otherwise consult our service department
 - amount in accordance with the mounting position (see section "Lubricant fill levels") on the nameplate
 - check at the oil level plug
7. Install oil level plug
8. Install breather plug/valve

8 Mounting Positions

8.1 General comments on mounting positions

Mounting position designation

SEW has six mounting positions M1 ... M6 for gear units (see illustration).

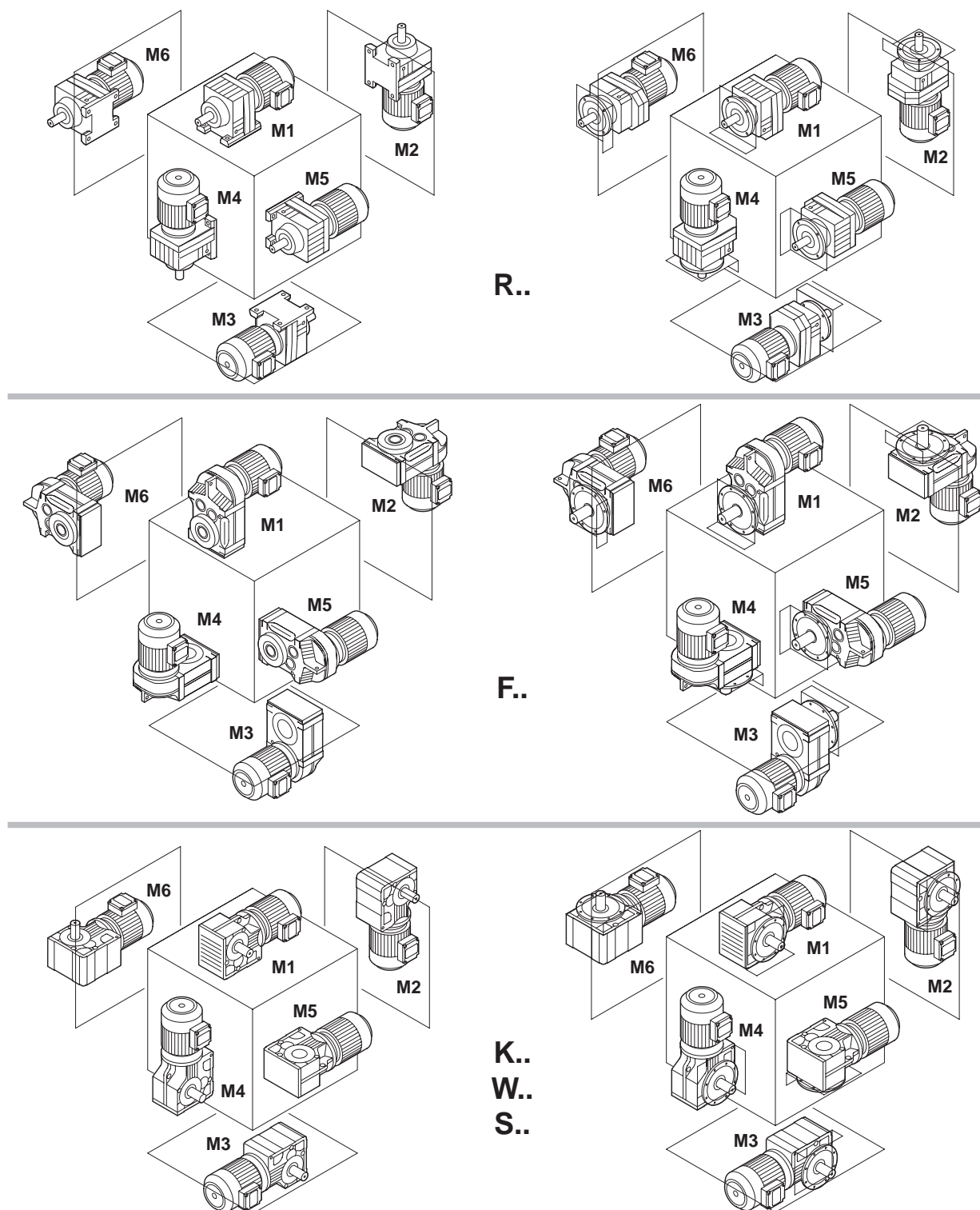


Fig. 13: Mounting positions M1 ... M6

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**Comparison
old/new**

The following table indicates in which way the old SEW mounting position designations are integrated into the new system:

	M1	M2	M3	M4	M5	M6
R, RX	B3	V6	B8	V5	B6	B7
R..F	B35	V36	B85	V15	B65	B75
RF, RXF	B5	V3	B5II	V1	B5I	B5III
F FA..B FH..B FV..B	B6	V6	B6II	V5	B3 B8	B3I B8I
FF	B5	V3	B5II	V1	B5I	B5III
FA FHF FVF FH FAZ FV FHZ FAF FVZ	H1	H6	H2	H5	H4	H3
K KA..B KH..B KV..B	B3 B6I	B6 B8I	B8	B3I B6II	V5 V5I	V6 V6I
K/KH 166/167 186/187	B3 B5/I			B3I B5/II	V1/	V1/I
KF	B5I B3/B5I	B5 B65	B5III B8/B5III	B5II B6/B5II	V1 V15	V1I V6/V1I
KA KHF KVF KH KAZ KV KHZ KAF KVZ	H1	H4	H2	H3	H5	H6
S	B3 B6I B8II (S37)	B6 B8I	B8 B3II	B3I B6II	V5 V5I	V6 V6I V5II (S37)
SF	B5I	B5	B5III	B5II	V1	V1I
SA SH SAF SHF SAZ SHZ	H1	H4	H2	H3	H5	H6

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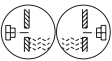

Example

A KA77B helical-bevel gear unit with the old mounting position B3I or B6II, is now referred to with mounting position designation M4.

8.2 Legend for mounting position pages

Used symbols

The following table contains all symbols used in the mounting position pages as well as their meaning:

Symbol	Meaning
	Breather valve
	Oil level check plug
	Oil drain plug

Churning losses



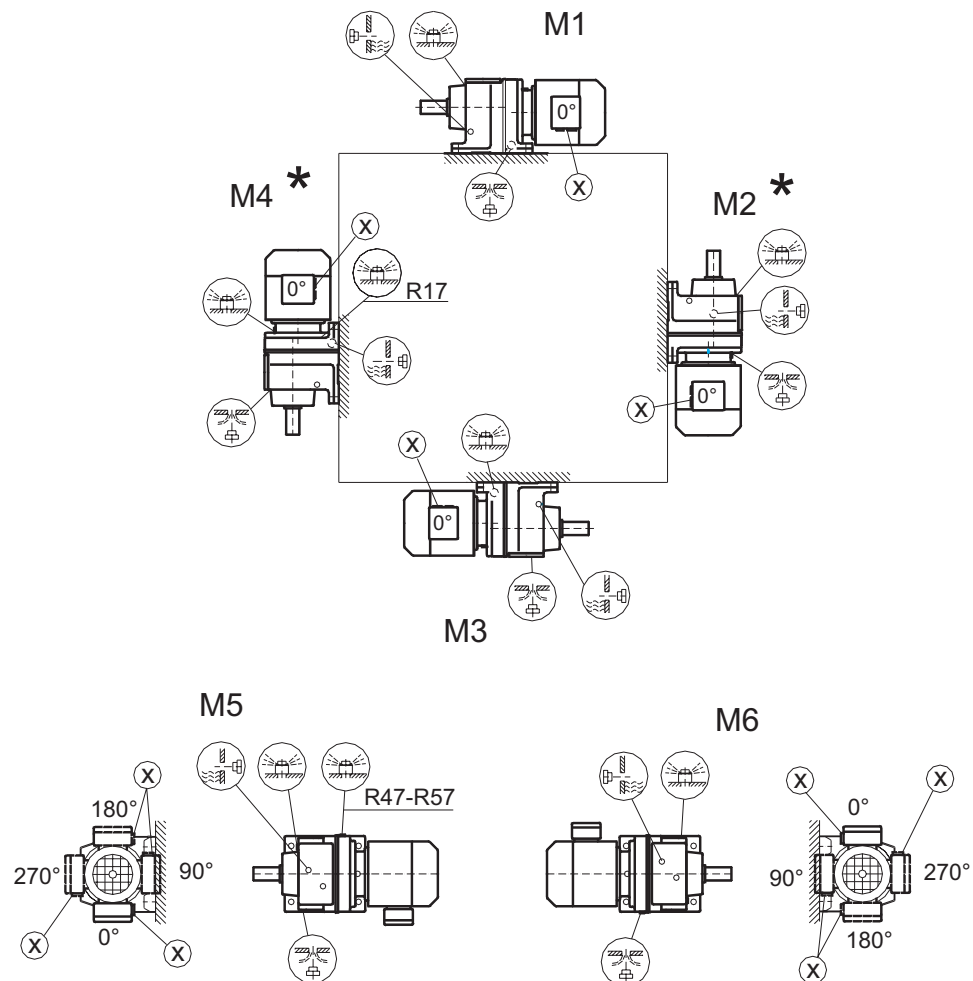
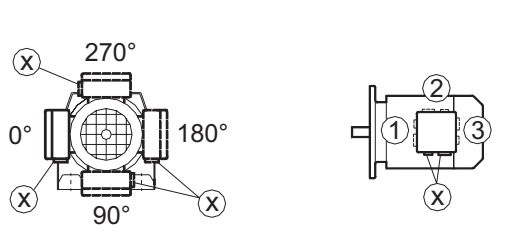
There is a possibility of increased churning losses with some mounting positions. Please contact SEW when dealing with the following combinations:

Mounting position	Gear unit type	Gear unit size	Input speed [1/min]
M2, M4	R	97 ... 107	> 2500
		> 107	> 1500
M2, M3, M4, M5, M6	F	97 ... 107	> 2500
		> 107	> 1500
	K	77 ... 107	> 2500
		> 107	> 1500
	S	77 ... 97	> 2500

8.3 Mounting positions, helical gear units

R17-R167

04 040 100

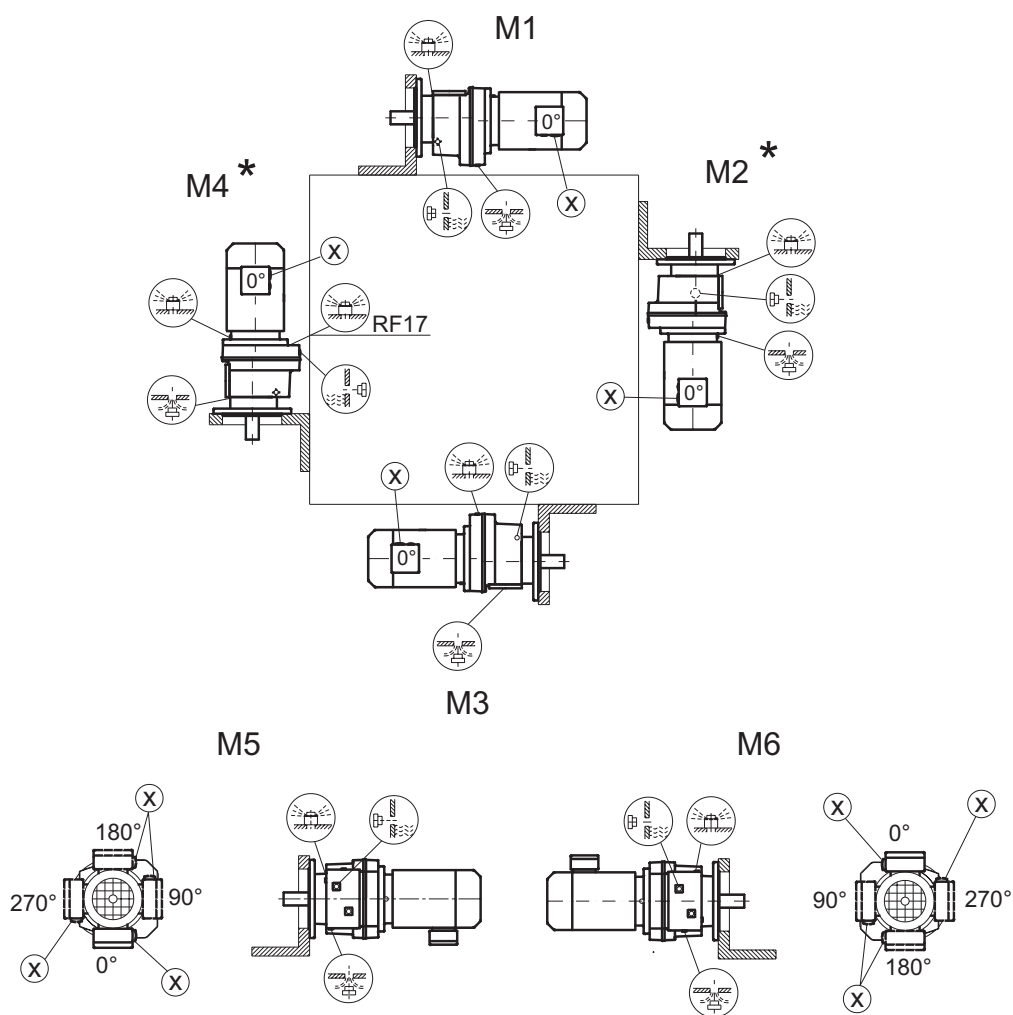
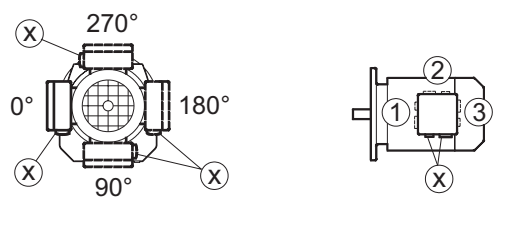


- | | | |
|----------|--|----------------|
| R17, R27 | | M1, M3, M5, M6 |
| R47, R57 | | M5 |
| R17, R27 | | |

* → page 36

RF17-RF167

04 041 100



RF17, RF27



M1, M3, M5, M6

RF47, RF57



M5

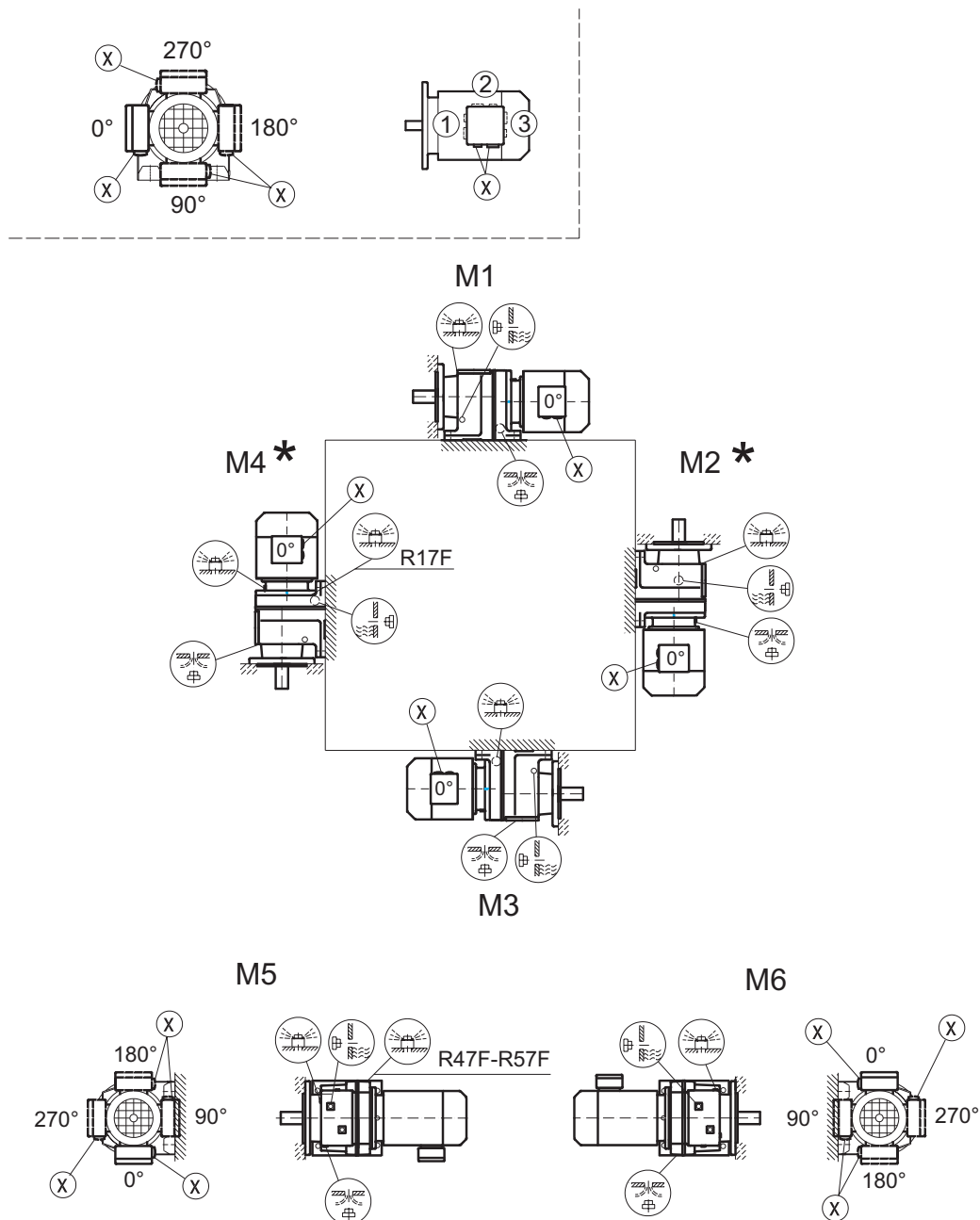
RF17, RF27



* → page 36

R17F-R87F

04 042 100



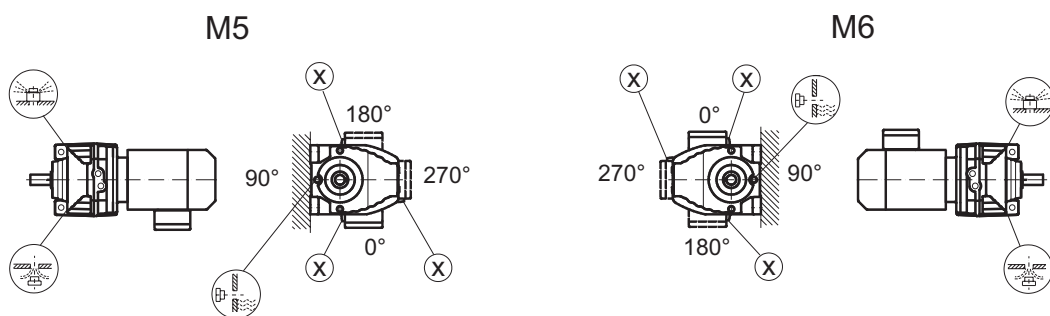
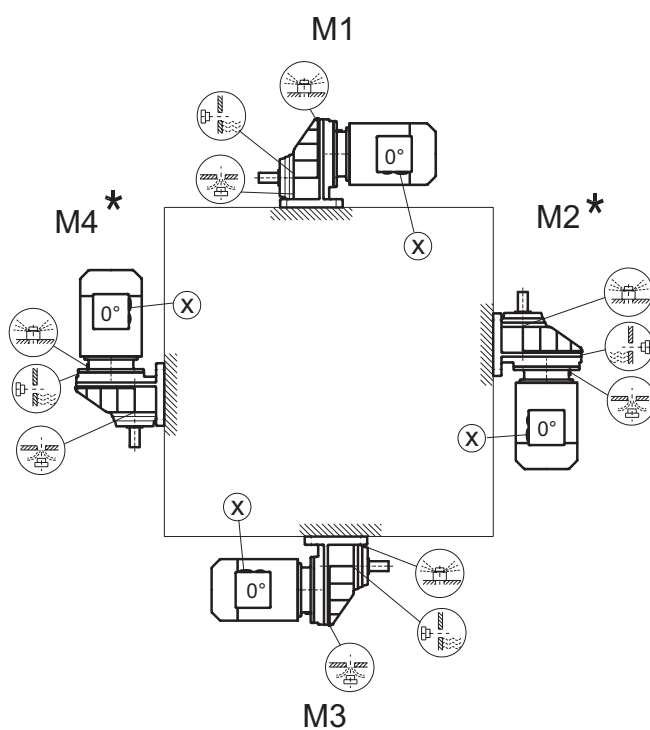
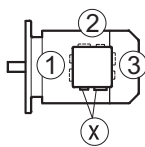
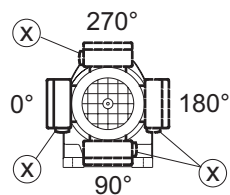
R17F, R27F		M1, M3, M5, M6
R47F, R57F		M5
R17F, R27F		

* → page 36

Caution: Note the notes in the "Geared Motors" catalog, section "Project Planning Gear Units/Overhung and axial loads."

RX57-RX107

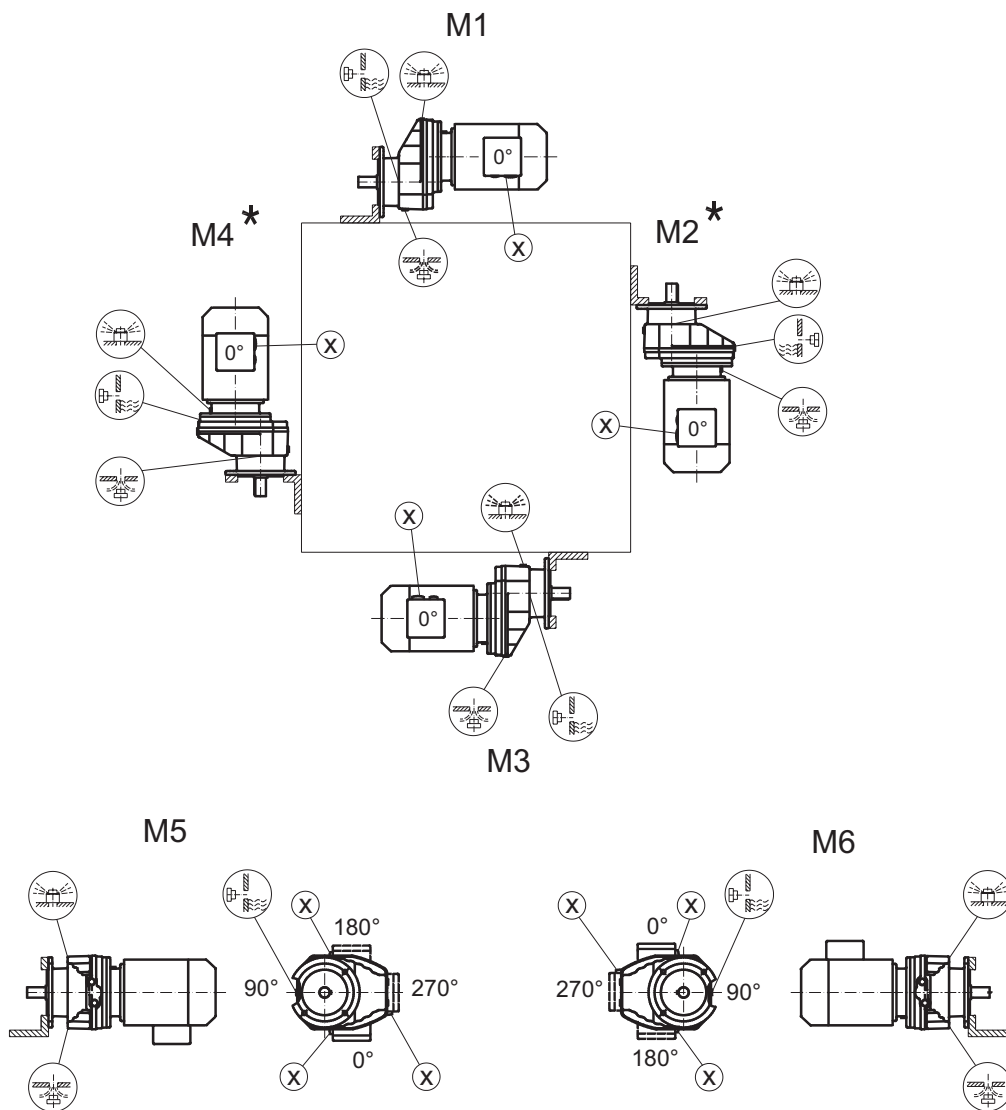
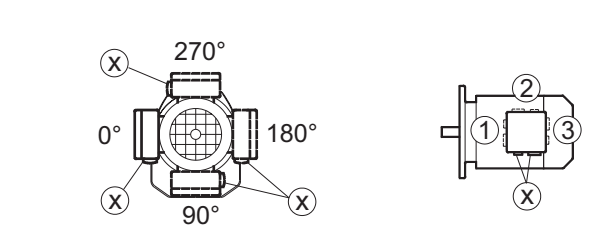
04 043 100



* → page 36

RXF57-RXF107

04 044 100

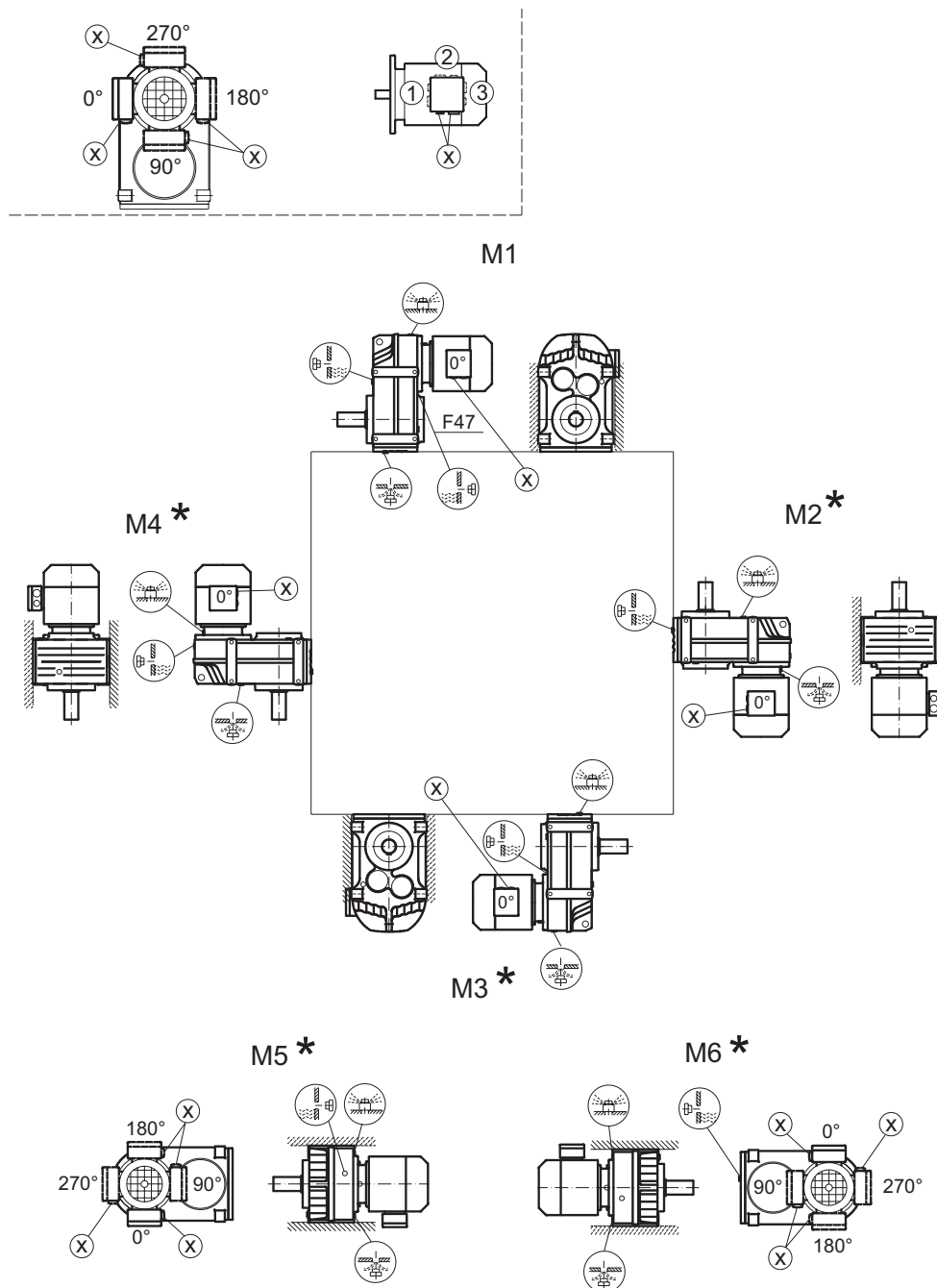


* → page 36

8.4 Mounting positions, parallel shaft helical gear units

F/FA..B/FH27B-157B, FV27B-107B

42 042 100



F..27  M1, M3, M5, M6

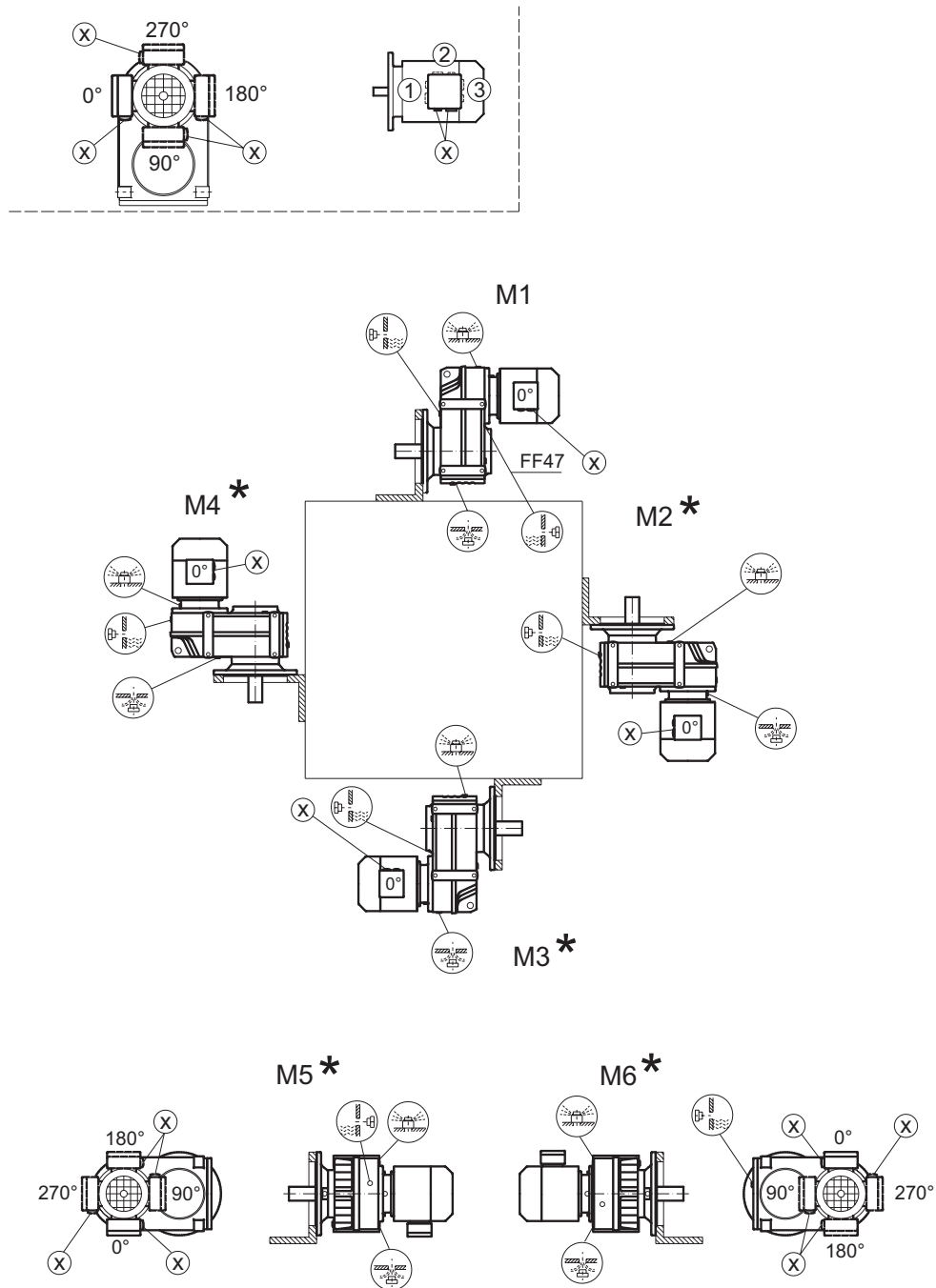
F..27  M1 - M6


F..27  M1, M3, M5, M6

* → page 36

FF/FAF/FHF/FAZ/FHZ27-157, FVF/FVZ27-107

42 043 100



F..27  M1, M3, M5, M6

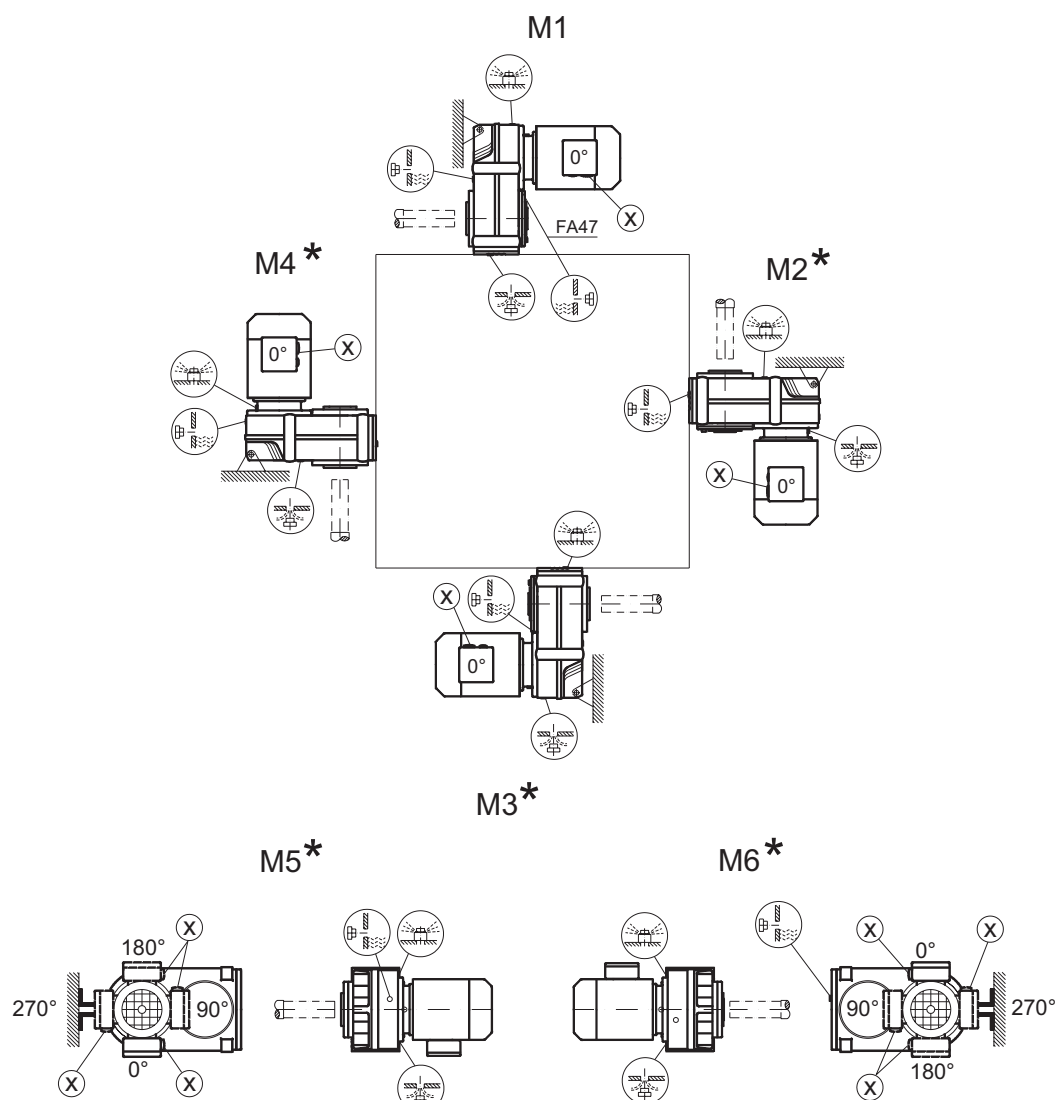
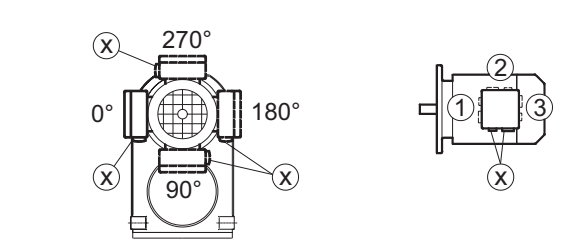

F..27  M1 - M6

F..27  M1, M3, M5, M6

* → page 36

FA/FH27-157, FV27-107

42 044 100

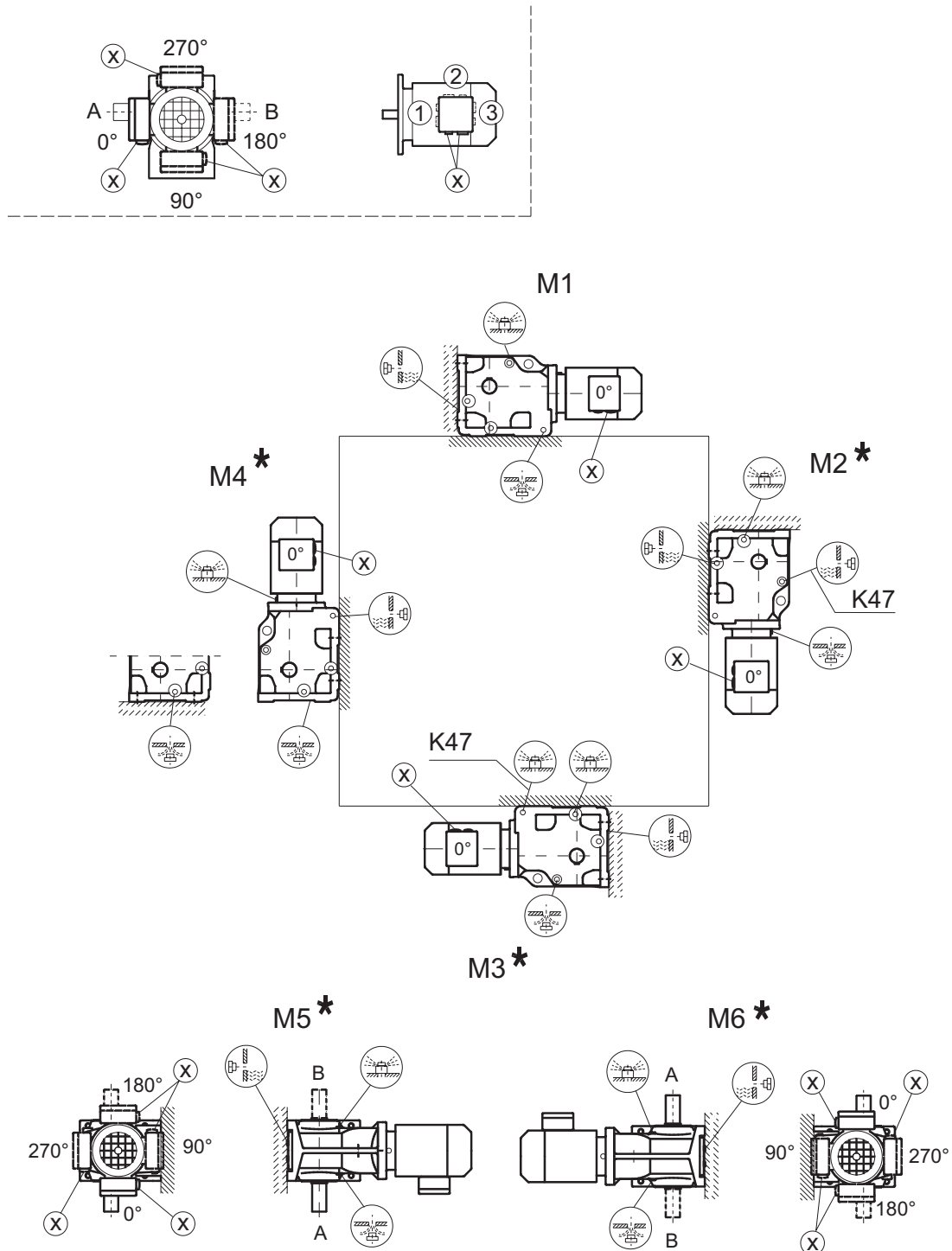
F..27  M1, M3, M5, M6F..27  M1 - M6F..27  M1, M3, M5, M6

* → page 36

8.5 Mounting positions, helical-bevel gear units

K/KA..B/KH37B-157B, KV37B-107B

34 025 100

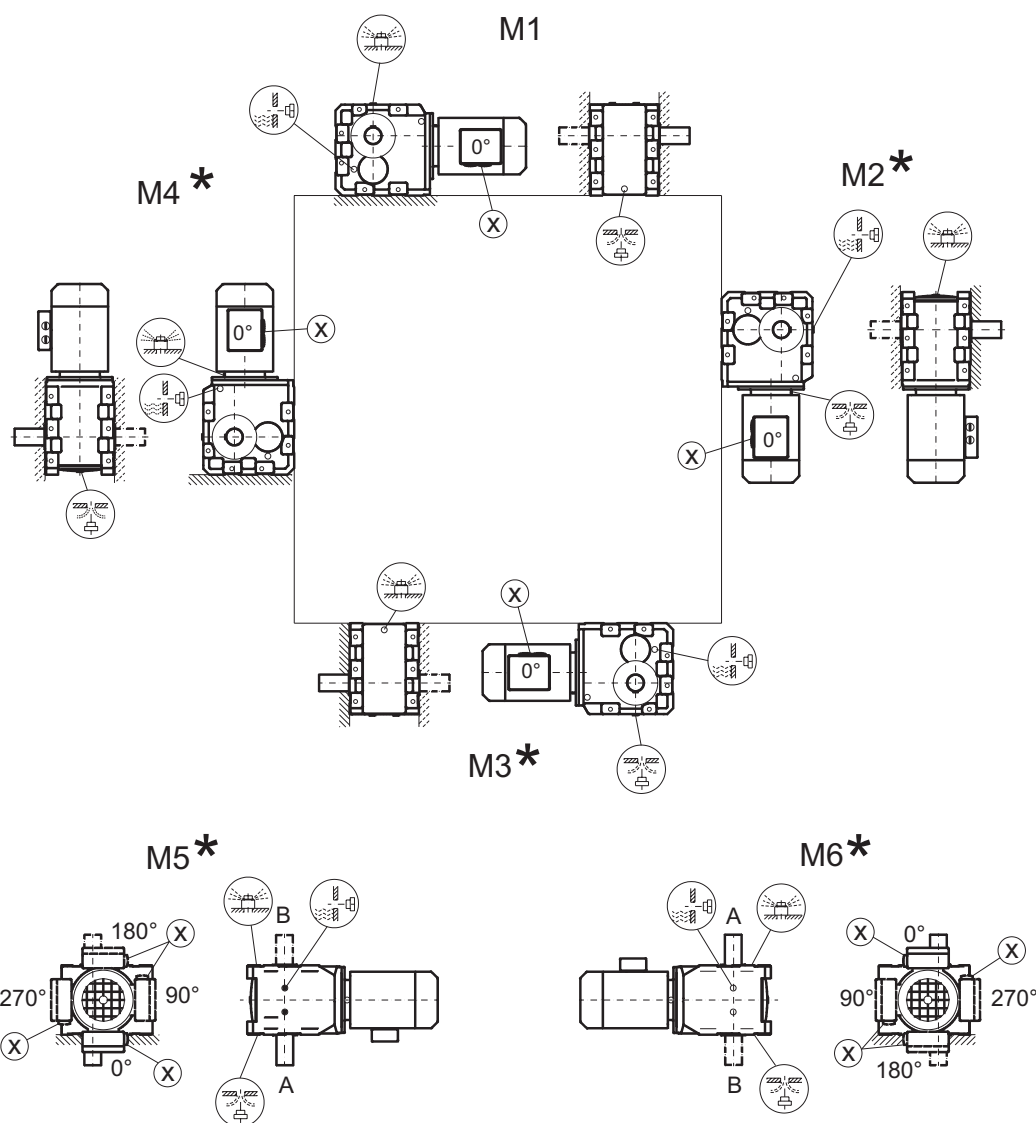
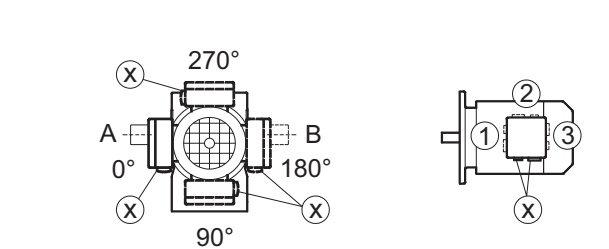


* → page 36

Caution: Note the ⓘ notes in the "Geared Motors" catalog, section "Project Planning Gear Units/Overhung and axial loads."

K167-187, KH167B-187B

34 026 100

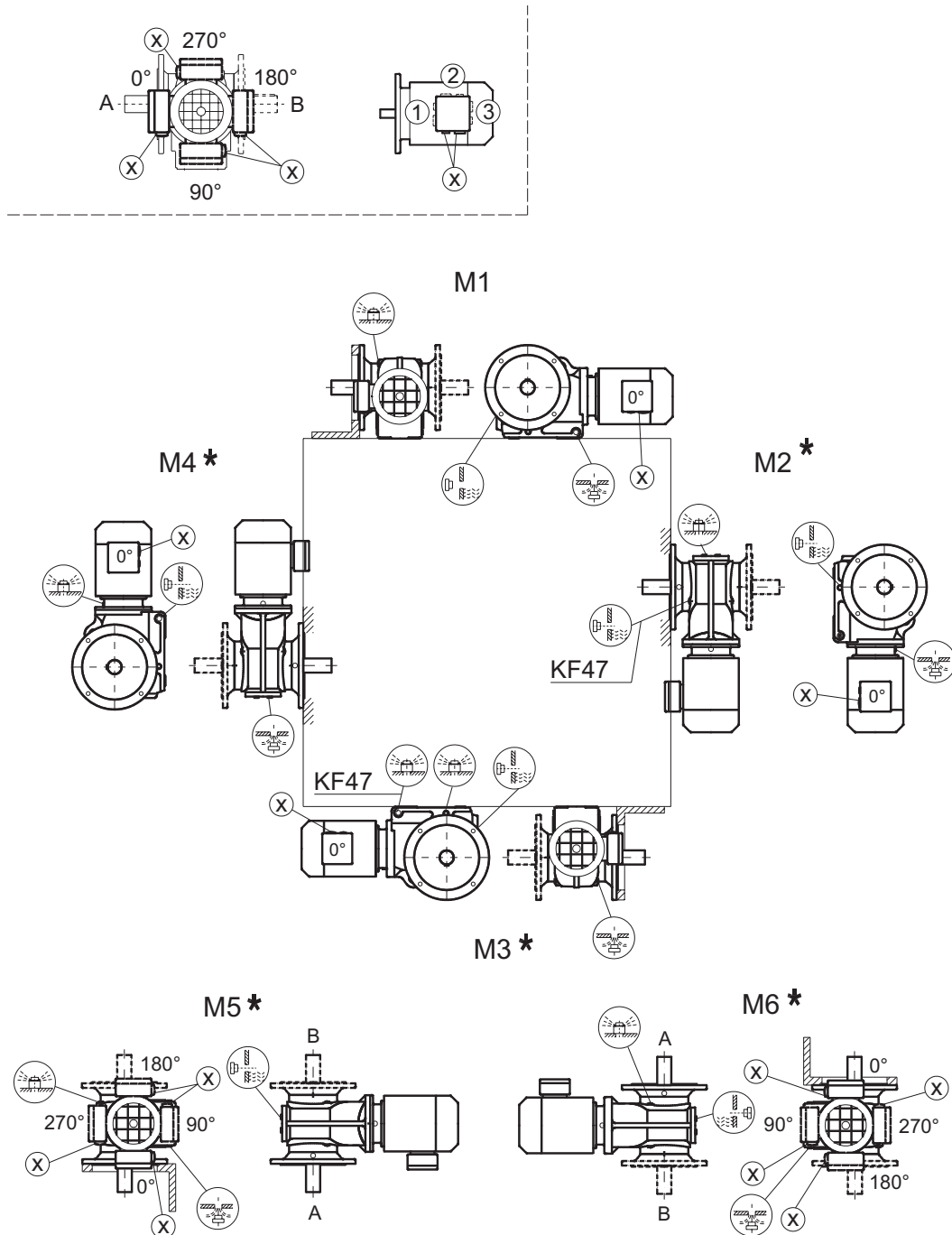


* → page 36

Caution: Note the ⓘ notes in the "Geared Motors" catalog, section "Project Planning Gear Units/Overhung and axial loads."

KF/KAF/KHF/KAZ/KHZ37-157, KVF/KVZ37-107

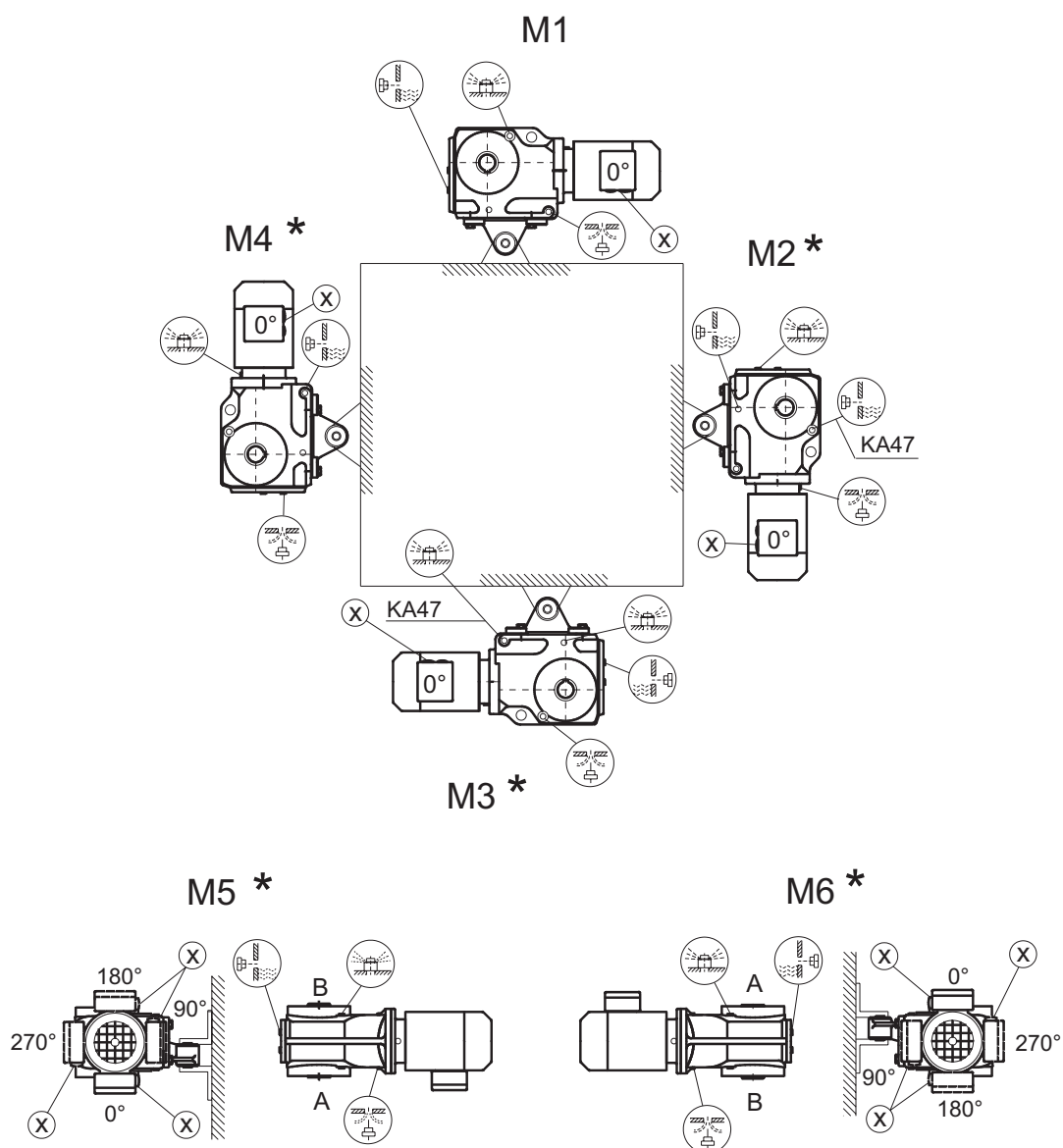
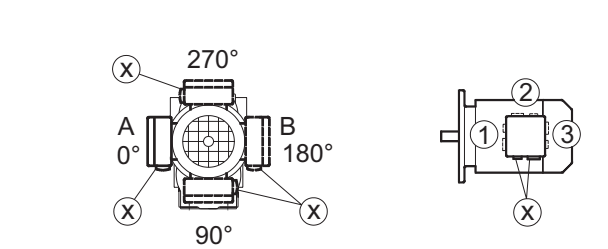
34 027 100



* → page 36

KA/KH37-157, KV37-107

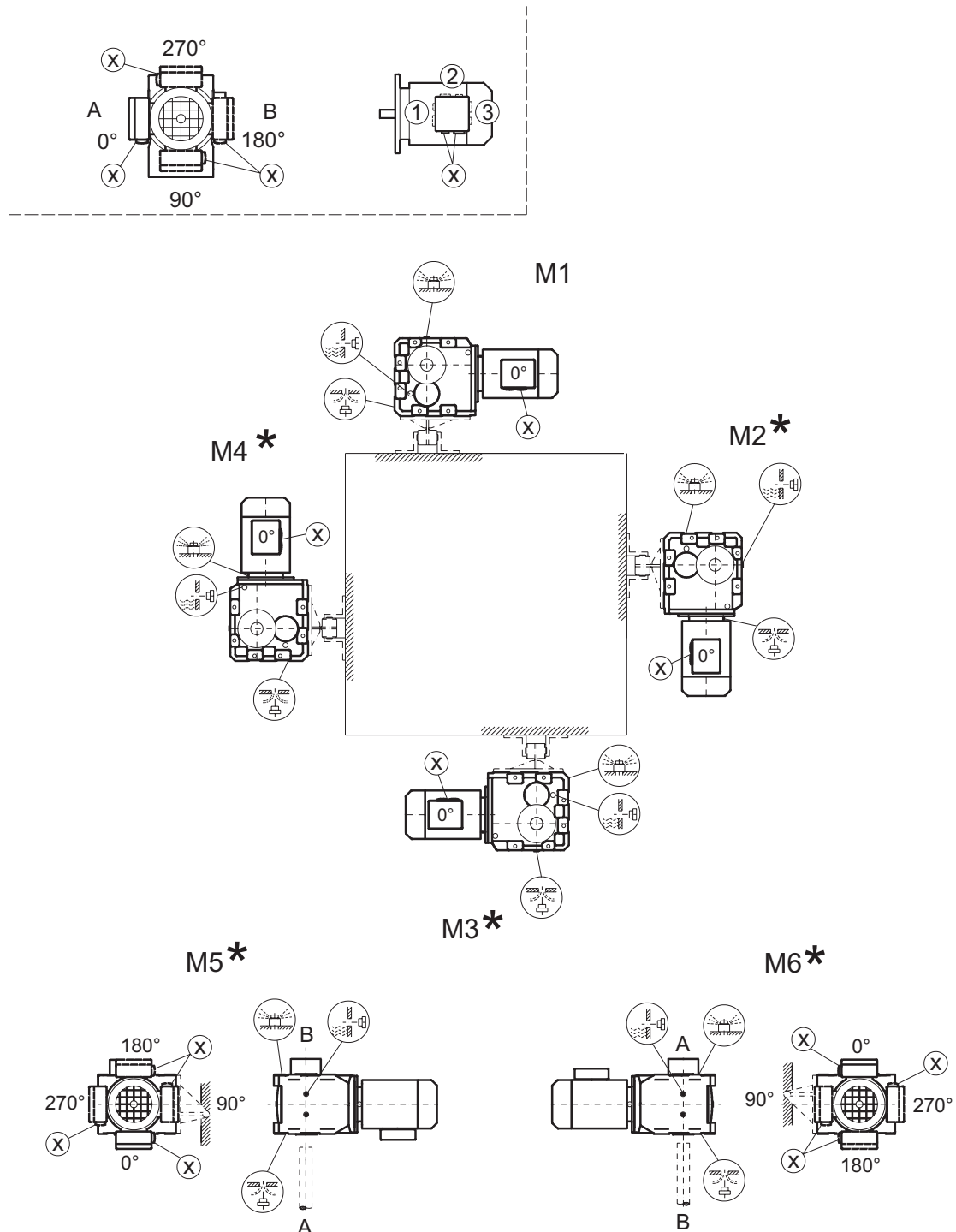
39 025 100



* → page 36

KH167-187

39 026 100

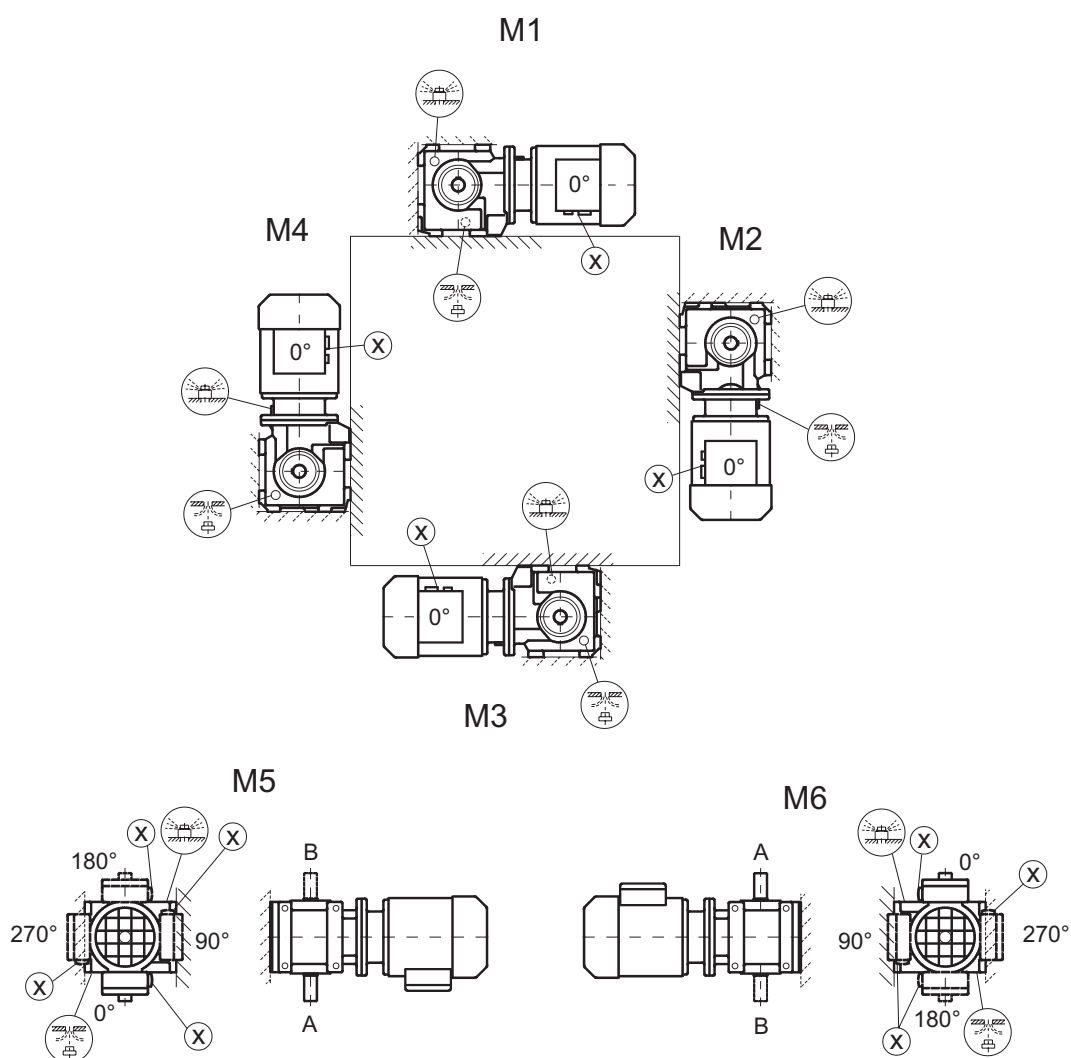
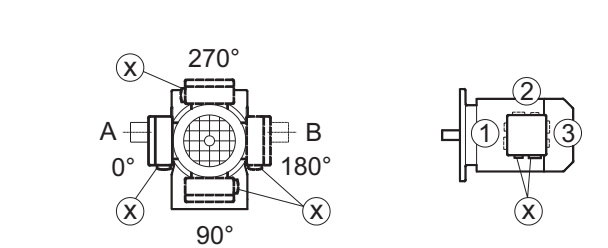


* → page 36

8.6 Mounting positions, helical-worm gear units

S37

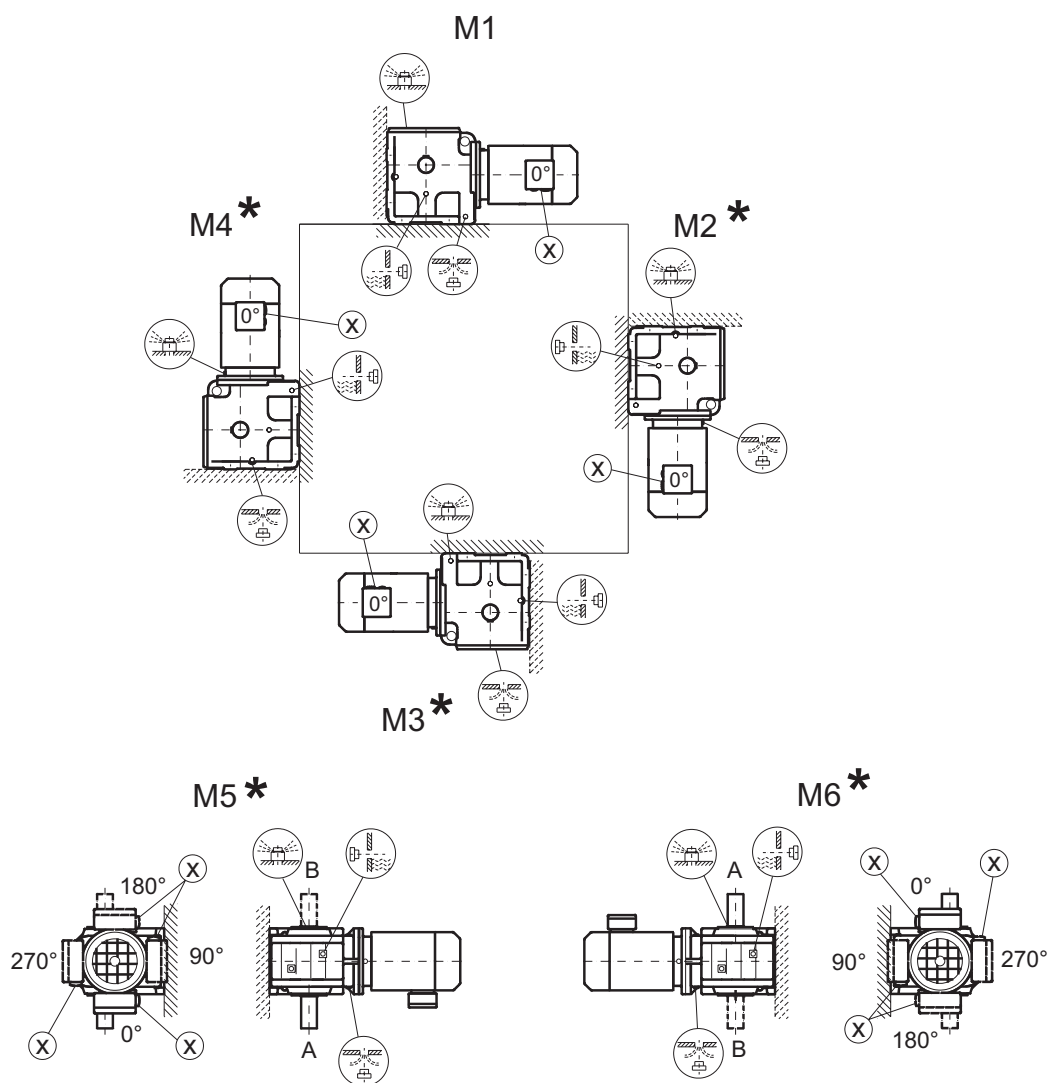
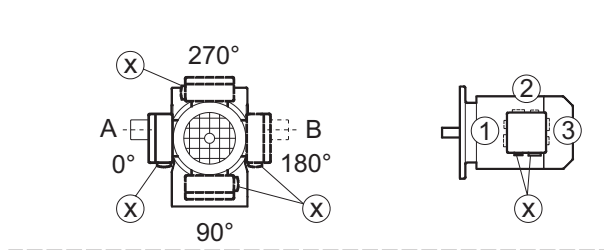
05 025 100




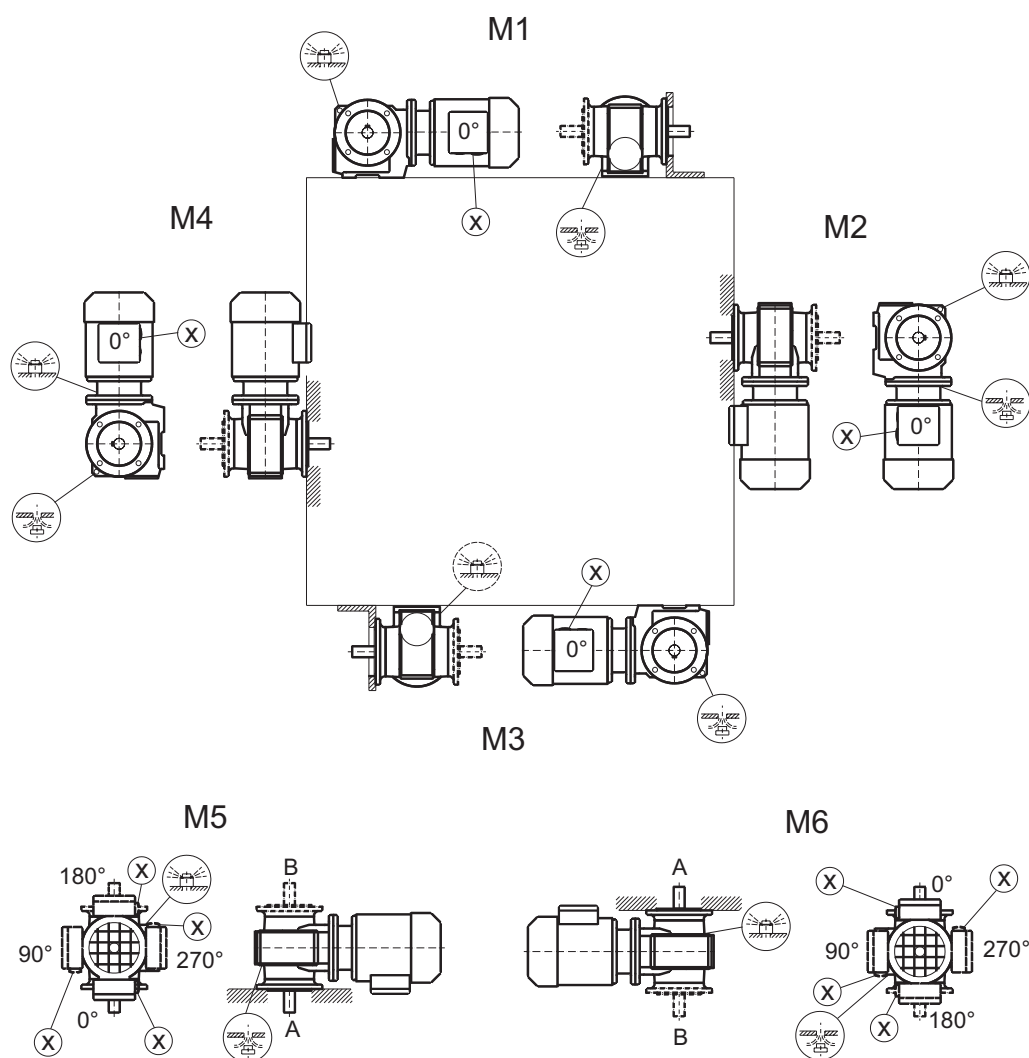
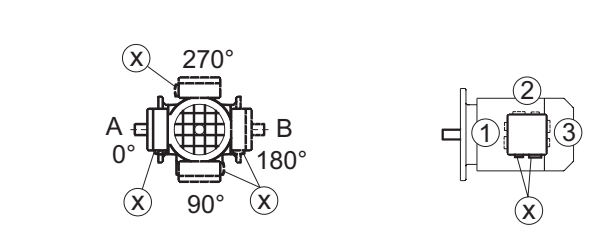
Caution: Note the ⓘ notes in the "Geared Motors" catalog, section "Project Planning Gear Units/Overhung and axial loads."

S47-S97

05 026 100

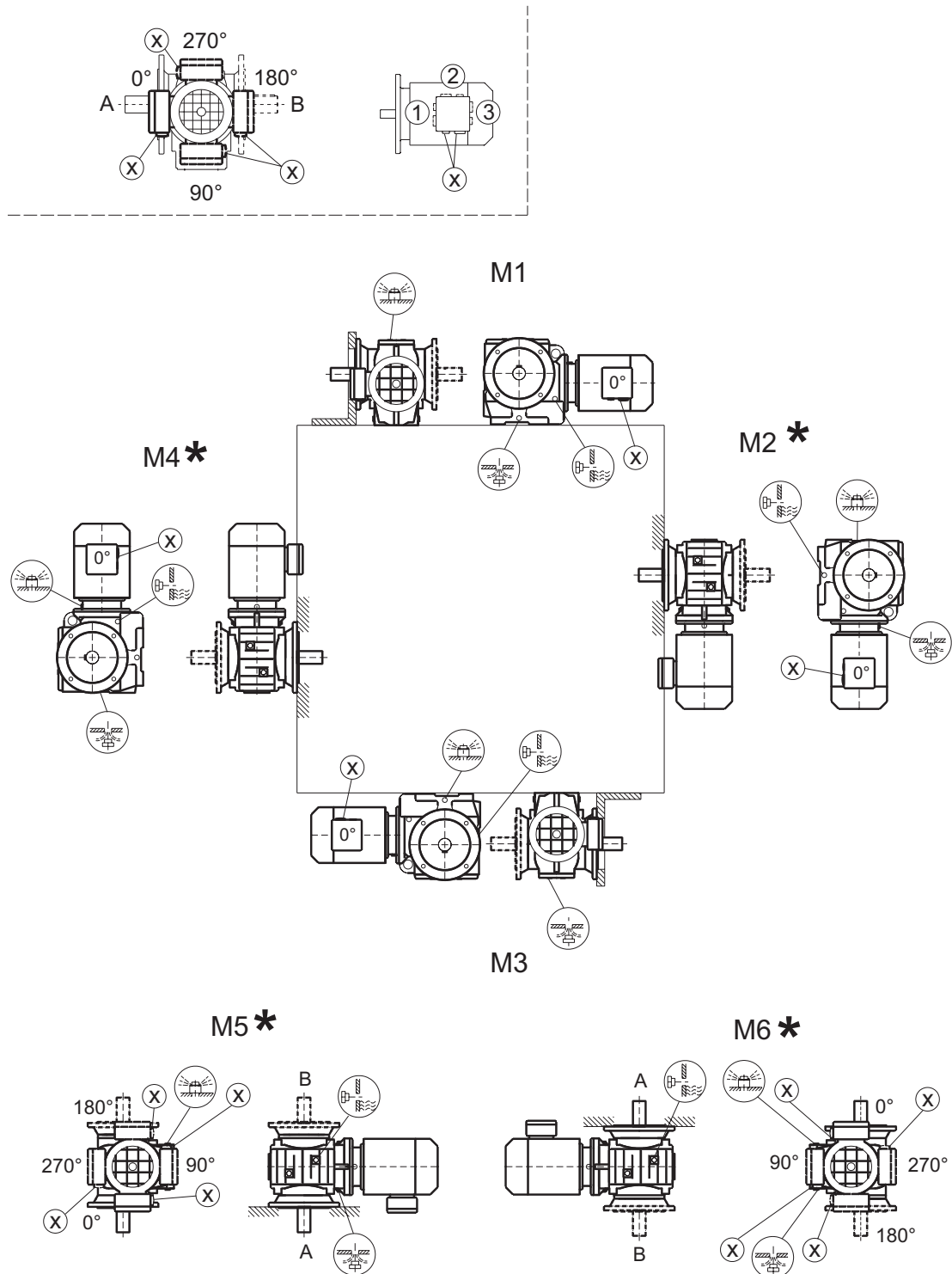


Caution: Note the  notes in the "Geared Motors" catalog, section "Project Planning Gear Units/Overhung and axial loads."

SF/SAF/SHF37**05 027 100**

SF/SAF/SHF/SAZ/SHZ47-97

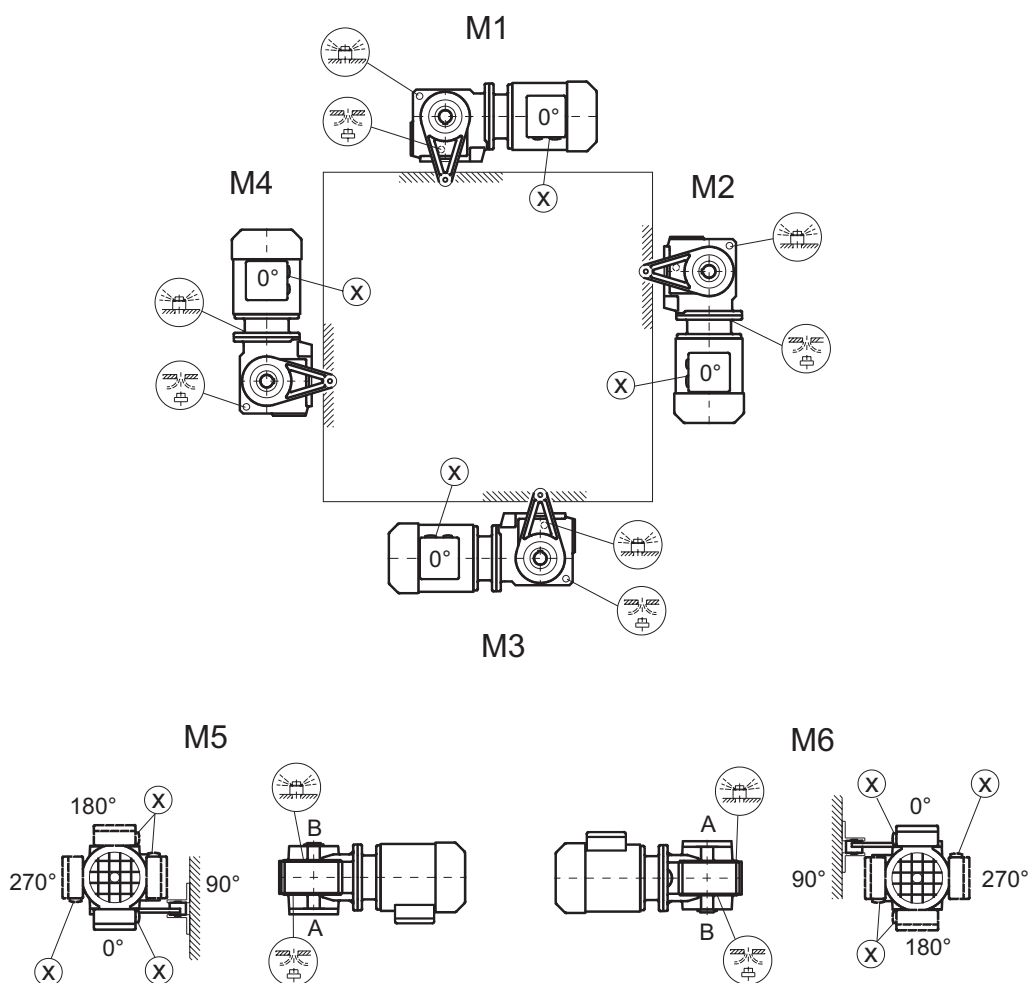
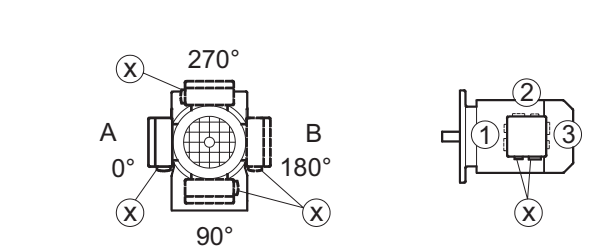
05 028 100



* → page 36

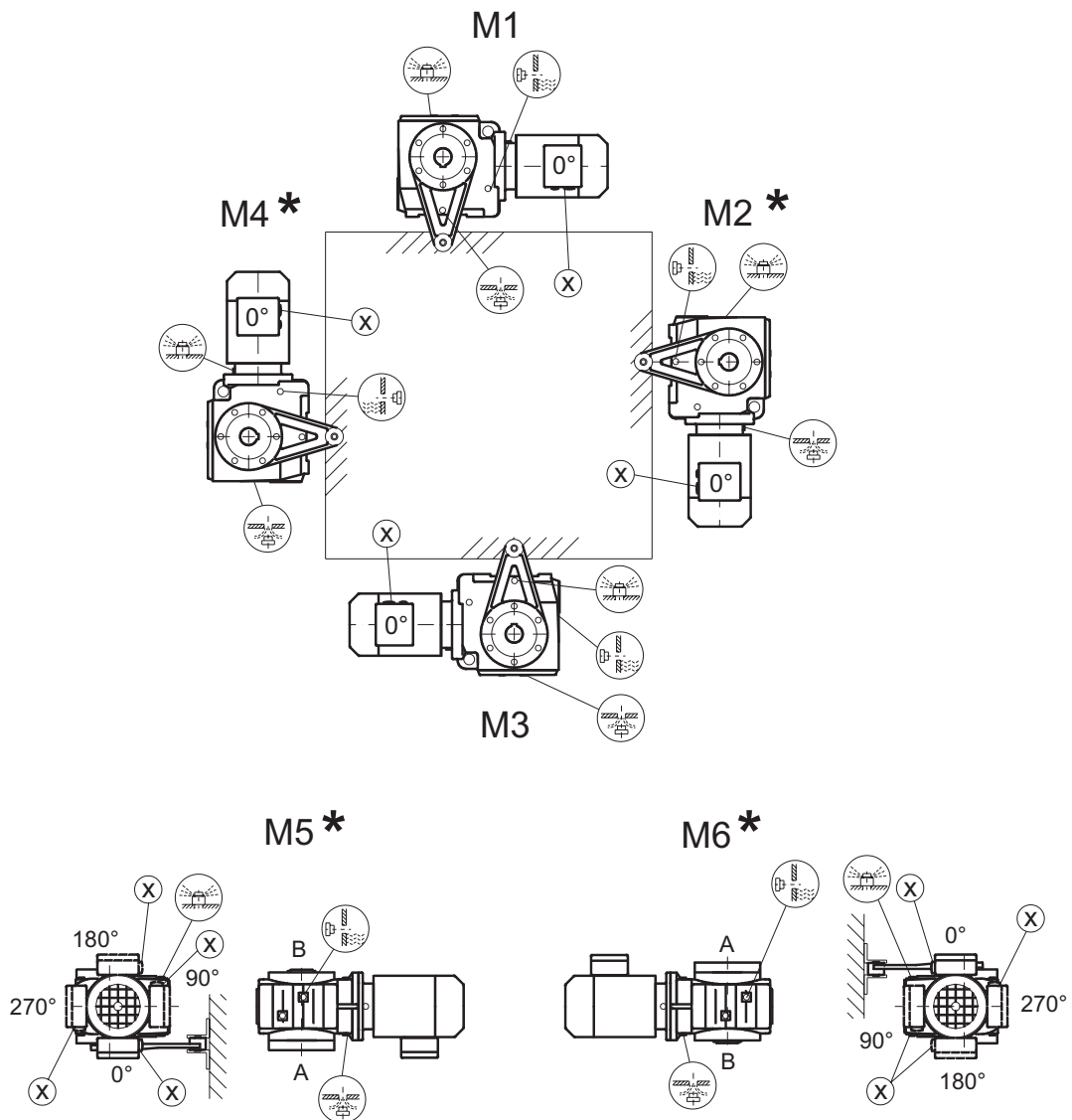
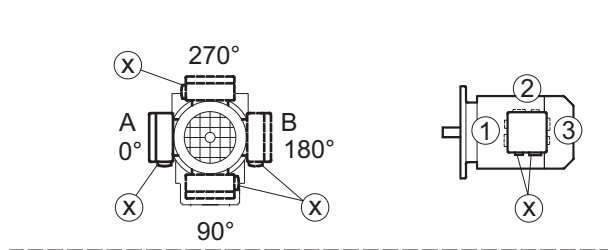
SA/SH37

28 020 100



SA/SH47-97

28 021 100



* → page 36



9 Lubricants

General

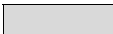
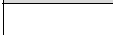


SEW supplies the drives filled with a lubricant appropriate for the specific gear unit and mounting position. The decisive factor is the indicated mounting position (M1...M6, → section "Mounting positions and important order information") when ordering the drive. The lubricant fill amounts for subsequent changes in the mounting position will have to be adjusted for the specific mounting position (→ Lubricant fill quantities).

Lubricant table

The lubricant table for SEW drives on the following page is a list of all approved lubricants for SEW drives. Please note the following legend for the lubricant table.



Legend for lubricant table

Abbreviations, meaning of shading and notes:

CLP	= Mineral oil
CLP PG	= Polyglykol (W gear unit, meeting USDA-H1 standard)
CLP HC	= Synthetic hydrocarbons
E	= Diester oil (water pollution class WGK 1)
HCE	= Synthetic hydrocarbons + diester oil (USDA - H1 approval)
HLP	= Hydraulic oil
	= Synthetic lubricant (= anti-friction bearing grease on synthetic base)
	= Mineral lubricant (= anti-friction bearing grease on mineral base)
1)	Helical-worm gear unit with PG oil: Please consult SEW
2)	Special lubricant for Spiroplan® gear units only
3)	Recommendation: Select SEW $f_B \geq 1.2$
4)	Note critical starting performance at low temperatures!
5)	Low-viscosity grease
6)	Ambient temperature
	Lubricant for the food industry
	Biological oil (lubricant for agricultural, forestry and water industry)

Anti-friction bearing greases

The anti-friction bearings in SEW gear units and motors will be filled with the following greases at the factory. SEW recommends to change the grease when replacing the oil in anti-friction bearings with grease filling.

	Ambient temperature	Manufacturer	Type
Gear unit anti-friction bearing	-30°C ... +60°C	Mobil	Mobilux EP 2
	-40°C ... +80°C	Mobil	Mobiltemp SHC 100
Motor anti-friction bearing	-25°C ... +80°C	Esso	Unirex N3
	-25°C ... +60°C	Shell	Alvania R3
	+80°C ... +100°C	Klüber	Barrierta L55/2
	-45°C ... -25°C	Shell	Aero Shell Grease 16
Special greases for gear unit anti-friction bearings:			
	-30°C ... +40°C	Aral	Aral Eural Grease EP 2
	-20°C ... +40°C	Aral Klüber	Aral Aralub BAB EP 2 Klüberbio M32-82



You need the following grease amounts:

- For fast-running bearings (motor and gear unit input side): Fill one third of the hollow spaces between the actual roller bodies with grease.
- For slow-running bearings (in gear unit and gear unit output side): Fill two thirds of the spaces between the actual roller bodies with grease.



Table of lubricants

01 805 692

	6) °C -50 0 +50 +100 Standard -10 +40	DIN (ISO) Oil	ISO, NLGI	Mobil®	Shell	KLÜBER LUBRICATION	ARAL	BP	Tribol	TEACO	Optimal	FUCHS
R...		CLP (CC)	VG 220	Mobilgear 630	Shell Omala 220	Klüberoil GEM 1-220	Aral Degol BG 220	BP Energol GR-XP 220	Tribol 1100/220	Meropa 220	Optigear BM 220	Renolin CLP 220
K... (HK...)		CLP PG	VG 220	Mobil Glygoyle 30	Shell Tivela WB	Klüberoil GH 6-220	Aral Degol GS 220	BP Energol SG-XP 220	Tribol 800/220	Synlube CLP 220	Optiflex A 220	
F...		CLP HC	VG 220	Mobilgear SHC 630	Shell Omala 220 HD	Klüberoil EG 4-220	Aral Degol PAS 220		Tribol 1510/220	Pinnacle EP 220	Optigear Synthetic A 220	Renolin Unisyn CLP 220
	4) -25		VG 150	Mobil SHC 629		Klüberoil EG 4-150				Pinnacle EP 150		
	4) -40		VG 150	Mobilgear 629	Shell Omala 100	Klüberoil GEM 1-150	Aral Degol BG 100	BP Energol GR-XP 100	Tribol 1100/100	Meropa 150	Optigear BM 100	Renolin CLP 150
		HLP (HM)	VG 68-46	Mobil D.T.E. 15M	Shell Tellus T 32	Klüberoil GEM 1-68	Aral Degol BG 46		Tribol 1100/68	Rando EP Ashless 46	Optigear 32	Renolin B 46 HVI
	4) -40	CLP HC	VG 32	Mobil SHC 624		Klüber-Summit HySyn FG-32				Cetus PAO 46		
	4) -40	HLP (HM)	VG 22	Mobil D.T.E. 11M	Shell Tellus T 15	Isotex MT 30 ROT		BP Energol HLP-HM 10		Rando HDZ 15		
		CLP (CC)	VG 680	Mobilgear 636	Shell Omala 680	Klüberoil GEM 1-680	Aral Degol BG 680	BP Energol GR-XP 680	Tribol 1100/680	Meropa 680	Optigear BM 680	Renolin CLP 680
S... (HS...)		CLP PG	VG 680 ¹⁾	Mobil Glygoyle HE 680		Klüberoil GH 6-680		BP Energol SG-XP 680	Tribol 800/680	Synlube CLP 680		
	4) -20		VG 460	Mobil SHC 634	Shell Omala 460 HD	Klüberoil EG 4-460				Pinnacle EP 460		
	4) -40		VG 150	Mobil SHC 629		Klüberoil EG 4-150				Pinnacle EP 150		
		CLP (CC)	VG 150	Mobil D.T.E. 18M	Shell Omala 100	Klüberoil GEM 1-150	Aral Degol BG 100	BP Energol GR-XP 100	Tribol 1100/100	Meropa 100	Optigear BM 100	Renolin CLP 150
		HLP (HM)	VG 100			Klüberoil GH 6-220			Tribol 800/220	Synlube CLP 220	Optiflex A 220	
	4) -25	CLP PG	VG 220 ¹⁾	Mobil Glygoyle 30		Klüber-Summit HySyn FG-32				Cetus PAO 46		
	4) -40	CLP HC	VG 32	Mobil SHC 624		Klüber-Summit HySyn FG-32						
R..., K... (HK...), F..., S... (HS...)		HCE	VG 460		Shell Cassida Fluid GL 460	Klüberoil 4UH1-460	Aral Eural Gear 460				Optileb GT 460	
		E	VG 460			Klüberoil CA2-460	Aral Degol BAB 460				Optisyn BS 460	
W... (HW...)		SEW PG	VG 460 ²⁾			Klüber SEW HT-460-5						
	4) -30		SAE 75W90 (~VG 100)	Mobilube SHC 75 W90-LS								
	4) -40	API GL5	VG 460 ³⁾			Klüberoil UH1 6-460						
		CLP PG	00	Glygoyle Grease 00	Shell Tivela Compound A	Klüberoil GE 46-1200				Multifak 6833 EP 00		
R32 R302		DIN 51 818 ⁵⁾	000 - 0	Mobilux EP 004	Shell Alvania GL 00		Aralub MFL 00	BP Energol LS-EP 00		Multifak EP 000	Longtime PD 00	Renolin SF 7 - 041

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Lubricant fill quantities

The indicated fill quantities are **recommended values**. The specific values vary depending on number of stages and ratio. Pay close attention to the **oil level plug to serve as indicator for the correct amount of oil**.

The following tables list the recommended values for the lubricant fill quantities in reference to mounting positions M1...M6.

Helical (R-) gear units

Gear units R.., R..F	Fill quantity in liters					
	M1 ¹⁾	M2 ¹⁾	M3	M4	M5	M6
R17/R17F	0.25	0.6	0.35	0.6	0.35	0.35
R27/R27F	0.25/0.4	0.7	0.4	0.7	0.4	0.4
R37/R37F	0.3/1	0.9	1	1.1	0.8	1
R47/R47F	0.7/1.5	1.6	1.5	1.7	1.5	1.5
R57/R57F	0.8/1.7	1.9	1.7	2.1	1.7	1.7
R67/R67F	1.1/2.3	2.6/3.5	2.8	3.2	1.8	2
R77/R77F	1.2 / 3	3.8 / 4.3	3.6	4.3	2.5	3.4
R87/R87F	2.3 / 6	6.7 / 8.4	7.2	7.7	6.3	6.5
R97	4.6/9.8	11.7/14	11.7	13.4	11.3	11.7
R107	6/13.7	16.3	16.9	19.2	13.2	15.9
R137	10/25	28	29.5	31.5	25	25
R147	15.4/40	46.5	48	52	39.5	41
R167	27/70	82	78	88	66	69
Gear units RF..	Fill quantity in liters					
	M1 ¹⁾	M2 ¹⁾	M3	M4	M5	M6
RF17	0.25	0.6	0.35	0.6	0.35	0.35
RF27	0.25/0.4	0.7	0.4	0.7	0.4	0.4
RF37	0.4/1	0.9	1	1.1	0.8	1
RF47	0.7/1.5	1.6	1.5	1.7	1.5	1.5
RF/RM57	0.8/1.7	1.8	1.7	2	1.7	1.7
RF/RM67	1.2/2.5	2.7/3.6	2.7	3.1	1.9	2.1
RF/RM77	1.2 / 2.6	3.8/4.1	3.3	4.1	2.4	3
RF/RM87	2.4 / 6	6.8/7.9	7.1	7.7	6.3	6.4
RF/RM97	5.1/10.2	11.9/14	11.2	14	11.2	11.8
RF/RM107	6.3/14.9	15.9	17	19.2	13.1	15.9
RF/RM137	9.5/25	27	29	32.5	25	25
RF/RM147	16.4/42	47	48	52	42	42
RF/RM167	26/70	82	78	88	65	71

1) The larger gear unit in multi-stage gear units must be filled with the larger oil quantity.

Gear units RX..	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
RX57	0.6	0.8	1.3	1.3	0.9	0.9
RX67	0.8	0.8	1.7	1.9	1.1	1.1
RX77	1.1	1.5	2.6	2.7	1.6	1.6
RX87	1.7	2.5	4.8	4.8	2.9	2.9
RX97	2.1	3.4	7.4	7	4.8	4.8
RX107	3.9	5.6	11.6	11.9	7.7	7.7
Gear units RXF..	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
RXF57	0.5	0.8	1.1	1.1	0.7	0.7
RXF67	0.7	0.8	1.5	1.7	1	1
RXF77	0.9	1.5	2.4	2.5	1.6	1.6
RXF87	1.6	2.5	4.9	4.7	2.9	2.9
RXF97	2.1	3.6	7.1	7	4.8	4.8
RXF107	3.1	5.9	11.2	10.5	7.2	7.2



Parallel shaft heli-
cal (F-) gear units

F.., FA..B, FH..B, FV..B:

Gear units	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
F..27	0.6	0.8	0.7	0.7	0.6	0.6
F..37	1	1.2	0.7	1.2	1	1.1
F..47	1.5	1.8	1.1	1.9	1.5	1.7
F..57	2.6	3.7	2.1	3.5	2.8	2.9
F..67	2.7	3.8	1.9	3.8	2.9	3.2
F..77	5	7.3	4.3	8	6	6.3
F..87	10	13.0	7.7	13.8	10.8	11
F..97	18.5	22.5	12.6	25.2	18.5	20
F..107	24.5	32	19.5	37.5	27	27
F..127	40.5	55	34	61	46.5	47
F..157	69	104	63	105	86	78

FF..:

Gear units	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
FF27	0.6	0.8	0.7	0.7	0.6	0.6
FF37	1	1.2	0.7	1.3	1	1.1
FF47	1.6	1.9	1.1	1.9	1.5	1.7
FF57	2.8	3.8	2.1	3.7	2.9	3
FF67	2.7	3.8	1.9	3.8	2.9	3.2
FF77	5.1	7.3	4.3	8.1	6	6.3
FF87	10.3	13.2	7.8	14.1	11	11.2
FF97	19	22.5	12.6	25.5	18.9	20.5
FF107	25.5	32	19.5	38.5	27.5	28
FF127	41.5	56	34	63	46.5	49
FF157	72	105	64	106	87	79

FA.., FH.., FV.., FAF.., FHF.., FVF.., FAZ.., FHZ.., FVZ..:

Gear units	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
F..27	0.6	0.8	0.7	0.7	0.6	0.6
F..37	1	1.2	0.7	1.2	1	1.1
F..47	1.5	1.8	1.1	1.9	1.5	1.7
F..57	2.7	3.8	2.1	3.6	2.9	3
F..67	2.7	3.8	1.9	3.8	2.9	3.2
F..77	5	7.3	4.3	8	6	6.3
F..87	10	13.0	7.7	13.8	10.8	11
F..97	18.5	22.5	12.6	25.0	18.5	20
F..107	24.5	32	19.5	37.5	27	27
F..127	39	55	34	61	45	46.5
F..157	68	103	62	104	85	77



Helical-bevel (K-)
gear units

K.., KA..B, KH..B, KV..B:

Gear units	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
K..37	0.5	1	1	1.3	1	1
K..47	0.8	1.3	1.5	2	1.6	1.6
K..57	1.2	2.3	2.5	3	2.6	2.4
K..67	1.1	2.4	2.6	3.4	2.6	2.6
K..77	2.2	4.1	4.4	5.9	4.2	4.4
K..87	3.7	8	8.7	10.9	7.8	8
K..97	7	14	15.7	20	15.7	15.5
K..107	10	21	25.5	33.5	24	24
K..127	21	41.5	44	54	40	41
K..157	31	62	65	90	58	62
K..167	35	100	100	125	85	85
K..187	60	170	170	205	130	130

KF..:

Gear units	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
KF37	0.5	1.1	1.1	1.5	1	1
KF47	0.8	1.3	1.7	2.2	1.6	1.6
KF57	1.3	2.3	2.7	3	2.9	2.7
KF67	1.1	2.4	2.8	3.6	2.7	2.7
KF77	2.1	4.1	4.4	6	4.5	4.5
KF87	3.7	8.2	9	11.9	8.4	8.4
KF97	7	14.7	17.3	21.5	15.7	16.5
KF107	10	22	26	35	25	25
KF127	21	41.5	46	55	41	41
KF157	31	66	69	92	62	62

KA.., KH.., KV.., KAF.., KHF.., KVF.., KAZ.., KHZ.., KVZ..:

Gear units	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
K..37	0.5	1	1	1.4	1	1
K..47	0.8	1.3	1.6	2.1	1.6	1.6
K..57	1.3	2.3	2.7	3	2.9	2.7
K..67	1.1	2.4	2.7	3.6	2.6	2.6
K..77	2.1	4.1	4.6	6	4.4	4.4
K..87	3.7	8.2	8.8	11.1	8	8
K..97	7	14.7	15.7	20	15.7	15.7
K..107	10	20.5	24	32	24	24
K..127	21	41.5	43	52	40	40
K..157	31	66	67	87	62	62
KH167	35	100	100	125	85	85
KH187	60	170	170	205	130	130



Spiroplan® (W-) gear units

The Spiroplan® gear units always have the same fill quantity, independent of the mounting position:

Gear units	Mounting position independent fill quantity in liters
W..10	0.16
W..20	0.26
W..30	0.5

Helical-worm (S-) gear units

S...:

Gear units	Fill quantity in liters					
	M1	M2	M3 ¹⁾	M4	M5	M6
S37	0.25	0.4	0.5	0.6	0.4	0.4
S47	0.35	0.8	0.7/0.9	1.1	0.8	0.8
S57	0.5	1.2	1/1.2	1.5	1.3	1.3
S67	1	2.0	2.2/3.1	3.2	2.6	2.6
S77	1.9	4.2	3.7/5.4	6	4.4	4.4
S87	3.3	8.1	6.9/10.4	12	8.4	8.4
S97	6.8	15	13.4/18	22.5	17	17

1) The larger gear unit in multi-stage gear units must be filled with the larger oil quantity.

SF...:

Gear units	Fill quantity in liters					
	M1	M2	M3 ¹⁾	M4	M5	M6
SF37	0.25	0.4	0.5	0.6	0.4	0.4
SF47	0.4	0.9	0.9/1.1	1.2	1.0	1
SF57	0.5	1.2	1/1.5	1.6	1.4	1.4
SF67	1	2.2	2.3/3	3.2	2.7	2.7
SF77	1.9	4.1	3.9/5.8	6.5	4.9	4.9
SF87	3.8	8	7.1/10.1	12	9.1	9.1
SF97	7.4	15	13.8/18.8	23.6	18	18

1) The larger gear unit in multi-stage gear units must be filled with the larger oil quantity.

SA..., SH..., SAF..., SHF..., SAZ..., SHZ...:

Gear units	Fill quantity in liters					
	M1	M2	M3 ¹⁾	M4	M5	M6
S..37	0.25	0.4	0.5	0.6	0.4	0.4
S..47	0.4	0.8	0.7/0.9	1.1	0.8	0.8
S..57	0.5	1.1	1/1.5	1.6	1.2	1.2
S..67	1	2	1.8/2.6	2.9	2.5	2.5
S..77	1.8	3.9	3.6/5	5.9	4.5	4.5
S..87	3.8	7.4	6/8.7	11.2	8	8
S..97	7	14	11.4/16	21	15.7	15.7

1) The larger gear unit in multi-stage gear units must be filled with the larger oil quantity.



Addresses

Germany			
Headquarters Production Sales Service	Bruchsal	SEW-EURODRIVE GmbH & Co Ernst-Blickle-Straße 42 D-76646 Bruchsal P.O. Box Postfach 3023 · D-76642 Bruchsal	Tel. (0 72 51) 75-0 Fax (0 72 51) 75-19 70 http://www.SEW-EURODRIVE.de sew@sew-eurodrive.de
	Graben	SEW-EURODRIVE GmbH & Co Ernst-Blickle-Straße 1 D-76676 Graben-Neudorf P.O. Box Postfach 1220 · D-76671 Graben-Neudorf	Tel. (0 72 51) 75-0 Fax (0 72 51) 75-29 70 Telex 7 822 276
	Garbsen (near Hannover)	SEW-EURODRIVE GmbH & Co Alte Ricklinger Straße 40-42 D-30823 Garbsen P.O. Box Postfach 110453 · D-30804 Garbsen	Tel. (0 51 37) 87 98-30 Fax (0 51 37) 87 98-55
	Kirchheim (near München)	SEW-EURODRIVE GmbH & Co Domagkstraße 5 D-85551 Kirchheim	Tel. (0 89) 90 95 52-10 Fax (0 89) 90 95 52-50
Assembly Service	Langenfeld (near Düsseldorf)	SEW-EURODRIVE GmbH & Co Siemensstraße 1 D-40764 Langenfeld	Tel. (0 21 73) 85 07-30 Fax (0 21 73) 85 07-55
	Meerane (near Zwickau)	SEW-EURODRIVE GmbH & Co Dänkritzer Weg 1 D-08393 Meerane	Tel. (0 37 64) 76 06-0 Fax (0 37 64) 76 06-30
	Additional addresses for service in Germany provided on request!		
	France		
Production Sales Service	Hagenau	SEW-USOCOME SAS 48-54, route de Soufflenheim B. P. 185 F-67506 Hagenau Cedex	Tel. 03 88 73 67 00 Fax 03 88 73 66 00 http://www.usocom.com sew@usocom.com
	Bordeaux	SEW-USOCOME SAS Parc d'activités de Magellan 62, avenue de Magellan - B. P. 182 F-33607 Pessac Cedex	Tel. 05 57 26 39 00 Fax 05 57 26 39 09
	Lyon	SEW-USOCOME SAS Parc d'Affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. 04 72 15 37 00 Fax 04 72 15 37 15
	Paris	SEW-USOCOME SAS Zone industrielle 2, rue Denis Papin F-77390 Verneuil l'Etang	Tel. 01 64 42 40 80 Fax 01 64 42 40 88
Additional addresses for service in France provided on request!			
Argentina			
Assembly Sales Service	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Centro Industrial Garin, Lote 35 Ruta Panamericana Km 37,5 1619 Garin	Tel. (3327) 45 72 84 Fax (3327) 45 72 21 sewar@sew-eurodrive.com.ar
Australia			
Assembly Sales Service	Melbourne	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. (03) 99 33 10 00 Fax (03) 99 33 10 03
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. (02) 97 25 99 00 Fax (02) 97 25 99 05
Austria			
Assembly Sales Service	Wien	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Strasse 24 A-1230 Wien	Tel. (01) 6 17 55 00-0 Fax (01) 6 17 55 00-30 sew@sew-eurodrive.at



Belgium			
Assembly Sales Service	Brüssel	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. (010) 23 13 11 Fax (010) 2313 36 http://www.caron-vector.be info@caron-vector.be
Brazil			
Production Sales Service	Sao Paulo	SEW DO BRASIL Motores-Redutores Ltda. Rodovia Presidente Dutra, km 208 CEP 07210-000 - Guarulhos - SP	Tel. (011) 64 60-64 33 Fax (011) 64 80 33 28 sew@sew.com.br
Additional addresses for service in Brazil provided on request!			
Bulgaria			
Sales	Sofia	BEVER-DRIVE GMBH Bogdanovetz Str.1 BG-1606 Sofia	Tel. (92) 9 53 25 65 Fax (92) 9 54 93 45 bever@mbox.infotel.bg
Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, Ontario L6T3W1	Tel. (905) 7 91-15 53 Fax (905) 7 91-29 99
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. 7188 Honeyman Street Delta. B.C. V4G 1 E2	Tel. (604) 9 46-55 35 Fax (604) 946-2513
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Street LaSalle, Quebec H8N 2V9	Tel. (514) 3 67-11 24 Fax (514) 3 67-36 77
Additional addresses for service in Canada provided on request!			
Chile			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE Motores-Reductores LTDA. Panamericana Norte No 9261 Casilla 23 - Correo Quilicura RCH-Santiago de Chile	Tel. (02) 6 23 82 03+6 23 81 63 Fax (02) 6 23 81 79
China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 46, 7th Avenue, TEDA Tianjin 300457	Tel. (022) 25 32 26 12 Fax (022) 25 32 26 11
Colombia			
Assembly Sales Service	Bogotá	SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 Bodega 6, Manzana B Santafé de Bogotá	Tel. (0571) 5 47 50 50 Fax (0571) 5 47 50 44 sewcol@andinet.com
Croatia			
Sales Service	Zagreb	KOMPEKS d. o. o. PIT Erdödy 4 II HR 10 000 Zagreb	Tel. +385 14 61 31 58 Fax +385 14 61 31 58
Czech Republic			
Sales	Praha	SEW-EURODRIVE S.R.O. Business Centrum Praha Luná 591 16000 Praha 6	Tel. 02/20 12 12 34 + 20 12 12 36 Fax 02/20 12 12 37 sew@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Kopenhagen	SEW-EURODRIVE A/S Geminivej 28-30, P.O. Box 100 DK-2670 Greve	Tel. 4395 8500 Fax 4395 8509 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Estonia			
Sales	Tallin	ALAS-KUUL AS Paldiski mnt.125 EE 0006 Tallin	Tel. 6 59 32 30 Fax 6 59 32 31



Address list

Finland			
Assembly Sales Service	Lahti	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. (3) 589 300 Fax (3) 780 6211
Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-Normanton, West- Yorkshire WF6 1QR	Tel. 19 24 89 38 55 Fax 19 24 89 37 02
Greece			
Sales Service	Athen	Christ. Boznos & Son S.A. 12, Mavromichali Street P.O. Box 80136, GR-18545 Piraeus	Tel. 14 22 51 34 Fax 14 22 51 59 Boznos@otenet.gr
Hong Kong			
Assembly Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. 2-7 96 04 77 + 79 60 46 54 Fax 2-7 95-91 29sew@sewhk.com
Hungary			
Sales Service	Budapest	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06 58 Fax +36 1 437 06 50
India			
Assembly Sales Service	Baroda	SEW-EURODRIVE India Pvt. Ltd. Plot No. 4, Gidc Por Ramangamdi - Baroda - 391 243 Gujarat	Tel. 0 265-83 10 86 Fax 0 265-83 10 87 sew.baroda@gecs.com
Ireland			
Sales Service	Dublin	Alpert Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. (01) 8 30 62 77 Fax (01) 8 30 64 58
Italy			
Assembly Sales Service	Milano	SEW-EURODRIVE di R. Blicke & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. (02) 96 98 01 Fax (02) 96 79 97 81
Japan			
Assembly Sales Service	Toyoda-cho	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Toyoda-cho, Iwata gun Shizuoka prefecture, P.O. Box 438-0818	Tel. (0 53 83) 7 3811-13 Fax (0 53 83) 7 3814
Korea			
Assembly Sales Service	Ansan-City	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate Unit 1048-4, Shingil-Dong Ansan 425-120	Tel. (031) 4 92-80 51 Fax (031) 4 92-80 56
Luxembourg			
Assembly Sales Service	Brüssel	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. (010) 23 13 11 Fax (010) 2313 36 http://www.caron-vector.be info@caron-vector.be
Macedonia			
Sales	Skopje	SGS-Skopje / Macedonia "Teodosij Sinactski" 6691000 Skopje / Macedonia	Tel. (0991) 38 43 90 Fax (0991) 38 43 90
Malaysia			
Assembly Sales Service	Johore	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. (07) 3 54 57 07 + 3 54 94 09 Fax (07) 3 5414 04



Netherlands			
Assembly Sales Service	Rotterdam	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 44 63 700 Fax +31 10 41 55 552 http://www.vector.nu info@vector.nu
New Zealand			
Assembly Sales Service	Auckland	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. 0064-9-2 74 56 27 Fax 0064-9-2 74 01 65 sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch	Tel. (09) 3 84 62 51 Fax (09) 3 84 64 55 sales@sew-eurodrive.co.nz
Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. (69) 2410 20 Fax (69) 2410 40 sew@sew-eurodrive.no
Peru			
Assembly Sales Service	Lima	SEW DEL PERU MOTORES REDUCTORES S.A.C. Los Calderos # 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. (511) 349-52 80 Fax (511) 349-30 02 sewperu@terra.com.pe
Poland			
Sales	Lodz	SEW-EURODRIVE Polska Sp.z.o.o. ul. Pojezierska 63 91-338 Lodz	Tel. (042) 6 16 22 00 Fax (042) 6 16 22 10 sew@sew-eurodrive.pl
Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. (0231) 20 96 70 Fax (0231) 20 36 85 infosew@sew-eurodrive.pt
Romania			
Sales Service	Bucuresti	Sialco Trading SRL str. Madrid nr.4 71222 Bucuresti	Tel. (01) 2 30 13 28 Fax (01) 2 30 71 70 sialco@mediasat.ro
Russia			
Sales	St. Petersburg	ZAO SEW-EURODRIVE P.O. Box 193 193015 St. Petersburg	Tel. (812) 3 26 09 41 + 5 35 04 30 Fax (812) 5 35 22 87 sewrus@post.spbnet.ru
Singapore			
Assembly Sales Service		SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. 8 62 17 01-705 Fax 8 61 28 27 Telex 38 659
Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 SLO – 3000 Celje	Tel. 00386 3 490 83 20 Fax 00386 3 490 83 21 pakman@siol.net



Address list

South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. + 27 11 248 70 00 Fax +27 11 494 23 11
	Capetown	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552 98 20 Fax +27 21 552 98 30 Telex 576 062
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700 34 51 Fax +27 31 700 38 47
Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. 9 44 31 84 70 Fax 9 44 31 84 71 sew.spain@sew-eurodrive.es
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. (036) 34 42 00 Fax (036) 34 42 80 www.sew-eurodrive.se
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. (061) 4 17 17 17 Fax (061) 4 17 17 00 http://www.imhof-sew.ch info@imhof-sew.ch
Thailand			
Assembly Sales Service	Chon Buri	SEW-EURODRIVE (Thailand) Ltd. Bangpakong Industrial Park 2 700/456, Moo.7, Tambol Donhuaroh Muang District Chon Buri 20000	Tel. 0066-38 21 40 22 Fax 0066-38 21 45 31
Turkey			
Assembly Sales Service	Istanbul	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti Bagdat Cad. Koruma Cikmazi No. 3 TR-81540 Maltepe ISTANBUL	Tel. (0216) 4 41 91 63 + 4 41 91 64 + 3 83 80 14 + 3 83 80 15 Fax (0216) 3 05 58 67 seweurodrive@superonline.com.tr
USA			
Production Assembly Sales Service	Greenville	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. (864) 4 39 75 37 Fax Sales (864) 439-78 30 Fax Manuf. (864) 4 39-99 48 Fax Ass. (864) 4 39-05 66 Telex 805 550
Assembly Sales Service	San Francisco	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. (510) 4 87-35 60 Fax (510) 4 87-63 81
	Philadelphia/PA	SEW-EURODRIVE INC. Pureland Ind. Complex 200 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. (856) 4 67-22 77 Fax (856) 8 45-31 79
	Dayton	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. (9 37) 3 35-00 36 Fax (9 37) 4 40-37 99
	Dallas	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. (214) 3 30-48 24 Fax (214) 3 30-47 24

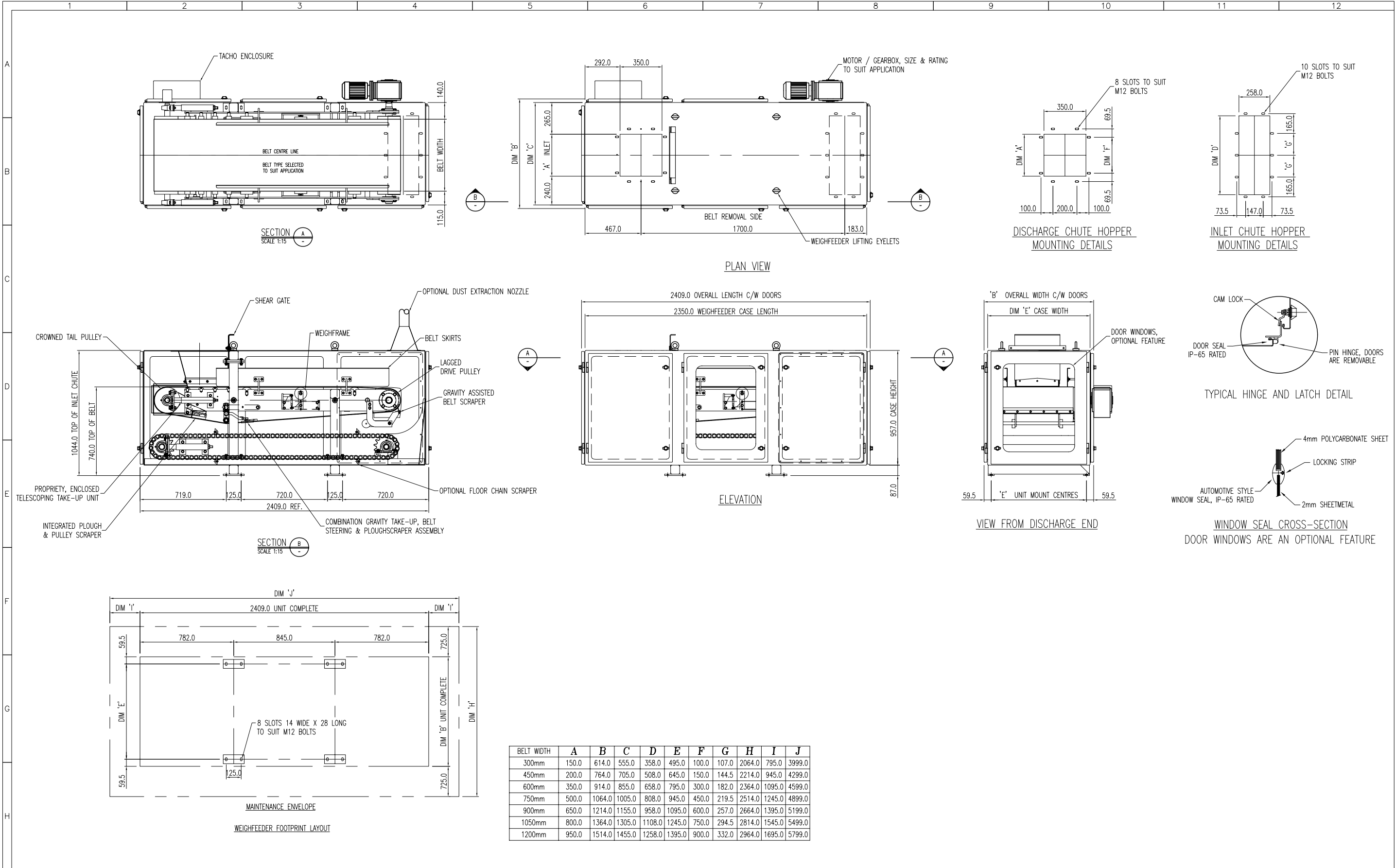


USA			
Additional addresses for service in the USA provided on request!			
Venezuela			
Assembly Sales Service	Valencia	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia	Tel. +58 (241) 8 32 98 04 Fax +58 (241) 8 38 62 75 sewventas@cantr.net sewfinanzas@cantr.net

SEW-EURODRIVE GmbH & Co · P.O. Box 3023 · D-76642 Bruchsal/Germany · Phone +49-7251-75-0
Fax +49-7251-75-1970 · <http://www.sew-eurodrive.com> · sew@sew-eurodrive.com

SEW
EURODRIVE





REVISIONS
A: 29/07/99
ORIGINAL ISSUE 0000

DRAWN	TONY BERNARDI
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APPROVED	-
DATE APP'D	-
SCALE	1:10
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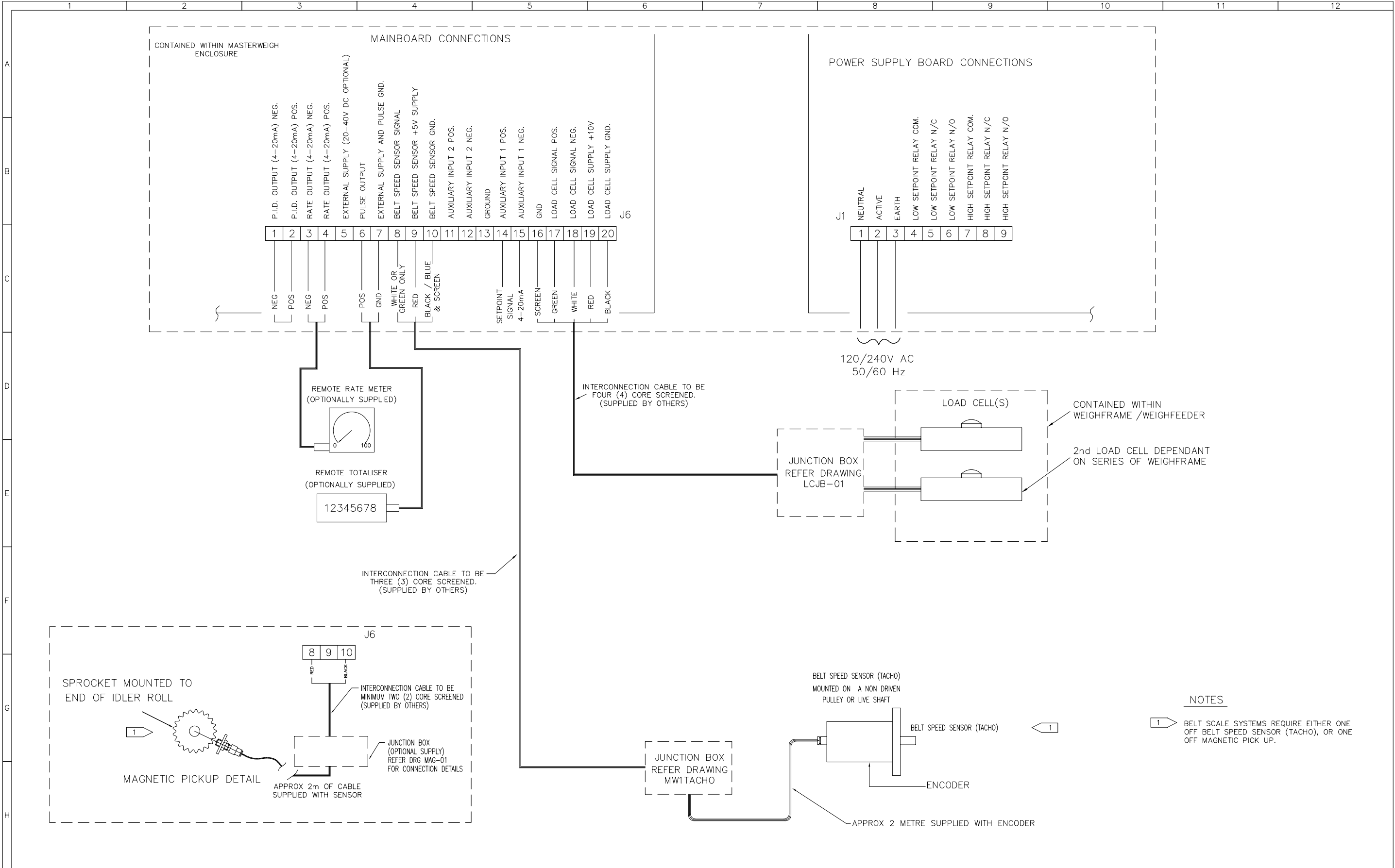
WEB-TECH AUSTRALIA PTY. LTD.
A.C.N. 010 764 431
11 ELECTRONICS STREET EIGHT MILE PLAINS, QUEENSLAND, 4113, AUSTRALIA
P.O. BOX 4006 EIGHT MILE PLAINS, QUEENSLAND, 4113, AUSTRALIA
Phone +61-7-3841 2844 Fax +61-7-3841 0005

TITLE
WT1700 ENCLOSED WEIGHFEEDER
C/W OPTIONAL CHAIN SCRAPER
GENERAL ARRANGEMENT

ALL DIMENSIONS IN MILLIMETRES
UNLESS OTHERWISE SPECIFIED


SIZE	DRAWING No.	
A1	NUMBER	REV.
	17000008	A
	CUSTOMER	
PROJECT		
CAD FILE		
17000008		

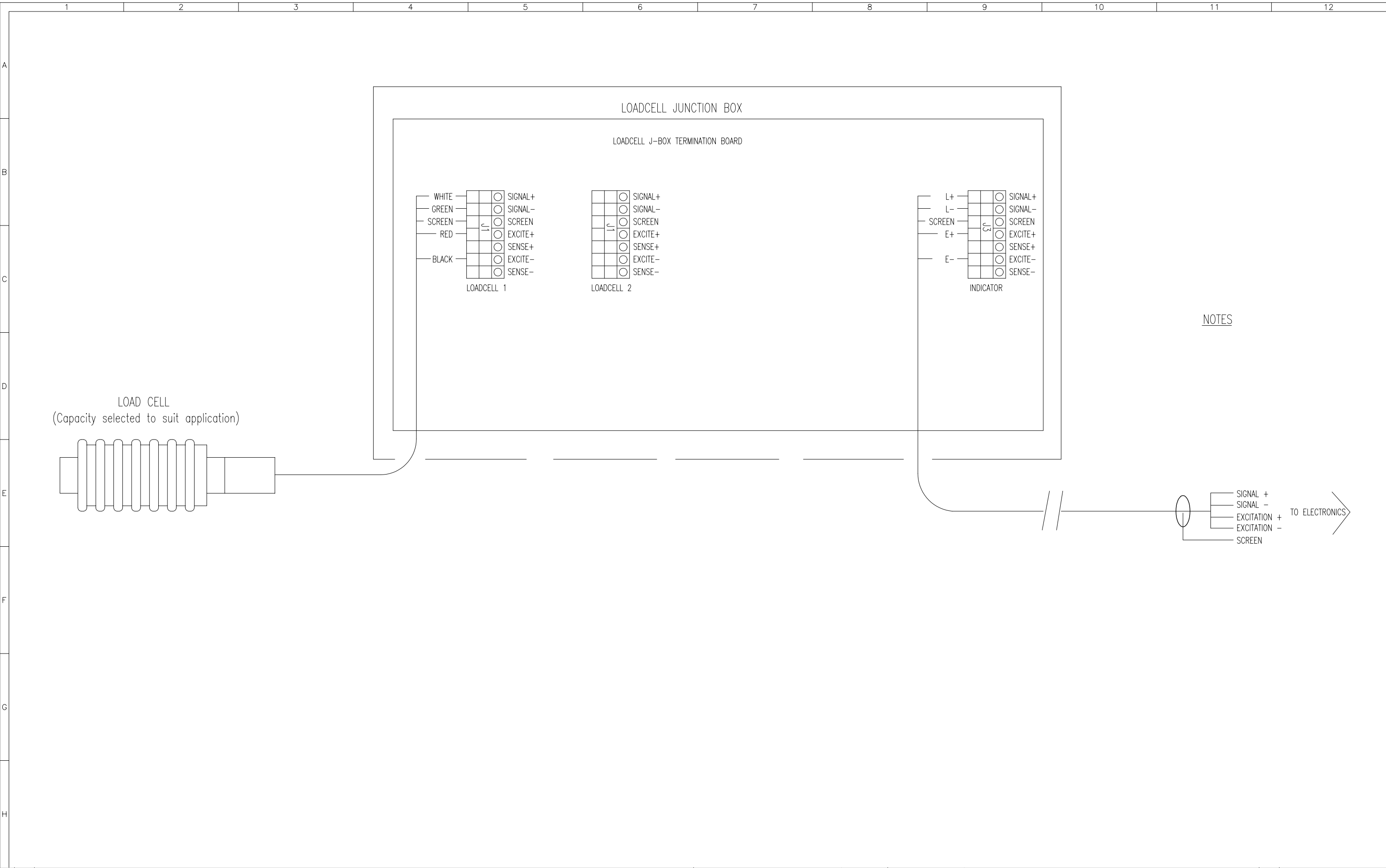
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NOTES

1 BELT SCALE SYSTEMS REQUIRE EITHER ONE OFF BELT SPEED SENSOR (TACHO), OR ONE OFF MAGNETIC PICK UP.

REVISIONS	A. 09/01/97 ORIGINAL ISSUE	CERTIFICATION		UNLESS OTHERWISE STATED UNTOLERANCED DIMENSIONS TO BE WITHIN THE LIMITS SHOWN		DRAWN	T.BERNARDI	 WEB-TECH AUSTRALIA PTY. LTD. A.C.N. 010 764 431 11 ELECTRONICS STREET EIGHT MILE PLAINS, QUEENSLAND, 4113, AUSTRALIA P.O. BOX 4006 EIGHT MILE PLAINS, QUEENSLAND, 4113, AUSTRALIA Phone +61-7-3841 2844 Fax +61-7-3841 0005	SIZE	DRAWING No.			
	B. 10/03/97 WIRING COLOURS ALTERED	WEB-TECH AUSTRALIA PTY. LTD. CUSTOMER No.: CUSTOMER ORDER No.:		NOMINAL SIZE	UP TO 50 UP TO 150 UP TO 300 UP TO 1000 UP TO 1000	CHECKED			A1	NUMBER	SHT.	REV.	
	C. 11/07/97 TACHO DRAWING No. ALTERED	WEB-TECH AUSTRALIA PTY. LTD. CERTIFIED BY: DATE //		MACHINING	± 0.1 ± 0.2 ± 0.3 ± 0.5 ± 1.0	APPROVED			CONTRACT				
	ECON: 0000	CUSTOMER APPROVAL DATE //		FABRICATION	± 0.5 ± 0.5 ± 0.5 ± 1.0 ± 2.0	DATE APP'D			PROJECT				
	ECON: 0000	APPROVED FOR CONSTRUCTION APPROVED AS NOTED APPROVED AS NOTED - RESUBMIT		ASSEMBLIES	± 0.5 ± 0.5 ± 0.5 ± 1.0 ± 2.0	SCALE			CAD FILE WT05001C				
	TITLE ELECTRICAL CONNECTION DIAGRAM FOR BELT SCALE SYSTEMS INCOMP MASTERWEIGH 1								ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SPECIFIED				
	DO NOT SCALE IF IN DOUBT ASK								This drawing and any information or descriptive matter set out herein are the confidential and copyright property of WEB-TECH AUSTRALIA PTY. LTD. (®) and must not be disclosed, loaned, copied or used for manufacturing / tendering or for any other purpose without their written permission.				



NOTES

REVISIONS

A- 21/11/05
ORIGINAL ISSUE

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						CHECKED	L.H.
NOMINAL SIZE	UP TO 50	ABOVE 50 UP TO 150	ABOVE 150 UP TO 300	ABOVE 300 UP TO 1000	ABOVE 1000	APPROVED	L.H.
						DATE APP'D	21/11/05
MACHINING	± 0.1	± 0.2	± 0.3	± 0.5	± 1.0	SCALE	N.T.S.
FABRICATION	± 0.5	± 0.5	± 0.5	± 1.0	± 2.0		DO NOT SCALE IF IN DOUBT ASK
ASSEMBLIES	± 0.5	± 0.5	± 0.5	± 1.0	± 2.0		

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ACN: 000 764 431
11 ELECTRONICS STREET EIGHT MILE PLAINS, QUEENSLAND, 4113, AUSTRALIA
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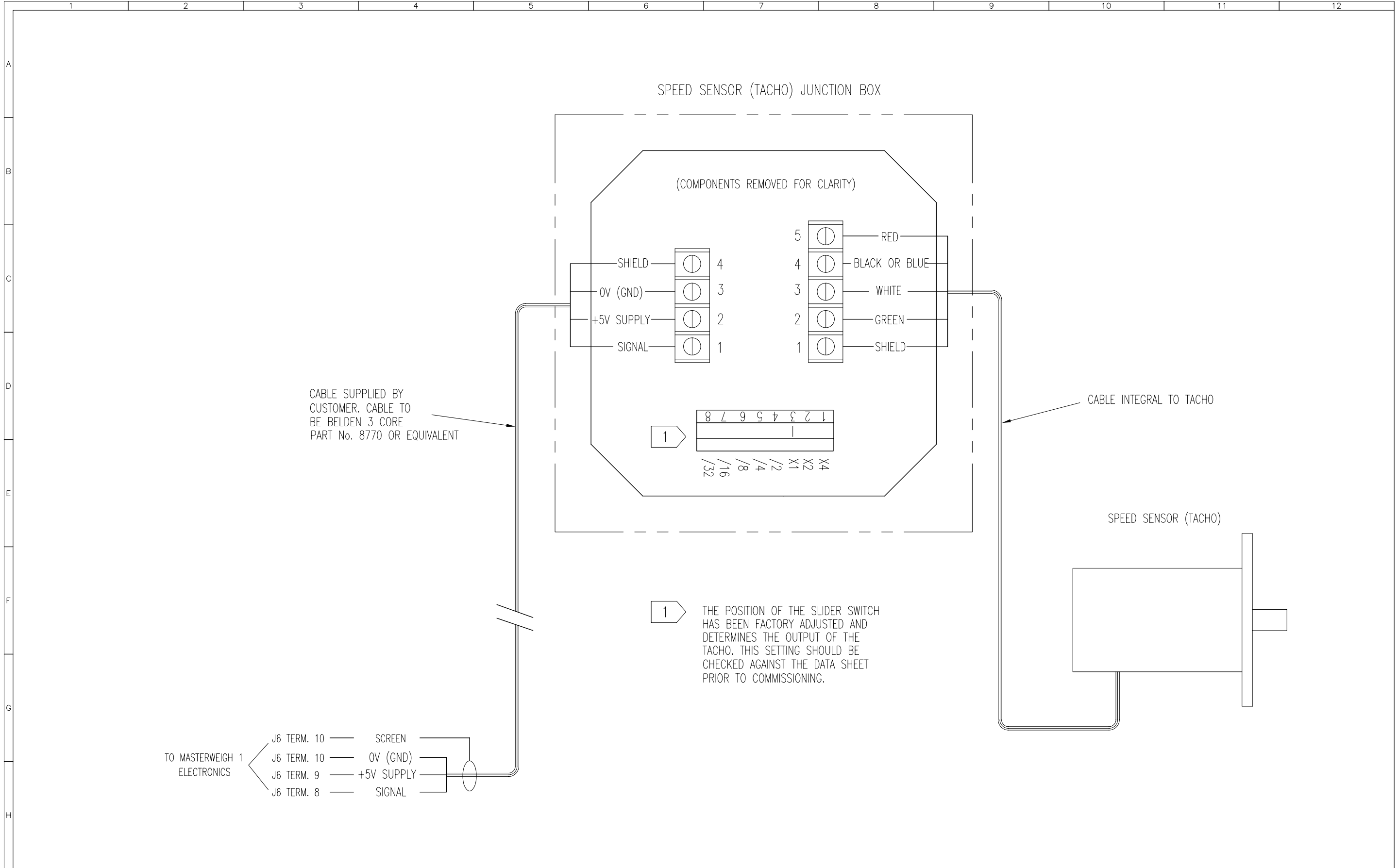
TITLE



MODEL WT735/1200/1700 WEIGHFEEDER
LOAD CELL JUNCTION BOX CONNECTION DIAGRAM.

ALL DIMENSIONS IN MILLIMETRES
UNLESS OTHERWISE SPECIFIED

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SIZE	DRAWING No.		
A1	NUMBER	SHT.	REV.
	LCJBOX	1	A
	CONTRACT		
	PROJECT		
CAD FILE			



REVISIONS	A. 20/10/98 ORIGINAL ISSUE	DRAWN	L.HARTLEY	 WEB-TECH AUSTRALIA PTY. LTD. A.C.N. 010 764 431 11 ELECTRONICS STREET EIGHT MILE PLAINS, QUEENSLAND, 4113, AUSTRALIA P.O. BOX 4006 EIGHT MILE PLAINS, QUEENSLAND, 4113, AUSTRALIA Phone +61-7-3841 2844 Fax +61-7-3841 0005	SIZE	DRAWING No.	
		CHECKED	L.HARTLEY		A1	NUMBER	REV.
		APPROVED	L.HARTLEY			JB010011 A	
		DATE APP'D	20/10/98			CUSTOMER	
		SCALE	N.T.S			PROJECT	
				DO NOT SCALE IF IN DOUBT ASK	TITLE		TACHO (S/S) JUNCTION BOX WIRING (WITH MULTIPLICATION), & CONNECTIONS TO MASTERWEIGH 1 INTEGRATOR
			ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SPECIFIED		This drawing and any information or descriptive matter set out herein are the confidential and copyright property of WEB-TECH AUSTRALIA PTY. LTD. (A) and must not be disclosed, loaned, copied or used for manufacturing / tendering or for any other purpose without their written permission.		

WEB-TECH AUSTRALIA PTY LTD

Customer : _____ Conveyor Designation : _____

Material : _____ Model : _____ Date : _____

Load Cell Type : _____ Tacho : _____ Data By : _____

MW S/No : _____ Software Version : _____ Contract No : _____

Order No. _____

MENU	FUNCTION	MASTERWEIGH 1 SETTINGS
1	Parameter Setup	Capacity : _____ Increments Size: _____ Zero Reference : _____ mV Precision Reference : _____ mV Pulse Width: _____ ms
2	Pulses per Belt Revolution	Programmed Pulses per Belt Revolution : _____ No. of Belt Revs : _____
3	Zero Calibration	Zero Calibration : _____ mV AutoZero Tracking : _____ mV
4	Fixed Weight Calibrate	Span : _____ Target Weight : #REF! kgs
5	Emperical Span	Emperical Span : _____
6	Null Level	Null Level : _____
7	Auto Zero Tracking	Auto Zero Level : _____ Auto Zero Period : _____ Delay Time : _____ sec
8	Loadcell Input	Dynamic (No Load) : _____ mV Dynamic (with weights) : _____ mV
9	Tacho Frequency	Tacho Frequency : _____ Hz @ _____ Hz on VF Drive (if appl.)
10	High Alarm Setpoint	High Alarm Level : _____ Alarm Delay : _____ sec
11	Low Alarm Setpoint	Low Alarm Level : _____ Alarm Delay : _____ sec
12	Parameter Print	NOT USED
13	Auto/Manual Control of PID	Auto / Manual
14	PID Parameters	Current Setpoint : _____ Proportional Term : _____ Integral Term : _____ Integral Lower Limit : _____ Integral Upper Limit : _____ Differential Term : _____ O/P Offset Term : _____ Feed Forw. Term: _____
15	Remote Setpoint Mode	_____
16	Remote Setpoint	_____
17	Filter Constants	Display Time Constant : _____ secs Rate O/P Time Constant : _____ secs Cascade Time Constant : _____ secs PID I/P Time Constant : _____ secs PID O/P Time Constant : _____ secs
18	Displayed Units	_____
19	Belt Speed Indication	Indicated Belt Speed : _____ m/sec @ _____ Hz on VF Drive (if appl.) Current Belt Length : _____ metres

WEB-TECH WEIGHFEEDER DESIGN DATA SHEET

CLIENT : _____ **DATE :** _____

DESIGNATION : _____ **MODEL** _____

CALIBRATION METHOD : BAR(S) / CHAIN

CALIBRATION BAR(S)

1. CALIBRATION BAR QTY AND TOTAL WEIGHT _____ = _____
2. IDLER PITCH _____
3. TOTAL WEIGH AREA _____ metres
4. EQUIVALENT LOADING/M WITH CAL BAR(S) (Item 1 x 1/Item 3) = _____
5. BELT SPEED _____ m/s
6. SIMULATED MASS RATE (Item 4 x Item 5 x 3600) = _____ kg/hr
7. BELT LENGTH _____ metres
8. No. OF BELT REVOLUTIONS FOR TEST _____
9. **TARGET WEIGHT (Item 4 x Item 7 x Item 8) =** _____ kgs

CALIBRATION CHAIN

1. WEIGHT OF CALIBRATION CHAIN PER STRAND _____ kg/m
2. No. OF STRANDS _____
3. TOTAL WEIGHT OF CALIBRATION CHAIN (Item 1 x Item 2) _____ kg/m
4. BELT LENGTH _____ m
5. No. OF BELT REVOLUTIONS FOR TEST _____
4. **TARGET WEIGHT (Item 3 x Item 4 x Item 5) =** _____ kgs

ADDENDUM

The following addenda are applicable to the equipment supplied for this contract.