

**EP series**



**Operating instructions  
Planetary gear reducers and gearmotors**



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## 1 – General information

This document provide information about handling, installation and maintenance of the planetary gear reducers.

All the people who work with the products presented in this operating instructions must carefully read and apply them rigorously. The products correspond to the technical level reached at the moment the document is printed. Rossi S.p.A. reserves the right to introduce, without notice, the necessary changes to improve efficiency and safety of its products.

### Recycling



keeping in mind the instructions in force:

- the elements of casing, gear pairs, shafts and bearings of gear reducer must be transformed into steel scraps. The elements in cast iron will be subjected to the same treatment if there is no particular instructions;
- exhausted oils must be recycled and treated in accordance with environmental legislation.

### Safety

The paragraphs marked with symbols shown below contain dispositions to be strictly respected in order to assure personal safety and to avoid any heavy damages to the machine or to the system.



- Live
- At temperature higher than 50 °C
- Rotating during operations
- attention



- Don't use to lift



- Lifting point

**IMPORTANT:** the components supplied by Rossi must be incorporated into machinery and **should not be commissioned before the machinery in which the components have been incorporated conforms to:**

- **Machinery directive 2006/42/CE and subsequent updatings;**
- **«Electromagnetic compatibility (EMC)» directive 2004/108/EC and subsequent updatings.**



**Attention!** Components in non-standard design or with special executions or with constructive variations may differ in the details from the ones described here following and may require additional information.



**Attention!** For the installation, use and maintenance of the electric motor (standard, brake or non-standard motor) or of the possible motor-variator and/or the electric supply device (frequency converter, soft-start, etc.) and accessories, if any (flow indicators, independent cooling unit, thermostat, ect) consult the attached specific documentation. If necessary, require it.



**Attention!** For any clarification and/or additional information consult Rossi S.p.A. and specify all name plate data.

Gear reducers and gearmotors of presented in this operating instruction are normally suitable for installations in industrial areas: **additional protection measures**, if necessary for different employs, must be adopted and assured by the person responsible for the installation.

An incorrect installation, an improper use, the removing or disconnection of protection devices, the lack of inspections and maintenance, improper connections may cause severe personal injury or property damage.

Therefore, the products must be moved, installed, commissioned, handled, controlled, serviced and re-paired **exclusively by responsible qualified personnel**.

Qualified personnel must be specially trained and have the experience necessary to recognize risks associated with these products and to avoid possible hazards.

It is recommended to pay attention to all existing safety laws and standards concerning correct installation.

Whenever personal injury or property damage may occur, due to falling or projecting parts of gear reducer or of its parts, foresee adequate supplementary protection devices against:

- release or breakage of fastening screws;
- rotation or unthreading of the gear reducer from shaft end of driven machine following to accidental breakage of the reaction arrangement;
- accidental breakage of the shaft end of driven machine.

When operating on gear reducer or on components connected to it, the machine must be at rest: disconnect motor (including auxiliary equipments) from power supply, gear reducer from load, be sure that safety systems are on against any accidental starting and, if necessary, pre-arrange mechanical locking devices (to be removed before commissioning).



**Attention!** During the operation the gear reducers may have hot surfaces.

**Attention!** During the operations take protection due to possible warm oil contact.

If deviations from normal operation occur (temperature increase, unusual noise, etc) immediately switch off the machine.

## 2 – Operating conditions

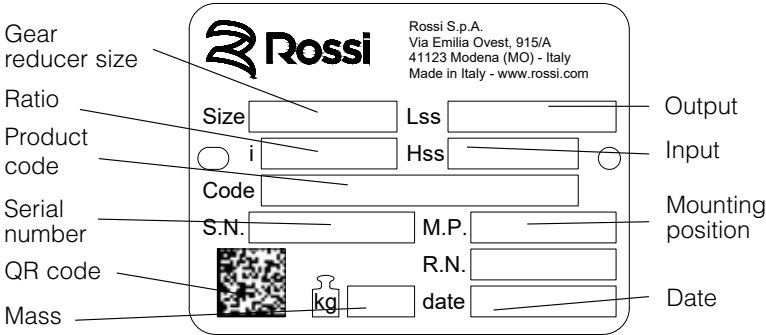
Gear reducer are designed for industrial applications, at ambient temperature 0 ÷ + 40 °C (with peaks at -20 °C and + 50 °C), maximum altitude 1 000m.

## 3 – How supplied

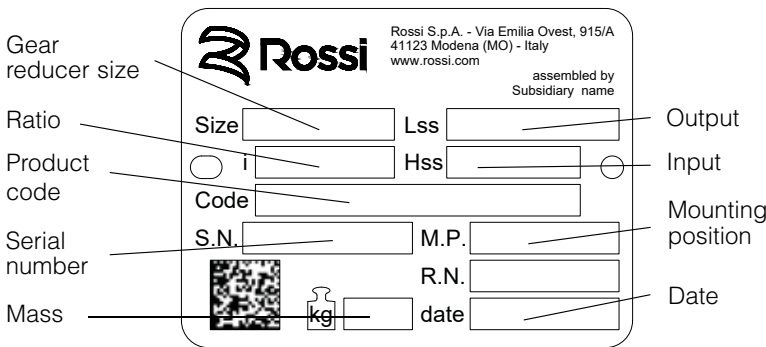
### Name plate

Every gear reducer is provided with a name plate in anodized aluminium containing main informations necessary for a correct identification of the product; the name plate must not be removed and must be kept integral and readable. All name plate data must be specified on eventual spare part orders.

#### Assembled by Rossi Italy



#### Assembled by subsidiaries



### Lubricant

If not differently stated, gear reducers until size 021A are supplied filled for the specific mounting position involved with synthetic PAO oil as indicated in an additional label.

### Painting

| Internal painting   | External painting   |  | Notes   |
|---|---|--|---|
|   | Final color<br>Blue RAL 5010  | Features   |   |
| Single-compound ester epoxy or phenolic resin basis primer (prepainted) | Single-compound ester epoxy or phenolic resin basis primer (prepainted)<br>+<br>Water-soluble polyurethane dual-compound enamel | Resistant to atmospheric and aggressive agents (atmospheric corrosivity category <b>C3</b> according to ISO 12944-2).<br>Suitable for further coats of dual-compound paints only <sup>1)</sup> | The internal painting does not resist polyglycol synthetic oils (polyalphaolefines synthetic oils are suitable).<br><br>Remove by a scraper or solvent the possible paint of gear reducer coupling surfaces |

1) Before adding further coats of paint, properly protect the seal rings and carefully degrease and sand the gear reducer surfaces.

### Protections and packing

Overhanging free shaft ends and hollow shafts are treated with protective anti-rust long life oil.

All internal parts are protected with protective anti-rust oil. Unless otherwise agreed in the order, products are adequately packed: on pallet, protected with a polyethylene film, wound with adhesive tape and strap (bigger sizes); in carton pallet, wound with adhesive tape and strap (smaller sizes); in carton boxes wound with tape (for small dimensions and quantities).

If necessary, gear reducers are conveniently separated by means of anti-shock foam cells or of filling cardboard. Generally the packing is suitable for the normal road/rail transport. For sea transport it is necessary to foresee a special packing, when ordering.

Before handling or transporting the gear reducers, be sure that the packing is in good conditions and suitable for the transport. Do not stock packed products on top of each other.

## 4 – Lifting, handling and storage

### Receipt

At receipt verify that the unit corresponds to the one ordered and has not been damaged during the transport, in case of damages, report them immediately to the courier.

Avoid commissioning gear reducers, that are even slightly damaged.

Report any non-compliance to Rossi S.p.A.

### Lifting and handling

First make sure that the lifting equipment (e.g. crane, hook, eye bolt, straps etc.) is suitable for the weight and size of the gear reducer (**the weight of the product are given in the name plate**). When lifting, use only the attachment point marked in the following figures.

Pay attention to avoid lifting (max 15° during handling) and, if necessary, use additional straps only to balance the load.

**Do not use front threads at the input shaft ends to lift the gear reducers.**

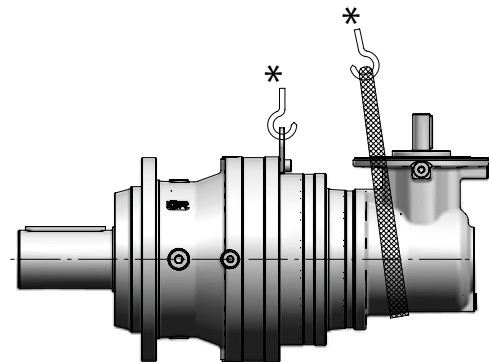
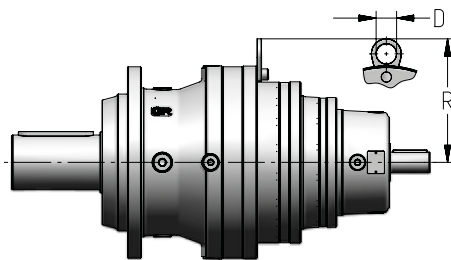
WARNING:



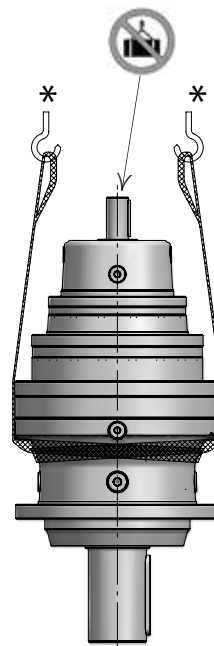
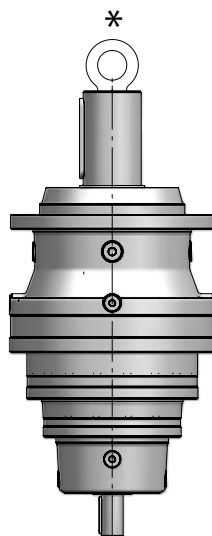
- suspended load can fall;
- do not stand under the load;
- improper transport may result in damage to the gear reducer.

Lifting and handling

Sizes **001A ... 021A details**



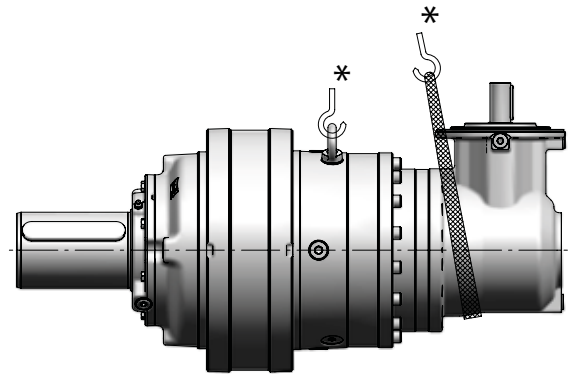
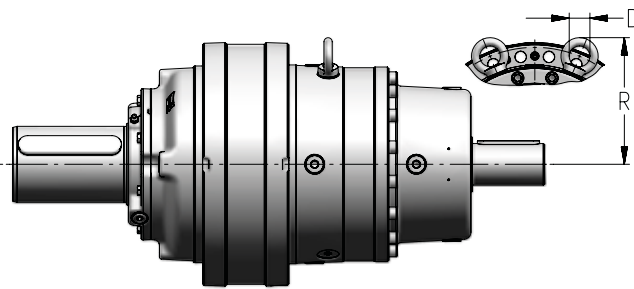
| Size          | D<br>∅ | R   |
|---------------|--------|-----|
| 001A, 002A    | –      | –   |
| 003A ... 006A | 25     | 151 |
| 009A ... 015A | 30     | 181 |
| 018A, 021A    | 35     | 213 |



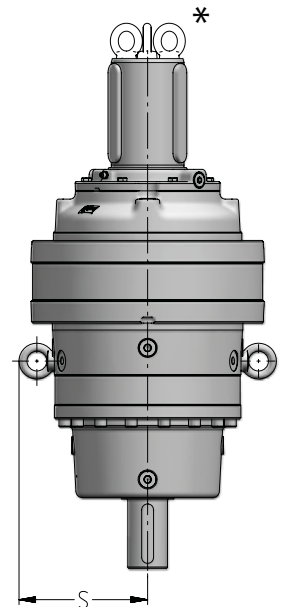
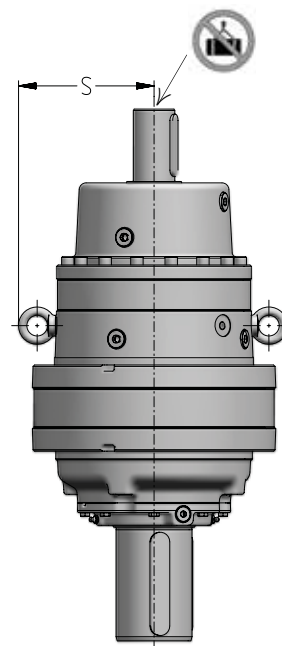
\* Not included

Lifting and handling

Sizes **022A ... 710A** details



| Size        | D<br>∅ | R                       |     | S                       |     |
|-------------|--------|-------------------------|-----|-------------------------|-----|
|             |        | 1EL ... 4EL<br>3EB, 4EB | 2EB | 1EL ... 4EL<br>3EB, 4EB | 2EB |
| <b>022A</b> | 25     | 180                     | 181 | 221                     | 222 |
| <b>030A</b> | 30     | 184                     | 204 | 197                     | 231 |
| <b>031A</b> | 30     | 193                     | 228 | 207                     | 259 |
| <b>042A</b> | 30     | 193                     | 209 | 207                     | 259 |
| <b>043A</b> | 30     | 193                     | 110 | 207                     | 270 |
| <b>060A</b> | 30     | 170                     | 243 | 229                     | 277 |
| <b>085A</b> | 30     | 187                     | 284 | 252                     | 312 |
| <b>125A</b> | 30     | 225                     | 312 | 280                     | 343 |
| <b>180A</b> | 35     | 230                     | -   | 312                     | -   |
| <b>250A</b> | 40     | 257                     | -   | 348                     | -   |
| <b>355A</b> | 50     | 299                     | -   | 404                     | -   |
| <b>500A</b> | 50     | 324                     | -   | 439                     | -   |
| <b>710A</b> | 60     | 362                     | -   | 489                     | -   |



\* Not included



**Warning**



✓ Lifting and handling **correct**

⊗ Lifting and handling **incorrect**

### Storage

Surroundings should be sufficiently clean, dry and free from excessive vibrations ( $v_{\text{eff}} \leq 0,2$  mm/s) to avoid damage to bearings (excessive vibration should also be guarded during transit, even if within wider range) and ambient storage temperature should be  $0 \div +40$  °C: peaks of 10 °C above and below are acceptable.

The gear reducer filled with oil must be positioned according to the mounting position mentioned on the name plate. Every six months rotate the shafts (some revolutions are sufficient) to prevent damage to bearings and seal rings.

Assuming normal surroundings and the provision of adequate protection during transit, the unit is protected for storage up to 1 year.

For a 2 year storing period in normal surroundings it is necessary to pay attention also to the following instructions: – generously grease the sealing, the shafts and the unpainted machined surfaces, if any, and periodically control conservation state of the protective anti rust oil; – completely fill the gear reducers with lubrication oil.

For storages longer than 2 years or in aggressive surroundings or outdoors, consult Rossi S.p.A.

## 5 – Installation

### General

Before the installation, verify that:

- there are no damages on shafts and on mating surfaces;
- design is suitable to the environment (temperature, atmosphere, etc.). No applications allowed in aggressive environment having explosion danger;
- be sure that the structure on which gear reducer is fitted is plane, levelled and sufficiently dimensioned in order to assure fitting stability and vibration absence (vibration speed  $v_{\text{eff}} \leq 3,5$  mm/s for  $P_N < 15$  kW and  $v_{\text{eff}} \leq 4,5$  mm/s for  $P_N > 15$  kW are acceptable), keeping in mind all transmitted forces due to the masses, to the torque, to the radial and axial loads;
- used mounting position corresponds to the one stated on name plate;
- carefully align the gear reducer with the motor and the driven machine (with the aid of shims if need be), interposing flexible couplings whenever possible. Attention! Bearing life and good shaft and coupling running depend on alignment precision between the shafts;
- position the gear reducer so as to allow a free passage of air for cooling both gear reducer and motor (especially at their fan side);
- avoid any obstruction to the air flow; heat sources near the gear reducer that might affect the temperature of cooling air and of gear reducer (for radiation); insufficient air recycle and applications hindering the steady dissipation of heat;
- verify that the gear reducer housing is dust-free in ordering to achieve an efficient heat dissipation;
- gear reducers and gearmotors should be protected whenever possible and by appropriate means from solar radiation and extremis of weather; weather protection **becomes essential** when high or low speed shafts are vertically disposed or when the motor is installed vertical with fan uppermost.
- mating surfaces (of gear reducer and machine) must be clean and sufficiently rough to provide a good friction coefficient (indicatively  $Ra$   $1,6 \div 3,2$   $\mu\text{m}$ ). Remove by a scraper or solvent the eventual paint of gear reducer on coupling surfaces and, especially in presence of external radial loads or torque required  $M_2 \geq 0,7 \times M_{N2}$ , apply **locking adhesives**;
- when external loads are present use pins or locking blocks, if necessary;
- before wiring-up the gearmotor make sure that motor voltage corresponds to input voltage. If direction of rotation is not as desired, invert two phases at the terminals.

Y- $\Delta$  starting should be adopted for no-load starting (or with a very small load) and for smooth starts, low starting current and limited stresses, if requested.

If overloads are imposed for long periods or if shocks or danger of jamming are envisaged, then motor-protection, electronic torque limiters, fluid couplings, safety couplings, control units or other similar devices should be fitted.

**Usually protect the motor with a thermal cut-out** however, where duty cycles involve a high number of on-load starts, it is necessary to utilise **thermal probes** for motor protection (fitted on the wiring); magneto-thermic breaker is unsuitable since its threshold must be set higher than the motor nominal current of rating.


**Connect thermal probes, if any, to auxiliary safety circuits.**

Use varistors and/or RC filters to limit voltage peaks due to contactors.

- For accessories not supplied by Rossi pay attention to their correct dimensioning; if necessary consult us.

### Screws and tightening torques

According to the design and size stated on nameplate, use screws and tightening torques as shown in the following tables; at least class 10.9 is necessary but in case of heavy stresses, alternate loads and shocks use class 12.9 (class 8.8 can be used if  $M_2 < 70\% \times M_{n2}$ ).

The screws must be equipped (where indicated - e.g.:  in the following tables) with ISO 7089 washers (300 HV min.).



# Installation and maintenance

Be careful to the tightening of the 12.9 screws. Over tightening can damage them.

The suggested tightening torque value are valid for an estimated friction coefficient of  $\mu = 0,14$  typical for lightly oiled steel bolts, black annealed or phosphatised and dry, cut mating threads in steel or cast iron.

Do not use lubricants altering the friction coefficient for they may overload the screw connection.

Always use dynamometric wrench or similar and verify the tightening torque after the first hours of running.

## Sizes 001A ... 021A

| Size       | Design<br>(e.g. C038M1 F10a)                     |        |     |     |                        |        |     |     |                        |        |     |     |                        |        |          |
|------------|--|--------|-----|-----|------------------------|--------|-----|-----|------------------------|--------|-----|-----|------------------------|--------|----------|
|            | C... F...<br>S... F...<br>H... A...<br>M... A... |        |     |     | K... F...<br>Z... F... |        |     |     | K... F...<br>Z... F... |        |     |     | C... P...<br>S... P... |        |          |
|            | n°   | d<br>Ø | min | max | n°                     | d<br>Ø | min | max | n°                     | d<br>Ø | min | max | n°                     | d<br>Ø | l<br>min |
| 001A, 002A | 8  | M10    | 30  | 40  | -                      | -      | -   | -   | 8                      | M10    | 10  | 13  | 4                      | M14    | 40       |
| 003A       | 10   | M12    | 35  | 35  | 10                     | M12    | 35  | 35  | -                      | -      | -   | -   | 4                      | M16    | 45       |
| 004A, 006A | 10   | M12    | 40  | 50  | 10                     | M12    | 35  | 35  | -                      | -      | -   | -   | 4                      | M16    | 45       |
| 009A, 012A | 12   | M14    | 45  | 55  | 12                     | M14    | 45  | 50  | -                      | -      | -   | -   | 4                      | M20    | 55       |
| 015A       | 16   | M14    | 45  | 55  | 16                     | M14    | 45  | 50  | -                      | -      | -   | -   | 4                      | M20    | 55       |
| 018A, 021A | 12   | M16    | 55  | 75  | 12                     | M16    | 50  | 50  | -                      | -      | -   | -   | 4                      | M22    | 60       |

## Sizes 030A ... 710A

| Size | Design<br>(e.g. C100M1 F10e)                     |        |          |
|------|--|--------|----------|
|      | C... F...<br>S... F...<br>H... A...<br>Z... F... |        |          |
|      | n°   | d<br>Ø | l<br>min |
| 030A | 24   | M16    | 150      |
| 042A | 28   | M16    | 160      |
| 060A | 24   | M20    | 180      |
| 085A | 28   | M20    | 200      |
| 125A | 28   | M24    | 230      |
| 180A | 32   | M24    | 250      |
| 250A | 28   | M30    | 290      |
| 355A | 32   | M30    | 320      |
| 500A | 28   | M36    | 350      |
| 710A | 32   | M36    | 390      |

## Sizes 030A ... 710A

| Size | Accessory<br>,FB                  |        |          |
|------|-----------------------------------|--------|----------|
|      | 12.9 with washer<br>(300 HV min.) |        |          |
|      | n°                                | d<br>Ø | l<br>min |
| 030A | 4                                 | M24    | 65       |
| 042A | 4                                 | M27    | 70       |
| 060A | 4                                 | M30    | 85       |
| 085A | 4                                 | M33    | 90       |
| 125A | 4                                 | M36    | 110      |
| 180A | 4                                 | M39    | 120      |
| 250A | 4                                 | M42    | 130      |
| 355A | 4                                 | M45    | 140      |
| 500A | 4                                 | M52    | 160      |
| 710A | 4                                 | M56    | 180      |

## Sizes 022A, 031A, 043A

| Size | Design<br>(e.g. C100M1 F10z) |        |          |    |                     |                       |
|------|------------------------------|--------|----------|----|---------------------|-----------------------|
|      | C... F...<br>S... F...       |        |          |    |                     |                       |
|      | n°                           | d<br>Ø | l<br>min | n° | d <sub>1</sub><br>Ø | l <sub>1</sub><br>min |
| 022A | 12                           | M16    | 140      | 3  | 12                  | 20                    |
| 031A | 15                           | M16    | 160      | 3  | 16                  | 20                    |
| 043A | 24                           | M16    | 170      | -  | -                   | -                     |

**Tightening torque**

| <b>R</b> |               |    |     |       | <b>S</b>      |    |     |       | <b>H</b>      |    |     |       |
|----------|---------------|----|-----|-------|---------------|----|-----|-------|---------------|----|-----|-------|
| size     | output design | n  | d   | l min | output design | n  | d   | l min | output design | n  | d   | l min |
| 007      | R30b          | 12 | M12 | 50    | S30b          | 16 | M10 | 100   | H30b          | 10 | M16 | 60    |
| 015      | R30c          | 10 | M16 | 60    | S30c          | 16 | M12 | 130   | H30c          | 12 | M16 | 55    |
| 021      | R30d          | 24 | M16 | 65    | S30d          | 16 | M14 | 140   | H30d          | 12 | M20 | 70    |
| 030      | R30e          | 24 | M16 | 65    | S30e          | 24 | M16 | 160   | H30e          | 24 | M20 | 80    |
| 042      | R30f          | 24 | M20 | 70    | S30f          | 28 | M16 | 180   | H30f          | 24 | M20 | 70    |
| 060      | R30g          | 24 | M20 | 80    | S30g          | 24 | M20 | 220   | H30g          | 24 | M20 | 80    |
| 085      | R30h          | 24 | M20 | 80    | S30h          | 28 | M20 | 240   | H30h          | 24 | M30 | 110   |
| 125      | R30i          | 24 | M24 | 90    | S30i          | 28 | M24 | 240   | H30i          | 28 | M24 | 90    |
| 180      | R30j          | 28 | M24 | 90    | S30j          | 32 | M24 | 260   | H30j          | 32 | M24 | 90    |
| 250      | R30k          | 28 | M30 | 110   | S30k          | 28 | M30 | 300   | H30k          | 28 | M30 | 110   |

Sizes **001A ... 021A**

| Size          | Design<br>(e.g. M...A...)<br>Accessory<br>(e.g. .WF...) |           |          |
|---------------|---|-----------|----------|
|               | n°  | d<br>10.9 | l<br>min |
| 001A ... 002A | 12  | M10       | 30       |
| 003A ... 006A | 12  | M12*      | 40       |
| 009A ... 015A | 12  | M18       | 50       |
| 018A ... 021A | 12  | M20       | 60       |

\*) Class 12.9.

Sizes **030A ... 710A**

| Size | Accessory<br>(e.g. .WF... .WT...) |           |          |
|------|-----------------------------------|-----------|----------|
|      | n°                                | d<br>10.9 | l<br>min |
| 030A | 12                                | M24       | 70       |
| 042A | 16                                | M24       | 70       |
| 060A | 12                                | M30       | 90       |
| 085A | 16                                | M30       | 90       |
| 125A | 18                                | M30       | 100      |
| 180A | 28                                | M30       | 100      |
| 250A | 36                                | M30       | 110      |
| 355A | 44                                | M30       | 110      |
| 500A | 44                                | M33       | 130      |
| 710A | 48                                | M36       | 140      |

**Tightening torque [N m]** 

| Ø          | Class                             |        |   |
|------------|-----------------------------------|--------|---|
|            | 8.8<br>$M_2 < 70\% \times M_{n2}$ | 10.9   | 12.9<br>Washer must be always used<br>(300 HV min.) |
| <b>M10</b> | 50                                | 70     | 85  |
| <b>M12</b> | 85                                | 120    | 145   |
| <b>M14</b> | 135                               | 190    | 230   |
| <b>M16</b> | 210                               | 300    | 355   |
| <b>M20</b> | 400                               | 560    | 675   |
| <b>M22</b> | 530                               | 770    | 895   |
| <b>M24</b> | 690                               | 1 000  | 1 165   |
| <b>M27</b> | 1 010                             | 1 400  | 1 705   |
| <b>M30</b> | 1 380                             | 1 950  | 2 330   |
| <b>M33</b> | 2 000                             | 2 800  | 3 375   |
| <b>M36</b> | 2 500                             | 3 550  | 4 220   |
| <b>M39</b> | 2 950                             | 4 200  | 4 980   |
| <b>M42</b> | 4 100                             | 5 800  | 6 920   |
| <b>M45</b> | 5 000                             | 7 100  | 8 440   |
| <b>M52</b> | 7 600                             | 10 700 | 12 800  |
| <b>M56</b> | 9 800                             | 13 800 | 16 540  |

**Flange mounting**

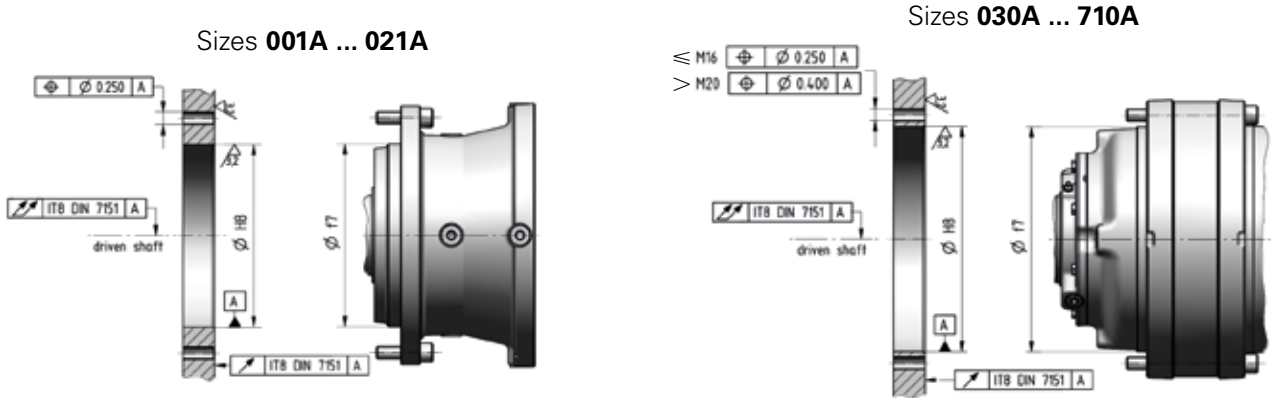
**To machine the driven shaft, please refer to the dimensions shown in ch. 4 cat. EP series.**

Before mounting pay attention to clean carefully mating surfaces.

In presence of external radial loads or torque required  $M_2 \geq 0,7 \times M_{N2}$ , apply locking adhesives.

Tighten the screws according to the values given in the table on previous page.

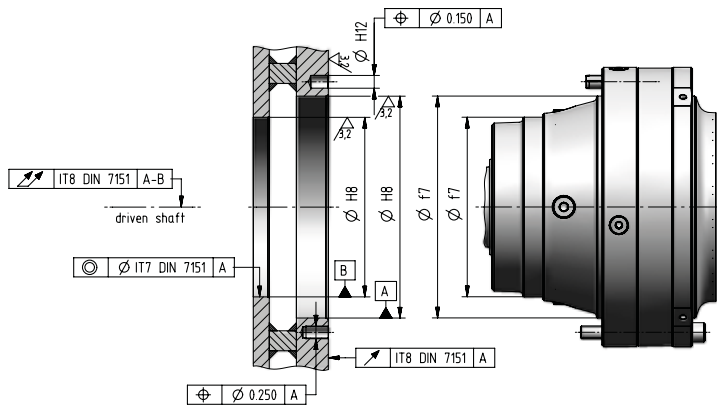
To machine the matching frame, please refer to the drawings below.



**Sizes 022A, 031A, 043A**

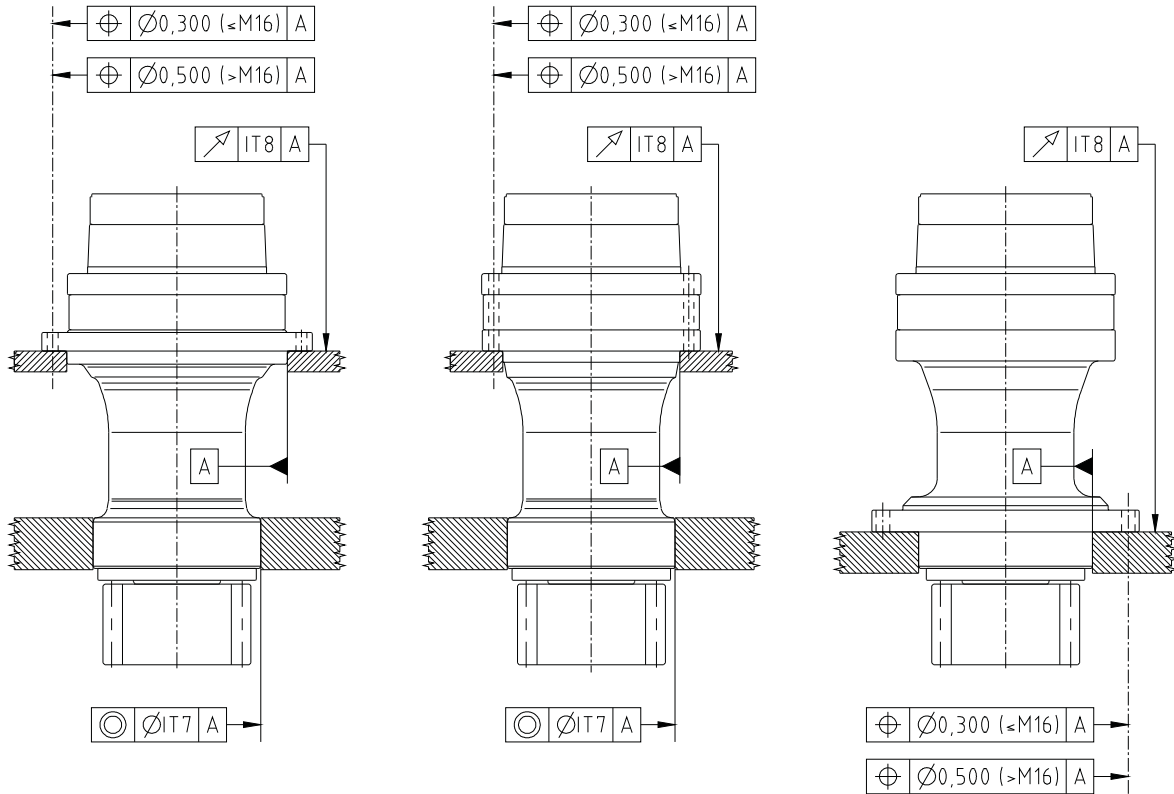
These sizes of gear reducers have two spigots. If the output shaft is not subject to radial load or if radial load is below 60% maximum allowed, only the bigger spigot may be used.

If elastic pins are present on the gear reducer flange, they must be used in the matching with a machine frame by a length equivalent to their diameter.



### Gear reducer mounting with slewing outputs

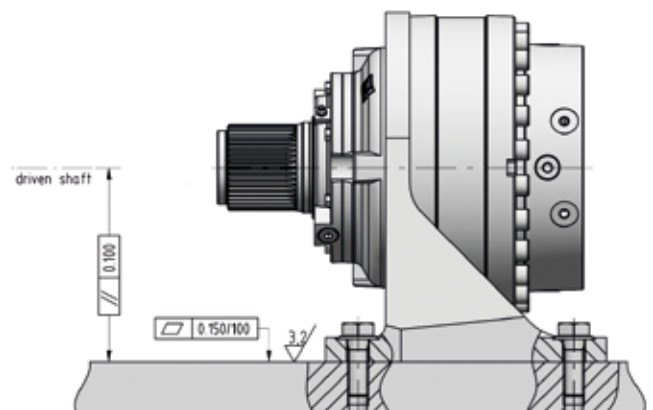
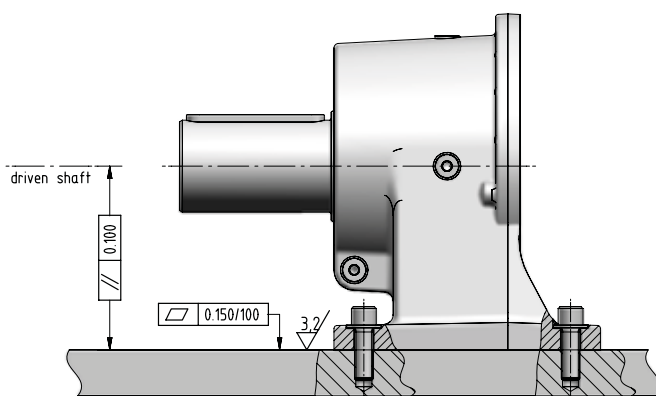
In case of gear reducers with slewing outputs (output design R-S-H), in order to assure a correct running and an excellent power transfer between gear reducer and machine, the gear reducer requires a rigid connection structure withstanding the radial loads. The position and shape tolerances stated below are to be observed.



### Foot mounting

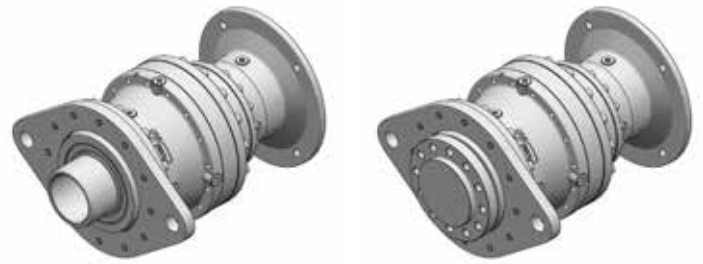
Sizes **001A ... 021A**

Sizes **030A ... 710A**



### Shaft mounting arrangements

When shaft mounted, the gear reducer must be supported both axially and radially (also for mounting positions B5 ... B53 see ch. 13) by the shaft end of the driven machine as well as anchored against rotation only by means of a reaction having freedom of axial movement and sufficient clearance in its couplings to permit minor oscillations – always in evidence – without provoking dangerous overloads on the gear reducer. It is recommended to use the torque arm symmetrically to the gear reducer low speed shaft because, in this way, the torque reaction is equally distributed on the two constraints without loading the machine bearings. Foresee adequate elastic bushes and lubricate with proper products the hinges and the parts subject to sliding. Regarding the reaction system, follow the instructions contained in the specific technical documentation.



Whenever personal injury or property damage may occur, due to falling or projecting parts of the gear reducer or of its parts, foresee adequate supplementary protection devices against:

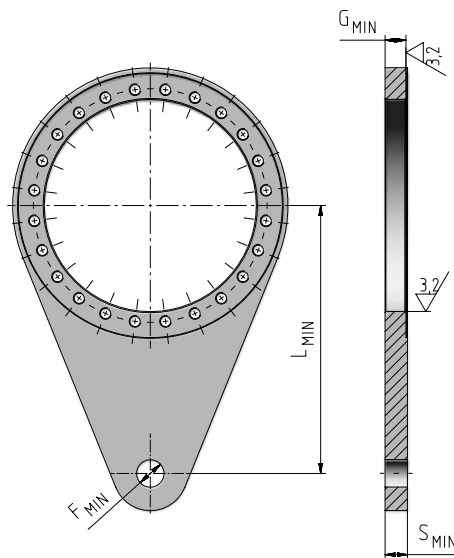
- rotation or unthreading of the gear reducer from shaft end of driven machine following to accidental breakage of the reaction arrangement;
- accidental breakage of shaft end of driven machine.



**Attention!** For **vertical ceiling-type** mounting and only for gear reducers equipped with locking rings or bush, gear reducer support is due only to friction, for this reason it is advisable to provide it with a fastening system.

### Torque arm

Symmetrical torque arm is provided as standard option (,TA - up to size 085A); if you need a one sided torque arm, it must comply with the dimensions shown below.



| Size        | L <sub>min</sub><br>[mm] | G <sub>min</sub><br>[mm] | S <sub>min</sub><br>[mm] | F <sub>min</sub><br>[mm] |
|-------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>001A</b> | 325                      | 10                       | 15                       | 20                       |
| <b>002A</b> | 325                      | 10                       | 15                       | 20                       |
| <b>003A</b> | 375                      | 13                       | 15                       | 20                       |
| <b>004A</b> | 375                      | 13                       | 15                       | 20                       |
| <b>006A</b> | 375                      | 13                       | 15                       | 20                       |
| <b>009A</b> | 450                      | 18                       | 20                       | 30                       |
| <b>012A</b> | 450                      | 18                       | 20                       | 30                       |
| <b>015A</b> | 450                      | 18                       | 20                       | 30                       |
| <b>018A</b> | 550                      | 23                       | 25                       | 35                       |
| <b>021A</b> | 550                      | 23                       | 25                       | 35                       |
| <b>030A</b> | 600                      | 28                       | 30                       | 35                       |
| <b>042A</b> | 700                      | 33                       | 35                       | 40                       |
| <b>060A</b> | 800                      | 33                       | 35                       | 40                       |
| <b>085A</b> | 900                      | 38                       | 40                       | 45                       |
| <b>125A</b> | 1000                     | 40                       | 45                       | 50                       |
| <b>180A</b> | 1100                     | 45                       | 50                       | 60                       |
| <b>250A</b> | 1250                     | 50                       | 55                       | 70                       |
| <b>355A</b> | 1400                     | 58                       | 65                       | 80                       |
| <b>500A</b> | 1550                     | 65                       | 70                       | 90                       |
| <b>710A</b> | 1700                     | 74                       | 80                       | 100                      |

### Shaft end mounting

Before mounting clean mating surface thoroughly and lubricate against seizure and fretting corrosion, except for hollow shaft mounting (See below).

For shaft end type **M, S + WF, T + WT** use screws and tightening torques as shown at page 9.



**Attention!** Installing and removal operations should be carried out with **pullers** and **jacking screws** using the tapped holes at the shaft butt-end (see ch. «Fitting of components to shaft end») taking care to avoid impacts and shocks which **may irretrievably damage the bearings, the circlips** or other parts.

### Hollow shaft mounting with shrink disc

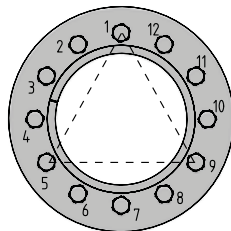
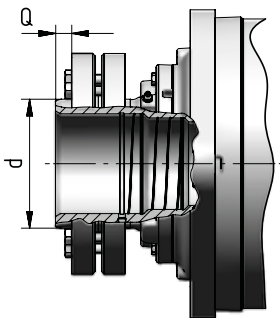
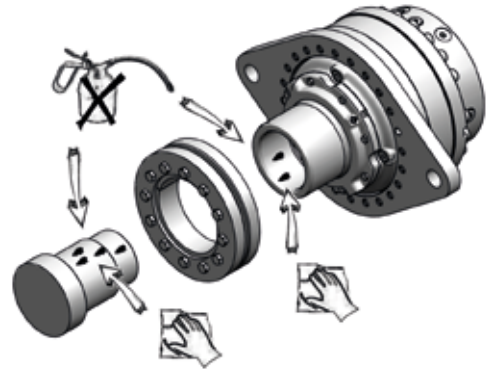
For the shaft end detail of machines where the hollow shaft of the gear reducer is to be keyed, follow the instructions see EP catalog.

#### Installation

If the shrink disc is not supplied by us, please carefully follow the manufacturer's instructions

When keying the shrink disc supplied by Rossi, follow these instructions:

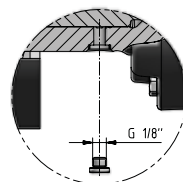
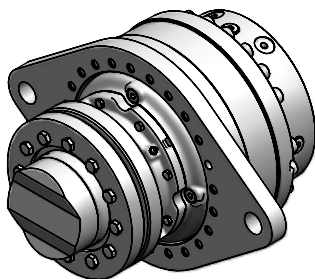
- carefully degrease the surfaces of hollow shaft and shaft end of driven machine to be fitted;
- mount the shrink disc on gear reducer hollow shaft by lubricating first only the external surface of hollow shaft; pay attention to locate axially the shrink disc at dimension «Q» shown in table below (values valid only for our shrink disc);
- slightly tighten a first group of three screws positioned at about 120° as shown for example in the figure;



| Size | d   | Q  |
|------|-----|----|
| 001A | 55  | 8  |
| 002A | 62  | 8  |
| 003A | 68  | 10 |
| 004A | 80  | 15 |
| 006A | 90  | 8  |
| 009A | 100 | 14 |
| 012A | 115 | 13 |
| 015A | 120 | 13 |
| 015A | 125 | 18 |
| 018A | 130 | 13 |
| 021A | 130 | 13 |
| 030A | 155 | 10 |
| 042A | 165 | 10 |
| 060A | 185 | 10 |
| 085A | 200 | 10 |

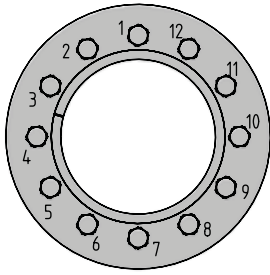
| Size | d   | Q    |
|------|-----|------|
| 125A | 240 | 13,5 |
| 180A | 260 | 13   |
| 250A | 300 | 16   |
| 355A | 340 | 15   |
| 500A | 360 | 15   |
| 710A | 420 | 15   |

- mount the gear reducer on the machine shaft end; insert the shaft slowly to allow an air escape (from size 030A, open the plug located on the shaft, see below);



detail

- gradually and uniformly tighten, by means of dynamometric wrench, the screws of shrink disc at torque value shown in the fig. below, by a continuous sequence (not crossing) using approximately 1/4 turns for several passes until 1/4 turns can no longer be achieved;
- continue to apply overtorque for 1 or 2 more passes and at the end verify the bolt tightening torque;
- when having heavy duty cycles, with frequent reversals, verify the bolt tightening torque again, after some hours of running.



| Size | screws | quantity | T... torque [N m] |
|------|--------|----------|-------------------|
| 001A | M6     | 8        | 12                |
| 002A | M8     | 6        | 30                |
| 003A | M8     | 6        | 30                |
| 004A | M8     | 8        | 30                |
| 006A | M8     | 10       | 30                |
| 009A | M8     | 12       | 30                |
| 012A | M10    | 10       | 59                |
| 015A | M10    | 12       | 59                |
| 018A | M12    | 10       | 100               |
| 021A | M12    | 10       | 100               |
| 030A | M12    | 15       | 100               |
| 042A | M16    | 10       | 250               |
| 060A | M16    | 15       | 250               |
| 085A | M16    | 15       | 250               |

| Size | screws | quantity | T... torque [N m] |
|------|--------|----------|-------------------|
| 125A | M20    | 15       | 490               |
| 180A | M20    | 18       | 490               |
| 250A | M20    | 20       | 490               |
| 355A | M24    | 20       | 840               |
| 500A | M24    | 20       | 840               |
| 710A | M24    | 30       | 840               |

**Removal**

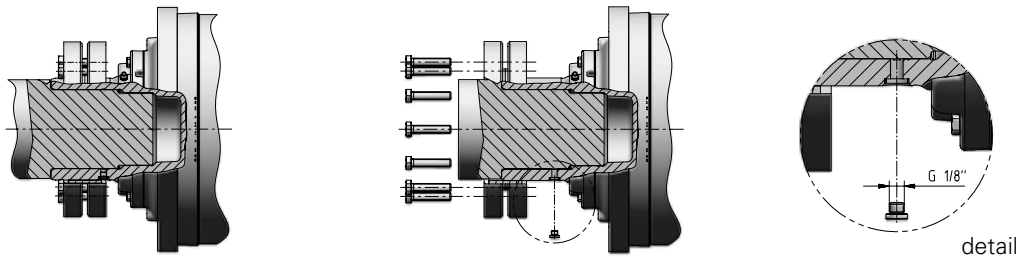


**Do not completely remove fastening screws before locking rings are disengaged.**  
**Risk of serious injury!!!**

Clean off any rusty areas.

Loosen the fastening screws one after the other **only** by using approx. 1/2 turn at a time and by a continuous sequence (not crossing), until shrink disc can be moved on the hollow shaft.

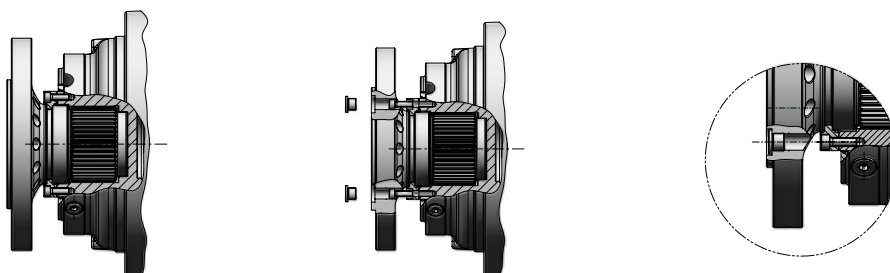
Remove the customer shaft or the gear reducer. For sizes above 030A to make it easier is possible to inject low pressure oil through a threaded hole located on the hollow shaft (see below).



"T" outputs can be used both for gear reducer shaft mounting coupling it to the splined solid shaft and coupling it to a splined solid wheel flange.

For the mounting of "T" output to a splined solid wheel flange, carefully follow these instructions:

- remove the metal plugs positioned on splined wheel flange holes, prearranged for the fastening screws.
- carefully lubricate the splined parts with grease for industrial applications with heavy and long lasting loads
- insert the O-ring seal on flange shaft
- (in case of mounting with wheel flange) - orientate the accessory before mounting; identify the tooth of splined shaft timing with the relevant recess positioned on gear reducer shaft. Timed tooth and recess are identified as per hole, see fig.
- insert slowly the splined shaft in order to have an air outlet
- radially mount the cover, compressing the O-ring.
- screw with crossed tightening the tightening screws of half rings taking care to tighten to the relevant torque.
- close the holes of splined wheel flange with plugs.

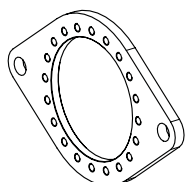


### Accessories mounting

Carefully clean the coupling surfaces, apply locking adhesives (recommended only with torque arm or foot bracket) and assemble the accessory to the gear reducer. Tighten the screws by a dynamometric wrench at values shown in the following tables.

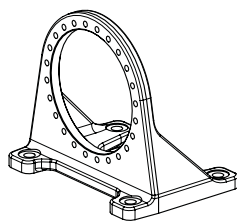
Screws and tightening torque

#### Torque arm



| Code         | screws  |       |      | torque [Nm] |
|--------------|---------|-------|------|-------------|
|              | d x l   | class | ISO  |             |
| <b>TA10a</b> | M10x25  | 10.9  | 4762 | 70          |
| <b>TA10b</b> | M12x30  | 10.9  | 4762 | 120         |
| <b>TA10c</b> | M14x40  | 10.9  | 4762 | 190         |
| <b>TA10d</b> | M14x50  | 10.9  | 4762 | 190         |
| <b>TA10e</b> | M16x150 | 10.9  | 4762 | 300         |
| <b>TA10f</b> | M16x160 | 10.9  | 4762 | 300         |
| <b>TA10g</b> | M20x180 | 10.9  | 4762 | 560         |
| <b>TA10h</b> | M20x200 | 10.9  | 4762 | 560         |

#### Foot bracket



| Code         | screws  |       |      | washer DIN | torque [Nm] |
|--------------|---------|-------|------|------------|-------------|
|              | d x l   | class | ISO  |            |             |
| <b>FB10e</b> | M16x150 | 10.9  | 4762 | -          | 300         |
| <b>FB10f</b> | M16x160 | 10.9  | 4762 | -          | 300         |
| <b>FB10g</b> | M20x180 | 10.9  | 4762 | -          | 560         |
| <b>FB10h</b> | M20x200 | 10.9  | 4762 | -          | 560         |
| <b>FB10i</b> | M24x220 | 10.9  | 4014 | 6916       | 1000        |
| <b>FB10j</b> | M24x240 | 10.9  | 4014 | 6916       | 1000        |
| <b>FB10k</b> | M30x280 | 10.9  | 4014 | 6916       | 1950        |
| <b>FB10l</b> | M30x320 | 10.9  | 4014 | 6916       | 1950        |
| <b>FB10m</b> | M36x340 | 10.9  | 4014 | 6916       | 3550        |
| <b>FB10n</b> | M36x380 | 10.9  | 4014 | 6916       | 3550        |

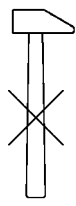
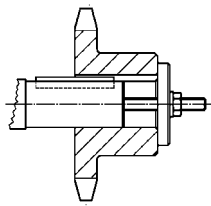
#### Stop washer



| Code         | screws |       |      | washer DIN | torque [Nm] |
|--------------|--------|-------|------|------------|-------------|
|              | d x l  | class | ISO  |            |             |
| <b>SW040</b> | M6x16  | 8.8   | 4017 | -          | 11          |
| <b>SW045</b> | M6x16  | 8.8   | 4017 | -          | 11          |
| <b>SW050</b> | M8x20  | 8.8   | 4017 | -          | 25          |
| <b>SW058</b> | M10x25 | 8.8   | 4017 | -          | 50          |
| <b>SW062</b> | M10x25 | 8.8   | 4017 | -          | 50          |
| <b>SW070</b> | M10x25 | 8.8   | 4017 | -          | 50          |
| <b>SW080</b> | M12x30 | 8.8   | 4017 | -          | 85          |
| <b>SW090</b> | M14x35 | 8.8   | 4017 | -          | 135         |
| <b>SW100</b> | M14x40 | 10.9  | 4017 | 6916       | 190         |
| <b>SW120</b> | M16x40 | 10.9  | 4017 | 6916       | 300         |
| <b>SW130</b> | M16x40 | 10.9  | 4017 | 6916       | 300         |
| <b>SW150</b> | M16x40 | 10.9  | 4017 | 6916       | 300         |
| <b>SW170</b> | M16x50 | 10.9  | 4017 | 6916       | 300         |
| <b>SW200</b> | M20x60 | 10.9  | 4017 | 6916       | 560         |
| <b>SW220</b> | M20x65 | 10.9  | 4017 | 6916       | 560         |
| <b>SW240</b> | M24x70 | 10.9  | 4017 | 6916       | 1000        |
| <b>SW280</b> | M27x80 | 10.9  | 4017 | 6916       | 1400        |
| <b>SW300</b> | M30x90 | 10.9  | 4017 | 6916       | 1950        |



**Fitting of components to shaft end**

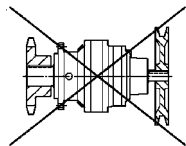


It is recommended that the bore of parts keyed to cylindrical shaft ends (spigots for splined shaft ends) is machined as indicated in EP catalog. Before mounting, clean mating surfaced thoroughly and lubricate against seizure and fretting corrosion. Attention! Installing and removal operations should be carried out with pullers and jacking screws using the tapped holes at the shaft butt-end (see fig. below) taking care to avoid impacts and shocks which may irretrievably damage the bearings, the circlips or other parts. For H7/m6, K7/k6 and K7/m6 fits it is advisable that the part to be keyed is preheated to a temperature of  $80 \div 100 \text{ }^\circ\text{C}$ .

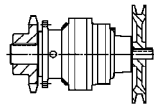
For splined couplings apply adequate grease or paste. The couplings having a tip speed on external diameter up to 20 m/s must be statically balanced; for higher tip speeds they must be dynamically balanced.

Where the transmission link between gear reducer and machine or motor generates shaft end loads, (see fig. below), ensure that the loads do not rise above the catalog values:

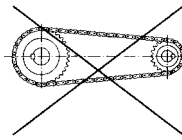
- transmission overhang is kept to a minimum;
- gear-type transmission must guarantee a minimum of backlash on all mating flanks;
- drive-chains should not be tensioned (if necessary – alternating loads and/or motion – foresee suitable chain tighteners);
- drive-belts should not be over-tensioned.



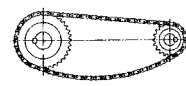
Incorrect



Correct



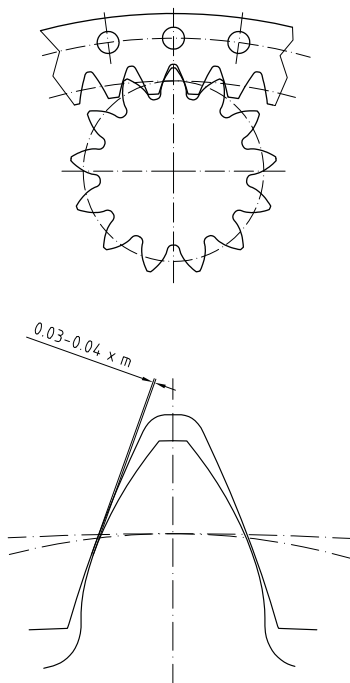
Incorrect



Correct

**Pinion gear**

When a pinion gear is mounted on output shaft, you must check the value of backlash with the corresponding slewing bearing or rack to achieve a correct meshing (see below).



| Code          | m  | z  | $\alpha$ | x   | $d_a$ | $d_f$  | k | Wk      | tolerances |        |
|---------------|----|----|----------|-----|-------|--------|---|---------|------------|--------|
| <b>R002CA</b> | 8  | 11 | 20       | 0,5 | 109,5 | 77,33  | 2 | 39,394  | -0,038     | -0,076 |
| <b>R002BB</b> | 6  | 12 | 20       | 0,5 | 89,5  | 64,00  | 3 | 47,342  | -0,034     | -0,068 |
| <b>R002BC</b> | 6  | 13 | 20       | 0,5 | 95,5  | 70,00  | 3 | 47,427  | -0,034     | -0,068 |
| <b>R002BD</b> | 6  | 14 | 20       | 0,5 | 101,5 | 76,00  | 3 | 47,511  | -0,034     | -0,068 |
| <b>R002BE</b> | 6  | 15 | 20       | 0,5 | 107,5 | 82,00  | 3 | 47,595  | -0,034     | -0,068 |
| <b>R002AF</b> | 5  | 16 | 20       | 0,5 | 94,5  | 73,33  | 3 | 39,732  | -0,034     | -0,068 |
| <b>R006DA</b> | 10 | 11 | 20       | 0,5 | 139   | 96,67  | 2 | 49,243  | -0,038     | -0,076 |
| <b>R006DB</b> | 10 | 12 | 20       | 0,5 | 149   | 106,67 | 3 | 78,904  | -0,038     | -0,076 |
| <b>R006CC</b> | 8  | 13 | 20       | 0,5 | 127   | 93,33  | 3 | 63,235  | -0,038     | -0,076 |
| <b>R006CD</b> | 8  | 14 | 20       | 0,5 | 135   | 101,33 | 3 | 63,347  | -0,038     | -0,076 |
| <b>R006CE</b> | 8  | 15 | 20       | 0,5 | 143   | 109,33 | 3 | 63,459  | -0,038     | -0,076 |
| <b>R006CF</b> | 8  | 16 | 20       | 0,5 | 149,5 | 117,33 | 3 | 63,571  | -0,041     | -0,082 |
| <b>R012FA</b> | 14 | 11 | 20       | 0,5 | 194,5 | 135,33 | 2 | 68,940  | -0,047     | -0,094 |
| <b>R012EB</b> | 12 | 12 | 20       | 0,5 | 179   | 128,00 | 3 | 94,685  | -0,047     | -0,094 |
| <b>R012EC</b> | 12 | 13 | 20       | 0,5 | 191   | 140,00 | 3 | 94,853  | -0,047     | -0,094 |
| <b>R012DD</b> | 10 | 14 | 20       | 0,5 | 169   | 126,67 | 3 | 79,184  | -0,041     | -0,082 |
| <b>R012DE</b> | 10 | 15 | 20       | 0,5 | 179   | 136,67 | 3 | 79,324  | -0,041     | -0,082 |
| <b>R012DF</b> | 10 | 16 | 20       | 0,5 | 189   | 146,67 | 3 | 79,464  | -0,041     | -0,082 |
| <b>R018GA</b> | 16 | 11 | 20       | 0,5 | 222,5 | 154,67 | 2 | 78,788  | -0,047     | -0,094 |
| <b>R018FB</b> | 14 | 12 | 20       | 0,5 | 208,5 | 149,33 | 3 | 110,466 | -0,047     | -0,094 |
| <b>R018FC</b> | 14 | 13 | 20       | 0,5 | 222,5 | 163,33 | 3 | 110,662 | -0,047     | -0,094 |
| <b>R018ED</b> | 12 | 14 | 20       | 0,5 | 203   | 152,00 | 3 | 95,021  | -0,047     | -0,094 |
| <b>R018EE</b> | 12 | 15 | 20       | 0,5 | 215   | 164,00 | 3 | 95,189  | -0,047     | -0,094 |
| <b>R018EF</b> | 12 | 16 | 20       | 0,5 | 227   | 176,00 | 3 | 95,357  | -0,047     | -0,094 |

Note: Definitions according to DIN 3960.

**Splined shaft greasing**

When pinion is supplied separately from gear reducer, before keying it onto shaft, lubricate the splined shaft with anti-corrosion grease in order to avoid any contact corrosion process. Do this operation at the first commissioning, only.

### Meshing clearance adjustment

In the presence of eccentric centering, the meshing action between pinion and rack is regulated through the rotation of the gear reducer inside its seat on the machine.

The point of maximum eccentricity of the centering is given by a small hole or a small milling obtained on the outlet support.

To adjust the meshing clearance, it is advisable to place itself in the initial minimum clearance condition, which can be obtained by making the point of maximum eccentricity on the gear reducer face:

- towards the center of the rack in case of **internal gear**;
- at 180° with respect to the center of the rack in case of **external gear**.

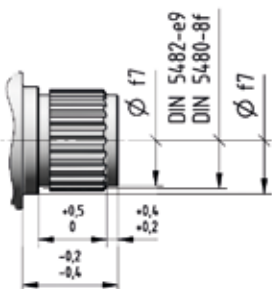
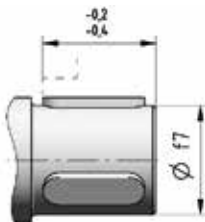
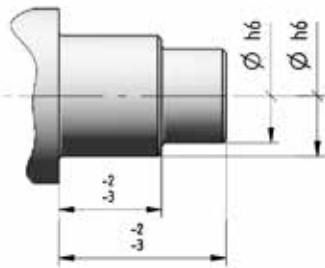
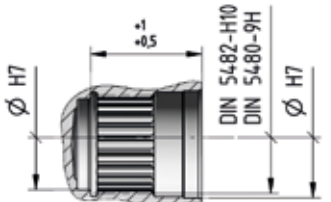
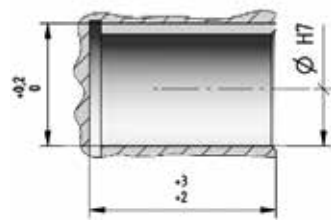
In this condition the meshing clearance must not be less than **0,03÷0,04 x m**.

It is also advisable that the measured clearance is in the range recommended by the rack manufacturer.

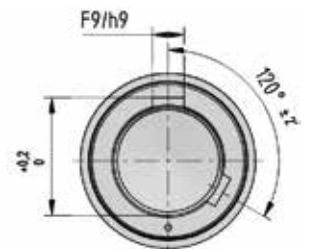
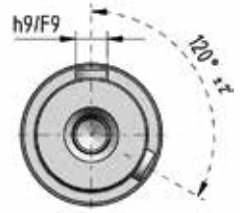
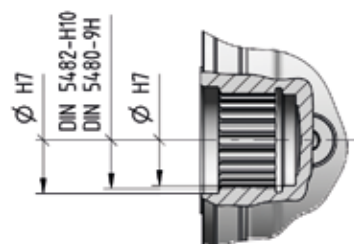
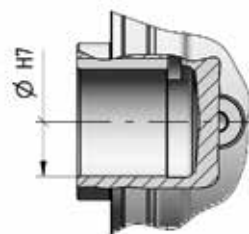
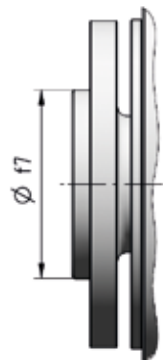
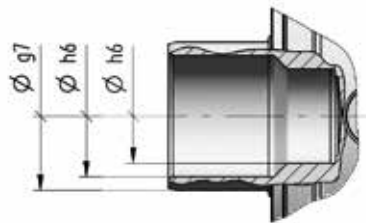
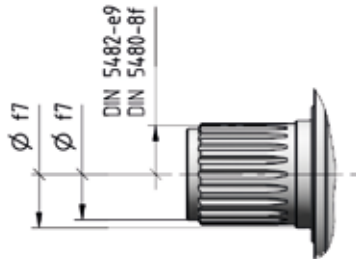
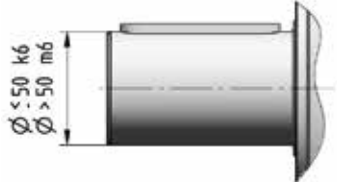
It is advisable to measure the clearance using calibrated thicknesses.

For the lubrication of pinion and rack, use only high quality grease suitable for the lubrication of gears subjected to high loads such as GADUS S5 T460 1.5 Shell.

**Suggested mating tolerances**



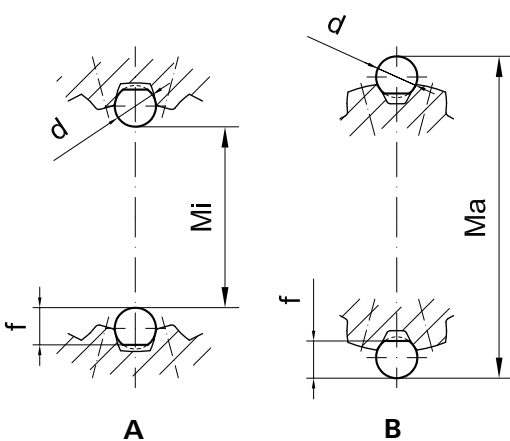
**Gear reducer shaft end tolerances**



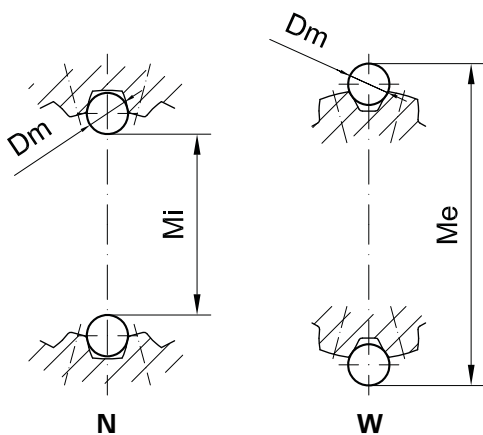
**Tolerances according to ISO 286**

| mm   | e7  | f7     | g6     | g7     | h6     | h9     | k6     | m6     | E6     | F6     | F9     | G7     | H6     | H7     | J7     |        |
|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| from | 1   | -0,014 | -0,006 | -0,002 | -0,002 | 0      | 0      | +0,006 | +0,008 | +0,020 | +0,012 | +0,031 | +0,012 | +0,006 | +0,010 | +0,004 |
| to   | 3   | -0,024 | -0,016 | -0,008 | -0,012 | -0,006 | -0,025 | 0      | +0,002 | +0,014 | +0,006 | +0,006 | +0,002 | 0      | 0      | -0,006 |
| >    | 3   | -0,020 | -0,010 | -0,004 | -0,004 | 0      | 0      | +0,009 | +0,012 | +0,028 | +0,018 | +0,040 | +0,016 | +0,008 | +0,012 | +0,006 |
| to   | 6   | -0,032 | -0,022 | -0,012 | -0,016 | -0,008 | -0,030 | +0,001 | +0,004 | +0,020 | +0,010 | +0,010 | +0,004 | 0      | 0      | -0,006 |
| >    | 6   | -0,025 | -0,013 | -0,005 | -0,005 | 0      | 0      | +0,010 | +0,015 | +0,034 | +0,022 | +0,049 | +0,020 | +0,009 | +0,015 | +0,008 |
| to   | 10  | -0,040 | -0,028 | -0,014 | -0,020 | -0,009 | -0,036 | +0,001 | +0,006 | +0,025 | +0,013 | +0,013 | +0,005 | 0      | 0      | -0,007 |
| >    | 10  | -0,032 | -0,016 | -0,006 | -0,006 | 0      | 0      | +0,012 | +0,018 | +0,043 | +0,027 | +0,059 | +0,024 | +0,011 | +0,018 | +0,010 |
| to   | 18  | -0,050 | -0,034 | -0,017 | -0,024 | -0,011 | -0,043 | +0,001 | +0,007 | +0,032 | +0,016 | +0,016 | +0,006 | 0      | 0      | -0,008 |
| >    | 18  | -0,040 | -0,020 | -0,007 | -0,007 | 0      | 0      | +0,015 | +0,021 | +0,053 | +0,033 | +0,072 | +0,028 | +0,013 | +0,021 | +0,012 |
| to   | 30  | -0,061 | -0,041 | -0,020 | -0,028 | -0,013 | -0,052 | +0,002 | +0,008 | +0,040 | +0,020 | +0,020 | +0,007 | 0      | 0      | -0,009 |
| >    | 30  | -0,050 | -0,025 | -0,009 | -0,009 | 0      | 0      | +0,018 | +0,025 | +0,066 | +0,041 | +0,087 | +0,034 | +0,016 | +0,025 | +0,014 |
| to   | 50  | -0,075 | -0,050 | -0,025 | -0,034 | -0,016 | -0,062 | +0,002 | +0,009 | +0,050 | +0,025 | +0,025 | +0,009 | 0      | 0      | -0,011 |
| >    | 50  | -0,060 | -0,030 | -0,010 | -0,010 | 0      | 0      | +0,021 | +0,030 | +0,079 | +0,049 | +0,104 | +0,040 | +0,019 | +0,030 | +0,018 |
| to   | 80  | -0,090 | -0,060 | -0,029 | -0,040 | -0,019 | -0,074 | +0,002 | +0,011 | +0,060 | +0,030 | +0,030 | +0,010 | 0      | 0      | -0,012 |
| >    | 80  | -0,072 | -0,036 | -0,012 | -0,012 | 0      | 0      | +0,025 | +0,035 | +0,094 | +0,058 | +0,123 | +0,047 | +0,022 | +0,035 | +0,022 |
| to   | 120 | -0,107 | -0,071 | -0,034 | -0,047 | -0,022 | -0,087 | +0,003 | +0,013 | +0,072 | +0,036 | +0,036 | +0,012 | 0      | 0      | -0,013 |
| >    | 120 | -0,085 | -0,043 | -0,014 | -0,014 | 0      | 0      | +0,028 | +0,040 | +0,110 | +0,068 | +0,143 | +0,054 | +0,025 | +0,040 | +0,026 |
| to   | 180 | -0,125 | -0,083 | -0,039 | -0,054 | -0,025 | -0,100 | +0,003 | +0,015 | +0,085 | +0,043 | +0,043 | +0,014 | 0      | 0      | -0,014 |
| >    | 180 | -0,100 | -0,050 | -0,015 | -0,015 | 0      | 0      | +0,033 | +0,046 | +0,129 | +0,079 | +0,165 | +0,061 | +0,029 | +0,046 | +0,030 |
| to   | 250 | -0,146 | -0,096 | -0,044 | -0,061 | -0,029 | -0,115 | +0,004 | +0,017 | +0,100 | +0,050 | +0,050 | +0,015 | 0      | 0      | -0,016 |
| >    | 250 | -0,110 | -0,056 | -0,017 | -0,017 | 0      | 0      | +0,036 | +0,052 | +0,142 | +0,088 | +0,186 | +0,069 | +0,032 | +0,052 | -0,036 |
| to   | 315 | -0,162 | -0,108 | -0,049 | -0,069 | -0,032 | -0,130 | +0,004 | +0,020 | +0,110 | +0,056 | +0,056 | +0,017 | 0      | 0      | -0,016 |
| >    | 315 | -0,125 | -0,062 | -0,018 | -0,018 | 0      | 0      | +0,040 | +0,057 | +0,161 | +0,098 | +0,202 | +0,075 | +0,036 | +0,057 | +0,039 |
| to   | 400 | -0,182 | -0,119 | -0,054 | -0,075 | -0,036 | -0,140 | +0,004 | +0,021 | +0,125 | +0,062 | +0,062 | +0,018 | 0      | 0      | -0,018 |
| >    | 400 | -0,135 | -0,068 | -0,020 | -0,018 | 0      | 0      | +0,045 | +0,063 | +0,165 | +0,102 | +0,223 | +0,083 | +0,040 | +0,063 | +0,043 |
| to   | 500 | -0,198 | -0,131 | -0,060 | -0,081 | -0,040 | -0,155 | +0,005 | +0,023 | +0,125 | +0,062 | +0,068 | +0,020 | 0      | 0      | -0,020 |

**Splined shafts - measurement over pins**



| DIN 5482 | female<br>male | m    | z  | d<br>pin | f<br>pin | tolerance | Mi - Ma |         |
|----------|----------------|------|----|----------|----------|-----------|---------|---------|
|          |                |      |    |          |          |           | max     | min     |
| 40x36    | A              | 1,9  | 20 | 3,5      | 3,2      | H10       | 32,712  | 32,612  |
|          | B              |      |    | 3,5      | -        | e9        | 43,281  | 43,235  |
| 45x41    | A              | 2    | 22 | 4        | 3,6      | H10       | 36,709  | 36,610  |
|          | B              |      |    | 3,5      | -        | e9        | 48,631  | 48,591  |
| 50x45    | A              | 2    | 24 | 3,5      | 3,2      | H10       | 42,515  | 42,433  |
|          | B              |      |    | 3,5      | -        | e9        | 52,635  | 52,594  |
| 58x53    | A              | 2    | 27 | 3,5      | -        | H10       | 49,967  | 49,881  |
|          | B              |      |    | 3,5      | -        | e9        | 59,818  | 59,772  |
| 62x57    | A              | 2,1  | 29 | 4        | 3,7      | H10       | 53,405  | 53,317  |
|          | B              |      |    | 3,5      | -        | e9        | 64,700  | 64,657  |
| 70x64    | A              | 2,1  | 32 | 4        | -        | H10       | 60,673  | 60,577  |
|          | B              |      |    | 4        | -        | e9        | 73,198  | 73,150  |
| 80x74    | A              | 2,1  | 36 | 4        | -        | H10       | 70,815  | 70,730  |
|          | B              |      |    | 4        | -        | e9        | 83,064  | 83,018  |
| 90x84    | A              | 2,25 | 40 | 3,5      | -        | H10       | 81,651  | 81,564  |
|          | B              |      |    | 4        | 3,7      | e9        | 92,198  | 92,151  |
| 100x94   | A              | 2,25 | 44 | 3,5      | -        | H10       | 91,875  | 91,796  |
|          | B              |      |    | 4        | 3,7      | e9        | 102,245 | 102,201 |

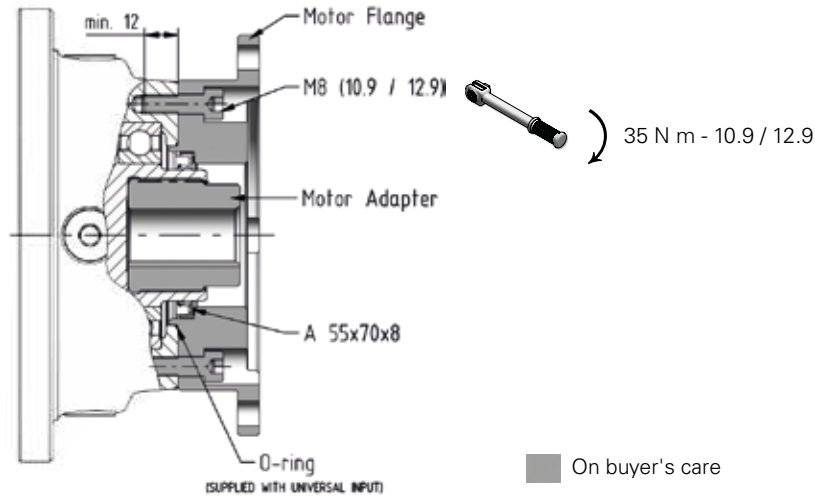


| DIN 5480 | female<br>male | m | z  | Dm  | tolerance | Mi - Me |         |
|----------|----------------|---|----|-----|-----------|---------|---------|
|          |                |   |    |     |           | max     | min     |
| 120x3    | N              | 3 | 38 | 5,5 | 9H        | 108,517 | 108,420 |
|          | W              |   |    | 6   | 8f        | 126,017 | 125,957 |
| 130x3    | N              | 3 | 42 | 5,5 | 9H        | 118,466 | 118,365 |
|          | W              |   |    | 6   | 8f        | 136,248 | 136,185 |
| 150x5    | N              | 5 | 28 | 10  | 9H        | 128,243 | 128,129 |
|          | W              |   |    | 10  | 8f        | 159,876 | 159,810 |
| 170x5    | N              | 5 | 32 | 10  | 9H        | 148,247 | 148,134 |
|          | W              |   |    | 11  | 8f        | 182,675 | 182,609 |
| 200x5    | N              | 5 | 38 | 10  | 9H        | 178,252 | 178,140 |
|          | W              |   |    | 11  | 8f        | 212,812 | 212,745 |
| 220x5    | N              | 5 | 42 | 10  | 9H        | 198,276 | 198,150 |
|          | W              |   |    | 11  | 8f        | 232,874 | 232,799 |
| 240x5    | N              | 5 | 46 | 10  | 9H        | 218,278 | 218,152 |
|          | W              |   |    | 11  | 8f        | 252,938 | 252,862 |
| 280x8    | N              | 8 | 34 | 15  | 9H        | 247,640 | 247,500 |
|          | W              |   |    | 16  | 8f        | 296,909 | 296,830 |
| 300x8    | N              | 8 | 36 | 15  | 9H        | 268,026 | 267,896 |
|          | W              |   |    | 16  | 8f        | 316,563 | 316,485 |

For more detail see specific literature  
DIN 5482 or DIN 5480.

### 6 – Universal flange adapter

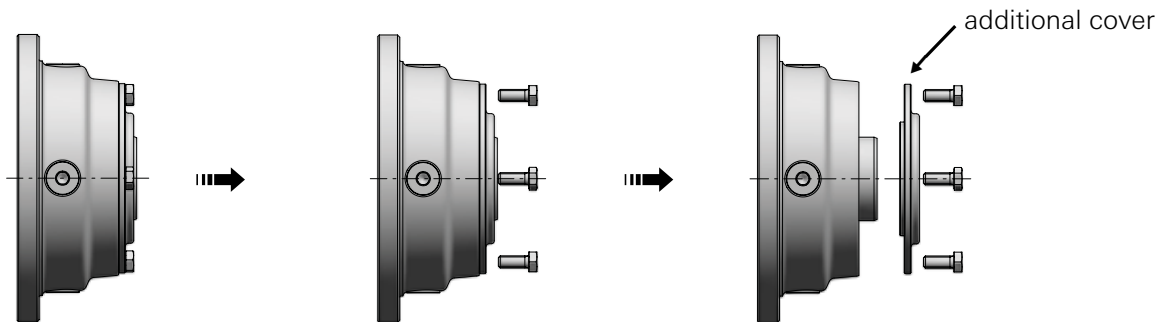
The universal input flange allows the customers to make their flanges and couplings suitable for the main motorization types. It's very important to observe the information shown in the drawing below to obtain a correct gear reducer oil sealing. The universal input flange can be used for motors up to 1 000 Nm maximum torque and weight as per following chart.



Gearboxes with "U" input (not "UN" and "UH") are supplied with an additional cover as shown below. When a flange made by customer have to be used, please remove it.



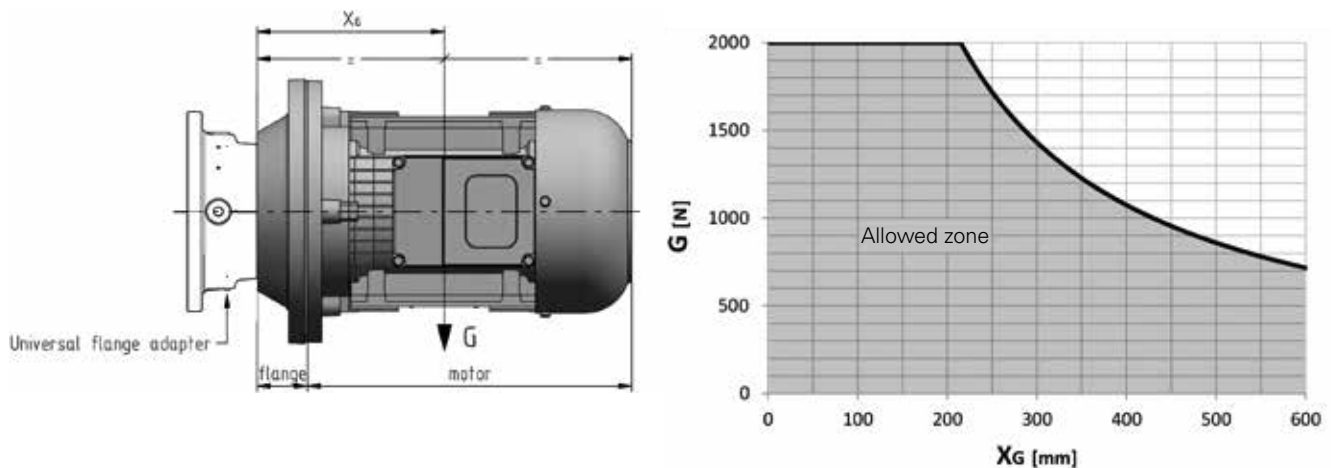
Pay attention for gearboxes supplied with oil. Removing the cover oil may leak.



When a universal flange adapter is used, it must be checked if the total weight of the flange+motor and the distance of their center of gravity are compliant with the following diagram. In case of high vibrations or dynamic stress, please contact Rossi S.p.A..



Severe or fatal injury and damage to property may occur.



## 7 – Motor mounting or replacement

### Electric motors

Check the mating dimensions for standards IEC 72-1 be sure that the mating surfaces are machined under accuracy rating (IEC 60072-1, UNEL 13501-69; DIN 42955) – for NEMA standards please refer to NEMA C-FACE chart;

- clean surfaces to be fitted thoroughly;
- check and, if necessary, lower the parallel key so as to leave a clearance of  $0,1 \div 0,2$  mm between its top and the bottom of the keyway of the hole. If shaft keyway is without shoulder, lock the key with a pin.
- lubricate surfaces to be fitted against fretting corrosion with adequate grease or paste.
- insert the motor down to shoulder on gear reducer flange; this operation can be facilitate vertically positioning the gear reducer with motor flange mounted upwards;



Do not force the motor shaft into the gear reducer coupling. A serious damage may occur!

- check that motor centering is in the relevant gear reducer flange seat;
- check that the length of the screws is enough to have  $2 \times$  pitch over the nut;
- tighten the motor fastening screws to gear reducer flange in order to achieve the tightening torque as per following table:

| Bolt       | Tightening torque       |
|------------|-------------------------|
| $d$<br>Ø   | N m<br>class <b>8.8</b> |
| <b>M8</b>  | 25                      |
| <b>M10</b> | 56                      |
| <b>M12</b> | 85                      |
| <b>M14</b> | 135                     |
| <b>M16</b> | 205                     |

Maximum allowed bending moment

In case of assembly of motors supplied by the customer, verify that the static bending moment  $M_b$  generated by motor weight on the counter flange of gear reducer is lower than the value allowed  $M_{bmax}$ , stated in the table:

$$M_b < M_{bmax}$$

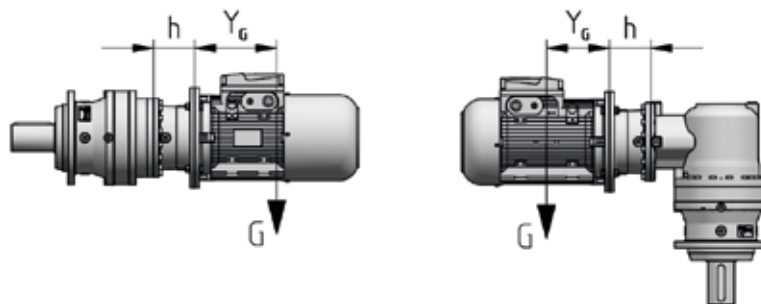
where:

$$M_b = G \cdot (Y_G + h) / 1000 \text{ [N m]}$$

- G [N] motor weight, nearly numerically equal to motor mass, expressed in kg, multiplied by 10
- $Y_G$  [mm] distance from motor center of gravity from flange surface
- h [mm] supplied in the table, according to gear reducer size and IEC motor size

Too long and thin motors, though with bending moments lower than prescribed limits, may generate anomalous vibrations during the operation. In these cases it is necessary to foresee a proper additional motor support (see motor specific documentation).

Loads higher than permissible loads may be present in dynamical applications where the gearmotor is subjected to translations, rotations or oscillations: consult us for the study of every specific case.



Bending moment  $M_{bmax}$  and dimension h

| 1EL           | 2EL            | 3EL           | 4EL           | 2EB                   | 3EB           | 4EB           | IEC        | Code           | h<br>mm | $M_{bmax}$<br>N m |
|---------------|----------------|---------------|---------------|-----------------------|---------------|---------------|------------|----------------|---------|-------------------|
| 001A, 002A    | 001A ... 006A  | 001A ... 022A | 001A ... 060A | 001A ... 006A         | 001A ... 022A | 001A ... 060A | 71         | <b>I14×160</b> | 52      | 900               |
|               |                |               |               |                       |               |               | 80         | <b>I19×200</b> | 72      |                   |
|               |                |               |               |                       |               |               | 90         | <b>I24×200</b> | 72      |                   |
|               |                |               |               |                       |               |               | 100        | <b>I28×250</b> | 82      |                   |
|               |                |               |               |                       |               |               | 112        | <b>I28×250</b> | 82      |                   |
|               |                |               |               |                       |               |               | 132        | <b>I38×300</b> | 102     |                   |
|               |                |               |               |                       |               |               | 160        | <b>I42×350</b> | 135     |                   |
|               |                |               |               |                       |               |               | 180        | <b>I48×350</b> | 135     |                   |
| 003A ... 006A | 009A ... 022A  | 030A ... 060A | 085A ... 180A | 009A ... 015A<br>022A | 030A ... 043A | 085A ... 125A | 100        | <b>I28×250</b> | 103     | 2800              |
|               |                |               |               |                       |               |               | 112        | <b>I28×250</b> | 103     |                   |
|               |                |               |               |                       |               |               | 132        | <b>I38×300</b> | 120     |                   |
|               |                |               |               |                       |               |               | 160        | <b>I42×350</b> | 153     |                   |
|               |                |               |               |                       |               |               | 180        | <b>I48×350</b> | 153     |                   |
|               |                |               |               |                       |               |               | 200        | <b>I55×400</b> | 153     |                   |
| 009A ... 015A | 030A ... 043A  | 085A ... 125A | 250A ... 355A | 018A, 021A, 030A      | 060A, 085A    | 180A ... 250A | 132        | <b>I38×300</b> | 133,5   | 4500              |
|               |                |               |               |                       |               |               | 160        | <b>I42×350</b> | 159     |                   |
|               |                |               |               |                       |               |               | 180        | <b>I48×350</b> | 159     |                   |
|               |                |               |               |                       |               |               | 200        | <b>I55×400</b> | 159     |                   |
|               |                |               |               |                       |               |               | 225        | <b>I60×450</b> | 189     |                   |
|               |                |               |               |                       |               |               | 250        | <b>I65×550</b> | 189     |                   |
|               |                |               |               |                       |               |               | 280        | <b>I75×550</b> | 189     |                   |
|               |                |               |               |                       |               |               | 018A, 021A | 060A           | 180A    |                   |
| 180           | <b>I48×350</b> | 159           |               |                       |               |               |            |                |         |                   |
| 200           | <b>I55×400</b> | 159           |               |                       |               |               |            |                |         |                   |
| 225           | <b>I60×450</b> | 189           |               |                       |               |               |            |                |         |                   |
| 250           | <b>I65×550</b> | 189           |               |                       |               |               |            |                |         |                   |
| 280           | <b>I75×550</b> | 189           |               |                       |               |               |            |                |         |                   |
| 030A ... 043A | 085A ... 125A  | 250A ... 355A | 710A          | 085A ... 125A         | 250A ... 355A | 710A          | 160        | <b>I42×350</b> | 111     | 4500              |
|               |                |               |               |                       |               |               | 180        | <b>I48×350</b> | 111     |                   |
|               |                |               |               |                       |               |               | 200        | <b>I55×400</b> | 111     |                   |
|               |                |               |               |                       |               |               | 225        | <b>I60×450</b> | 141     |                   |
|               |                |               |               |                       |               |               | 250        | <b>I65×550</b> | 141     |                   |
|               |                |               |               |                       |               |               | 280        | <b>I75×550</b> | 141     |                   |

**Hydraulic motors**

- check the mating dimensions;
- clean surfaces to be fitted thoroughly;
- ensure that any seal provided (O-ring) with hydraulic motor is correctly fitted in its seat;
- lubricate surfaces to be fitted against fretting corrosion with adequate grease or paste.
- insert the motor down to shoulder on gear reducer flange; this operation can be facilitate vertically positioning the gear reducer with motor flange mounted upwards.



Do not force the motor shaft into the gear reducer coupling. A serious damage may occur!

- check that motor centering is in the relevant gear reducer flange seat;
- tighten the motor fastening screws to gear reducer flange in order to achieve the appropriate tightening torque;
- use bolts 8.8 or higher.

## 8 – Lubrication

Gear pairs are oil-bath lubricated, bearings are either oil bathed or splashed or lubricated «for life» with grease. For some mounting positions with continuous duty at high speed, an expansion tank is foreseen: consult us.

**Sizes 001A ... 021A:** gear reducers are supplied **filled with PAO synthetic oil** having ISO viscosity grade 320 cSt (at 40° C).

**Important!** Verify the mounting position, keeping in mind that if gear reducer is installed in a mounting position differing from the one stated on name plate, it could need the addition of the difference between the two lubricant quantities. In any cases, always check the correct oil quantities through the level plug.

**Sizes 022A ... 710A:** gear reducers are supplied **without oil**; before putting into service, fill to the specified level<sup>1)</sup> with synthetic or mineral oil (see table below).

1) The lubricant quantities stated in ch.13 are approximate and indicative for provisioning. The exact oil quantity the gear reducer is to be filled with is definitely given by the level. When output speed  $n_2$  is lower than  $0,3 \text{ min}^{-1}$ , for all mounting positions please refer to the approximate oil quantities stated for V1 position.

Use only lubricants with **EP** (extreme pressure) **additives**.

In case of mineral lubricant choice, follow the instructions about the service factor (EP catalog).

| Manufacturer | PAO synthetic oil<br>ISO VG 320 | mineral oil<br>ISO VG 150 ... 460 |
|--------------|---------------------------------|-----------------------------------|
| ADDINOL      | Eco Gear S                      | Eco Gear M                        |
| AGIP         | Blasia SX                       | Blasia                            |
| ARAL         | Degol PAS                       | Degol BG                          |
| BP           | Energyn EPX                     | Energol GR XP                     |
| CASTROL      | Alphasyn T                      | Alpha SP                          |
| KLÜBER       | Klübersynth GEM4                | Klüberoil GEM1                    |
| MOBIL        | Mobil SHC Gear                  | Mobilgear 600 XP                  |
| SHELL        | Omala S4 GX                     | Omala S2 G                        |
| TOTAL        | Carter SH                       | Carter EP                         |

ISO viscosity grade  
Mean kinematic viscosity [cSt] at 40 °C.

| Speed $n_2$<br>$\text{min}^{-1}$ | Ambient temperature [°C] |         |
|----------------------------------|--------------------------|---------|
|                                  | mineral oil              |         |
|                                  | -10 ÷ 20                 | 10 ÷ 40 |
| > 140                            | 150                      | 220     |
| 140 ÷ 2,0                        | 220                      | 320     |
| < 2,0                            | 320                      | 460     |

Never mix different makes of synthetic oil; if oil-change involves switching to a type different from that used hitherto, then give the gear reducer a through clean-out. **Polyglycol basis synthetic lubricants must not be used.**

For oil change intervals, refer to ch. 12.

### Bearings with independent lubrication

Usually the bearings are automatically and continuously lubricated (oil-bathed or splashed) with the same lubricant of gear reducer. However for certain gear reducer in vertical mounting positions V1, V3 and horizontal mounting positions B51, B52 the upper bearings have independent lubrication, with special grease for «long life» lubrication in absence of external pollution.

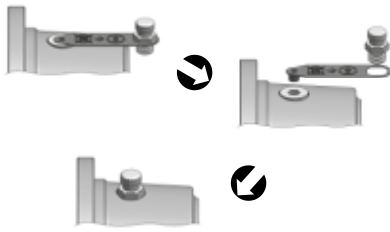
### Note about re-greasing of output bearings for rotation

**In case of gear reducers with slewing outputs (output design R-S-H), independently from mounting position, the output bearing presents independent lubrication with grease.**

**The re-greasing of bearing must be realized respecting the same oil change intervals. For maintenance intervals and for grease quantity, consider the chapter about maintenance.**



## 9 – Commissioning



Carry out an overall check, making particularly sure that the gear reducer is filled with lubricant up to level and mounted according to the mounting position stated on name plate.



The filler plug and breather is supplied disassembled, inside a bag close to its seat. Before commissioning, after positioning the gear reducer in the mounting position stated in the nameplate, replace the closed plug with the filler plug and breather (see fig.).

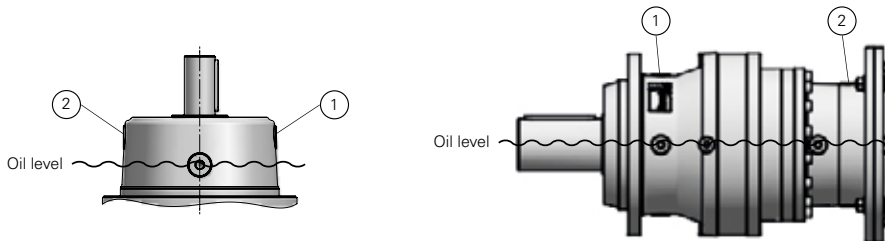
### Oil filling



Pay attention to the correct position of the oil level plug (see ch. 14).

For mounting positions with input side in vertical position, during the oil filling it is very important to always open the plug located up to the level of air escape in order to reach the correct level.

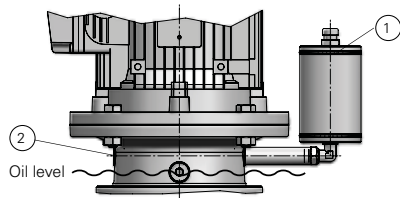
**When the output speed  $n_2$  is lower than  $0,3 \text{ min}^{-1}$  and the mounting position is horizontal, the gear reducer must be completely filled with oil.**



Oil filling:

- Open the plugs 1 and 2.
- Fill with oil by the plug 1 reaching the correct level
- Close the plugs 1 and 2.

### Expansion tanks



For some mounting positions, as foreseen (see EP catalog) an expansion tank is needed in order to allow the correct oil level and the natural thermal expansion of lubricant.

It is very important that it must always be placed above the oil level.

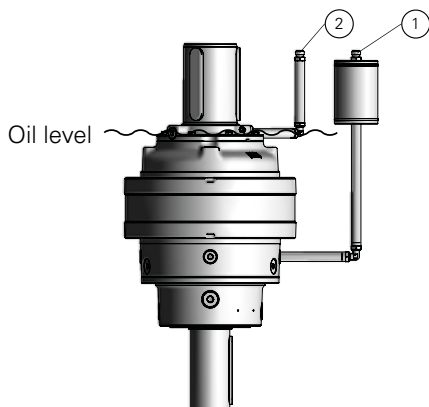
For the oil filling consider the diagram below:

Oil filling:

- Open plugs 1 and 2.
- Fill with oil by the plug 1 up to reach the correct level
- Close plugs 1 and 2.

For sizes from 030A with mounting positions V3-V31-V32-V33, when ordered, the expansion tank kit does not include the piping arrangement. In these cases, please refer to the diagram below:

Mounting positions  
V3-V31-V32-V33

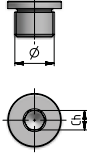
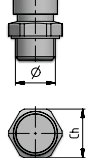


Oil filling:

- Open plugs 1 and 2.
- Fill with oil by the plug 1 up to reach the correct level
- Close plugs 1 and 2.

### Plugs

For EP series plugs are magnetic. Size of plugs and breather plugs and values of tightening torque are shown below.

|  | Plugs    |    |                           |  | Breather plugs |    |  |
|---|----------|----|---------------------------|---|----------------|----|--|
|   | Ø        | Ch | Tightening torque<br>[Nm] |   | Ø              | Ch | Tightening torque<br>(with aluminium washer)<br>[Nm] |
|   | G 1/8 "  | 5  | <b>8</b>                  |   | G 1/4 "        | 17 | <b>12</b>  |
|   | G 1/4 "  | 6  | <b>13</b>                 |   | G 3/8 "        | 20 | <b>16</b>  |
|   | G 3/8 "  | 8  | <b>20</b>                 |   | G 1/2 "        | 24 | <b>23</b>  |
|   | G 1/2 "  | 10 | <b>30</b>                 |   | G 3/4 "        | 32 | <b>37</b>  |
|   | G 3/4 "  | 12 | <b>45</b>                 |   | G 1 "          | 40 | <b>58</b>  |
|   | G 1 "    | 17 | <b>65</b>                 |   | G 1" 1/4       | 50 | <b>105</b>   |
|   | G 1" 1/4 | 22 | <b>100</b>                |   | G 1" 1/2       | 55 | <b>126</b>   |
|   | G 1" 1/2 | 24 | <b>125</b>                |   |                |    |  |

For the first commissioning, before starting with a normal running cycle, it is advisable to run the gear reducer without load in order to verify if it correctly runs.

In this circumstance, cause of the elimination of potential residual air, an oil filling up to level could be necessary.

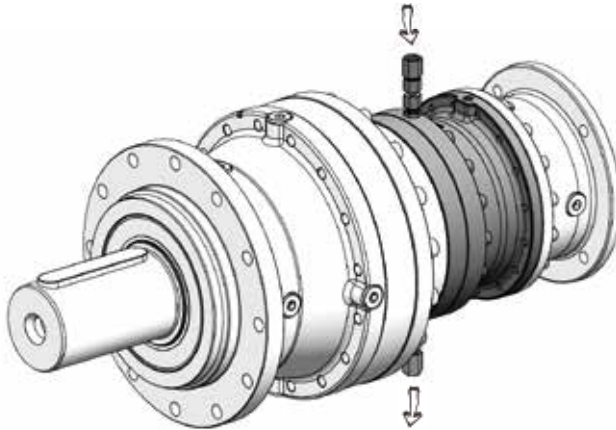
During this first run, it is important to check:

- noise level;
- vibrations;
- sealings;

If you notice any malfunctions, please refer to ch. 15.

## 10 – Cooling unit systems

### Integrated water cooling unit

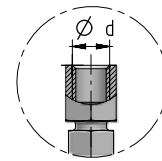


The gear reducers, according to the sizes, can be equipped with a water cooling unit.

Suggested cooling water specifications are:

- low hardness;
- max temperature 20 °C;
- minimum flow 3 dm<sup>3</sup>/min (l/min);
- pressure 0,2 ÷ 0,4 Mpa (2 ÷ 4 bar).

For the connection you may use standard fitting according to the female coupling sizes (see below).



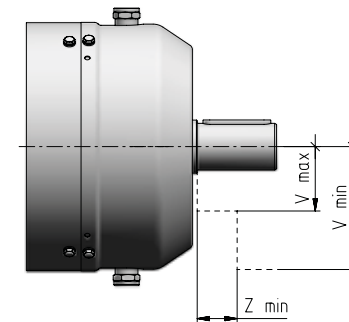
Be sure that all the connections are free of leakage.

| 1EL   | 2EL   | 3EL   | 4EL   | 2EB  | 3EB   | 4EB   | d<br>Ø                  | Code                 |
|---|---|---|---|--|---|---|-------------------------|----------------------|
| 001A ... 002A<br>003A ... 006A<br>009A ... 015A | 001A ... 006A<br>009A ... 022A<br>030A ... 043A | 001A ... 022A<br>030A ... 060A<br>085A ... 125A | 001A ... 060A<br>085A ... 180A<br>250A ... 355A | 001A ... 006A<br>009A ... 015A, 022<br>018A ... 021A, 030A | 001A ... 022A<br>030A ... 043A<br>060A ... 085A | 001A ... 060A<br>085A ... 125A<br>180A ... 250A | G1/4"<br>G1/4"<br>G1/4" | RS1a<br>RS1b<br>RS1c |

### Integrated fan cooling unit



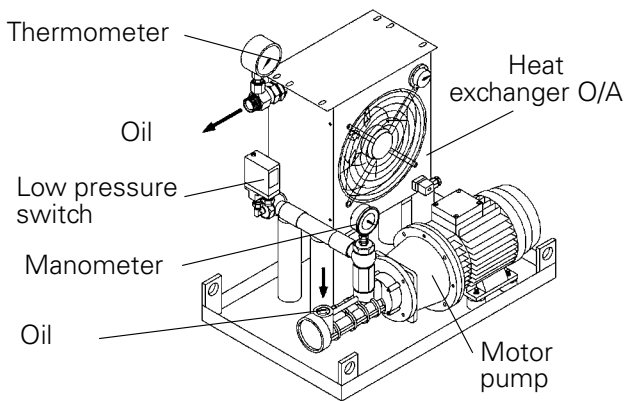
When a fan cooling unit is mounted, verify that there is sufficient space allowing for adequate circulation of cooling air also after fitting coupling protection (see below).



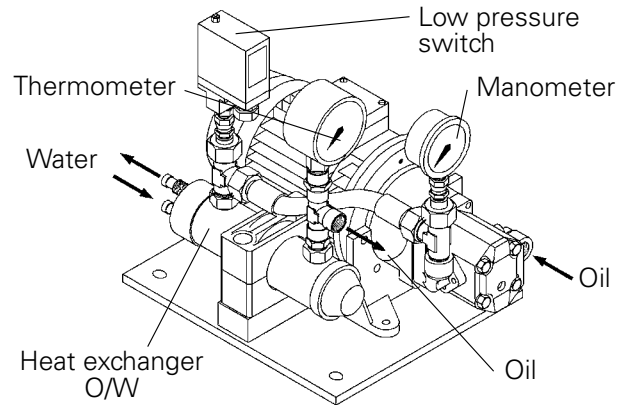
| 1EL  | 2EL   | 3EL   | 4EL   | 2EB  | 3EB   | 4EB   | V <sub>max</sub><br>Ø | V <sub>min</sub><br>Ø | Z <sub>min</sub> | Code                        |
|--|---|---|---|--|---|---|-----------------------|-----------------------|------------------|-----------------------------|
| 001A, 002A<br>003A ... 006A<br>009A ... 015A | 001A ... 006A<br>009A ... 022A<br>030A ... 043A | 001A ... 022A<br>030A ... 060A<br>085A ... 125A | 001A ... 060A<br>085A ... 180A<br>250A ... 355A | 001A ... 006A<br>009A ... 015A, 022A<br>018A, 021A, 030A | 001A ... 022A<br>030A ... 043A<br>060A ... 085A | 001A ... 060A<br>085A ... 125A<br>180A ... 250A | 70<br>85<br>110       | 195<br>230<br>280     | 27<br>30<br>35   | V38×58<br>V48×82<br>V60×105 |

### Independent cooling units

Independent cooling unit with oil-air heat exchanger **UR O/A ...**



Independent cooling unit with oil-water heat exchanger **UR O/W ...**



When natural cooling or integrated cooling units are not sufficient anymore (for thermal power verification see ch. 2), it is possible to install the independent cooling units described below.

Consisting of:

- **oil/air heat exchanger** (O/A; with thermostat and adjustable control knob 0 ÷ 90 °C) or **oil/water heat exchanger** (O/W),
- **motor pump**: screw or gear pump with fluoro rubber seals; 4 pole motor B3/B5 (three-phase Δ230 Y400 V 50 Hz); motor-pump connection with coupling;
- **motor fan** (O/A) (three-phase supply Δ230 Y400 V 50 Hz or single phase supply 230 V 50, 60 Hz, see table)
- **oil filter** (type Spin-On) with filtration degree 60µm (M60) and optical-electric blockage warning (BVR);
- **analogic manometer** (0 ÷ 16 bar) mounted between pump and exchanger;
- **analogic thermometer** (0 ÷ 120 °C) mounted at exchanger output;
- **low pressure switch** (with on-off switch) mounted between pump and exchanger;
- **supporting frame** with nameplate.

On request, several accessories are at disposal (supplied separately, assembled by Customer) in order to satisfy all functionality and safety needs:

- **oil temperature probe Pt100**;
- **2-threshold signalling device CT03** (necessary also the oil temperature probe Pt100) for the mounting on rail to DIN EN 50022;
- **3-threshold signalling device CT10** (necessary also the oil temperature probe Pt100) for the mounting on rail to DIN EN 50022;
- **bi-metal type thermostat**;
- **flow gauge**;

Connections realized by flexible pipes (type SAE 100 R1, maximum length 2 m) between gear reducer and cooling unit and the assembly of accessories and signalling devices are Buyer's responsibility.

Be sure that the capacity of selected cooling unit is lower or equal to the lubricant quantity present inside the gear reducer.

Excellent performance reachable with air temperature at max 25 °C for UR O/A and water temperature at max 20 °C for UR O/W.

**Operational features - UR O/A ... - EP**

| Designation          | P <sub>s</sub> | Air Oil Heat Exchanger | Oil motor pump |          | Air Oil heat Exchanger features |                      |                        |                         |          |                    | Oil filter type                     |      | Total mass |
|----------------------|----------------|------------------------|----------------|----------|---------------------------------|----------------------|------------------------|-------------------------|----------|--------------------|-------------------------------------|------|------------|
|                      |                |                        | Motor Power    | Capacity | Electric fan side               |                      | Oil side               |                         |          |                    |                                     |      |            |
|                      | [kW]           |                        |                |          | [dm <sup>3</sup> /min]          | Power and motor type | Oil suction fem. conn. | Oil delivery fem. conn. | Oil vol. | Size and filtering | Pressure gauge with optical control | [kg] |            |
| <b>URO/A 5 - EP</b>  | 5              | AP 300 E               | 0,75           | 6        | 0,12 / 0,20                     | 0,15 / 0,23          | 1×G 3/4"               | 1×G 3/4"                | 2        | MPS 050 M60        | BVR                                 | 60   |            |
| <b>URO/A 7 - EP</b>  | 7              | AP 300 E               | 0,75           | 9        | 0,12 / 0,20                     | 0,15 / 0,23          | 1×G 3/4"               | 1×G 3/4"                | 2        | MPS 050 M60        | BVR                                 | 64   |            |
| <b>URO/A 9 - EP</b>  | 9              | AP 300/2 E             | 0,75           | 11       | 0,12 / 0,20                     | 0,15 / 0,23          | 1×G 3/4"               | 1×G 3/4"                | 4        | MPS 050 M60        | BVR                                 | 70   |            |
| <b>URO/A 13 - EP</b> | 13             | AP 430 E               | 1,1            | 16       | 0,11 / 0,21                     | 0,11 / 0,20          | 1×G 3/4"               | 1×G 3/4"                | 4        | MPS 100 M60        | BVR                                 | 75   |            |
| <b>URO/A 20 - EP</b> | 20             | AP 430/2 E             | 1,1            | 20       | 0,11 / 0,18                     | 0,15 / 0,26          | 1×G 3/4"               | 1×G 3/4"                | 6        | MPS 100 M60        | BVR                                 | 115  |            |
| <b>URO/A 28 - EP</b> | 28             | AP 580 EB              | 1,5            | 46       | 0,11 / 0,18                     | 0,15 / 0,26          | 2×G 3/4"               | 2×G 3/4"                | 12       | MPS 100 M60        | BVR                                 | 125  |            |
| <b>URO/A 40 - EP</b> | 40             | AP 680 EB              | 1,5            | 46       | 0,70                            | 1,1                  | 2×G 1"                 | 2×G 1"                  | 15       | MPS 150 M60        | BVR                                 | 140  |            |
| <b>URO/A 48 - EP</b> | 48             | AP 730 EB              | 2,2            | 56       | 0,70                            | 1,1                  | 2×G 1"                 | 2×G 1"                  | 15       | MPS 150 M60        | BVR                                 | 150  |            |

**Operational features - UR O/W ... - EP**

| Designation          | P <sub>s</sub> | Oil Water Heat Exchanger | Oil motor pump |          | Water Oil Exchanger features |                |                          |                           |                         |                         | Oil filter type |                    | Total Mass |
|----------------------|----------------|--------------------------|----------------|----------|------------------------------|----------------|--------------------------|---------------------------|-------------------------|-------------------------|-----------------|--------------------|------------|
|                      |                |                          | Motor Power    | Capacity | Water side                   |                |                          | Oil Side                  |                         |                         |                 |                    |            |
|                      | [kW]           |                          |                |          | [dm <sup>3</sup> /min]       | Water capacity | Water suction fem. conn. | Water delivery fem. conn. | Oil suction fem. conn.. | Oil delivery fem. conn. | Oil vol.        | Size and filtering |            |
| <b>URO/W 4 - EP</b>  | 4              | T80 CB2                  | 0,37           | 6        | ≥ 30 ≤ 60                    | 1× Ø17 - G1/2" | 1× Ø17 - G1/2"           | 1×G 3/4"                  | 1×G 3/4"                | 1,0                     | MPS 050 M60     | BVR                | 14         |
| <b>URO/W 6 - EP</b>  | 6              | T80 CB3                  | 0,37           | 6        | ≥ 30 ≤ 80                    | 1× Ø17 - G1/2" | 1× Ø17 - G1/2"           | 1×G 3/4"                  | 1×G 3/4"                | 1,6                     | MPS 050 M60     | BVR                | 16         |
| <b>URO/W 9 - EP</b>  | 9              | T80 CB3                  | 0,75           | 13       | ≥ 30 ≤ 80                    | 1× Ø17 - G1/2" | 1× Ø17 - G1/2"           | 1×G 3/4"                  | 1×G 3/4"                | 1,6                     | MPS 050 M60     | BVR                | 20         |
| <b>URO/W 13 - EP</b> | 13             | MS 134P1                 | 1,1            | 20       | ≥ 60 ≤ 110                   | 1×G 1"         | 1×G 1"                   | 1×G 3/4"                  | 1×G 3/4"                | 2,8                     | MPS 100 M60     | BVR                | 30         |
| <b>URO/W 20 - EP</b> | 20             | MS 134P1                 | 1,1            | 30       | ≥ 60 ≤ 110                   | 1×G 1"         | 1×G 1"                   | 2×G 3/4"                  | 2×G 3/4"                | 2,8                     | MPS 100 M60     | BVR                | 32         |
| <b>URO/W 32 - EP</b> | 32             | MS 134P2                 | 1,5            | 40       | ≥ 80 ≤ 110                   | 1×G 1"         | 1×G 1"                   | 2×G 1"                    | 2×G 1"                  | 4,6                     | MPS 150 M60     | BVR                | 60         |
| <b>URO/W 48 - EP</b> | 48             | MS 134P4                 | 1,5            | 60       | ≥ 100 ≤ 120                  | 1×G 1"         | 1×G 1"                   | 2×G 1"                    | 2×G 1"                  | 6,8                     | MPS 150 M60     | BVR                | 75         |

**Starting mode and required accessories**

| Ref.      | T <sub>amb</sub> °C | Required accessories | Required oil type                                   | Description and remarks  |
|-----------|---------------------|----------------------|---|--|
| <b>A1</b> | 0 ÷ 25              | Pt100 + CT10         | Polyalphaolefine based synthetic oil or Mineral oil | <b>Gear reducer starting and subsequent motor-pump starting with warm oil.</b><br>The motor-pump is managed by the <b>three-threshold</b> oil temperature control system (Pt100 + CT10).<br>Set the three-threshold device CT10 with:<br>– operating temperature 60 °C (starting of motor-pump);<br>– restoring temperature 40 °C;<br>– warning temperature 90° C. |
| <b>A2</b> | > 25                | –                    | Polyalphaolefine based synthetic oil                | <b>Simultaneous starting of gear reducer and motor-pump</b>  |

Additional description when ordering by **designation**:

**independent oil-air cooling unit UR O/A ... - EP** or **independent oil-water cooling unit UR O/W ... - EP.**

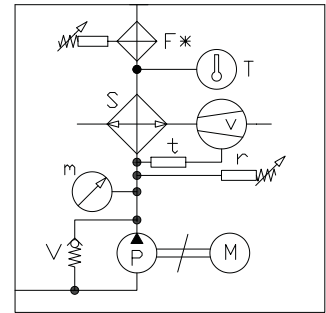
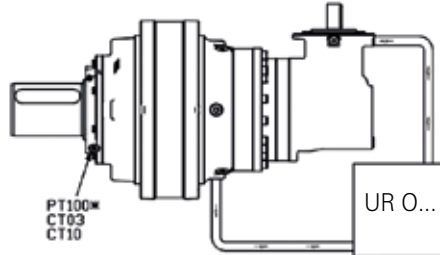
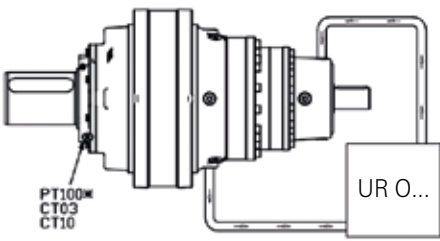
For more details about reference starting mode A1 / A2, see specific literature.

For dimensions, accessories and further technical details, see specific literature.

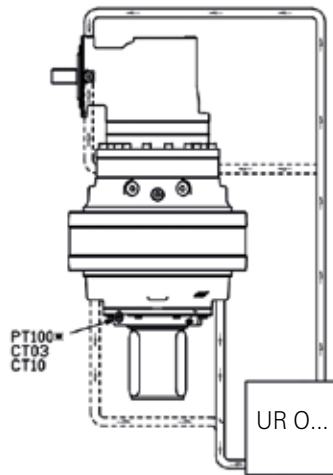
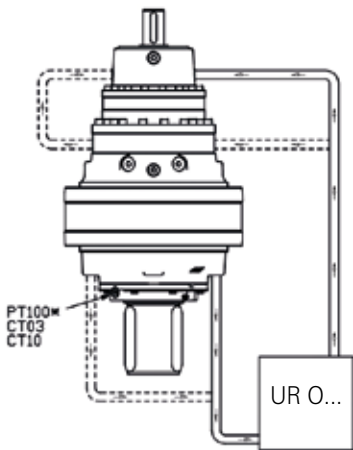
## Installation and maintenance

For the design of the cooling system, see the following instructions and sample diagrams.

It is recommended for suction to be in the lowest point and that suction and delivery points are adequately distant from each other.



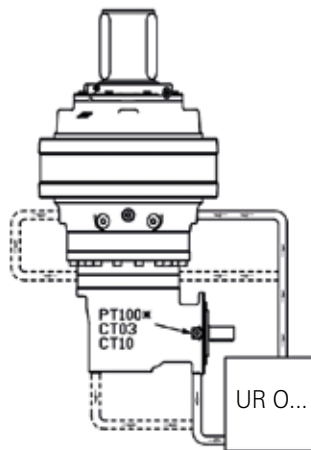
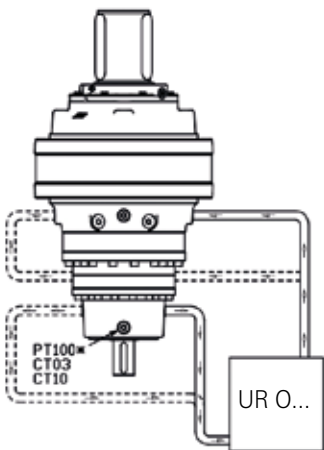
UR O ...



### Legend:

- Pt 100** oil temperature probe (supplied separately)
- F** filter with clogging signaller
- m** manometer 0 ÷ 16 bar
- M** motor pump
- P** pump
- CT 03\*, CT10\*** signalling device (supplied separately)
- S** oil/air or oil/water heat exchanger
- v** motor fan (UR O/A ...)
- t** fan thermostat 0 ÷ 90 °C (UR O/A...)
- T** thermometer 0 ÷ 120 °C
- V** safety valve 6 bar (screw pump)
- r** low pressure switch

\* On demand



### Oil flow capacity of holes

| Plugs size | d [mm] | q <sub>s</sub> (max) [l/min] | q <sub>d</sub> (max) [l/min] |
|------------|--------|------------------------------|------------------------------|
| G 1/4"     | 7      | 3                            | 5                            |
| G 3/8"     | 10     | 6                            | 10                           |
| G 1/2"     | 12     | 9                            | 15                           |
| G 3/4"     | 16     | 16                           | 27                           |
| G 1"       | 22     | 30                           | 51                           |
| G 1 1/4"   | 30     | 56                           | 95                           |

Stated values are valid with a kinematic oil viscosity of about 60 Cst.

For exact oil levels, plug positions and size, expansions tanks, see ch. 6, cat. EP series.

It is very important to design the hydraulic circuit according to the following indications:

$$q_s \leq Q_R$$

q<sub>s</sub> max delivery in suction for 1 hole.

q<sub>d</sub> max delivery sending for 1 hole.

Q<sub>R</sub> is the gear reducer oil quantity at correct level, see ch. 6, cat. EP series.

d internal diameter of fitting and pipes.

Where the use of only one hole is not enough to dispose all the oil flow, 2 or more holes can be connected at the main pipelines (suction and delivery).

Obviously, being a closed circuit, the total oil flow in suction and delivery must be equivalent.

## 11 – Backstop device

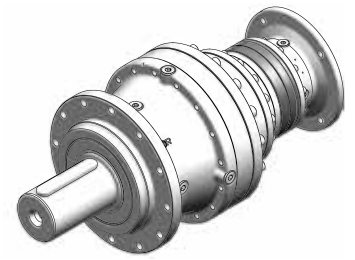
The presence on gear reducer of backstop device is stated by a specific label indicating the free rotation.

Provide a protection system where a backstop device breaking could cause personal injury or property damage.

Check - before starting - that there is **correspondence between free rotation and the direction of rotation of the machine to be driven and of the motor**



**Attention!** One or more startings in the false direction, even if short, could irretrievably damage the backstop device, the coupling seats and/or the electric motor.



## 12 – Maintenance

At machine rest, verify at regular intervals (more or less frequently according to environment and use):

- a) all external surfaces are clean and air passages to the gear reducer are free, in order that cooling remains fully effective. An accumulation of dust impedes efficient heat dispensal from the gear reducer housing and must be removed;
- b) oil level and deterioration degree (check with cold gear reducer at rest);
- c) correct fastening screws tightening.

During operation, check periodically:

- noise level;
- vibrations;
- sealings;
- etc.

Attention! After a running period, gear reducer is subject to a light internal overpressure which may cause burning liquid discharge. Therefore, before loosening whichever plug (filler plug included) wait until gear reducer has become cold and open it carefully; if not possible, take the necessary protection measures against burning due to warm oil contact. In all cases, always proceed with great care.

Maximum oil temperatures indicated on lubrication table do not represent a hindrance to the gear reducer regular running.

Consider the lubrication interval stated in the table for all re-lubrication operations.

Use only lubricants of the same type stated on lubrication nameplate.

| Oil temperature [°C] | Oil-change interval [h] |             |
|----------------------|-------------------------|-------------|
|                      | synthetic oil           | mineral oil |
| ≤ 65                 | 12 500                  | 5 600       |
| 65 ÷ 80              | 10 000                  | 2 800       |
| 80 ÷ 95              | 6 300                   | 1 400       |

Oil-change intervals assume pollution-free surroundings. When heavy overloads are present, halve the values.

Independently from running times, change the oil:

every 2 ÷ 4 years, for synthetic oil;

every 1 ÷ 2 years, for mineral oil;

During oil change operation, after unscrewing also the filler plug in order to facilitate oil draining (for plug position see ch. 14):

- wash the inside part of gear reducer housing using the same oil type suitable for the running (stated on lubrication nameplate); the oil used for this wash can be applied for further washings after proper filtering by 25 µm of filtration standard;
- clean, using a compressed air stream, all magnetic plugs, taking care to assemble them again in their original position;
- fill in the gear reducer with new oil up to level), using only oil of the same type and viscosity as per lubrication nameplate.

1) The lubricant quantities stated in ch. 13 are approximate and indicative for provisioning. The exact oil quantity the gear reducer is to be filled with is definitely given by the level. When output speed  $n_2$  is lower than  $0,3 \text{ min}^{-1}$ , for all mounting positions please refer to the approximate oil quantities stated for V1 position.

Replace the seal rings in case of dismounting or of periodical check; in this case, the new ring must be positioned so that it does not work on the same sliding race of previous ring.

### Seal rings

Duration depends on several factors such as dragging speed, temperature, ambient conditions, etc.; as a rough guide it can vary from 1 600 ÷ 12 500 h.

For sizes above 030A (except 031A, 043A), refill output seals with grease every 3 000 operating hours or at least every 6 months.

**Re-greasing procedure for slewing output bearings**

In case of gear reducers with slewing outputs (output design R-S-H), independently from mounting position, the output bearing presents an independent lubrication with grease.

**The re-greasing of bearing must be realized with the same oil change intervals.**

It is advisable to re-grease the bearings and the seals with the same grease the gear reducer was supplied with. As alternative, you can use greases with the same specifications.

ATTENTION: the re-greasing procedure may cause a grease passage from bearing lubrication area to oil lubrication area. This does not involve any malfunctioning of gear reducer. It is anyway recommended to re-grease before gear reducer oil change, so that the eventual grease into the oil lubrication area is expelled.

For grease quantities consider the following table data.

| Size | R             |                   | S             |                   | H             |                   |
|------|---------------|-------------------|---------------|-------------------|---------------|-------------------|
|      | output design | grease quantity g | output design | grease quantity g | output design | grease quantity g |
| 007  | R30b          | 50                | S30b          | 50                | H30b          | 50                |
| 015  | R30c          | 100               | S30c          | 100               | H30c          | 70                |
| 021  | R30d          | 120               | S30d          | 120               | H30d          | 120               |
| 030  | R30e          | 150               | S30e          | 150               | H30e          | 150               |
| 042  | R30f          | 170               | S30f          | 170               | H30f          | 170               |
| 060  | R30g          | 200               | S30g          | 200               | H30g          | 200               |
| 085  | R30h          | 220               | S30h          | 220               | H30h          | 220               |
| 125  | R30i          | 250               | S30i          | 250               | H30i          | 250               |
| 180  | R30j          | 300               | S30j          | 300               | H30j          | 300               |
| 250  | R30k          | 350               | S30k          | 350               | H30k          | 350               |



### 13 – Mounting positions, oil quantities and tanks

## Sizes 001A ... 021A

Mounting positions<sup>1)</sup> (Output mounting ... F..., ... A...)

For more details see cat. EP series.

- \* Based on the motor size, the expansion tank is required.
- \*\* Based on the output design, the expansion tank is required.
- Reference hole for the identification of the mounting position.

1) The drawings show the terminal box in position 0.

Mounting positions<sup>1)</sup> (Output mounting ... P...)

For more details see cat. EP series.

- \* Based on the motor size, the expansion tank is required.
- \*\* Based on the output design, the expansion tank is required.

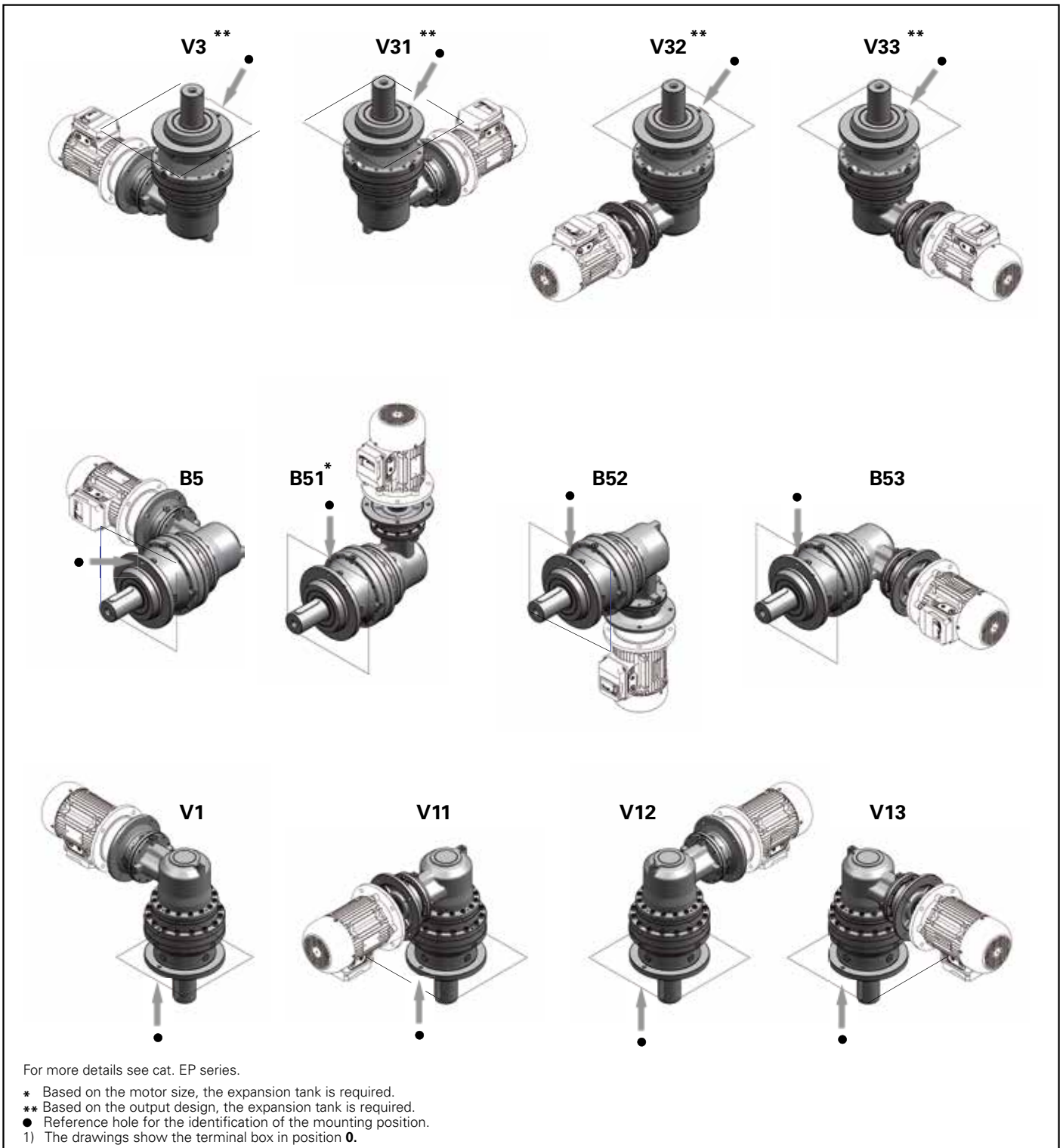
1) The drawings show the terminal box in position 0.

### Oil quantities [l]

| Q <sub>R</sub> | 1EL  |      |      |      |      |      |      |      |      |      | 2EL  |      |      |      |      |      |      |      |      |      | 3EL  |      |      |      |      |      |      |      |      |      | 4EL  |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A |
| B3 ... B8      | 0,66 | 0,67 | 1,2  | 1,3  | 1,3  | 2    | 1,9  | 1,9  | 3    | 3,4  | 0,81 | 0,82 | 1,3  | 1,4  | 1,4  | 2,7  | 2,6  | 2,6  | 3,2  | 3,2  | 0,96 | 0,98 | 1,4  | 1,5  | 1,4  | 2,5  | 2,6  | 2,6  | 3,3  | 3,3  | 1,1  | 1,1  | 1,8  | 1,8  | 2,6  | 2,6  | 2,6  | 3,2  | 3,2  |      |
| V1, V5         | 0,85 | 0,85 | 1,5  | 1,6  | 1,4  | 2,5  | 2    | 2,1  | 3,9  | 4    | 1,1  | 1,2  | 2    | 2,2  | 2,1  | 3,9  | 3,9  | 3,9  | 5,1  | 5    | 1,5  | 1,5  | 2,3  | 2,5  | 2,3  | 4,5  | 4,4  | 4,4  | 5,8  | 5,8  | 1,8  | 1,8  | 2,6  | 2,8  | 2,6  | 4,8  | 4,8  | 6    | 6    |      |
| V3, V6         | 0,96 | 1    | 1,9  | 2,1  | 2    | 2,9  | 2,8  | 2,9  | 4,3  | 5,2  | 1,3  | 1,3  | 2,1  | 2,3  | 2,3  | 4,1  | 4,3  | 4,3  | 4,8  | 4,7  | 1,6  | 1,7  | 2,2  | 2,4  | 2,2  | 3,9  | 4,1  | 4,1  | 4,8  | 4,8  | 1,8  | 1,9  | 2,5  | 2,7  | 2,5  | 4    | 4,3  | 4,3  | 4,8  | 4,8  |

Stated oil quantities are approximate for provisioning. The exact quantity gear reducer is to be filled with is definitely given by the level.

**Mounting positions** (Output mounting ... F..., ... A...)



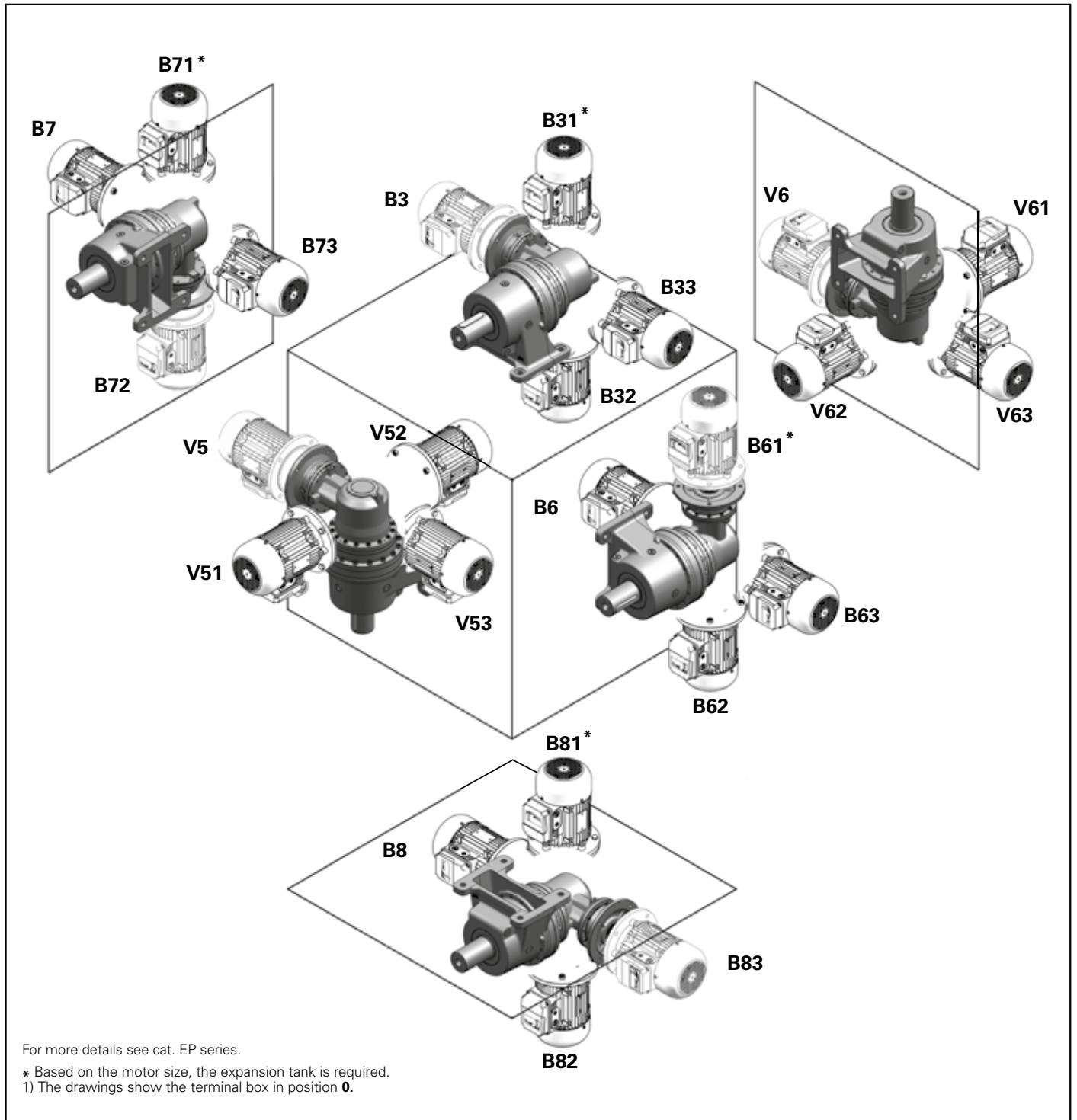
Oil quantities [l]

| Q <sub>R</sub> | 2EB  |      |      |      |      |      |      |      |      |      | 3EB  |      |      |      |      |      | 4EB  |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A |
| V3 ... V33     | 2,7  | 2,8  | 4,4  | 4,5  | 4,4  | 8,2  | 8,3  | 8,3  | 14,3 | 14,3 | 3    | 3,1  | 3,7  | 3,8  | 3,6  | 6,1  | 6,3  | 6,3  | 6,8  | 6,8  | 3,3  | 3,3  | 3,9  | 4,1  | 3,9  | 5,4  | 5,6  | 5,6  | 6,2  | 6,2  |
| B5, B53        | 1,5  | 1,5  | 2,5  | 2,5  | 2,5  | 4,7  | 4,6  | 4,6  | 8    | 8    | 1,7  | 1,7  | 2,1  | 2,2  | 2,1  | 3,7  | 3,6  | 3,6  | 4,2  | 4,3  | 1,8  | 1,8  | 2,2  | 2,3  | 2,2  | 3,3  | 3,3  | 3,3  | 4    | 4    |
| B51            | 2,6  | 2,6  | 4,2  | 4,3  | 4,2  | 8    | 7,8  | 7,8  | 13,3 | 13,3 | 2,9  | 2,9  | 3,7  | 3,9  | 3,7  | 6,6  | 6,5  | 6,5  | 7,7  | 7,7  | 3,2  | 3,2  | 4    | 4,2  | 4    | 6,2  | 6,1  | 6,1  | 7,4  | 7,4  |
| B52            | 1,8  | 1,9  | 3    | 3    | 3    | 5,6  | 5,6  | 5,6  | 9,8  | 9,8  | 2    | 2    | 2,4  | 2,5  | 2,4  | 4,2  | 4,1  | 4,1  | 4,7  | 4,8  | 2,1  | 2,1  | 2,5  | 2,6  | 2,5  | 3,6  | 3,6  | 3,6  | 4,3  | 4,3  |
| V1 ... V13     | 1,9  | 1,9  | 3    | 3,1  | 3    | 5,7  | 5,5  | 5,5  | 9,4  | 9,4  | 2,2  | 2,2  | 3    | 3,2  | 3    | 5,4  | 5,4  | 5,4  | 6,5  | 6,6  | 2,5  | 2,5  | 3,3  | 3,5  | 3,3  | 5,5  | 5,4  | 5,4  | 6,7  | 6,7  |

Stated oil quantities are approximate for provisioning. The exact quantity gear reducer is to be filled with is definitely given by the level.

# Sizes 001A ... 021A

## Mounting positions (Output mounting ... P...)

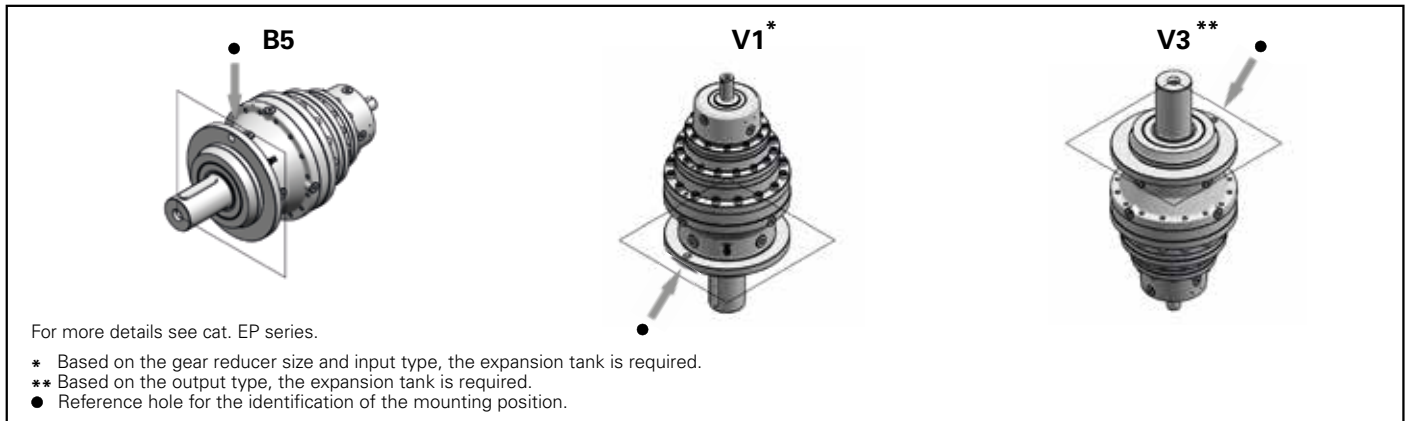


## Oil quantities [l]

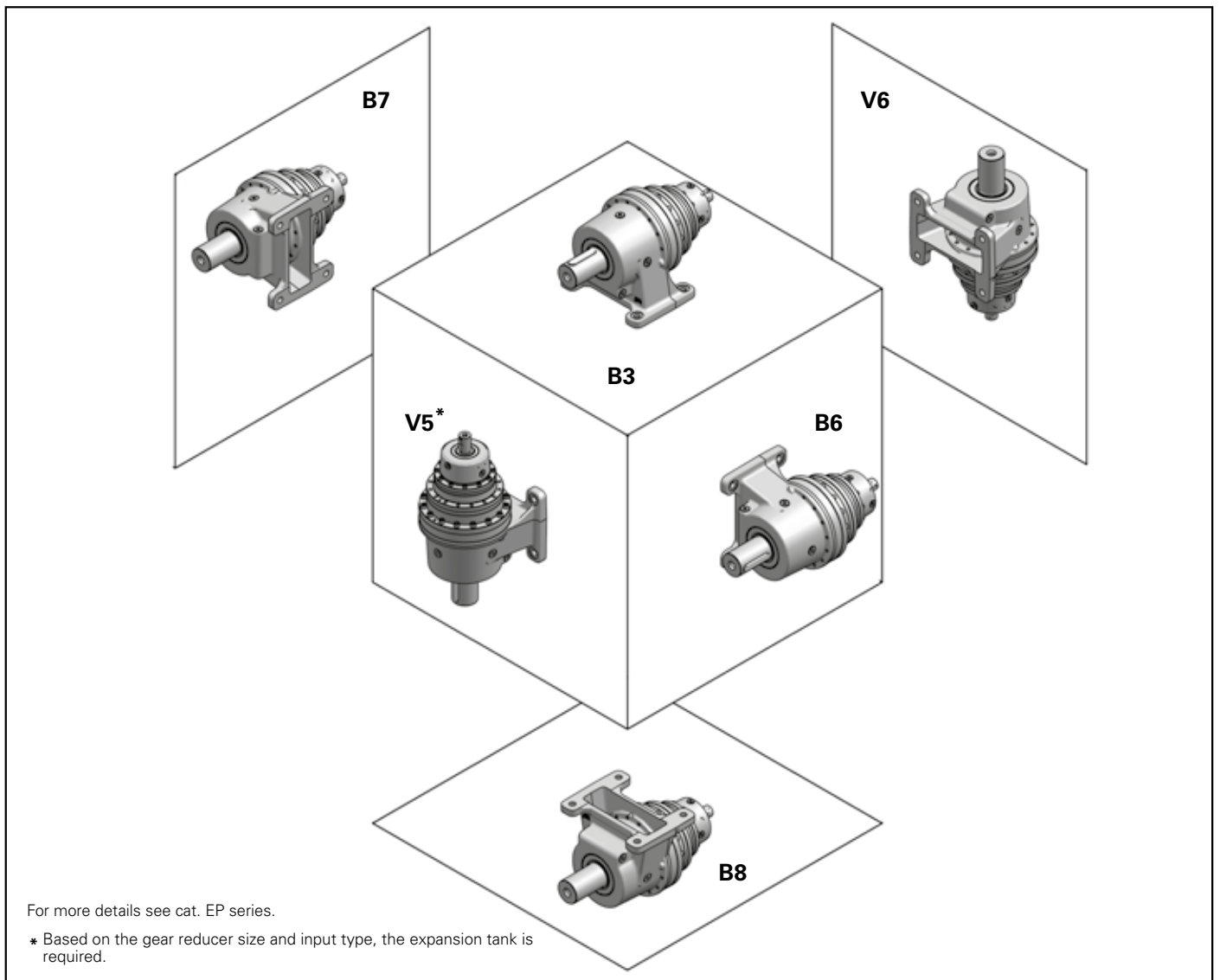
| Q <sub>R</sub> | 2EB  |      |      |      |      |      |      |      |      |      | 3EB  |      |      |      |      |      |      |      | 4EB  |      |      |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A |
| B3 ... B8      | 1,5  | 1,5  | 2,5  | 2,5  | 2,5  | 4,7  | 4,6  | 4,6  | 8    | 8    | 1,7  | 1,7  | 2,1  | 2,2  | 2,1  | 3,7  | 3,6  | 3,6  | 4,2  | 4,3  | 1,8  | 1,8  | 2,2  | 2,3  | 2,2  | 3,3  | 3,3  | 3,3  | 4    | 4    |
| B33 ... B83    | 1,5  | 1,5  | 2,5  | 2,5  | 2,5  | 4,7  | 4,6  | 4,6  | 8    | 8    | 1,7  | 1,7  | 2,1  | 2,2  | 2,1  | 3,7  | 3,6  | 3,6  | 4,2  | 4,3  | 1,8  | 1,8  | 2,2  | 2,3  | 2,2  | 3,3  | 3,3  | 3,3  | 4    | 4    |
| B31 ... B81    | 2,6  | 2,6  | 4,2  | 4,3  | 4,2  | 8    | 7,8  | 7,8  | 13,3 | 13,3 | 2,9  | 2,9  | 3,7  | 3,9  | 3,7  | 6,6  | 6,5  | 6,5  | 7,7  | 7,7  | 3,2  | 3,2  | 4    | 4,2  | 4    | 6,2  | 6,1  | 6,1  | 7,4  | 7,4  |
| B32 ... B82    | 1,8  | 1,9  | 3    | 3    | 3    | 5,6  | 5,6  | 5,6  | 9,8  | 9,8  | 2    | 2    | 2,4  | 2,5  | 2,4  | 4,2  | 4,1  | 4,1  | 4,7  | 4,8  | 2,1  | 2,1  | 2,5  | 2,6  | 2,5  | 3,6  | 3,6  | 3,6  | 4,3  | 4,3  |
| V5 ... V53     | 1,9  | 1,9  | 3    | 3,1  | 3    | 5,7  | 5,5  | 5,5  | 9,4  | 9,4  | 2,2  | 2,2  | 3    | 3,2  | 3    | 5,4  | 5,4  | 5,4  | 6,5  | 6,6  | 2,5  | 2,5  | 3,3  | 3,5  | 3,3  | 5,5  | 5,4  | 5,4  | 6,7  | 6,7  |
| V6 ... V63     | 2,7  | 2,8  | 4,4  | 4,5  | 4,4  | 8,2  | 8,3  | 8,3  | 14,3 | 14,3 | 3    | 3,1  | 3,7  | 3,8  | 3,6  | 6,1  | 6,3  | 6,3  | 6,8  | 6,8  | 3,3  | 3,3  | 3,9  | 4,1  | 3,9  | 5,4  | 5,6  | 5,6  | 6,2  | 6,2  |

Stated oil quantities are approximate for provisioning. The exact quantity gear reducer is to be filled with is definitely given by the level.

**Mounting positions** (Output mounting ... F..., ... A...)



**Mounting positions** (Design ... P...)



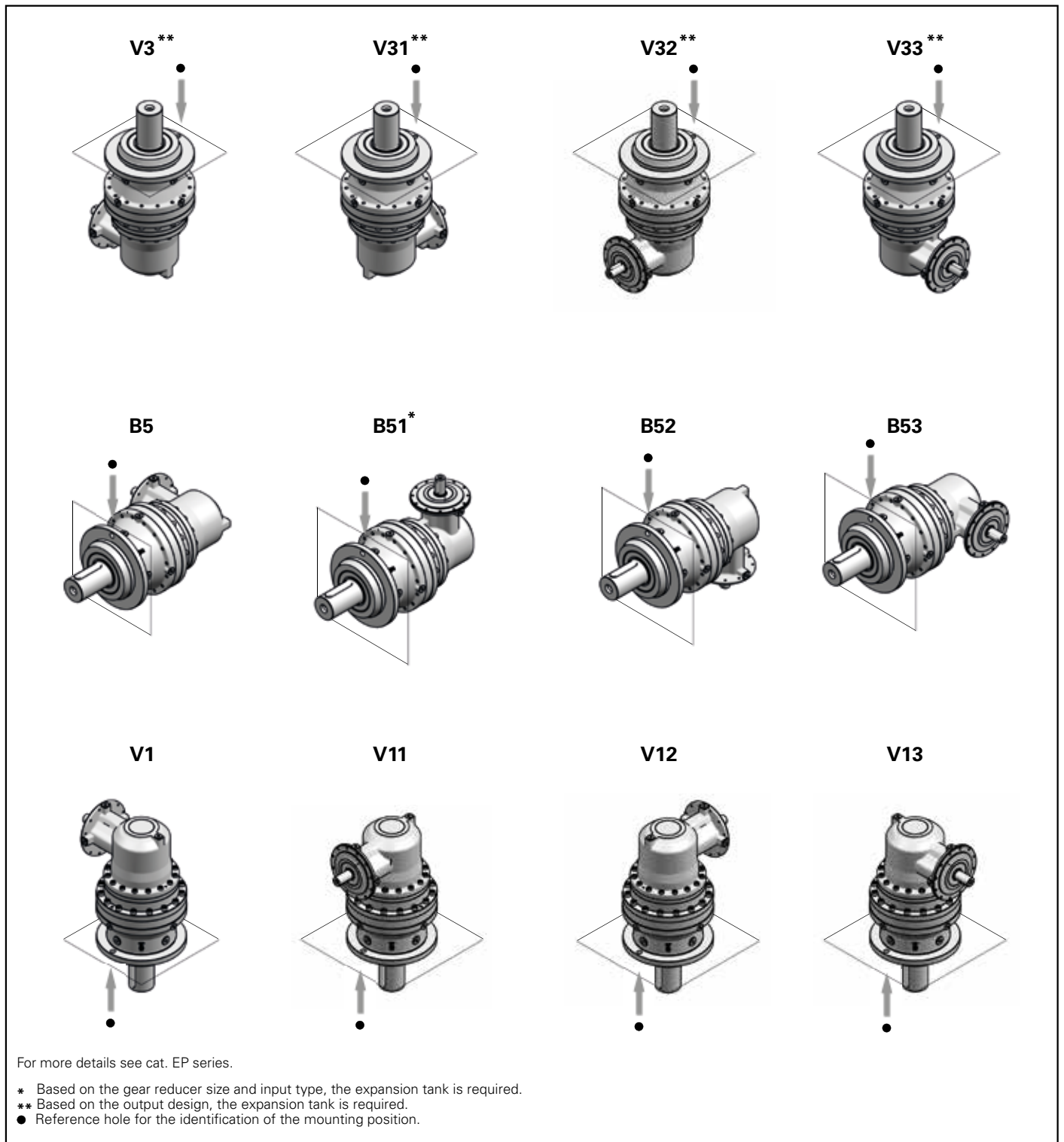
Oil quantities [l]

| Q <sub>R</sub> | 1EL  |      |      |      |      |      |      |      |      |      | 2EL  |      |      |      |      |      | 3EL  |      |      |      |      |      | 4EL  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A |
| B3 ... B8      | 0,68 | 0,68 | 1,4  | 1,4  | 1,2  | 2,2  | 2    | 2    | 3,1  | 3    | 0,84 | 0,84 | 1,3  | 1,3  | 1,2  | 2,5  | 2,5  | 2,5  | 3    | 3    | 1    | 1    | 1,4  | 1,5  | 1,4  | 2,5  | 2,5  | 2,5  | 3,1  | 3,1  | 1,2  | 1,2  | 1,6  | 1,7  | 1,6  | 2,6  | 2,6  | 2,6  | 3,3  | 3,3  |
| V1, V5         | 1,4  | 1,4  | 2,7  | 2,7  | 2,5  | 4,4  | 3,9  | 4    | 6,2  | 6,1  | 1,7  | 1,7  | 2,5  | 2,7  | 2,5  | 5    | 4,9  | 4,9  | 6,1  | 6    | 2    | 2    | 2,8  | 3    | 2,8  | 5    | 4,9  | 4,9  | 6,2  | 6,2  | 2,3  | 2,3  | 3,2  | 3,3  | 3,2  | 5,3  | 5,3  | 5,3  | 6,5  | 6,5  |
| V3, V6         | 1    | 1,1  | 2,2  | 2,1  | 1,9  | 3,2  | 2,9  | 3    | 4,5  | 4,4  | 1,3  | 1,4  | 2    | 2,1  | 1,9  | 3,8  | 3,9  | 3,9  | 4,4  | 4,3  | 1,6  | 1,7  | 2,3  | 2,4  | 2,3  | 3,8  | 3,9  | 3,9  | 4,5  | 4,5  | 2    | 2    | 2,6  | 2,8  | 2,6  | 4,1  | 4,3  | 4,3  | 4,8  | 4,8  |

Stated oil quantities are approximate for provisioning. The exact quantity the gear reducer is to be filled with is definitely given by the level.

# Sizes 001A ... 021A

Mounting positions (Output mounting ... F..., ... A...)

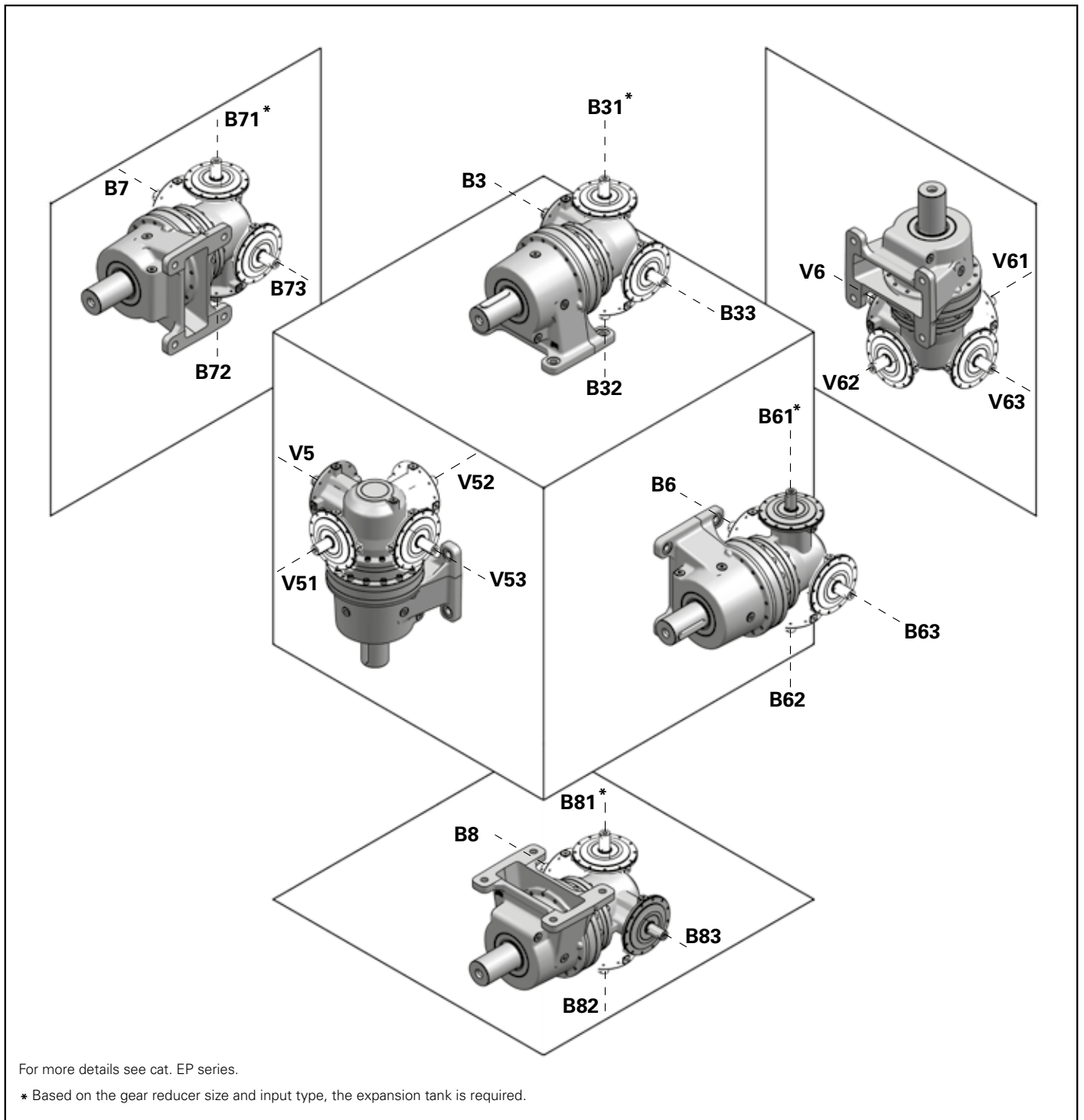


## Oil quantities [l]

| Q <sub>R</sub> | 2EB  |      |      |      |      |      |      |      |      |      | 3EB  |      |      |      |      |      | 4EB  |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A |
| V3 ... V33     | 2    | 2,1  | 3,4  | 3,5  | 3,3  | 6,4  | 6,4  | 6,4  | 10,7 | 10,7 | 2,4  | 2,4  | 3    | 3,2  | 3    | 5,1  | 5,3  | 5,3  | 5,8  | 5,8  | 2,7  | 2,8  | 3,4  | 3,5  | 3,3  | 4,8  | 5    | 5    | 5,6  | 5,6  |
| B5, B53        | 1,2  | 1,2  | 2    | 2    | 2    | 3,8  | 3,7  | 3,7  | 6,2  | 6,2  | 1,4  | 1,4  | 1,8  | 1,9  | 1,8  | 3,2  | 3,1  | 3,1  | 3,7  | 3,7  | 1,5  | 1,5  | 2    | 2    | 1,9  | 3    | 3    | 3    | 3,6  | 3,6  |
| B51            | 2,4  | 2,4  | 3,9  | 4,1  | 3,9  | 7,6  | 7,4  | 7,4  | 12,4 | 12,4 | 2,7  | 2,7  | 3,6  | 3,7  | 3,6  | 6,3  | 6,3  | 6,3  | 7,4  | 7,4  | 3,1  | 3,1  | 3,9  | 4,1  | 3,9  | 6    | 6    | 6    | 7,3  | 7,3  |
| B52            | 1,2  | 1,2  | 2    | 2    | 2    | 3,8  | 3,7  | 3,7  | 6,2  | 6,2  | 1,4  | 1,4  | 1,8  | 1,9  | 1,8  | 3,2  | 3,1  | 3,1  | 3,7  | 3,7  | 1,5  | 1,5  | 2    | 2    | 1,9  | 3    | 3    | 3    | 3,6  | 3,6  |
| V1 ... V13     | 1,5  | 1,5  | 2,5  | 2,6  | 2,5  | 4,8  | 4,6  | 4,6  | 7,6  | 7,6  | 1,9  | 1,9  | 2,7  | 2,9  | 2,7  | 4,9  | 4,9  | 4,9  | 6    | 6    | 2,2  | 2,2  | 3    | 3,2  | 3    | 5,1  | 5,1  | 5,1  | 6,4  | 6,4  |

Stated oil quantities are approximate for provisioning. The exact quantity gear reducer is to be filled with is definitely given by the level.

**Mounting positions** (Output mounting ... P...)



Oil quantities [l]

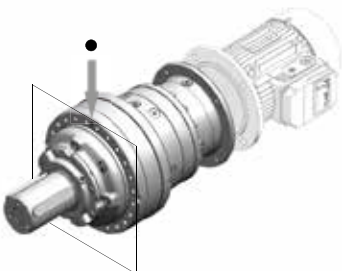
| Q <sub>R</sub> | 2EB  |      |      |      |      |      |      |      |      |      | 3EB  |      |      |      |      |      |      |      |      |      | 4EB  |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A | 001A | 002A | 003A | 004A | 006A | 009A | 012A | 015A | 018A | 021A |
| B3 ... B8      | 1,2  | 1,2  | 2    | 2    | 2    | 3,8  | 3,7  | 3,7  | 6,2  | 6,2  | 1,4  | 1,4  | 1,8  | 1,9  | 1,8  | 3,2  | 3,1  | 3,1  | 3,7  | 3,7  | 1,5  | 1,5  | 2    | 2    | 1,9  | 3    | 3    | 3    | 3,6  | 3,6  |
| B31 ... B81    | 1,2  | 1,2  | 2    | 2    | 2    | 3,8  | 3,7  | 3,7  | 6,2  | 6,2  | 1,4  | 1,4  | 1,8  | 1,9  | 1,8  | 3,2  | 3,1  | 3,1  | 3,7  | 3,7  | 1,5  | 1,5  | 2    | 2    | 1,9  | 3    | 3    | 3    | 3,6  | 3,6  |
| B32 ... B82    | 2,4  | 2,4  | 3,9  | 4,1  | 3,9  | 7,6  | 7,4  | 7,4  | 12,4 | 12,4 | 2,7  | 2,7  | 3,6  | 3,7  | 3,6  | 6,3  | 6,3  | 6,3  | 7,4  | 7,4  | 3,1  | 3,1  | 3,9  | 4,1  | 3,9  | 6    | 6    | 6    | 7,3  | 7,3  |
| V5 ... V53     | 1,2  | 1,2  | 2    | 2    | 2    | 3,8  | 3,7  | 3,7  | 6,2  | 6,2  | 1,4  | 1,4  | 1,8  | 1,9  | 1,8  | 3,2  | 3,1  | 3,1  | 3,7  | 3,7  | 1,5  | 1,5  | 2    | 2    | 1,9  | 3    | 3    | 3    | 3,6  | 3,6  |
| V6 ... V63     | 2    | 2    | 3,4  | 3,5  | 3,3  | 6,4  | 6,4  | 6,4  | 10,7 | 10,7 | 2,4  | 2,4  | 3    | 3,2  | 3    | 5,1  | 5,3  | 5,3  | 5,8  | 5,8  | 2,2  | 2,2  | 3    | 3,2  | 3    | 5,1  | 5,1  | 5,1  | 6,4  | 6,4  |
|                | 2    | 2    | 3,4  | 3,5  | 3,3  | 6,4  | 6,4  | 6,4  | 10,7 | 10,7 | 2,4  | 2,4  | 3    | 3,2  | 3    | 5,1  | 5,3  | 5,3  | 5,8  | 5,8  | 2,7  | 2,8  | 3,4  | 3,5  | 3,3  | 4,8  | 5    | 5    | 5,6  | 5,6  |

Stated oil quantities are approximate for provisioning. The exact quantity gear reducer is to be filled with is definitely given by the level.


# Sizes **022A ... 710A**

## Mounting positions (Output mounting ... F..., ... A...)


**B5**



**V1 \***



**V3 \*\***



For more details see cat. EP series.

- \* Based on the motor size, the expansion tank is required.
- \*\* Based on the output design, the expansion tank is required.
- Reference hole for the identification of the mounting position.

1) The drawings show the terminal box in position **0**.

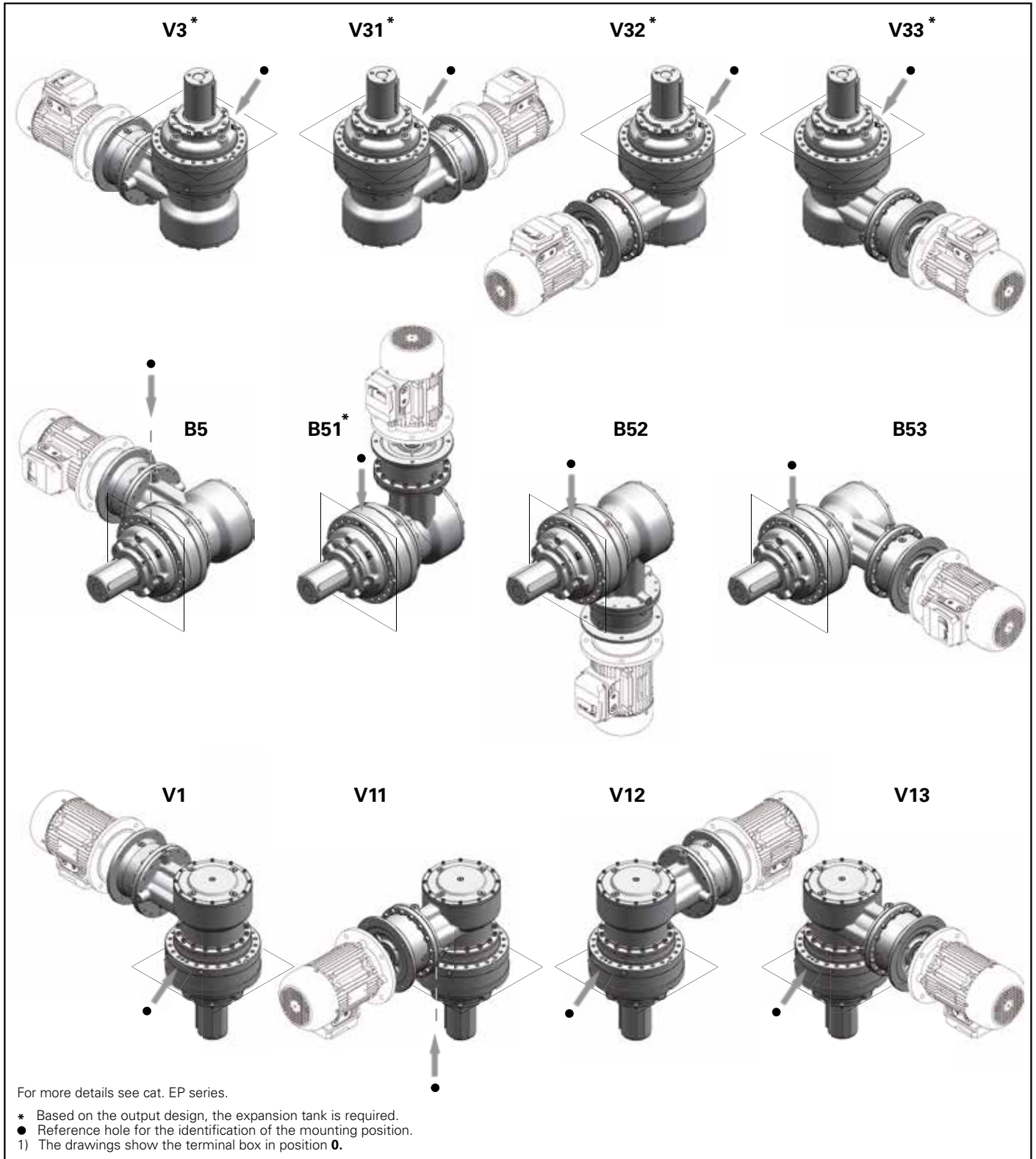
## Oil quantities [l]

| Q <sub>R</sub> | 1EL  |      |      |      |      | 2EL  |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 022A | 030A | 031A | 042A | 043A | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A |
| <b>B5</b>      | 2,9  | 3,2  | 4,5  | 4,4  | 5,6  | 2,7  | 4,4  | 5,9  | 5,3  | 6,7  | 6,7  | 7,7  | 14   |
| <b>V1</b>      | 3,6  | 5,2  | 8,1  | 7,5  | 10,2 | 3,9  | 6,2  | 9,2  | 8    | 10,8 | 10,6 | 14,1 | 24   |
| <b>V3</b>      | 3,3  | 6,5  | 5    | 8,8  | 6    | 2,9  | 8,9  | 7,8  | 10,7 | 8,3  | 13,5 | 15,4 | 27   |

| Q <sub>R</sub> | 3EL  |      |      |      |      |      |      |      |      |      | 4EL  |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A | 180A | 250A | 355A | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A | 180A | 250A | 355A | 500A | 710A |
| <b>B5</b>      | 3,1  | 3,6  | 5,1  | 4,9  | 6,3  | 6,3  | 7,9  | 15   | 22   | 32   | 45   | 3,1  | 3,6  | 5,1  | 5    | 6,4  | 6,2  | 8,1  | 15   | 22   | 33   | 46   | 59   | 89   |
| <b>V1</b>      | 5,5  | 6    | 9    | 8,7  | 11,5 | 11,4 | 14,5 | 27   | 40   | 60   | 86   | 5,7  | 6,8  | 9,8  | 9,5  | 12,3 | 11,9 | 15,5 | 29   | 43   | 63   | 89   | 114  | 174  |
| <b>V3</b>      | 3,8  | 7,1  | 6,1  | 9,8  | 7,5  | 12,5 | 15,8 | 29   | 43   | 63   | 89   | 3,8  | 7,3  | 6,2  | 10   | 7,6  | 12,4 | 16,2 | 30   | 44   | 65   | 91   | 117  | 177  |

Stated oil quantities are approximate for provisioning. The exact quantity gear reducer is to be filled with is definitely given by the level.

**Mounting positions** (Output mounting ... F..., ... A...)



Oil quantities [l]

| Q <sub>R</sub> | 2EB  |      |      |      |      |      |      |      | 3EB  |      |      |      |      |      |      |      | 4EB  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A | 180A | 250A | 355A | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A | 180A | 250A | 355A | 500A | 710A |
| V3 ... V33     | 11,2 | 12,5 | 12,4 | 18,8 | 15,7 | 20   | 33,5 | 23   | 6,5  | 11   | 10   | 14,5 | 11,9 | 20,5 | 20,6 | 42   | 56   | 84   | 106  | 4,9  | 10,3 | 8,1  | 11,9 | 9,6  | 14,6 | 23,6 | 36   | 52   | 68   | 101  | 125  | 196  |
| B5, B53        | 6,8  | 6,3  | 8,2  | 9,4  | 10,4 | 10   | 16,8 | 44   | 4,4  | 5,5  | 7    | 7,3  | 8,5  | 10,2 | 10,3 | 21   | 28   | 42   | 53   | 3,6  | 5,1  | 6,1  | 6    | 7,4  | 7,3  | 11,8 | 18   | 26   | 34   | 51   | 63   | 98   |
| B51            | 12,5 | 9,9  | 16,5 | 18,8 | 20,8 | 20   | 33,5 | 27   | 8,1  | 9,9  | 12,9 | 13,2 | 15,9 | 19,1 | 19,2 | 38   | 52   | 82   | 104  | 6,8  | 9,8  | 11,7 | 11,5 | 14,3 | 14,2 | 22,9 | 32   | 50   | 66   | 98   | 122  | 194  |
| B52            | 7,6  | 8    | 8,2  | 9,4  | 10,4 | 10   | 16,8 | 31   | 4,9  | 6,3  | 7,8  | 8,2  | 9,3  | 11,1 | 11,2 | 21   | 44   | 46   | 57   | 4    | 5,4  | 6,4  | 6,3  | 7,7  | 7,6  | 12,2 | 18   | 26   | 34   | 51   | 63   | 102  |
| V1 ... V13     | 10,1 | 7,8  | 10,6 | 13   | 15   | 14,2 | 20,5 | 45   | 6,9  | 7,5  | 10,5 | 10,8 | 13,5 | 14,8 | 16,7 | 34   | 52   | 70   | 92   | 6,1  | 8,5  | 10,4 | 10,2 | 13   | 12,9 | 20,3 | 32   | 46   | 64   | 93   | 118  | 182  |

Stated oil quantities are approximate for provisioning. The exact quantity gear reducer is to be filled with is definitely given by the level.



# Sizes **022A ... 710A**

## Mounting positions (Output mouting ... **F...**, ... **A...**)

For more details see cat. EP series.

- \*\* Based on the output design, the expansion tank is required.
- \* Based on the gear reducer size and input type, the expansion tank is required.
- Reference hole for the identification of the mounting position.

## Oil quantities [l]

| Q <sub>R</sub> | 1EL  |      |      |      | 2EL  |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 030A | 031A | 042A | 043A | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A | 180A | 250A | 355A | 500A | 710A |
| B5             | 2,8  | 4,3  | 4    | 5,4  | 2,5  | 3,9  | 5,4  | 4,8  | 6,2  | 6,4  | 7,2  | 13   | 21   | 30   | 43   | 56   | 81   |
| V1             | 5,6  | 8,6  | 7,9  | 10,7 | 4,9  | 7,8  | 10,8 | 9,6  | 12,4 | 12,7 | 14,5 | 26   | 42   | 60   | 86   | 112  | 162  |
| V3             | 5,6  | 4,6  | 7,9  | 5,6  | 2,5  | 7,8  | 6,8  | 9,6  | 7,3  | 12,7 | 14,5 | 26   | 42   | 60   | 86   | 112  | 162  |

| Q <sub>R</sub> | 3EL  |      |      |      |      |      |      |      |      |      |      |      |      | 4EL  |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A | 180A | 250A | 355A | 500A | 710A | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A | 180A | 250A | 355A | 500A | 710A |
| B5             | 3    | 3,6  | 5    | 4,9  | 6,3  | 6,2  | 8,2  | 14   | 21   | 31   | 44   | 58   | 83   | 3,1  | 3,6  | 5,2  | 5    | 6,4  | 6,2  | 8,4  | 15   | 22   | 32   | 45   | 58   | 88   |
| V1             | 5,9  | 7,1  | 10,1 | 9,8  | 12,6 | 12,5 | 16,5 | 28   | 42   | 62   | 88   | 116  | 166  | 6,2  | 7,3  | 10,3 | 10   | 12,8 | 12,4 | 16,8 | 30   | 44   | 64   | 90   | 116  | 176  |
| V3             | 3,5  | 7,1  | 6    | 9,8  | 7,5  | 12,5 | 16,5 | 28   | 42   | 62   | 88   | 116  | 166  | 3,8  | 7,3  | 6,3  | 10   | 7,7  | 12,4 | 16,8 | 30   | 44   | 64   | 90   | 116  | 176  |

Stated oil quantities are approximate for provisioning. The exact quantity the gear reducer is to be filled with is definitely given by the level.

# Sizes 022A ... 710A

## Mounting positions (Output mounting ... F..., ... A...)

For more details see cat. EP series.

- \* Based on the gear reducer size and input type, the expansion tank is required).
- \*\* Based on the output design, the expansion tank is required.
- Reference hole for the identification of the mounting position.

## Oil quantities [l]

| Q <sub>R</sub> | 2EB  |      |      |      |      |      |      |      | 3EB  |      |      |      |      |      |      |      | 4EB  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A | 180A | 250A | 355A | 022A | 030A | 031A | 042A | 043A | 060A | 085A | 125A | 180A | 250A | 355A | 500A | 710A |
| V3 ... V33     | 9,7  | 9    | 12,4 | 18,8 | 15,7 | 20   | 33,5 | 44   | 5,4  | 9,5  | 8,4  | 12,7 | 10,4 | 18,7 | 18,8 | 38   | 52   | 82   | 104  | 4,2  | 9,6  | 7,4  | 11,3 | 9    | 14   | 22,7 | 32   | 50   | 66   | 98   | 122  | 194  |
| B5, B53        | 6    | 4,5  | 8,2  | 9,4  | 10,4 | 10   | 16,8 | 22   | 3,9  | 4,8  | 6,2  | 6,4  | 7,8  | 9,4  | 9,4  | 19   | 26   | 41   | 52   | 3,3  | 4,8  | 5,8  | 5,6  | 7    | 7    | 11,4 | 16   | 25   | 33   | 49   | 61   | 97   |
| B51            | 12,1 | 9    | 16,5 | 18,8 | 20,8 | 20   | 33,5 | 44   | 7,9  | 9,5  | 12,5 | 12,7 | 15,5 | 18,7 | 18,8 | 38   | 52   | 82   | 104  | 6,6  | 9,6  | 11,5 | 11,3 | 14,1 | 14   | 22,7 | 32   | 50   | 66   | 98   | 122  | 194  |
| B52            | 6    | 4,5  | 8,2  | 9,4  | 10,4 | 10   | 16,8 | 26   | 3,9  | 4,8  | 6,2  | 6,4  | 7,8  | 9,4  | 9,4  | 19   | 26   | 45   | 56   | 3,3  | 4,8  | 5,8  | 5,6  | 7    | 7    | 11,4 | 16   | 25   | 33   | 49   | 61   | 101  |
| V1 ... V13     | 9,7  | 9    | 12,4 | 18,8 | 15,7 | 20   | 33,5 | 31   | 6,4  | 6,7  | 9,7  | 9,9  | 12,7 | 14   | 15,8 | 32   | 46   | 69   | 91   | 5,8  | 8,2  | 10,1 | 9,9  | 12,7 | 12,6 | 19,9 | 29   | 45   | 63   | 92   | 116  | 181  |

Stated oil quantities are approximate for provisioning. The exact quantity gear reducer is to be filled with is definitely given by the level.

**Note**

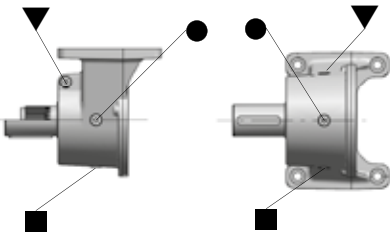
**For the oil quantities to be filled into the gear reducers with slewing outputs (output design R-S-H), refer to the quantities stated in the previous tables for gear reducers with F output design.**

**The oil quantities stated are approximative for the provisioning.**

**The exact oil quantities to be filled into the gear reducer are given by the level.**

## 14 – Plug positions and types

Sizes **001A ... 021A**



Mounting positions

**B3, B5, B6, B7, B8**

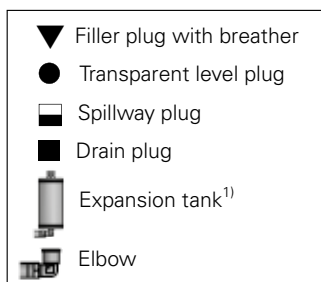
**B32, B52, B62, B72, B82**

**B33, B53, B63, B73, B83**

Sizes **022A ... 710A**

Mounting positions

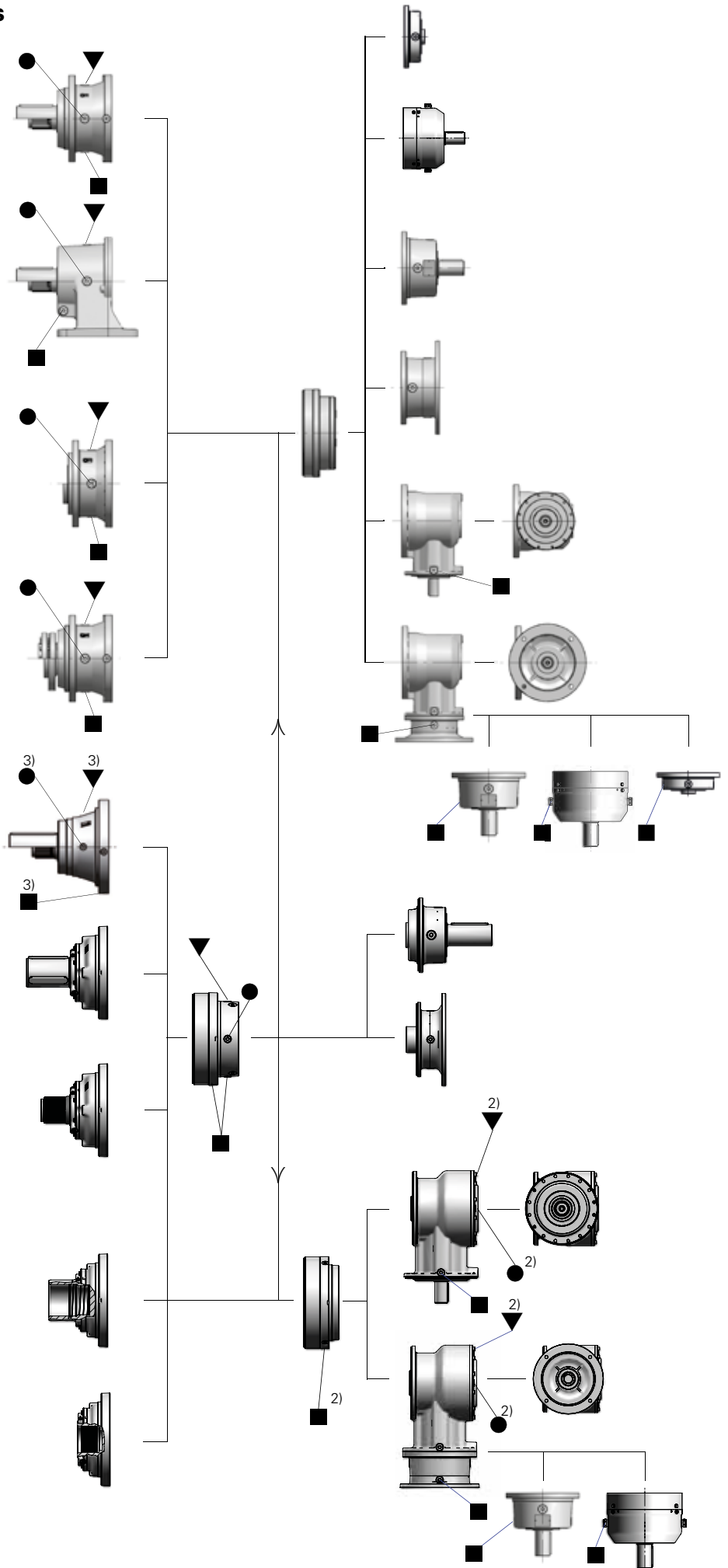
**B5, B52, B53**



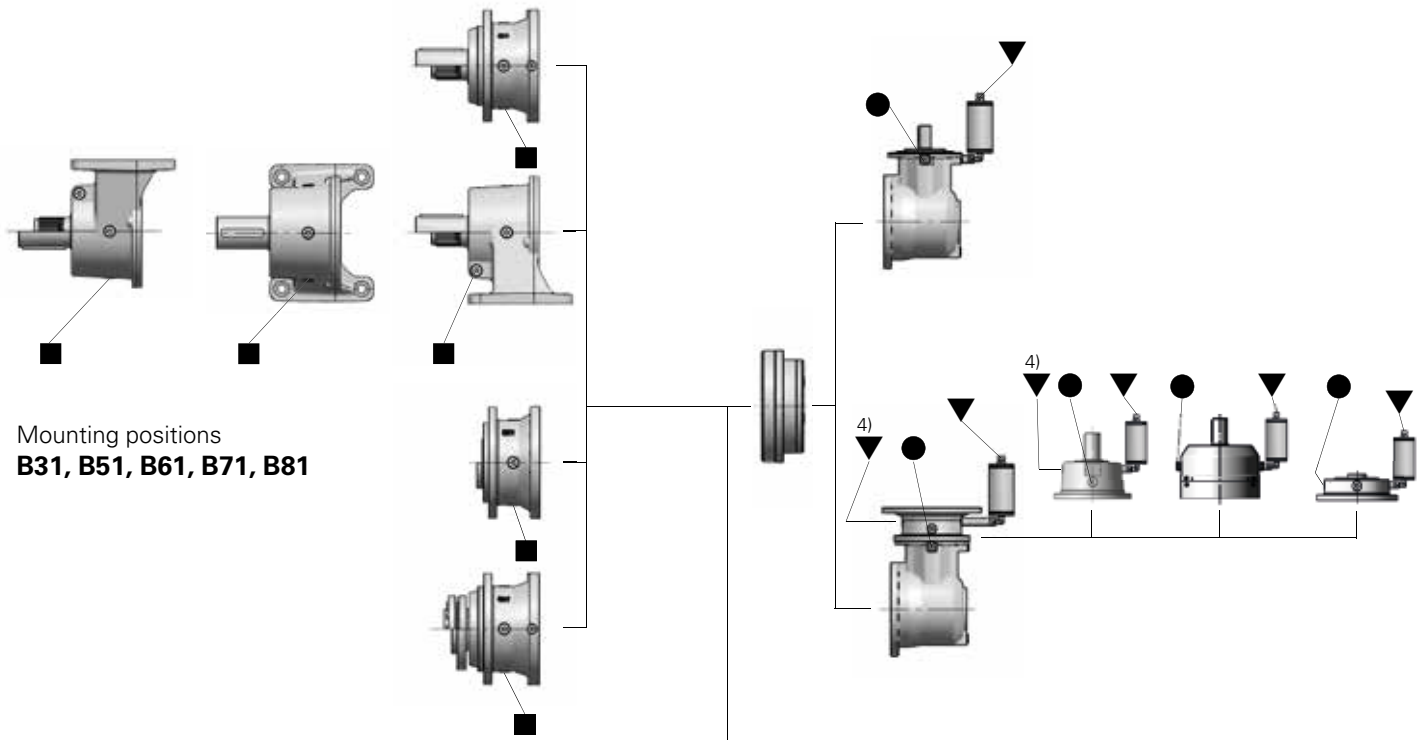
1) For more details see cat. EP series.

2) Only for 2EB train of gears.

3) Only for size 022A.

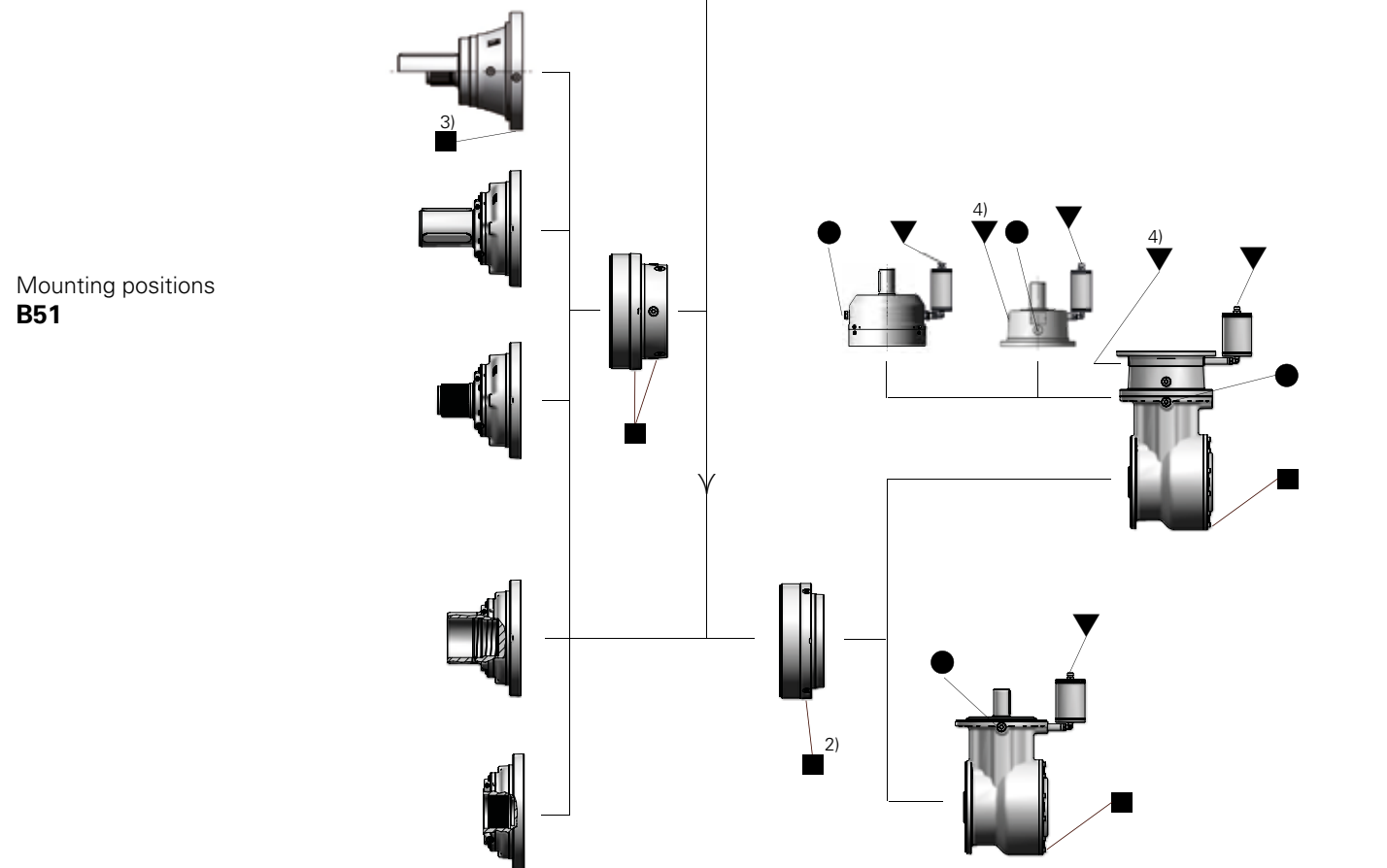


Sizes **001A ... 021A**



Mounting positions  
**B31, B51, B61, B71, B81**

Sizes **022A ... 710A**

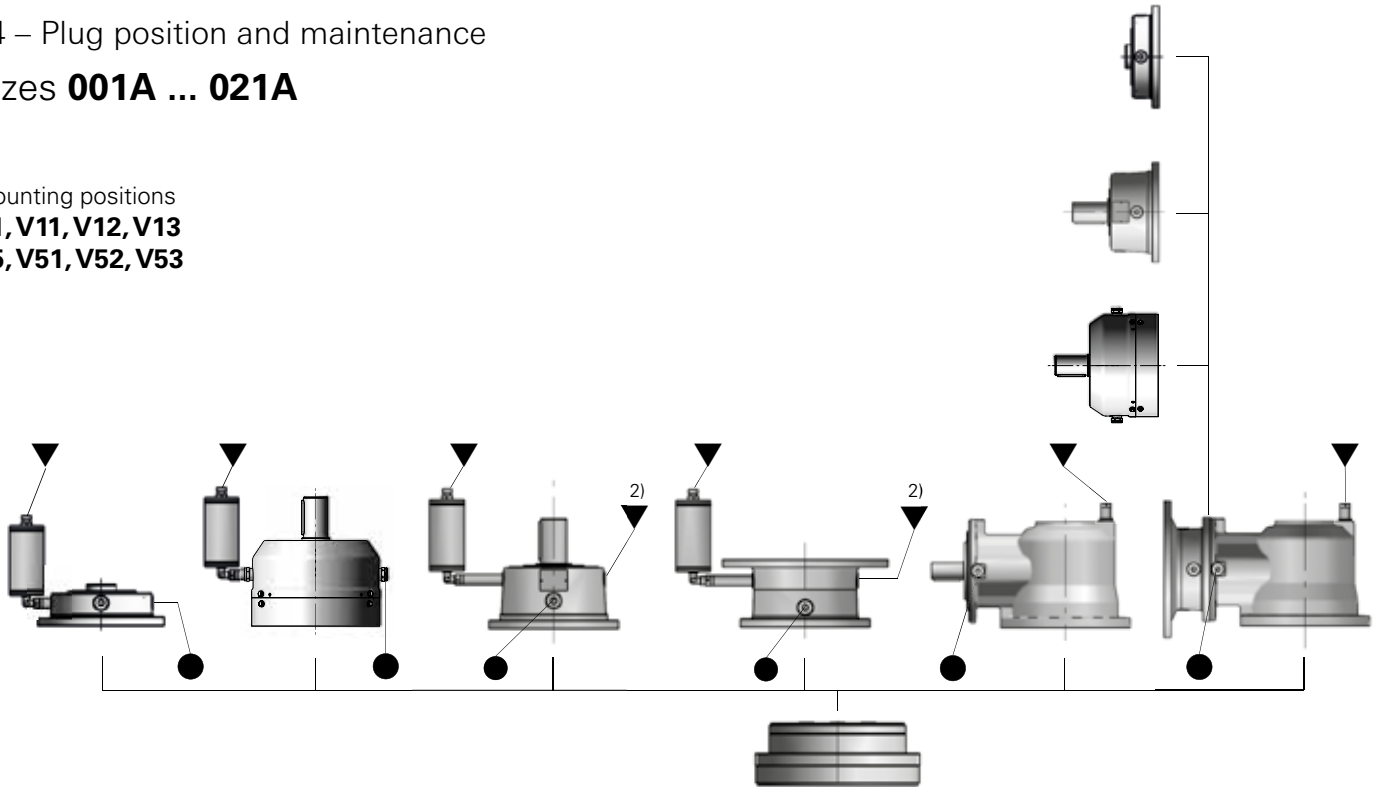


Mounting positions  
**B51**

- 1) For more details see cat. EP series.
- 2) Only for 2EB train of gears.
- 3) Only for size 022A.
- 4) When expansion tank is not necessary.

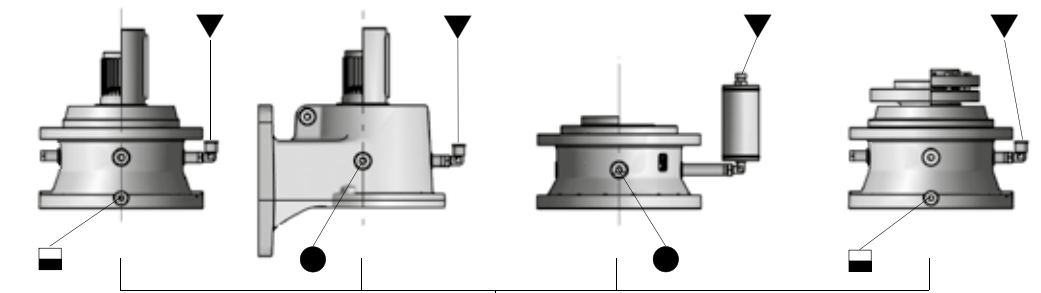
Sizes **001A ... 021A**

Mounting positions  
**V1, V11, V12, V13**  
**V5, V51, V52, V53**

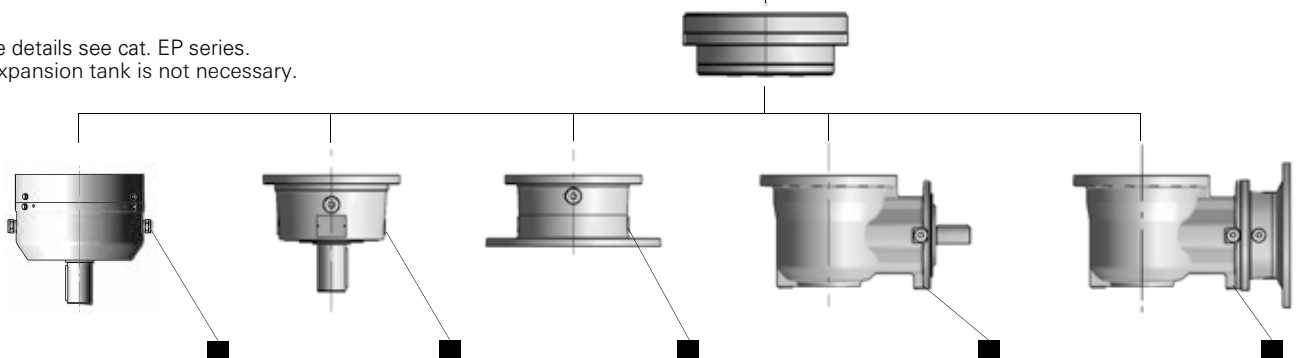


Mounting positions  
**V3, V31, V32, V33**  
**V6, V61, V62, V63**

- ▼ Filler plug with breather
- Transparent level plug
- ▭ Spillway plug
- Drain plug
- Expansion tank<sup>1)</sup>
- Elbow



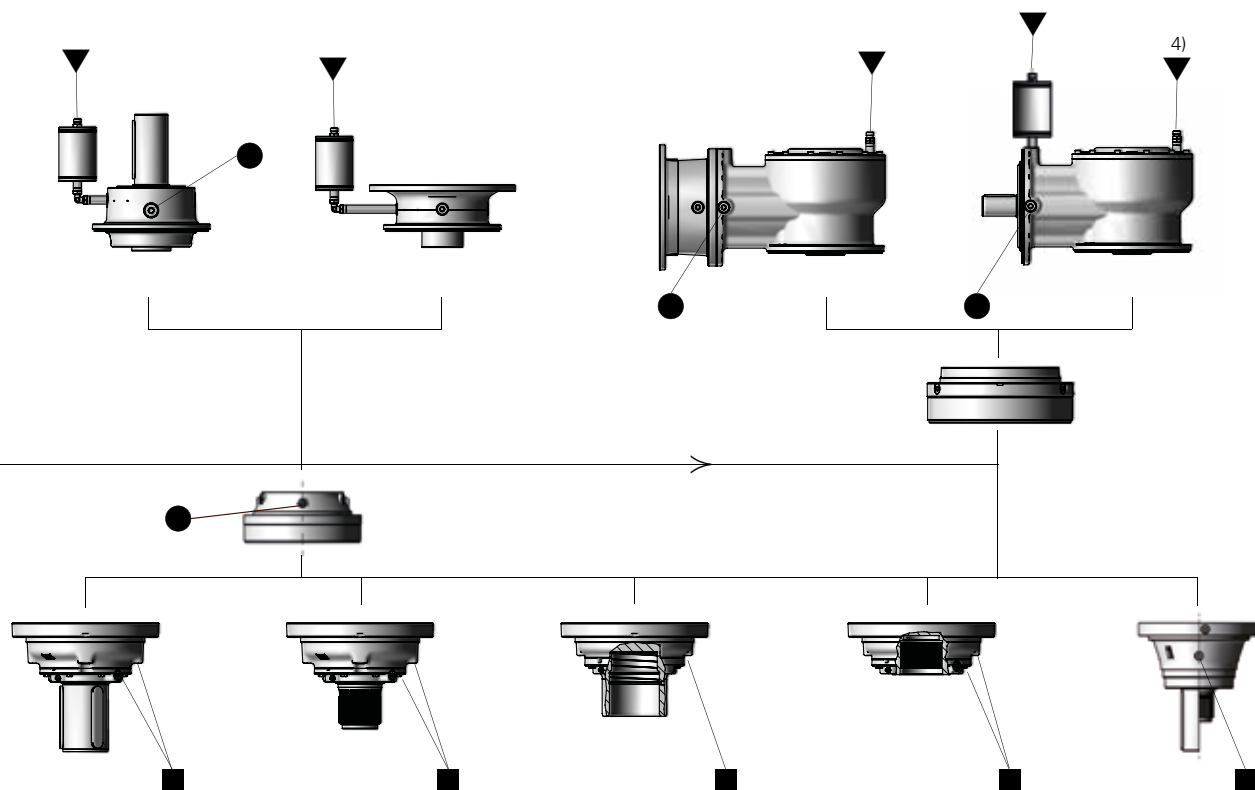
1) For more details see cat. EP series.  
 2) When expansion tank is not necessary.



Sizes **022A ... 710A**

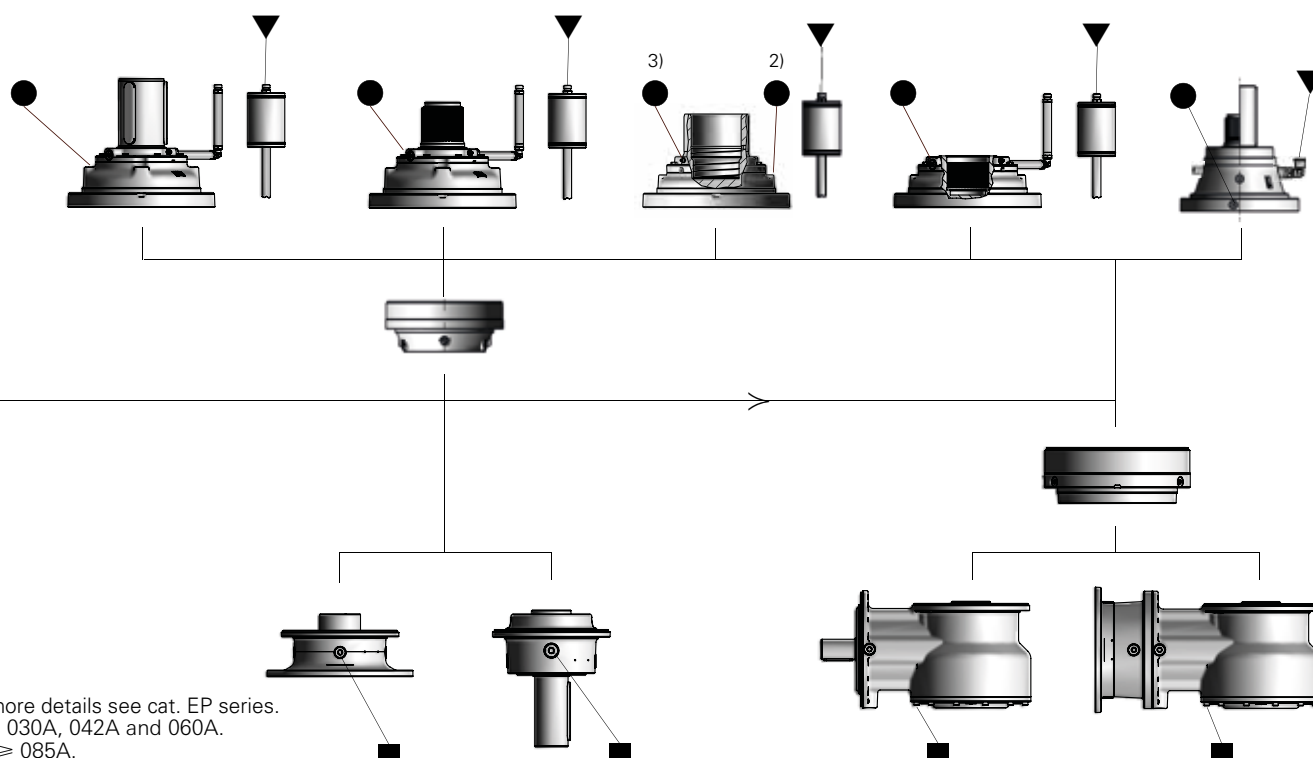
Mounting positions

**V1, V11, V12, V13**



Mounting positions

**V3, V31, V32, V33**



- 1) For more details see cat. EP series.
- 2) Sizes 030A, 042A and 060A.
- 3) Size  $\geq$  085A.
- 4) When expansion tank is not necessary.

## 15 – Troubles: causes and corrective actions

| Trouble   | Possible causes  | Corrective actions  |
|---|--|---|
| Excessive temperature (in continuous duty or of bearings) | Inadequate lubrication:<br>– excessive of insufficient oil quantity<br>– exhaust lubricant<br>– too tightened taper roller bearings<br>– excessive ambient temperature | Check:<br>– oil level (gear reducer standstill)<br>– lubricant type<br>Consult Rossi<br>Increase the cooling or correct the ambient temperature |
|   | Obstructed suction openings of fan cover   | Clean the fan cover   |
|   | Bearing failure, defect or bad lubrication   | Consult Rossi   |
|   | Inefficient or out of service oil cooling system: obstructed filter, insufficient oil (exchanger) or water (coil) flow rate, pump out of service, etc.                 | Check the pump, the pipes, the oil filter and safety devices efficiency (manostats, thermostats, etc.)  |
| Anomalous noise   | One or more teeth with<br>– dents or spillings<br>– excessive flanks roughness   | Consult Rossi   |
|   | Bearings failure, defect or bad lubrication  |   |
|   | Taper roller bearings with excessive clearance   |   |
|   | Vibrations   | Check the fastening   |
| Lubricant leaking from seal rings                         | Seal ring with worm, bakelized, damaged or false mounted seal lip  | Replace the seal ring   |
|   | Damaged rotating seating (scoring, rust, dent, etc.)   | Restore the seating   |
|   | Mounting position differs from the one stated on the name plate  | Correctly position the gear reducer   |

### NOTE

When consulting Rossi state:

- all data on gear reducer or gearmotor name plate;
- failure nature and duration;
- when and under what conditions the failure happened;
- during the warranty period, in order not to loose its validity, do not disassemble nor open the gear reducer without the approval of Rossi.

## 16 – PB series - Parking brakes

### Features

The parking brakes of PB series are spring applied and hydraulic released multi-disc brakes, to be used in combination with planetary gear reducers of EP series.

**They are not service brakes and they cannot be used in dynamic conditions.**

They are used to hold the load from application or to stop the machine in case of emergency.

The values of static braking torque  $M_{Bstat}$  given in the following table should be considered as nominal values and are valid for a brand new brake with correct lubrication. Values of  $M_{Bstat}$  are given with a tolerance of  $\pm 10\%$ .

After some braking cycles, values of static braking torque could reduce by 5% and 10%, due to the adjustment of discs.

**Max back pressure allowed 0,5 bar.**

### Speed limits

The presence of a SAHR brake does not limit the values of  $n_{1max}$  and  $n_{1peak}$  of the gear reducer stated in EP catalog.

**ATTENTION:** a continuous or frequent duty at high speed may generate an overheating of the group (previous paragraph).

### Operating conditions

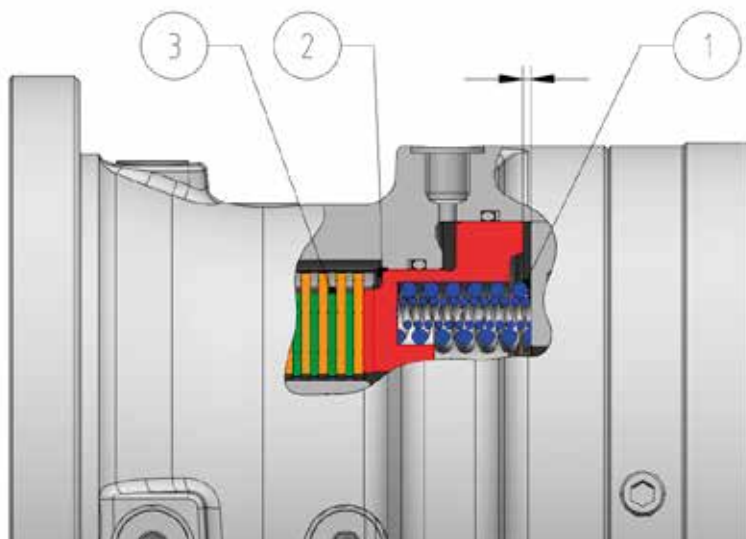
Brakes are designed for industrial applications, at ambient temperature  $-20\text{ °C} \div + 50\text{ °C}$ , maximum altitude 1000 m. For operation at temperatures from  $-20\text{ °C}$  to  $0\text{ °C}$  limit  $p_{max}$  to 200 bar.



### Functioning of PB parking brakes

#### Brake closed

When no pressure is applied to the brake (0 bar) springs (1) apply a force to the piston (2) which lock the discs (3) and produce a nominal braking torque equivalent to  $M_{Bstat}$ .

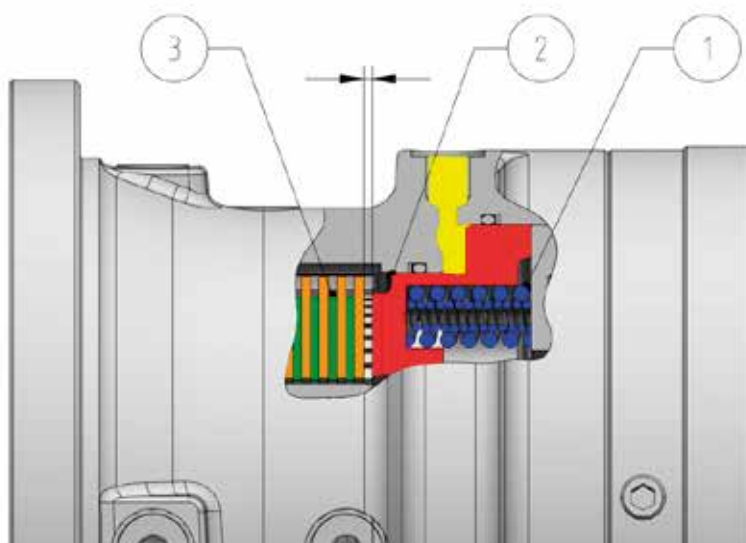


#### Brake opened

Above the pressure of 0 bar, the piston begins to compress the springs and the brake progressively reduces the braking torque.

When the release pressure exceeds the value of  $p_{min}$  the brake begins to open; once reached the value  $p$  the brake is fully opened, the piston ends its displacement and the discs can rotate freely.

To ensure a long life of the brake, it is suggested to use a release pressure 50% above the value of  $p$  and in any case not higher than  $p_{max}$ .



**Technical data of PB parking brakes**

| PB10-...                     |             |                      | 0075   | 0150 | 0225 | 0340 | 0420 | 0525 | 0650 | 0815 |  |
|------------------------------|-------------|----------------------|--|------|------|------|------|------|------|------|--|
| Static braking torque        | $M_{Bstat}$ | [N m]                | 72   | 156  | 224  | 345  | 421  | 531  | 660  | 818  |  |
| Min release pressure         | $p_{min}$   | [bar]                | 4,4  | 9,5  | 10,2 | 15,7 | 15,4 | 19,4 | 20,1 | 24,9 |  |
| Release pressure             | $p$         | [bar]                | 6,9  | 14,9 | 16,1 | 24,7 | 24,2 | 30,4 | 31,6 | 39,1 |  |
| Max. release pressure        | $p_{max}$   | [bar]                | 300  |      |      |      |      |      |      |      |  |
| Maximum speed                | $n_{1max}$  | [min <sup>-1</sup> ] | According to gear reducer $n_{1max}$ and $n_{1peak}$ |      |      |      |      |      |      |      |  |
| Oil volume for brake release | $V$         | [l]                  | 0,10   |      |      |      |      |      |      |      |  |

| PB30-...                     |             |                      | 0250   | 0400 | 0500 | 0630 | 0800 | 1000 | 1250 | 1500 | 1700 |
|------------------------------|-------------|----------------------|--|------|------|------|------|------|------|------|------|
| Static braking torque        | $M_{Bstat}$ | [N m]                | 265  | 407  | 509  | 637  | 809  | 1010 | 1281 | 1529 | 1741 |
| Min release pressure         | $p_{min}$   | [bar]                | 7,6  | 11,8 | 11,8 | 14,7 | 15,6 | 19,4 | 24,7 | 25,2 | 28,7 |
| Release pressure             | $p$         | [bar]                | 12,0   | 18,5 | 18,5 | 23,1 | 24,5 | 30,5 | 38,7 | 39,6 | 45,1 |
| Max. release pressure        | $p_{max}$   | [bar]                | 300  |      |      |      |      |      |      |      |      |
| Maximum speed                | $n_{1max}$  | [min <sup>-1</sup> ] | According to gear reducer $n_{1max}$ and $n_{1peak}$ |      |      |      |      |      |      |      |      |
| Oil volume for brake release | $V$         | [l]                  | 0,12   |      |      |      |      |      |      |      |      |

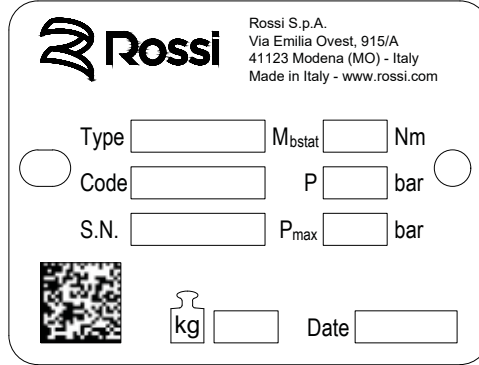
| PB90-...                     |             |                      | 0850   | 1250 | 1500 | 1800 | 2100 | 2600 | 3000 | 3550 | 4250 |
|------------------------------|-------------|----------------------|--|------|------|------|------|------|------|------|------|
| Static braking torque        | $M_{Bstat}$ | [N m]                | 869  | 1304 | 1552 | 1811 | 2173 | 2680 | 3063 | 3560 | 4305 |
| Min release pressure         | $p_{min}$   | [bar]                | 10,2   | 15,3 | 18,2 | 18,2 | 21,9 | 27,0 | 27,0 | 31,4 | 37,9 |
| Release pressure             | $p$         | [bar]                | 15,3   | 23,0 | 27,4 | 27,4 | 32,8 | 40,5 | 40,5 | 47,1 | 56,9 |
| Max. release pressure        | $p_{max}$   | [bar]                | 300  |      |      |      |      |      |      |      |      |
| Maximum speed                | $n_{1max}$  | [min <sup>-1</sup> ] | According to gear reducer $n_{1max}$ and $n_{1peak}$ |      |      |      |      |      |      |      |      |
| Oil volume for brake release | $V$         | [l]                  | 0,25   |      |      |      |      |      |      |      |      |

Different braking torques on request.  
**Max back pressure allowed 0,5 bar.**

## How supplied

### Nameplate of PB parking brakes

Every brake is provided with a name plate in anodized aluminium containing main information necessary for a correct identification of the product; the name plate must not be removed and must be kept integral and readable. All name plate data must be specified on eventual spare part orders.




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41123 Modena (MO) - Italy  
Made in Italy - www.rossi.com

Type  M<sub>bstat</sub>  Nm

Code  P  bar

S.N.  P<sub>max</sub>  bar

  kg  Date

### Lubrication of PB parking brakes

PB series brakes **require lubrication** and are supplied **without oil**, as specified by the relevant adhesive label. Before putting the brakes into service fill them with mineral oil ISO VG 32, unless otherwise prescribed by specific documentation. Hydraulic oils are generally suitable. The separate lubrication prevents premature lubricant contamination in the gear reducer, increasing gears and bearings life.

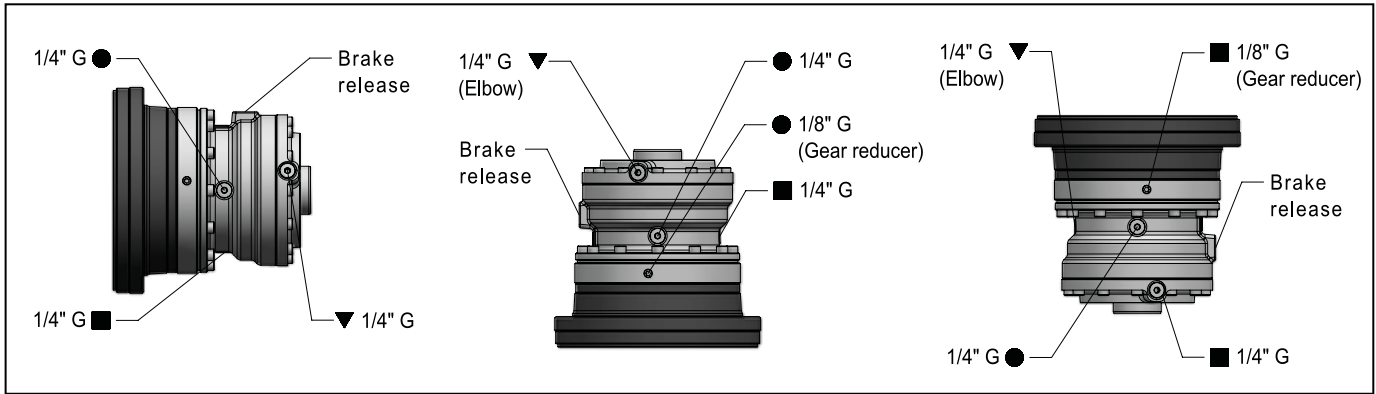


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www.rossi-group.com Made in Italy

Freno fornito **SENZA OLIO** di lubrificazione.  
Immettere olio minerale con grado di viscosità:  
Brake supplied **WITHOUT OIL** for lubrication.  
Fill with mineral oil having viscosity grade:  
**ISO VG 32**

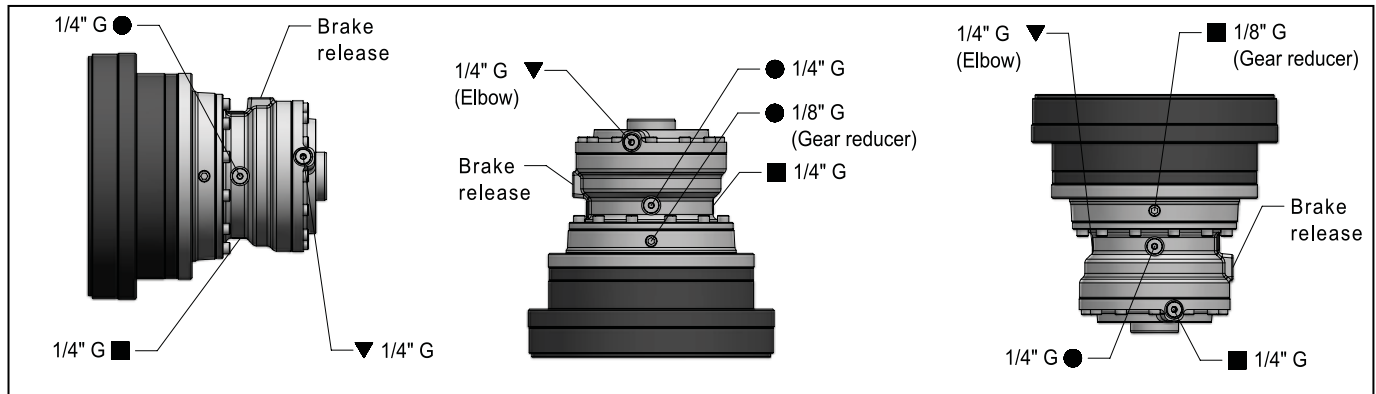
Per gli intervalli di lubrificazione ed altre informazioni  
attenersi alle Istruzioni d'uso.  
For oil change intervals and further informations  
refer to the Operating instructions.

**PB10 (001/002/C125/C160)**



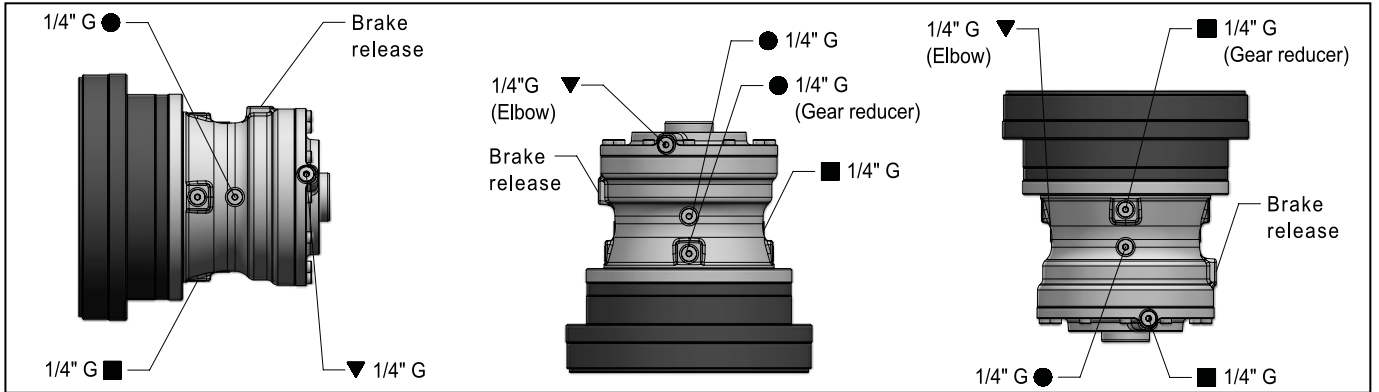
|            |             |             |             |             |             |             | Oil quantities |      |      |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|------|------|
| 1EL        | 2EL         | 3EL         | 4EL         | 2EB         | 3EB         | 4EB         | B5             | V1   | V3   |
| 001A, 002A | 001A...006A | 001A...022A | 001A...061A | 001A...006A | 001A...022A | 001A...061A | 0,09           | 0,06 | 0,16 |

**PB10 (003/004/006/C200)**



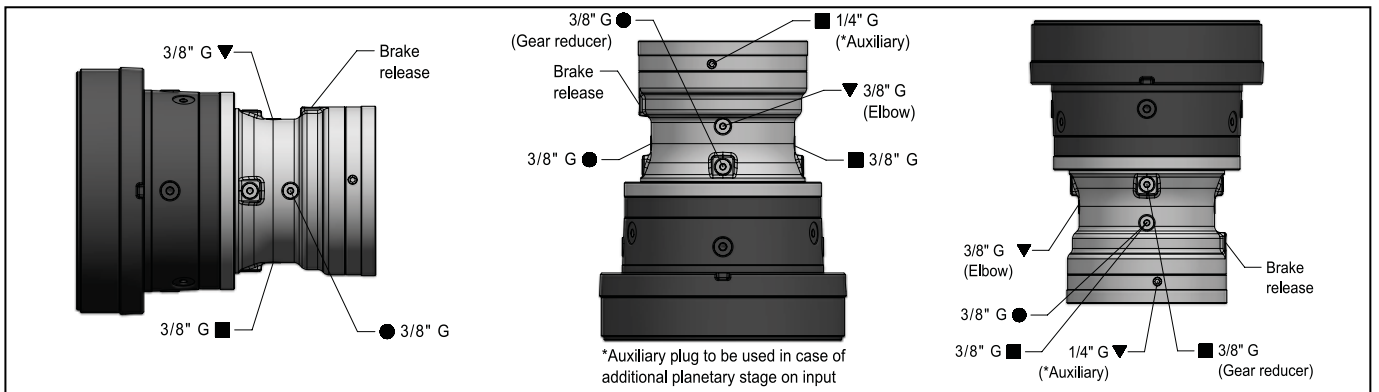
|             |             |             |             |                   |             |             | Oil quantities |      |      |
|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|----------------|------|------|
| 1EL         | 2EL         | 3EL         | 4EL         | 2EB               | 3EB         | 4EB         | B5             | V1   | V3   |
| 003A...006A | 009A...022A | 030A...061A | 085A...180A | 009A...015A, 022A | 030A...043A | 085A...125A | 0,09           | 0,06 | 0,16 |

**PB30 (003/004/006/C200)**



|             |             |             |             |                   |             |             | Oil quantities |      |      |
|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|----------------|------|------|
| 1EL         | 2EL         | 3EL         | 4EL         | 2EB               | 3EB         | 4EB         | B5             | V1   | V3   |
| 003A...006A | 009A...022A | 030A...061A | 085A...180A | 009A...015A, 022A | 030A...043A | 085A...125A | 0,36           | 0,18 | 0,67 |

**PB90 (009/012/015/C250)**



|             |             |             |            |                  |             |            | Oil quantities |      |      |
|-------------|-------------|-------------|------------|------------------|-------------|------------|----------------|------|------|
| 1EL         | 2EL         | 3EL         | 4EL        | 2EB              | 3EB         | 4EB        | B5             | V1   | V3   |
| 009A...015A | 030A...043A | 085A...125A | 250A, 355A | 018A, 021A, 030A | 060A...085A | 180A, 250A | 0,48           | 0,24 | 0,90 |

**Oli quantity [l]**

For mounting position B5 the exact oil quantity the parking brake is to be filled with is definitely given by the level.

For mounting positions V1, V3 the oil quantities stated in the tables must be followed.

### Commissioning

An inadequate commissioning can damage the gear reducer, the brake and compromise the correct operation of the application.

Do not disassemble and do not modify any brake component in order not to compromise the correct operation of gear reducer / brake.

Before commissioning verify that:

- gear reducer has been correctly installed and fixed to the machine
- gear reducer and brake are correctly lubricated. (oil level and grease quantity, if foreseen).
- lubricants are suitable.
- there is no lubricant leakage from plugs / seals
- oil level, drain plugs and their relevant vent valves are easily accessible
- during operation, max temperature of brake and/or gear reducer housing never exceeds admitted temperature (95°C for products on catalog)
- brake starts when machine shaft is stopped (static conditions)
- supply tube (opening and closing) is correctly connected to brake and no oil leakage is present.

For the supply of brake use mineral basis hydraulic oil; synthetic oils could damage and compromise the regular operation of brake.

Connect the hydraulic circuit to drive hole present on brake, after removing the protection plug.

**Before using it, purge the air. Unscrew slightly the connector on drive hole, maintaining the pressure up to complete air leakage, then screw the connector again.**

- supply pressure is sufficient to open completely the brake (higher than “opening pressure [p]” differing due to braking torque and brake type)
- during brake closure phase, the supply pressure is equal to 0 bar. **Attention, eventual residual pressure in the supply tube helps to reduce the static braking torque  $M_{Bstat}$ .**
- the drive and the possible drive valve are correctly installed and connected to brake

### **Maintenance**

All maintenance activities must be executed in safe conditions.

**At machine rest**, verify at regular intervals (more or less frequently according to environment and use):

a) all external surfaces are clean and air passages to gear reducer and brake are free, in order that cooling remains fully effective. An accumulation of dust impedes efficient heat disposal

– oil level and deterioration degree

c) correct fastening screws tightening.

**During operation**, check periodically:

– vibration and noise level

– possible oil leakages

– possible pressure losses from brake supply area (possible losses from internal brake seals).

**Attention.** After a running period, gear reducer is subject to a light internal overpressure which may cause potentially burning liquid discharge. Therefore, before loosening whichever plug (filler plug included) wait until gear reducer has become cold. In all cases, always proceed with great care.

### **Oil change**

Oil change of brake must be done according to the same gear reducer intervals.

Except specific cases, brake lubrication is separated from the gear reducer one, therefore it is necessary to act on the proper plugs present on brake.

Use only oil of the same type and viscosity and do not mix different oils.

It is advised to change lubricating oil with warm brake, to avoid any deposits and to facilitate the output.

For the operations of oil drain and filling, use the specific plugs properly.

### **Seal change**

Change the seals when disassembling or periodically checking.

**ATTENTION:** in case of a high increase of levels when checking lubricating oils, it could be caused by an oil leakage due to brake seal wear.

In this case it is necessary to stop gear reducer / brake and contact Rossi after sale service for repair.

**Troubles: causes and corrective actions**

If deviations from normal operation occur, refer to the following table. If deviations persist, consult Rossi.

| <b>Trouble</b>                                    | <b>Possible cause</b>  | <b>Corrective action</b>  |
|---|--|---|
| Oil leakage from seals                            | Seal stiffening due to long lasting storage<br>Seal damage or wear | Clean the area and check the leakage after some hours of running<br>Consult Rossi |
| Multiple disc brake does not block                | Residual pressure in the circuit<br>Worn discs                     | Verify the hydraulic circuit<br>Consult Rossi                                     |
| With running motor, gear reducer does not operate | Possible brake blocked   | Verify hydraulic braking circuit  |
| Excessive overheating                             | No lubricating oil<br>Disc brake does not open correctly           | Add lubricating oil<br>Verify pressure when brake opening                         |
| Multiple disc brake does not release              | No pressure at brake<br>Defect brake seals                         | Verify brake connection<br>Consult Rossi  |
| Excessive vibrations                              | Internal trouble   | Consult Rossi   |
| Excessive noise level                             | Internal trouble   | Consult Rossi   |



## Index of revisions

### **List of modifications** - Edition UTD.175.01-2016\_EN

Pages 9 and 12: Addition of descriptions about screw types and tightening torques at outputs types M, S+WF, T+ WT.

Page 17: Addition of descriptions about seal cover in the inputs type "U".

### **List of modifications** - Edition UTD.175.04-2018.00\_EN

Page 5: updating of minimum running temperature from -10 °C to -20 °C

Page 13: new assembly specifications of "T" outputs

Pages 25 and 26: new cooling units UR O/A-EP and O/W-EP

from page 44 to 53: new PB brakes chapter

### **List of modifications** - Edition UTD.175.04-2019.00\_EN

Page 10 - new table of fastening screws for slewing drives

Page 12 - new paragraph for slewing outputs

Page 17 - new note about lubrication of splined shafts

Page 18 - new paragraph about meshing clearance adjustment

Page 24 - new note about re-greasing of output bearings for rotation

Page 32 - new paragraph concerning re-greasing procedure for slewing output bearings

Page 32 - new table of grease quantity for re-greasing of slewing outputs

Page 43 - new note about oil quantity for gear reducers with slewing outputs







**Rossi**  
Habasit Group

Solutions for  
an evolving  
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UTD.175.04-2019.00\_EN

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