



## 6 Lubrication


### 6.1 Greases and table keys

SEW-EURODRIVE supplies drives with the proper amount of oil specific to the gear unit and mounting position. If you later change the position, you will have to change the amount of oil within the gear unit. See fill quantities beginning on page 103.

#### Greases






The anti-friction bearings in gear units and motors are given a factory-fill with the greases listed below. SEW-EURODRIVE recommends regreasing bearings at the same time as changing the oil or replacing the bearings.

|                    | Type  | Ambient temperature | Manufacturer | Brand Name             |
|--------------------|---|---------------------|--------------|------------------------|
| Gear unit bearings | mineral   | -20 °C ... +60 °C   | Shell        | Gadus S2 V220 2        |
|                    | synthetic   | -40 °C ... +80 °C   | Shell        | Gadus S5 V100 2        |
|                    |  | -20 °C ... +40 °C   | Klüber       | Klübersynth UH1 14-151 |
|                    |  | -20 °C ... +40 °C   | Klüber       | Klüberbio M 72-82      |
| Motor bearings     | mineral   | -20 °C ... +80 °C   | ExxonMobil   | Polyrex EM             |
|                    | synthetic   | -40 °C ... +60 °C   | Kyodo Yushi  | Multemp SRL            |

|  |   |
|--|---|
|  | <b>INFORMATION</b>  |
|  | <p><b>The following grease quantities are required:</b></p> <ul style="list-style-type: none"> <li>• For fast-running bearings (gear unit input end): Fill the cavities between the rolling elements one-third full with grease.</li> <li>• For slow-running bearings (in gear units and at gear unit output end): Fill the cavities between the rolling elements two-thirds full with grease.</li> </ul> |

#### Table keys

















The lubricant table on the following page shows the permissible lubricants for SEW-EURODRIVE gear units. Observe the following key to the table.

- API GL-5 = American Petroleum Institute GL-5 type oil
- CLP (CC) = Mineral oil
- CLP PG = Synthetic: polyglycol
- CLP HC = Synthetic: hydrocarbon
- E = Ester oil (water pollution danger category WGK1)
- GP = Mineral grease for enclosed gears
- GP HC = Synthetic grease for enclosed gears
- SEW PG = Synthetic: polyglycol, special SEW formulation
-  = Synthetic lubricant or synthetic bearing grease
-  = Mineral lubricant or mineral bearing grease
- 1) Helical-worm gear units with PG oil: please contact SEW-EURODRIVE
- 2) Special lubricant for SPIROPLAN® gear units only
- 3) Gear unit service factor, SEW- $f_B \geq 1.2$  required
- 4) Observe the starting behavior at low temperatures
- 5) Low-viscosity grease
-  Lubricant for the food industry (food grade oil)
-  Biodegradable oil (lubricant for agriculture, forestry, fisheries, and water management)
-  Available at all SEW (USA) facilities


















## 6.2 Lubricant tables

The following tables show the assignment of lubricants to gear units:

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|   | Ambient Temperature |          |     |      | Note | DIN (ISO)<br>API   | ISO, SAE<br>NLGI       | Mobil®                         | Shell                    | bp                      | KLOBER<br>LUBRICATION        | TEXACO             |
|---|---------------------|----------|-----|------|------|--|------------------------|--------------------------------|--------------------------|-------------------------|------------------------------|--------------------|
|   | -50                 | 0°C      | +50 | +100 |      |  |                        |                                |                          |                         |                              |                    |
| R..<br>          | -15                 | Standard | +40 |      |      | CLP (CC)   | VG 220                 | Mobilgear 600<br>XP 220        | Shell Omala<br>S2 G 220  | BP Energol<br>GR-XP 220 | Klüberoil<br>GEM 1-220 N     | Meropa 220         |
|   | -20                 |          | +80 |      |      | CLP PG   | VG 220                 | Mobil<br>Glygoyle 220          | Shell Omala<br>S4 WE 220 | BP Enersyn<br>SG-XP 220 | Klübersynth<br>GH 6-220      | Synlube<br>CLP 220 |
| K..7 (HK..)<br>  | -20                 |          | +60 |      |      | CLP HC   | VG 220                 | Mobil<br>SHC 630               | Shell Omala<br>S4 GX 220 |                         | Klübersynth<br>GEM 4-220 N   | Pinnacle<br>EP 220 |
|   | -40                 |          | +40 |      |      |  | VG 150                 | Mobil<br>SHC 629               | Shell Omala<br>S4 GX 150 |                         | Klübersynth<br>GEM 4-150 N   | Pinnacle<br>EP 150 |
| F..<br>          | -20                 |          | +25 |      |      | CLP (CC)   | VG 150                 | Mobilgear 600<br>XP 150        | Shell Omala<br>S2 G 150  | BP Energol<br>GR-XP 150 | Klüberoil<br>GEM 1-150 N     | Meropa 150         |
|   | -4                  |          | +20 |      |      | CLP HC   | VG 68                  | Mobil<br>SHC 626               | Shell Morlina<br>S4 B 68 |                         |                              |                    |
|   | -40                 | 0        |     |      |      |  | VG 32                  | Mobil<br>SHC 624               | Shell Corena<br>S4 R 32  |                         | Klüber-Summit<br>HySyn FG-32 | Cetus<br>PAO 46    |
| K..9<br>         | -20                 | Standard | +60 |      |      | CLP PG   | VG 460                 |                                |                          |                         | Klübersynth<br>GH 6-460      |                    |
|   | -20                 |          | +60 |      |      | CLP PG    | VG 460                 |                                |                          |                         | Klübersynth<br>UH1 6-460     |                    |
| S.. (HS..)<br>  | 0                   | Standard | +40 |      |      | CLP (CC)   | VG 680                 | Mobilgear 600<br>XP 680        | Shell Omala<br>S2 G 680  | BP Energol<br>GR-XP 680 | Klüberoil<br>GEM 1-680 N     | Meropa 680         |
|   | -20                 |          | +80 |      | 1)   | CLP PG   | VG 680                 | Mobil Glygoyle<br>680          | Shell Omala<br>S4 WE 680 | BP Enersyn<br>SG-XP 680 | Klübersynth<br>GH 6-680      | Synlube<br>CLP 680 |
|   | -20                 |          | +60 |      |      | CLP HC   | VG 460                 | Mobil<br>SHC 634               | Shell Omala<br>S4 GX 460 |                         | Klübersynth<br>GEM 4-460 N   | Pinnacle<br>EP 460 |
|   | -40                 |          | +30 |      | 4)   |  | VG 150                 | Mobil<br>SHC 629               | Shell Omala<br>S4 GX 150 |                         | Klübersynth<br>GEM 4-150 N   | Pinnacle<br>EP 150 |
|   | -20                 | +10      |     |      |      | CLP (CC)   | VG 150                 | Mobilgear 600<br>XP 150        | Shell Omala<br>S2 G 150  | BP Energol<br>GR-XP 150 | Klüberoil<br>GEM 1-150 N     | Meropa 150         |
|   | -20                 |          | +40 |      | 1)   | CLP PG   | VG 220                 | Mobil<br>Glygoyle 220          | Shell Omala<br>S4 WE 220 | BP Enersyn<br>SG-XP 220 | Klübersynth<br>GH 6-220      | Synlube<br>CLP 220 |
|   | -40                 |          | +20 |      |      | CLP HC   | VG 68                  | Mobil<br>SHC 626               | Shell Morlina<br>S4 B 68 |                         |                              |                    |
|   | -40                 | 0        |     |      |      |  | VG 32                  | Mobil<br>SHC 624               | Shell Corena<br>S4 R 32  |                         | Klüber-Summit<br>HySyn FG-32 | Cetus<br>PAO 46    |
| R..,<br>K.., F..  | -20                 |          | +60 |      |      | CLP PG  | VG 460                 |                                |                          |                         | Klübersynth<br>UH1 6-460     |                    |
| R..,<br>K..,<br>F..,<br>S..   | -10                 | Standard | +40 |      |      | CLP HC   | VG 460                 |                                |                          |                         | Klüberöl<br>4UH1-460 N       |                    |
|   | -20                 |          | +30 |      |      |  | VG 220                 |                                |                          |                         | Klüberöl<br>4UH1-220 N       |                    |
|   | -40                 | 0        |     |      |      | E     | VG 68                  |                                |                          |                         | Klüberöl<br>4UH1-68 N        |                    |
|   | -20                 |          | +40 |      |      |  | VG 460                 |                                |                          |                         | Klüberbio<br>CA2-460         |                    |
| W.. (HW..)<br> | -20                 | Standard | +40 |      | 2)   | SEW PG   | VG 460                 |                                |                          |                         | Klüber SEW<br>HT-460-5       |                    |
|   | -40                 |          | +10 |      | 4)   | API GL5  | SAE 75W90<br>(~VG 100) | Mobil Synth Gear<br>Oil 75 W90 |                          |                         |                              |                    |
|   | -20                 |          | +60 |      | 3)   | CLP PG  | VG 460                 |                                |                          |                         | Klübersynth<br>UH1 6-460     |                    |
| PS F<br>       | -20                 | Standard | +80 |      |      | CLP PG   | VG 220                 |                                |                          |                         | Klübersynth<br>GH 6-220      |                    |
|   | -20                 |          | +60 |      | 3)   | CLP PG  | VG 460                 |                                |                          |                         | Klübersynth<br>UH1 6-460     |                    |
|   | -40                 | 0        |     |      |      | CLP HC   | VG 32                  | Mobil<br>SHC 624               | Shell Corena<br>S4 R 32  |                         |                              |                    |
| PS C<br>       | -10                 | Standard | +40 |      |      | CLP (CC)   | VG 220                 | Mobilgear 600<br>XP 220        | Shell Omala<br>S2 G 220  |                         |                              |                    |
|   | -20                 |          | +40 |      | 5)   | GP   | NLGI 00<br>VG 160      | Mobilux<br>EP 004              |                          |                         |                              |                    |
|   | -20                 |          | +40 |      | 5)   | GP HC   | NLGI 1<br>VG 150       |                                |                          |                         | Klübersynth<br>UH1 14-151    |                    |
|   | -40                 | 0        |     |      |      | CLP HC   | VG 32                  | Mobil<br>SHC 624               | Shell Corena<br>S4 R 32  |                         |                              |                    |
| BS F<br>       | -20                 | Standard | +60 |      |      | CLP PG   | VG 220                 |                                |                          |                         | Klübersynth<br>GH 6-220      |                    |
|   | -20                 |          | +60 |      | 3)   | CLP PG  | VG 460                 |                                |                          |                         | Klübersynth<br>UH1 6-460     |                    |

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|  | Ambient Temperature |          |     |      | Note | DIN (ISO)<br>API   | ISO, SAE<br>NLGI    | Castrol         |                          | FUCHS                  | TOTAL         |
|--|---------------------|----------|-----|------|------|--|---------------------|-----------------|--------------------------|------------------------|---------------|
|  | -50                 | 0°C      | +50 | +100 |      |  |                     | Tribol          | Optimol                  |                        |               |
|  R..          | -15                 | Standard | +40 |      |      | CLP (CC)   | VG 220              | Tribol 1100/220 | Optigear BM 220          | Renolin CLP 220        | Carter EP 220 |
|  | -20                 |          | +80 |      |      | CLP PG   | VG 220              | Tribol 800/220  | Optiflex A 220           | Renolin PG 220         | Carter SY 220 |
|  K..7 (HK..)  | -20                 |          | +60 |      |      | CLP HC   | VG 220              | Tribol 1510/220 | Optigear Synthetic X 220 | Renolin Unisyn CLP 220 | Carter SH 220 |
|  | -40                 |          | +40 |      |      |  | VG 150              |                 | Optigear Synthetic X 150 | Renolin Unisyn CLP 150 | Carter SH 150 |
|  F..          | -20                 |          | +25 |      |      | CLP (CC)   | VG 150              | Tribol 1100/150 | Optigear BM 150          | Renolin CLP 150        | Carter EP 150 |
|  | -40                 |          | +20 |      |      | CLP HC   | VG 68               |                 |                          | Renolin Unisyn CLP 68  |               |
|  | -40                 | 0        |     |      |      |  | VG 32               |                 | Optileb HY 32            | Renolin Unisyn OL32    | Dacnis SH 32  |
|  K..9         | -20                 | Standard | +60 |      |      | CLP PG   | VG 460              |                 |                          |                        |               |
|  | -20                 |          | +60 |      |      | CLP PG    | VG 460              |                 |                          |                        |               |
|  | 0                   | Standard | +40 |      |      | CLP (CC)   | VG 680              | Tribol 1100/680 | Optigear BM 680          | Renolin SEW 680        | Carter EP 680 |
|  | -20                 |          | +80 | 1)   |      | CLP PG   | VG 680              | Tribol 800/680  | Optiflex A 680           | Renolin PG 680         |               |
|  S.. (HS..)   | -20                 |          | +60 |      |      | CLP HC   | VG 460              |                 | Optigear Synthetic X 460 | Renolin Unisyn CLP 460 | Carter SH 460 |
|  | -40                 |          | +30 |      | 4)   |  | VG 150              |                 | Optigear Synthetic X 150 | Renolin Unisyn CLP 150 | Carter SH 150 |
|  | -20                 |          | +10 |      |      | CLP (CC)   | VG 150              | Tribol 1100/150 | Optigear BM 150          | Renolin CLP 150        | Carter EP 150 |
|  | -20                 |          | +40 | 1)   |      | CLP PG   | VG 220              | Tribol 800/220  | Optiflex A 220           | Renolin PG 220         | Carter SY 220 |
|  | -40                 |          | +20 |      |      | CLP HC   | VG 68               |                 |                          | Renolin Unisyn CLP 68  |               |
|  | -40                 | 0        |     |      |      |  | VG 32               |                 | Alphasyn T 32            | Renolin Unisyn OL32    | Dacnis SH 32  |
| R..<br>K.., F..  | -20                 |          | +60 |      |      | CLP PG  | VG 460              |                 |                          |                        |               |
| R..<br>K..<br>F..<br>S..   | -10                 | Standard | +40 |      |      | CLP HC   | VG 460              |                 | Optileb GT 460           | Cassida Fluid GL 460   |               |
|  | -20                 |          | +30 |      |      |         | VG 220              |                 | Optileb GT 220           | Cassida Fluid GL 220   |               |
|  | -40                 | 0        |     |      |      |  | VG 68               |                 | Optileb HY 68            | Cassida Fluid HF 68    |               |
|  | -20                 |          | +40 |      |      | E       | VG 460              |                 |                          | Plantogear 460 S       |               |
|  W.. (HW..) | -20                 | Standard | +40 | 2)   |      | SEW PG   | VG 460              |                 |                          |                        |               |
|  | -40                 |          | +10 |      | 4)   | API GL5  | SAE 75W90 (-VG 100) |                 |                          |                        |               |
|  | -20                 |          | +60 |      | 3)   | CLP PG  | VG 460              |                 |                          |                        |               |
|  PS F       | -20                 | Standard | +80 |      |      | CLP PG   | VG 220              |                 |                          |                        |               |
|  | -20                 |          | +60 |      | 3)   | CLP PG  | VG 460              |                 |                          |                        |               |
|  | -40                 | 0        |     |      |      | CLP HC   | VG 32               |                 |                          |                        |               |
|  PS C       | -10                 | Standard | +40 |      |      | CLP (CC)   | VG 220              |                 |                          |                        |               |
|  | -20                 |          | +40 |      | 5)   | GP   | NLGI 00<br>VG 160   |                 |                          |                        |               |
|  | -20                 |          | +40 |      | 5)   | GP HC   | NLGI 1<br>VG 150    |                 |                          |                        |               |
|  | -40                 | 0        |     |      |      | CLP HC   | VG 32               |                 |                          |                        |               |
|  BS F       | -20                 | Standard | +60 |      |      | CLP PG   | VG 220              |                 |                          |                        |               |
|  | -20                 |          | +60 |      | 3)   | CLP PG  | VG 460              |                 |                          |                        |               |

## 6.3 Fill quantities

The specified fill quantities are **recommended values**. The precise values vary depending on the number of stages and gear ratio. When filling, it is essential to check the **oil level plug since it indicates the precise oil volume**.

The following tables show guide values for lubricant fill quantities in relation to the mounting position M1 - M6.

*Helical (R) gear units*

RX..

| Gear unit | Fill quantity in liters |      |      |      |      |      |
|-----------|-------------------------|------|------|------|------|------|
|           | M1                      | M2   | M3   | M4   | M5   | M6   |
| RX57      | 0.60                    | 0.80 | 1.30 | 1.30 | 0.90 | 0.90 |
| RX67      | 0.80                    | 0.80 | 1.70 | 1.90 | 1.10 | 1.10 |
| RX77      | 1.10                    | 1.50 | 2.60 | 2.70 | 1.60 | 1.60 |
| RX87      | 1.70                    | 2.50 | 4.80 | 4.80 | 2.90 | 2.90 |
| RX97      | 2.10                    | 3.40 | 7.4  | 7.0  | 4.80 | 4.80 |
| RX107     | 3.90                    | 5.6  | 11.6 | 11.9 | 7.7  | 7.7  |

RXF..

| Gear unit | Fill quantity in liters |      |      |      |      |      |
|-----------|-------------------------|------|------|------|------|------|
|           | M1                      | M2   | M3   | M4   | M5   | M6   |
| RXF57     | 0.50                    | 0.80 | 1.10 | 1.10 | 0.70 | 0.70 |
| RXF67     | 0.70                    | 0.80 | 1.50 | 1.40 | 1.00 | 1.00 |
| RXF77     | 0.90                    | 1.30 | 2.40 | 2.00 | 1.60 | 1.60 |
| RXF87     | 1.60                    | 1.95 | 4.90 | 3.95 | 2.90 | 2.90 |
| RXF97     | 2.10                    | 3.70 | 7.1  | 6.3  | 4.80 | 4.80 |
| RXF107    | 3.10                    | 5.7  | 11.2 | 9.3  | 7.2  | 7.2  |

R..., R..F

| Gear unit | Fill quantity in liters |                  |      |      |      |      |
|-----------|-------------------------|------------------|------|------|------|------|
|           | M1 <sup>1)</sup>        | M2 <sup>1)</sup> | M3   | M4   | M5   | M6   |
| R07       | 0.12                    | 0.20             | 0.20 | 0.20 | 0.20 | 0.20 |
| R17       | 0.25                    | 0.55             | 0.35 | 0.55 | 0.35 | 0.40 |
| R27       | 0.25/0.40               | 0.70             | 0.50 | 0.70 | 0.50 | 0.50 |
| R37       | 0.30/0.95               | 0.85             | 0.95 | 1.05 | 0.75 | 0.95 |
| R47       | 0.70/1.50               | 1.60             | 1.50 | 1.65 | 1.50 | 1.50 |
| R57       | 0.80/1.70               | 1.90             | 1.70 | 2.10 | 1.70 | 1.70 |
| R67       | 1.10/2.30               | 2.40/3.20        | 2.80 | 2.90 | 1.80 | 2.00 |
| R77       | 1.20/3.00               | 3.30/4.20        | 3.60 | 3.80 | 2.50 | 3.40 |
| R87       | 2.30/6.0                | 6.4/8.1          | 7.2  | 7.2  | 6.3  | 6.5  |
| R97       | 4.60/9.8                | 11.7/14.0        | 11.7 | 13.4 | 11.3 | 11.7 |
| R107      | 6.0/13.7                | 16.3             | 16.9 | 19.2 | 13.2 | 15.9 |
| R137      | 10.0/25.0               | 28.0             | 29.5 | 31.5 | 25.0 | 25.0 |
| R147      | 15.4/40.0               | 46.5             | 48.0 | 52.0 | 39.5 | 41.0 |
| R167      | 27.0/70.0               | 82.0             | 78.0 | 88.0 | 66.0 | 69.0 |

1) The larger gear unit requires a larger volume when there is a compound gear unit (ex: R67R37).

RF..

| Gear unit | Fill quantity in liters |                  |      |      |      |      |
|-----------|-------------------------|------------------|------|------|------|------|
|           | M1 <sup>1)</sup>        | M2 <sup>1)</sup> | M3   | M4   | M5   | M6   |
| RF07      | 0.12                    | 0.20             | 0.20 | 0.20 | 0.20 | 0.20 |
| RF17      | 0.25                    | 0.55             | 0.35 | 0.55 | 0.35 | 0.40 |
| RF27      | 0.25/0.40               | 0.70             | 0.50 | 0.70 | 0.50 | 0.50 |
| RF37      | 0.35/0.95               | 0.90             | 0.95 | 1.05 | 0.75 | 0.95 |
| RF47      | 0.65/1.50               | 1.60             | 1.50 | 1.65 | 1.50 | 1.50 |
| RF57      | 0.80/1.70               | 1.80             | 1.70 | 2.00 | 1.70 | 1.70 |
| RF67      | 1.20/2.50               | 2.50/3.20        | 2.70 | 2.80 | 1.90 | 2.10 |
| RF77      | 1.20/2.60               | 3.10/4.10        | 3.30 | 3.60 | 2.40 | 3.00 |
| RF87      | 2.40/6.0                | 6.4/8.2          | 7.1  | 7.2  | 6.3  | 6.4  |
| RF97      | 5.1/10.2                | 11.9/14.0        | 11.2 | 14.0 | 11.2 | 11.8 |
| RF107     | 6.3/14.9                | 15.9             | 17.0 | 19.2 | 13.1 | 15.9 |
| RF137     | 9.5/25.0                | 27.0             | 29.0 | 32.5 | 25.0 | 25.0 |
| RF147     | 16.4/42.0               | 47.0             | 48.0 | 52.0 | 42.0 | 42.0 |
| RF167     | 26.0/70.0               | 82.0             | 78.0 | 88.0 | 65.0 | 71.0 |

1) The larger gear unit requires a larger volume when there is a compound gear unit (ex: RF67R37).

Parallel shaft  
helical (F) gear  
units

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

| Gear unit | Fill quantity in liters |       |      |       |      |      |
|-----------|-------------------------|-------|------|-------|------|------|
|           | M1                      | M2    | M3   | M4    | M5   | M6   |
| F..27     | 0.60                    | 0.80  | 0.65 | 0.70  | 0.60 | 0.60 |
| F..37     | 0.95                    | 1.25  | 0.70 | 1.25  | 1.00 | 1.10 |
| F..47     | 1.50                    | 1.80  | 1.10 | 1.90  | 1.50 | 1.70 |
| F..57     | 2.60                    | 3.50  | 2.10 | 3.50  | 2.80 | 2.90 |
| F..67     | 2.70                    | 3.80  | 1.90 | 3.80  | 2.90 | 3.20 |
| F..77     | 5.9                     | 7.3   | 4.30 | 8.0   | 6.0  | 6.3  |
| F..87     | 10.8                    | 13.0  | 7.7  | 13.8  | 10.8 | 11.0 |
| F..97     | 18.5                    | 22.5  | 12.6 | 25.2  | 18.5 | 20.0 |
| F..107    | 24.5                    | 32.0  | 19.5 | 37.5  | 27.0 | 27.0 |
| F..127    | 40.5                    | 54.5  | 34.0 | 61.0  | 46.3 | 47.0 |
| F..157    | 69.0                    | 104.0 | 63.0 | 105.0 | 86.0 | 78.0 |

FF..

| Gear unit | Fill quantity in liters |       |      |       |      |      |
|-----------|-------------------------|-------|------|-------|------|------|
|           | M1                      | M2    | M3   | M4    | M5   | M6   |
| FF27      | 0.60                    | 0.80  | 0.65 | 0.70  | 0.60 | 0.60 |
| FF37      | 1.00                    | 1.25  | 0.70 | 1.30  | 1.00 | 1.10 |
| FF47      | 1.60                    | 1.85  | 1.10 | 1.90  | 1.50 | 1.70 |
| FF57      | 2.80                    | 3.50  | 2.10 | 3.70  | 2.90 | 3.00 |
| FF67      | 2.70                    | 3.80  | 1.90 | 3.80  | 2.90 | 3.20 |
| FF77      | 5.9                     | 7.3   | 4.30 | 8.1   | 6.0  | 6.3  |
| FF87      | 10.8                    | 13.2  | 7.8  | 14.1  | 11.0 | 11.2 |
| FF97      | 19.0                    | 22.5  | 12.6 | 25.6  | 18.9 | 20.5 |
| FF107     | 25.5                    | 32.0  | 19.5 | 38.5  | 27.5 | 28.0 |
| FF127     | 41.5                    | 55.5  | 34.0 | 63.0  | 46.3 | 49.0 |
| FF157     | 72.0                    | 105.0 | 64.0 | 106.0 | 87.0 | 79.0 |

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

| Gear unit | Fill quantity in liters |       |      |       |      |      |
|-----------|-------------------------|-------|------|-------|------|------|
|           | M1                      | M2    | M3   | M4    | M5   | M6   |
| F..27     | 0.60                    | 0.80  | 0.65 | 0.70  | 0.60 | 0.60 |
| F..37     | 0.95                    | 1.25  | 0.70 | 1.25  | 1.00 | 1.10 |
| F..47     | 1.50                    | 1.80  | 1.10 | 1.90  | 1.50 | 1.70 |
| F..57     | 2.70                    | 3.50  | 2.10 | 3.40  | 2.90 | 3.00 |
| F..67     | 2.70                    | 3.80  | 1.90 | 3.80  | 2.90 | 3.20 |
| F..77     | 5.9                     | 7.3   | 4.30 | 8.0   | 6.0  | 6.3  |
| F..87     | 10.8                    | 13.0  | 7.7  | 13.8  | 10.8 | 11.0 |
| F..97     | 18.5                    | 22.5  | 12.6 | 25.2  | 18.5 | 20.0 |
| F..107    | 24.5                    | 32.0  | 19.5 | 37.5  | 27.0 | 27.0 |
| F..127    | 39.0                    | 54.5  | 34.0 | 61.0  | 45.0 | 46.5 |
| F..157    | 68.0                    | 103.0 | 62.0 | 104.0 | 85.0 | 79.5 |

Helical-bevel (K)  
gear units

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

| Gear unit | Fill quantity in liters |       |       |       |       |       |
|-----------|-------------------------|-------|-------|-------|-------|-------|
|           | M1                      | M2    | M3    | M4    | M5    | M6    |
| K..19     | 0.40                    | 0.40  | 0.40  | 0.45  | 0.40  | 0.40  |
| K..29     | 0.70                    | 0.70  | 0.70  | 0.85  | 0.70  | 0.70  |
| K..37     | 0.50                    | 1.00  | 1.00  | 1.25  | 0.95  | 0.95  |
| K..39     | 0.86                    | 1.65  | 1.55  | 2.15  | 1.55  | 1.30  |
| K..47     | 0.80                    | 1.30  | 1.50  | 2.00  | 1.60  | 1.60  |
| K..49     | 1.65                    | 3.35  | 2.80  | 4.20  | 3.15  | 2.75  |
| K..57     | 1.10                    | 2.20  | 2.20  | 2.80  | 2.30  | 2.10  |
| K..67     | 1.10                    | 2.40  | 2.60  | 3.45  | 2.60  | 2.60  |
| K..77     | 2.20                    | 4.10  | 4.40  | 5.8   | 4.20  | 4.40  |
| K..87     | 3.70                    | 8.0   | 8.7   | 10.9  | 8.0   | 8.0   |
| K..97     | 7.0                     | 14.0  | 15.7  | 20.0  | 15.7  | 15.5  |
| K..107    | 10.0                    | 21.0  | 25.5  | 33.5  | 24.0  | 24.0  |
| K..127    | 21.0                    | 41.5  | 44.0  | 54.0  | 40.0  | 41.0  |
| K..157    | 31.0                    | 62.0  | 65.0  | 90.0  | 58.0  | 62.0  |
| K..167    | 33.0                    | 95.0  | 105.0 | 123.0 | 85.0  | 84.0  |
| K..187    | 53.0                    | 152.0 | 167.0 | 200   | 143.0 | 143.0 |

KF..

| Gear unit | Fill quantity in liters |      |      |      |      |      |
|-----------|-------------------------|------|------|------|------|------|
|           | M1                      | M2   | M3   | M4   | M5   | M6   |
| KF19      | 0.40                    | 0.40 | 0.40 | 0.45 | 0.4  | 0.4  |
| KF29      | 0.70                    | 0.70 | 0.70 | 0.85 | 0.70 | 0.70 |
| KF37      | 0.50                    | 1.10 | 1.10 | 1.50 | 1.00 | 1.00 |
| KF39      | 0.86                    | 1.65 | 1.55 | 2.15 | 1.55 | 1.30 |
| KF47      | 0.80                    | 1.30 | 1.70 | 2.20 | 1.60 | 1.60 |
| KF49      | 1.65                    | 3.35 | 2.80 | 4.20 | 3.15 | 2.75 |
| KF57      | 1.20                    | 2.20 | 2.40 | 3.15 | 2.50 | 2.30 |
| KF67      | 1.10                    | 2.40 | 2.80 | 3.70 | 2.70 | 2.70 |
| KF77      | 2.10                    | 4.10 | 4.40 | 5.9  | 4.50 | 4.50 |
| KF87      | 3.70                    | 8.2  | 9.0  | 11.9 | 8.4  | 8.4  |
| KF97      | 7.0                     | 14.7 | 17.3 | 21.5 | 15.7 | 16.5 |
| KF107     | 10.0                    | 21.8 | 25.8 | 35.1 | 25.2 | 25.2 |
| KF127     | 21.0                    | 41.5 | 46.0 | 55.0 | 41.0 | 41.0 |
| KF157     | 31.0                    | 66.0 | 69.0 | 92.0 | 62.0 | 62.0 |

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

| Gear unit | Fill quantity in liters |      |      |      |      |      |
|-----------|-------------------------|------|------|------|------|------|
|           | M1                      | M2   | M3   | M4   | M5   | M6   |
| K..19     | 0.40                    | 0.40 | 0.40 | 0.45 | 0.40 | 0.40 |
| K..29     | 0.70                    | 0.70 | 0.70 | 0.85 | 0.70 | 0.70 |
| K..37     | 0.50                    | 1.00 | 1.00 | 1.40 | 1.00 | 1.00 |
| K..39     | 0.86                    | 1.65 | 1.55 | 2.15 | 1.55 | 1.30 |
| K..47     | 0.80                    | 1.30 | 1.60 | 2.15 | 1.60 | 1.60 |
| K..49     | 1.65                    | 3.35 | 2.80 | 4.20 | 3.15 | 2.75 |
| K..57     | 1.20                    | 2.20 | 2.40 | 3.15 | 2.70 | 2.40 |
| K..67     | 1.10                    | 2.40 | 2.70 | 3.70 | 2.60 | 2.60 |
| K..77     | 2.10                    | 4.10 | 4.60 | 5.9  | 4.40 | 4.40 |
| K..87     | 3.70                    | 8.2  | 8.8  | 11.1 | 8.0  | 8.0  |
| K..97     | 7.0                     | 14.7 | 15.7 | 20.0 | 15.7 | 15.7 |
| K..107    | 10.0                    | 20.5 | 24.0 | 32.4 | 24.0 | 24.0 |
| K..127    | 21.0                    | 41.5 | 43.0 | 52.0 | 40.0 | 40.0 |
| K..157    | 31.0                    | 66.0 | 67.0 | 87.0 | 62.0 | 62.0 |

Helical-worm (S)  
gear units

S

| Gear unit | Fill quantity in liters |      |                  |      |      |      |
|-----------|-------------------------|------|------------------|------|------|------|
|           | M1                      | M2   | M3 <sup>1)</sup> | M4   | M5   | M6   |
| S..37     | 0.25                    | 0.40 | 0.50             | 0.55 | 0.40 | 0.40 |
| S..47     | 0.35                    | 0.80 | 0.70/0.90        | 1.00 | 0.80 | 0.80 |
| S..57     | 0.50                    | 1.20 | 1.00/1.20        | 1.45 | 1.30 | 1.30 |
| S..67     | 1.00                    | 2.00 | 2.20/3.10        | 3.10 | 2.60 | 2.60 |
| S..77     | 1.90                    | 4.20 | 3.70/5.4         | 5.9  | 4.40 | 4.40 |
| S..87     | 3.30                    | 8.1  | 6.9/10.4         | 11.3 | 8.4  | 8.4  |
| S..97     | 6.8                     | 15.0 | 13.4/18.0        | 21.8 | 17.0 | 17.0 |

1) The S-series gear unit requires a larger volume when there is a compound gear unit (ex: S67R37).

SF..

| Gear unit | Fill quantity in liters |      |                  |      |      |      |
|-----------|-------------------------|------|------------------|------|------|------|
|           | M1                      | M2   | M3 <sup>1)</sup> | M4   | M5   | M6   |
| SF37      | 0.25                    | 0.40 | 0.50             | 0.55 | 0.40 | 0.40 |
| SF47      | 0.40                    | 0.90 | 0.90/1.05        | 1.05 | 1.00 | 1.00 |
| SF57      | 0.50                    | 1.20 | 1.00/1.50        | 1.55 | 1.40 | 1.40 |
| SF67      | 1.00                    | 2.20 | 2.30/3.00        | 3.20 | 2.70 | 2.70 |
| SF77      | 1.90                    | 4.10 | 3.90/5.8         | 6.5  | 4.90 | 4.90 |
| SF87      | 3.80                    | 8.0  | 7.1/10.1         | 12.0 | 9.1  | 9.1  |
| SF97      | 7.4                     | 15.0 | 13.8/18.8        | 22.6 | 18.0 | 18.0 |

1) The S-series gear unit requires a larger volume when there is a compound gear unit (ex: SF67R37).

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

| Gear unit | Fill quantity in liters |      |                  |      |      |      |
|-----------|-------------------------|------|------------------|------|------|------|
|           | M1                      | M2   | M3 <sup>1)</sup> | M4   | M5   | M6   |
| S..37     | 0.25                    | 0.40 | 0.50             | 0.50 | 0.40 | 0.40 |
| S..47     | 0.40                    | 0.80 | 0.70/0.90        | 1.00 | 0.80 | 0.80 |
| S..57     | 0.50                    | 1.10 | 1.00/1.50        | 1.50 | 1.20 | 1.20 |
| S..67     | 1.00                    | 2.00 | 1.80/2.60        | 2.90 | 2.50 | 2.50 |
| S..77     | 1.80                    | 3.90 | 3.60/5.0         | 5.8  | 4.50 | 4.50 |
| S..87     | 3.80                    | 7.4  | 6.0/8.7          | 10.8 | 8.0  | 8.0  |
| S..97     | 7.0                     | 14.0 | 11.4/16.0        | 20.5 | 15.7 | 15.7 |

1) The S-series gear unit requires a larger volume when there is a compound gear unit (ex: SA67R37).

**SPIROPLAN® (W)**  
gear units

W.., WF.., WA..B, WH..B

| Gear unit | Fill quantity in liters |      |    |      |    |      |
|-----------|-------------------------|------|----|------|----|------|
|           | M1                      | M2   | M3 | M4   | M5 | M6   |
| W..10     | 0.16                    |      |    |      |    |      |
| W..20     | 0.24                    |      |    |      |    |      |
| W..30     | 0.40                    |      |    |      |    |      |
| W..37     |                         | 0.50 |    | 0.70 |    | 0.50 |
| W..47     |                         | 0.90 |    | 1.40 |    | 0.90 |

WA.., WAF.., WT.., WH.., WHF..

| Gear unit | Fill quantity in liters |      |    |      |    |      |
|-----------|-------------------------|------|----|------|----|------|
|           | M1                      | M2   | M3 | M4   | M5 | M6   |
| W..10     | 0.16                    |      |    |      |    |      |
| W..20     | 0.24                    |      |    |      |    |      |
| W..30     | 0.40                    |      |    |      |    |      |
| W..37     |                         | 0.50 |    | 0.70 |    | 0.50 |
| W..47     |                         | 0.80 |    | 1.25 |    | 0.80 |