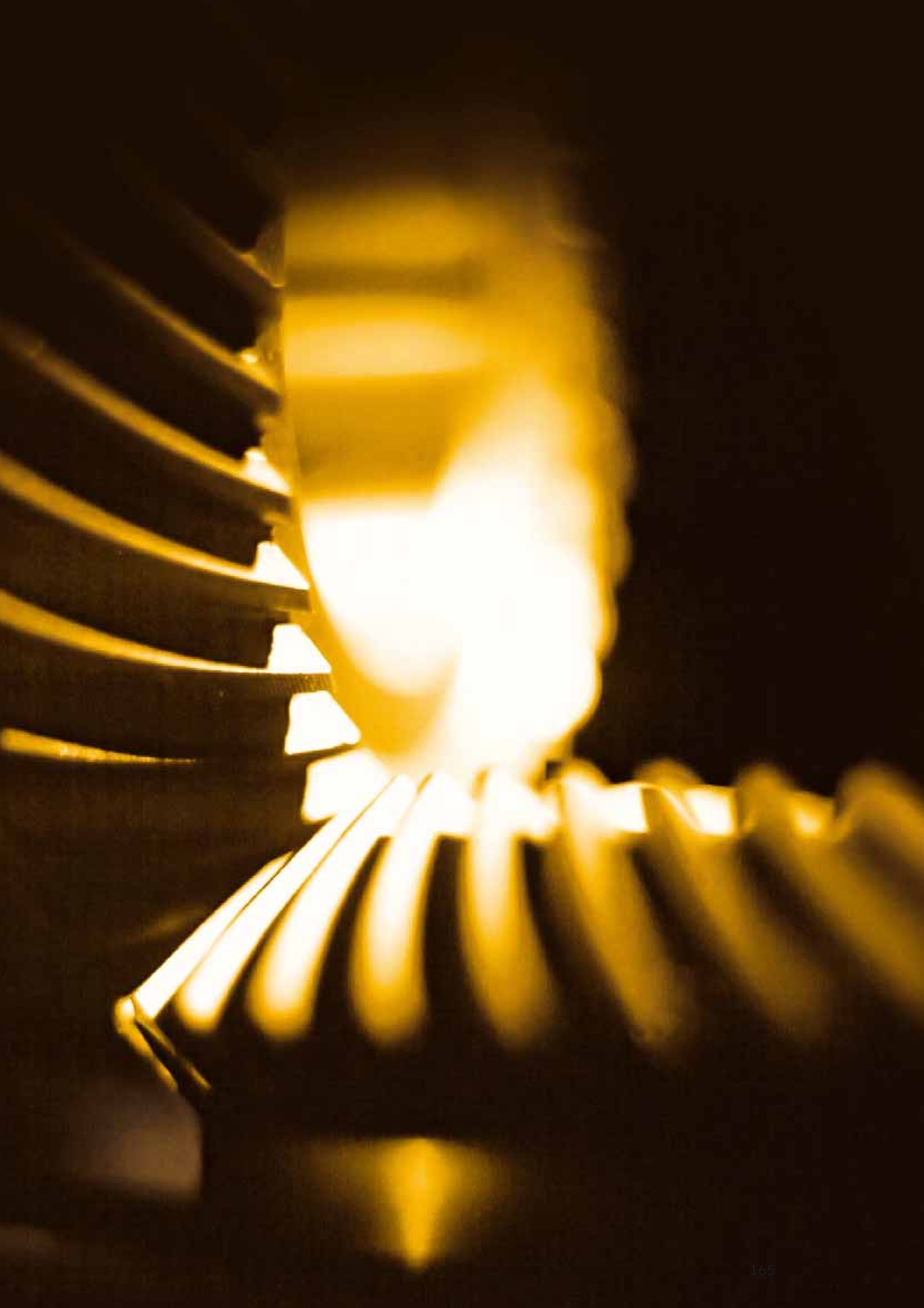
UNIMEC bevel gearboxes have been designed and manufactured since 28 years using an in-the van technology and mechanical solutions according to the state of the art to be able to meet the growing requirements of a demanding and sophisticated market. Nine sizes, tenths of mounting schemes, a range of serial ratios up to 1/12 and the possibility of a customized design having no equal, make of UNIMEC a reliable partner in the field of the motion transmission. The practical cubic shape of bevel gearboxes allows universal mounting possibilities on every kind of machines.

# Bevel gear boxes

Bevel gearboxes are also very versatile with regard to the shafts choice and the possibility of a direct mounting on any kind of motors, from the normal IEC to brushless motors, to pneumatic motors and so on. High running efficiency, low noise are the logical consequences of the application of Gleason® type spiral teeth conical gears; the use of this kind of geometry and suitable thermal treatments place UNIMEC's bevel gearboxes on top of this mechanical sector.



## 198 RC

Hollow shaft bevel gearboxes.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

## 199 RR

Hollow shaft bevel gearboxes with reinforced hub shaft.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

## 200 RB

Broached hollow shaft bevel gearboxes
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

## 201 RA

Hollow shaft bevel gearboxes with shrink-disks.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

## 202 RS

Protruding shaft bevel gearboxes.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

## 203 RP

Protruding shaft bevel gearboxes with reinforced hub shaft.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

## 204 RX

Double hub bevel gearboxes.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

## 205 RZ

Double hub bevel gearboxes with reinforced shafts.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.



Application samples are online at www.unimec.eu - section Applications

## RM 206

Bevel gearboxes with fast double shaft – multiplier version.
Ratios: 1/1,5.

## RIS 207

Protruding shaft bevel gearboxes with inverter.
Ratios:
1/1 - 1/2.

## REC 208

High reduction bevel gearboxes with hollow shaft.
Ratios:
1/4,5 - 1/6 - 1/9 - 1/12.

## REB 209

High reduction bevel gearboxes with broached hollow shaft.
Ratios:
1/4,5 - 1/6 - 1/9 - 1/12.

## REA 210

High reduction hollow shaft bevel gearboxes with shrink-disks.
Ratios:
1/4,5 - 1/6 - 1/9 - 1/12.

## RES 211

High reduction bevel gearboxes with protruding shaft.
Ratios:
1/4,5 - 1/6 - 1/9 - 1/12.

## RHC 212

Inverted bevel gearboxes with hollow shaft.
Ratios:
1/2 - 1/3.

Application samples are online at www.unimec.eu - section Applications

## 213 RHB

Inverted gearboxes with broached hollow shaft.
Ratios:
1/2 - 1/3.

## 214 RHA

Inverted bevel gearboxes with hollow shaft with shrink-disks.
Ratios:
1/2 - 1/3.

## 215 RHS

Inverted bevel gearboxes with protruding shaft.
Ratios:
1/2 - 1/3 - 1/4,5.

## 216 MRC

Hollow shaft motor-gearboxes.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

## 217 MRB

Broached hollow shaft motor-gearboxes.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

## 218 MRA

Hollow shaft motor-gearboxes with shrink-disks.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

## 219 MRS

Protruding shaft motor-gearboxes.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

## 220 MRX

Two hub shafts motor-gearboxes.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.


Application samples are online at www.unimec.eu - section Applications

## MRZ

Two hub shafts bevel gearboxes with reinforced shaft.
Ratios:
1/1 - 1/1,5 - 1/2 - 1/3 - 1/4.

**221**

Special bevel gearboxes

## MRE

High reduction motor-gearboxes.
Ratios:
1/4,5 - 1/6 - 1/9 - 1/12.

**222**

Bevel gearboxes with clamps on the motor shaft

## Casings

Bevel gearboxes casings have a cubic base form, with six completely machine finished outer faces and varnished inner parts. Each face is supplied with mounting holes, while the finished hubs and flanges show outer tolerance centerings. The casing are made of grey cast iron EN-GJL-250 (according to the UNI EN 1561:1998 requirements), except for size 500 whose casing is made of electro-welded carbon steel S235J0 (according to the UNI EN 10025-2:2005 requirements).

# Bevel gearboxes

## Gears

All the gears are alloy steel 17NiCrMo 6-4 (according to the UNI EN 10084:2000 requirements).
They have a Gleason® type helicoidal geometry toothing, with variable helix angle depending on the ratio for a better meshing and an optimum torque distribution.
The bevel gear set undergo thermal treatments like case-hardening, and carburizing and then they are run-in in couples with marking of the contact point; all this allows a perfect and noiseless meshing. All the gears planes and holes undergo a grinding process.

## Shafts

The bevel gearboxes protruding shafts are made of carbon steel C45 (according to the UNI EN 10083-2:1998 requirements); the hollow shafts on the contrary are made of steel 16NiCr4 (according to the UNI EN 10084:2000 requirements), and they undergo case-hardening, carburizing and grinding treatments for their inner diameters. All shafts are induction ground and case-hardened in the contact area with the seals. A wide range of geometries is available for the shafts: hollow shafts with key, broached or for shrink-disks, protruding or over-size.

## Bearings and market materials

Top-quality bearings and market materials are used for the whole line. All UNIMEC's bevel gear boxes are adapted to conical roller bearings, excluded sizes 54 and 86, for which ball bearings are foreseen.

## Weight

(referred to base models)

| Size | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 | 32 | 42 | 55 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Weight [kg] | 2 | 6,5 | 10 | 19 | 32 | 55 | 103 | 173 | 1050 | 29 | 48 | 82 |

## GLOSSARY

$A$ = maximum input angular speed [rpm]
$B$ = frequency of the loading cycle [Hz]
$C_p$ = specific heat of lubricant [J/Kg·°C]
$F_{r1}$ = radial force on the hub shaft [daN]
$F_{r2}$ = radial force on the double shaft (Protrusion next to the gear) [daN]
$F_{r3}$ = radial force on the double shaft (protrusion far from the gear) [daN]
$F_{a1}$ = axial compression force on the hub shaft [daN]
$F_{a2}$ = axial traction force on the hub shaft [daN]
$F_{a3}$ = axial compression force on the double shaft [daN]
$F_{a4}$ = axial traction force on the double shaft [daN]
$f_a$ = ambient factor
$f_d$ = duration factor
$f_g$ = usage factor
$i$ = reduction ratio, meant as a fraction (es.1/2)
$J$ = total inertia [$kgm^2$]
$J_r$ = bevel gearbox inertia [$kgm^2$]
$J_v$ = inertia downstream of the bevel gearbox [$kgm^2$]
$M_{tL}$ = torque on the slow shaft [daNm]
$M_{tv}$ = torque on the fast shaft [daNm]
$n_1$ = fast shaft
$n_2$ = slow shaft
$P_d$ = power dissipated in the form of heat [kW]
$P_i$ = input power to the single bevel gearbox [kW]
$P_L$ = power on the slow shaft [kW]
$P_v$ = power on the fast shaft [kW]
$P_j$ = inertia power [kW]
$P_u$ = output power to the single bevel gearbox [kW]
$P_e$ = equivalent power [kW]
PTC = adjustment factor on thermal power
$Q$ = lubricant flow-rate [litre/min]
rpm = rounds per minute
$t_a$ = ambient temperature [°C]
$t_r$ = bevel gearbox surface temperature [°C]
$\eta$ = bevel gearbox running efficiency
$\omega_L$ = slow shaft angular speed [rpm]
$\omega_v$ = fast shaft angular speed [rpm]
$\alpha_L$ = angular acceleration of the slow shaft [$rad/s^2$]

Unless otherwise specified all tables show linear measurements expressed in [mm].
All the reduction ratios are expressed in the form of a fraction, unless otherwise specified.

## LOAD ANALYSIS AND COMPOSITION

The aim of a bevel gearbox is to transmit power through shafts being orthogonal the one to the other; for this reason the gears, the shafts and the bearings have been designed to transmit powers and torques as shown in the power tables. Nevertheless there can also be other forces which have to be considered during the dimensioning phase of bevel gearboxes.
Such loads are generated by the devices connected to the bevel gearbox and they can be caused by belt drives, sudden accelerations and decelerations of the flywheels, structure misalignments, vibrations, shocks, pendular cycles etc. There can be two types of loads acting on the shafts: radial and axial loads, as referred to the shaft axis itself. The tables below show the maximum values for each type of forces according to the model and the size. In case of heavy loads, the table values must be divided by 1,5, while in case of shock load they should be divided by 2.
In case real load do not approach to the table values (modified) it is advisable to contact the technical office.

## RADIAL LOADS

**RC RB RA RS RX RM RIS**

| Size | | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | | | | |
| Dynamic | 50 $F_{r1}$ [daN] | 53 | 109 | 160 | 245 | 476 | 846 | 1663 | 2441 | 4150 |
| | 3000 | 15 | 34 | 135 | 232 | 270 | 384 | 534 | 930 | 1580 |
| Static | $F_{r1}$ [daN] | 100 | 204 | 300 | 460 | 893 | 1586 | 3118 | 4577 | 7780 |

**RR RP RZ**

| Size | | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | | | |
| Dynamic | 50 $F_{r1}$ [daN] | 316 | 351 | 524 | 1045 | 1297 | 2459 | 3184 | 5412 |
| | 3000 | 135 | 179 | 232 | 305 | 379 | 718 | 930 | 1580 |
| Static | $F_{r1}$ [daN] | 592 | 658 | 982 | 2100 | 3326 | 5715 | 8373 | 14235 |

**REC REB REA RES**

| Size | | 32 | 42 | 55 |
|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | |
| Dynamic | 50 $F_{r1}$ [daN] | 245 | 476 | 846 |
| | 3000 | 232 | 270 | 384 |
| Static | $F_{r1}$ [daN] | 460 | 893 | 1586 |

**RHC RHB RHA RHS**

| Size | | 32 | 42 | 55 | 32 | 42 | 55 |
|---|---|---|---|---|---|---|---|
| Ratio | | | 1/2 - 1/3 | | | 1/4,5 | |
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | |
| Dynamic | 50 $F_{r1}$ [daN] | 477 | 610 | 927 | 596 | 762 | 1158 |
| | 3000 | 151 | 198 | 295 | 151 | 198 | 295 |
| Static | $F_{r1}$ [daN] | 982 | 2000 | 3838 | 684 | 2019 | 3838 |

## RC RR RB RA RS RP

| Size | | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | | | | |
| Dynamic | 50 $F_{r2}$ [daN] | 40 | 144 | 351 | 462 | 788 | 953 | 1444 | 2784 | 4732 |
| | 3000 | 10 | 36 | 105 | 135 | 230 | 278 | 421 | 813 | 1382 |
| Dynamic | 50 Fr3 [daN] | 68 | 241 | 351 | 524 | 1121 | 1588 | 2406 | 4466 | 7592 |
| | 3000 | 17 | 61 | 176 | 225 | 384 | 464 | 703 | 1356 | 2300 |
| Static | Fr2-Fr3 [daN] | 349 | 592 | 658 | 982 | 2100 | 3326 | 5715 | 8373 | 14234 |

## RM RIS

| Size | | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | | | | |
| Dynamic | 50 $F_{r2}$ [daN] | 26 | 109 | 160 | 245 | 441 | 561 | 1044 | 2441 | 4150 |
| | 3000 | 5 | 47 | 70 | 94 | 128 | 163 | 421 | 813 | 1382 |
| Dynamic | 50 Fr3 [daN] | 42 | 109 | 160 | 245 | 476 | 846 | 1663 | 2441 | 4150 |
| | 3000 | 9 | 78 | 117 | 156 | 266 | 273 | 706 | 1356 | 2300 |
| Static | Fr2-Fr3 [daN] | 110 | 204 | 300 | 460 | 893 | 1586 | 3118 | 4577 | 7780 |

## REC REB REA RES

| Size | | 32 | 42 | 55 |
|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | |
| Dynamic | 50 $F_{r2}$ [daN] | 462 | 788 | 953 |
| | 3000 | 204 | 348 | 421 |
| Dynamic | 50 Fr3 [daN] | 524 | 1121 | 1588 |
| | 3000 | 341 | 582 | 703 |
| Static | Fr2-Fr3 [daN] | 982 | 2100 | 3326 |

## RHC RHB RHA RHS

| Size | | 32 | 42 | 55 | 32 | 42 | 55 |
|---|---|---|---|---|---|---|---|
| Ratio | | | 1/2 - 1/3 | | | 1/4,5 | |
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | |
| Dynamic | 50 $F_{r2}$ [daN] | 462 | 788 | 953 | 245 | 441 | 561 |
| | 3000 | 135 | 230 | 278 | 94 | 128 | 163 |
| Dynamic | 50 Fr3 [daN] | 524 | 1121 | 1588 | 245 | 476 | 846 |
| | 3000 | 225 | 384 | 464 | 156 | 266 | 273 |
| Static | Fr2-Fr3 [daN] | 982 | 2100 | 3326 | 460 | 893 | 1586 |


# AXIAL LOADS

## RC RB RA RS RX RM RIS

| Size | | | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | | | | | |
| Dynamic | 50 | $F_{a1}$ [daN] | 59 | 136 | 463 | 794 | 926 | 1314 | 1828 | 3184 | 5412 |
| | 3000 | | 15 | 34 | 135 | 232 | 270 | 384 | 534 | 930 | 1581 |
| Dynamic | 50 | $F_{a2}$ [daN] | 35 | 81 | 278 | 476 | 555 | 788 | 1097 | 1910 | 3247 |
| | 3000 | | 9 | 20 | 81 | 139 | 162 | 230 | 320 | 558 | 948 |
| Static | | $F_{a1}$ [daN] | 71 | 327 | 2327 | 4153 | 4250 | 6535 | 8733 | 21538 | 36614 |
| Static | | $F_{a2}$ [daN] | 71 | 327 | 2044 | 3464 | 4250 | 5196 | 7830 | 21538 | 36614 |

## RR RP RZ

| Size | | | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | | | | |
| Dynamic | 50 | $F_{a1}$ [daN] | 463 | 615 | 794 | 1045 | 1297 | 2459 | 3184 | 5412 |
| | 3000 | | 135 | 179 | 232 | 305 | 379 | 718 | 930 | 1581 |
| Dynamic | 50 | $F_{a2}$ [daN] | 278 | 368 | 476 | 627 | 778 | 1475 | 1910 | 3247 |
| | 3000 | | 81 | 107 | 139 | 183 | 227 | 431 | 558 | 948 |
| Static | | $F_{a1}$ [daN] | 1060 | 1620 | 2670 | 5700 | 6300 | 8600 | 21538 | 36614 |
| Static | | $F_{a2}$ [daN] | 1656 | 2044 | 3464 | 4150 | 5196 | 7830 | 21538 | 36614 |

## REC REB REA RES

| Size | | | 32 | 42 | 55 |
|---|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | |
| Dynamic | 50 | $F_{a1}$ [daN] | 794 | 926 | 1314 |
| | 3000 | | 232 | 270 | 384 |
| Dynamic | 50 | $F_{a2}$ [daN] | 476 | 555 | 788 |
| | 3000 | | 139 | 162 | 230 |
| Static | | $F_{a1}$ [daN] | 4153 | 4250 | 6535 |
| Static | | $F_{a2}$ [daN] | 3464 | 4250 | 5196 |

## RHC RHB RHA RHS

| Size | | | 32 | 42 | 55 | 32 | 42 | 55 |
|---|---|---|---|---|---|---|---|---|
| Ratio | | | | 1/2 - 1/3 | | | 1/4,5 | |
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | | |
| Dynamic | 50 | $F_{a1}$ [daN] | 477 | 610 | 927 | 477 | 610 | 927 |
| | 3000 | | 152 | 197 | 298 | 152 | 197 | 298 |
| Dynamic | 50 | $F_{a2}$ [daN] | 477 | 610 | 927 | 477 | 610 | 927 |
| | 3000 | | 152 | 197 | 298 | 152 | 197 | 298 |
| Static | | $F_{a1}$ [daN] | 1100 | 1520 | 3400 | 1100 | 1520 | 3400 |
| Static | | $F_{a2}$ [daN] | 1100 | 1520 | 3400 | 1100 | 1520 | 3400 |

## RC RR RB RA RS RP

| Size | | | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | | | | | |
| Dynamic | 50 | $F_{a3}$ [daN] | 68 | 241 | 604 | 770 | 1314 | 1588 | 2406 | 4641 | 7889 |
| | 3000 | | 17 | 61 | 176 | 225 | 384 | 464 | 703 | 1356 | 2305 |
| Dynamic | 50 | $F_{a4}$ [daN] | 40 | 144 | 362 | 462 | 788 | 953 | 1444 | 2784 | 4732 |
| | 3000 | | 10 | 36 | 105 | 135 | 230 | 278 | 421 | 813 | 1382 |
| Static | | Fa3-Fa4 [daN] | 182 | 580 | 2044 | 3464 | 4330 | 5196 | 7830 | 22320 | 37944 |


## RM RIS

| Size | | | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | | | | |
| Dynamic | 50 | $F_{a3}$ [daN] | 268 | 402 | 536 | 912 | 935 | 2406 | 4641 | 7889 |
| | 3000 | | 78 | 117 | 156 | 266 | 273 | 703 | 1356 | 2305 |
| Dynamic | 50 | $F_{a4}$ [daN] | 161 | 241 | 322 | 441 | 561 | 1444 | 2784 | 4732 |
| | 3000 | | 47 | 70 | 94 | 128 | 163 | 421 | 813 | 1382 |
| Static | | Fa3-Fa4 [daN] | 1094 | 1622 | 2150 | 3464 | 5196 | 7830 | 22320 | 37944 |

## REC REB REA RES

| Size | | | 32 | 42 | 55 |
|---|---|---|---|---|---|
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | |
| Dynamic | 50 | $F_{a3}$ [daN] | 770 | 1314 | 1588 |
| | 3000 | | 341 | 582 | 703 |
| Dynamic | 50 | $F_{a4}$ [daN] | 462 | 788 | 953 |
| | 3000 | | 204 | 348 | 421 |
| Static | | Fa3-Fa4 [daN] | 3464 | 4330 | 5196 |

## RHC RHB RHA RHS

| Size | | | 32 | 42 | 55 | 32 | 42 | 55 |
|---|---|---|---|---|---|---|---|---|
| Ratio | | | | 1/2 - 1/3 | | | 1/4,5 | |
| Conditions | Revolution speed of the fast shaft $\omega_v$ [rpm] | | | | | | | |
| Dynamic | 50 | $F_{a3}$ [daN] | 770 | 1314 | 1588 | 536 | 912 | 935 |
| | 3000 | | 225 | 384 | 464 | 156 | 266 | 273 |
| Dynamic | 50 | $F_{a4}$ [daN] | 462 | 788 | 953 | 322 | 441 | 561 |
| | 3000 | | 135 | 230 | 278 | 94 | 128 | 163 |
| Static | | Fa3-Fa4 [daN] | 3464 | 4330 | 5196 | 2150 | 3464 | 5196 |

## BACKLASH

The gears connection presents a natural and necessary backlash which is transmitted to the shafts. A particular care in the assembly allows to keep such value within 15'-20'. For particular applications, where the standard backlash should be further reduced, it is possible to reach a maximum value comprised between 5'-7'. It is important to remember that **an excessive backlash reduction could induce the transmission to be blocked** due to the interference between the gears. Furthermore, a too tight backlash would cause friction phenomena and consequently an efficiency reduction as well as an heating of the transmission.

**The gears backlash tends to increase according to the wear ratio of the components,** that is why after various running cycles we can logically expect an higher value than the value taken before the start-up. Finally it should be reminded that, due to the axial components of the transmission forces, **the backlash measured under load can be different than the value taken when the bevel gearbox is unloaded.** In case a very high precision is requested, it is advisable to mount shrink disks, both on the output and on the input shafts, because among standard couplings it is the only one ensuring a minimum backlash for the mounting on the machine.

## RUNNING EFFICIENCY

As the aim of a bevel gearbox is to transmit power, it is necessary for its running efficiency to be the maximum possible, in order to minimize the loss of power transformed into heat. The meshing precision allows a gear pair running efficiency of 97%. **The overall transmission running efficiency reaches 90%** due to the lubricant splash and the sliding of the rotating devices, such as bearings and shafts. During the first operation hours the running efficiency could be lower than indicated; after a suitable run-in the power which had been lost in friction should reach a value towards 10%.

## HANDLING

All bevel gearboxes can be manually operated. Anyway most part of its application foresees a motorized handling, in many cases even direct. For the sizes from 86 to 250 included, it is possible to connect directly a standard IEC motor to the fast shaft of the bevel gearbox. Special flanges can be provided for all sizes made for hydraulic, pneumatic, brushless motors, as well as for direct current motors, permanent magnet motors, stepper motors and other special motors. It is also possible to realize special flanges for fixing the drive shaft by means of a shrink disk, in order to minimize the transmission backlash. The power tables determine the motoring power and the torque on the slow shaft, for each single bevel gearbox, in case of unique service factors, according to the model, size, ratio and revolution speeds.

### Rotation directions

The rotation directions depend on the mounting scheme. According to the chosen model, as a function of the required rotation direction, it's possible to choose the mounting scheme which best meets those requirements. We remind that, even if one only rotation direction of a shaft is changed from clockwise into anti-clockwise (and vice-versa), any other rotations of the bevel gearbox shafts direction must be reversed.

### Non-stop operation

A non-stop operation occurs when the speed modulation gear is subjected to time constant torque and angular speed. After a transition period the revolutions become stationary, together with the surface temperature of the bevel gearbox and the ambient thermal exchange. It is important to check for wear phenomena and thermal power.

### Intermittent operation

An intermittent operation occurs when high grade accelerations and deceleration overlap a revolution speed and torque (even at zero value), make it necessary to verify the ability to counteract the system inertia. A revision of the bevel gearbox and the input power is therefore necessary. It is important to check bending and fatigue strength parameters.

### The key phase

Because of gears have a discrete teeth number, keys on shaft will never be perfectly on phase as shown in drawings. Phasing precision changes in function of ratio and size, as reported in the following table.

| Ratio | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|
| 1/1 | ± 8° | ± 6,5° | ± 5,5° | ± 6,5° | ± 6,5° | ± 6,5° | ± 6° | ± 4° | ± 4° |
| 1/1,5 | ± 5° | ± 6° | ± 5,5° | ± 5,5° | ± 6° | ± 5,5° | ± 5,5° | ± 4° | ± 4° |
| 1/2 | ± 5° | ± 6° | ± 6° | ± 6,5° | ± 6,5° | ± 6,5° | ± 6° | ± 4° | ± 4° |
| 1/3 | ± 5° | ± 6° | ± 4,5° | ± 5,5° | ± 5° | ± 5° | ± 5° | ± 3,5° | ± 3,5° |
| 1/4 | ± 5° | ± 4,5° | ± 4,5° | ± 4,5° | ± 4,5° | ± 4° | ± 4,5° | ± 3,5° | ± 3,5° |

If there's the need of a higher precision, it's necessary to proceed with a special assembling.

## LUBRICATION

The lubrication of the inner transmission devices (gears and bearings) is made using a mineral oil with extreme pressure additive: TOTAL CARTER EP 220. For size 54 the adopted lubricant is TOTAL CERAN CA. For a proper operation of the transmission it is advisable to steady check for lubricant leakage. For all sizes a plug for lubricant filling-up is foreseen. The technical specifications and the application field for the lubricant inside the bevel gearboxes are listed below.

| Lubricant | Application field | Operating temperature [°C]* | Technical specifications |
|---|---|---|---|
| Total Carter EP 220 (not compatible with polyglicol oils) | standard | 0 : +200 | AGMA 9005: D24<br>DIN 51517-3: CLP<br>NF ISO 6743-6: CKD |
| Total Ceran CA | standard (54) | -15 : +130 | DIN 51502:OGPON -25 ISO 6743-9: L-XBDIB 0 |
| Total Azolla ZS 68 | High speeds** | -10 : +200 | AFNOR NF E 48-603 HM<br>DIN 51524-2: HLP<br>ISO 6743-4: HM |
| Total Dacnis SH 100 | High temperatures | -30 : +250 | NF ISO 6743: DAJ |
| Total Nevastane SL 220 | Food industry | -30 : +230 | NSF-USDA: H1 |

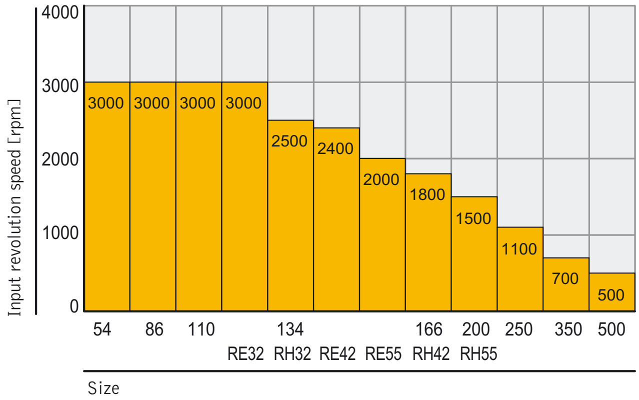
* for operation temperatures between 80°C and 150°C Viton® seals should be used; for temperatures higher than 150°C and lower -20°C it is advisable to contact our technical office.

** for input revolutions higher than 1500 rpm we suggest using Viton® seals in order to better counteract the local temperature increases due to the strong sliding on the seals.

The quantity of lubricant contained in bevel gearboxes is shown in the following table.

| Size | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 | 32 | 42 | 55 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inner lubricant quantity [litres] | 0,015 | 0,1 | 0,2 | 0,4 | 0,9 | 1,5 | 3,1 | 11 | 28 | 1 | 1,8 | 3,7 |

The inner devices of the bevel gearboxes can be lubricated in two ways: by means of splash or forced lubrication. Splash lubrication does not require external interventions: when the fast shaft revolutions are lower than indicated in the graph below, its operation ensures that lubricant reaches all the components requiring lubrication. For revolution speeds higher than the indicated values, it may happen that the gears peripheral speed be such as to create centrifugal forces able to overcome the lubricant adhesivity. Therefore, in order to ensure a proper lubrication, a lubricant feeding under pressure is necessary (we suggest 5 bar) by means of a suitable oil cooling circuit. In case of forced lubrication it will be necessary to precise the mounting position and localization of the holes to be provided for the connection to the lubrication circuit.




For revolutions reaching the border values indicated in the above graph it is advisable to contact our technical office in order to evaluate the modus operandi.
For very low revolutions of the fast shaft (lower than 50 rpm) the phenomena which normally generate splash could not be triggered off in a correct way. We suggest contacting our technical office in order to evaluate the most suitable solution to the problem.
In case of vertical axis mounting, the upper bearings and gears could not be properly lubricated. It is therefore necessary to indicate such situation in case of order, so that suitable grease holes can be foreseen.
If no indication about lubrication is given at the ordering phase, it is understood that the application conditions fall within the conditions of an horizontal mounting with splash lubrication.

# INSTALLATION AND MAINTENANCE

## Installation

When positioning the bevel gearboxes and connecting them to the machines, the greatest of care is necessary in the alignment of the axes. In case of an imprecise alignment, the bearing would be overloaded, anomalous overheated, and it would be subjected to a greater wear with a consequent lifetime reduction and a noise increase. The transmission should be mounted so that movements and vibrations are avoided, and they should be properly fixed by means of bolts. We suggest effecting a proper cleaning and lubrication of the contact surfaces before assembling the connecting members, in order that any seizure or oxidizing problems be avoided. The assembly or disassembly must be carried out using tie rods and extractors through the threaded bore at the end of the shaft. For tight fittings, a shrink assembly is recommended, heating the members to be shrunk on to 80-100°C. Thanks to their particular cubic box form, bevel gearboxes can be mounted in any position. It should be given previous notice in case of a vertical mounting in order that a proper lubrication be foreseen.

## Preparing for service

All speed modulation gears are supplied filled with long lasting lubricant which ensures a perfect operation of the unit according to the power values indicated in the catalogue. The only exception is represented by the ones having an "add oil" label. The lubricant filling up to the right level is an installer's responsibility and it must be carried out when the gears are not in motion. An excessive filling should be avoided in order that any overheating, noise, inner pressure loss and power loss occur.

## Start-up

All the units undergo a brief testing before being delivered to the client. However, several hours of running at full load are necessary before the bevel gearbox reaches its full running efficiency. In case of need, the bevel gearbox can be immediately set to work at full load; but, circumstances permitting, it is nonetheless advisable to subject it to a gradually increasing load to reach maximum load after 20 - 30 hours of running. It is also vital to take the precautions necessary to avoid overloading in the first stages of running. The temperatures reached by the bevel gearbox in these initial phases will be higher than the ones produced after the complete running-in of the same.

## Routine maintenance

<u>Bevel gearboxes must be inspected once a month.</u> Lubricant leakage should be checked for, and in case the oil level should be restored and the seals replaced. The lubricant control must be effected when the speed modulation gear is not working. The oil should be changed at intervals which will vary according to the working conditions; generally, in normal conditions and at the normal operation temperatures, it should be possible to obtain a minimum lubricant lifetime of 10.000 hours.

## Storage

The bevel gearboxes must be protected from deposits of dust and foreign matter during storage. Particular attention must be paid to saline or corrosive atmospheres.
We also recommend to:

- Periodically rotate the shafts to ensure proper lubrication of inner parts and avoid that the seals dry up, therefore causing lubricant leakage.
- For bevel gearboxes without lubricant completely fill-in the unit with rustproof oil. When servicing for use, completely empty the oil and refill with the recommended oil to the correct level.
- Protect the shafts with suitable products.

## Warranty

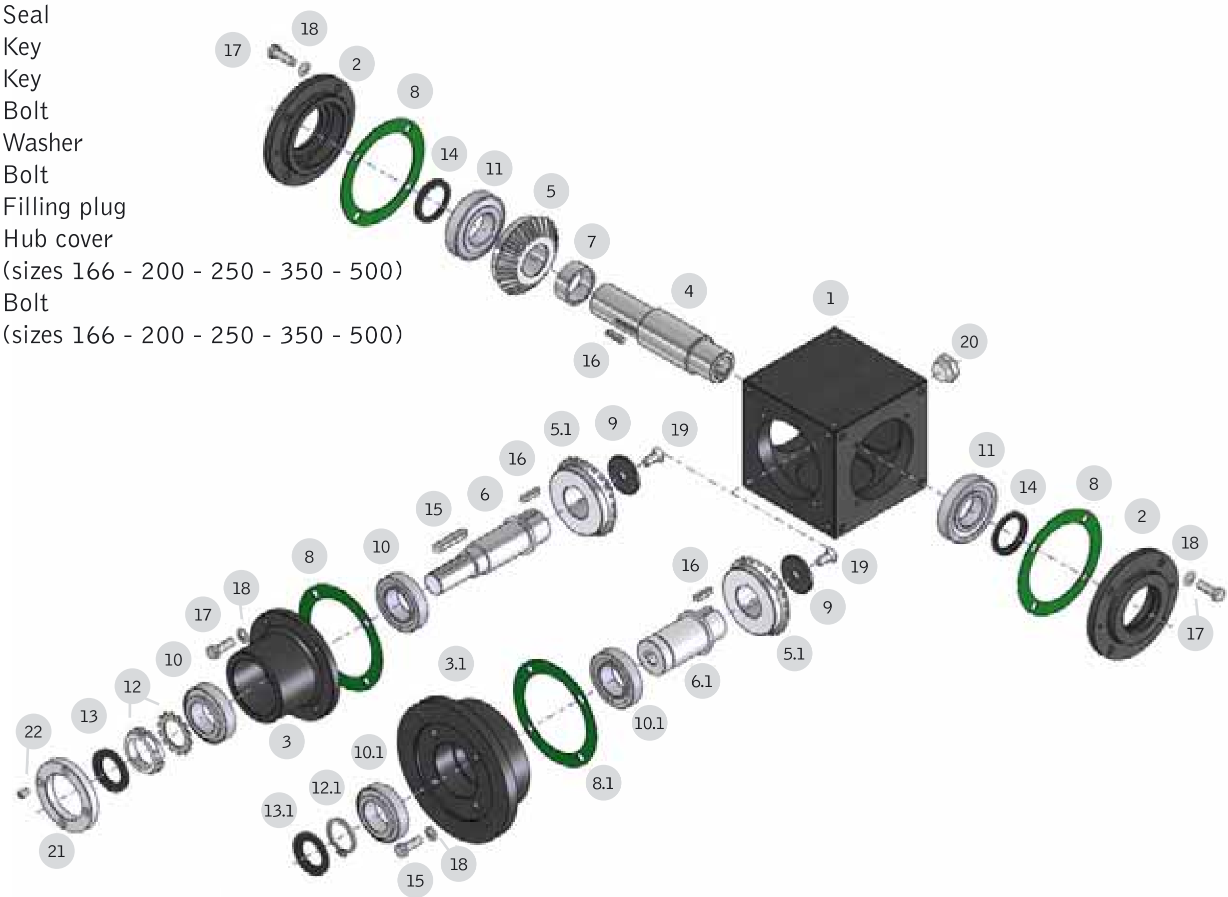
The warranty is valid only when the instructions contained in our manual are carefully followed.

## ORDERING CODES

| RC | 86 | C1 | 1/1 |
|---|---|---|---|
| model | size | construction model | ratio |

## Models: RC - RR - RB - RA - RS - RP - RX - RZ - RM* - RIS and motorized

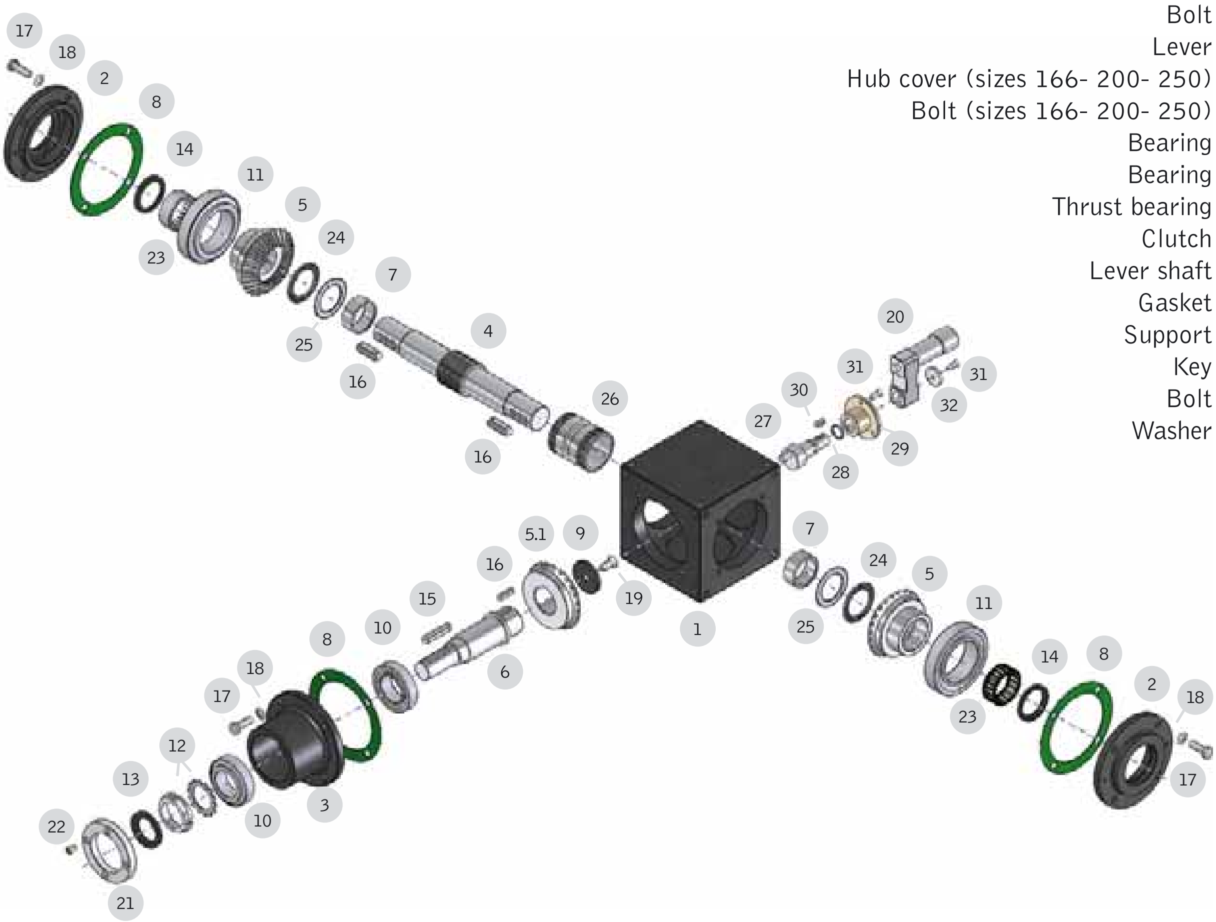
1 Casing
2 Cover
3 Hub
3.1 Motor flange
4 Shaft (hollow-protruding-broached - with shrink disk)
5 Bevel gear
5.1 Bevel pinion
6 Hub shaft
6.1 Drive shaft
7 Spacer
8 Gasket
8.1 Gasket for motorisation
9 Lock washer
10 Bearing
10.1 Bearing for motorisation
11 Bearing
12 Stop ring
12.1 Stop ring for motorisation
13 Seal
13.1 Seal for motorisation
14 Seal
15 Key
16 Key
17 Bolt
18 Washer
19 Bolt
20 Filling plug
21 Hub cover
(sizes 166 - 200 - 250 - 350 - 500)
22 Bolt
(sizes 166 - 200 - 250 - 350 - 500)




*For the RM model, gear and pinion are inverted

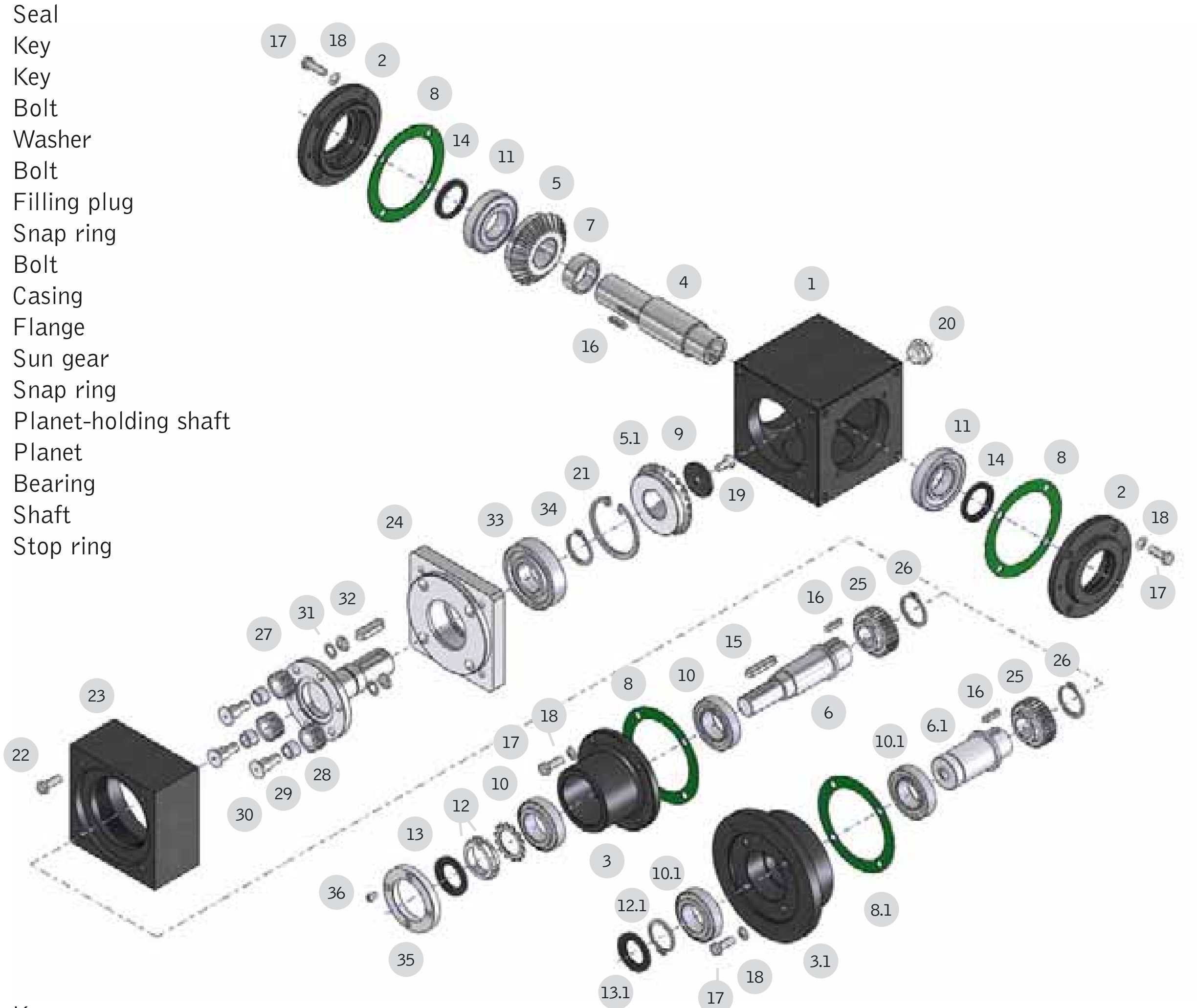
## RIS Model

| | |
|---|---|
| Casing | 1 |
| Cover | 2 |
| Hub | 3 |
| Protruding shaft | 4 |
| Bevel gear | 5 |
| Bevel pinion | 5.1 |
| Hub shaft | 6 |
| Spacer | 7 |
| Gasket | 8 |
| Lock washer | 9 |
| Bearing | 10 |
| Bearing | 11 |
| Stop ring | 12 |
| Seal | 13 |
| Seal | 14 |
| Key | 15 |
| Key | 16 |
| Bolt | 17 |
| Washer | 18 |
| Bolt | 19 |
| Lever | 20 |
| Hub cover (sizes 166- 200- 250) | 21 |
| Bolt (sizes 166- 200- 250) | 22 |
| Bearing | 23 |
| Bearing | 24 |
| Thrust bearing | 25 |
| Clutch | 26 |
| Lever shaft | 27 |
| Gasket | 28 |
| Support | 29 |
| Key | 30 |
| Bolt | 31 |
| Washer | 32 |



## Models: RE - MRE

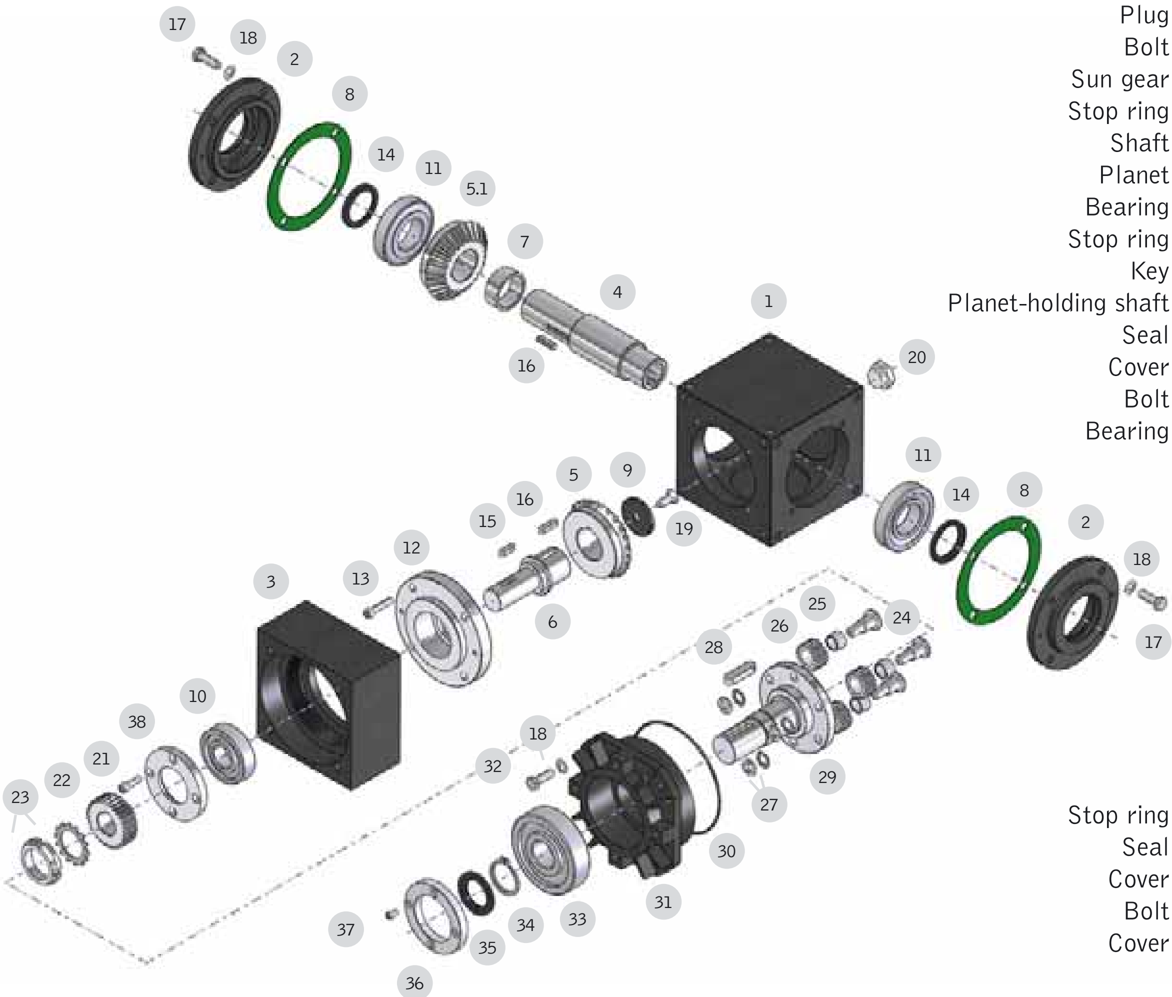
1 Casing
2 Cover
3 Hub
3.1 Motor flange
4 Shaft (hollow-protruding-broached - with shrink disk)
5 Bevel gear
5.1 Bevel pinion
6 Hub shaft
6.1 Drive shaft
7 Spacer
8 Gasket
8.1 Gasket for motorisation
9 Lock washer
10 Bearing
10.1 Bearing for motorisation
11 Bearing
12 Stop ring
12.1 Stop ring for motorisation
13 Seal
13.1 Seal for motorisation
14 Seal
15 Key
16 Key
17 Bolt
18 Washer
19 Bolt
20 Filling plug
21 Snap ring
22 Bolt
23 Casing
24 Flange
25 Sun gear
26 Snap ring
27 Planet-holding shaft
28 Planet
29 Bearing
30 Shaft
31 Stop ring




32 Key
33 Bearing
34 Stop ring
35 Cover (sizes 42 - 55)
36 Bolt (sizes 42 - 55)

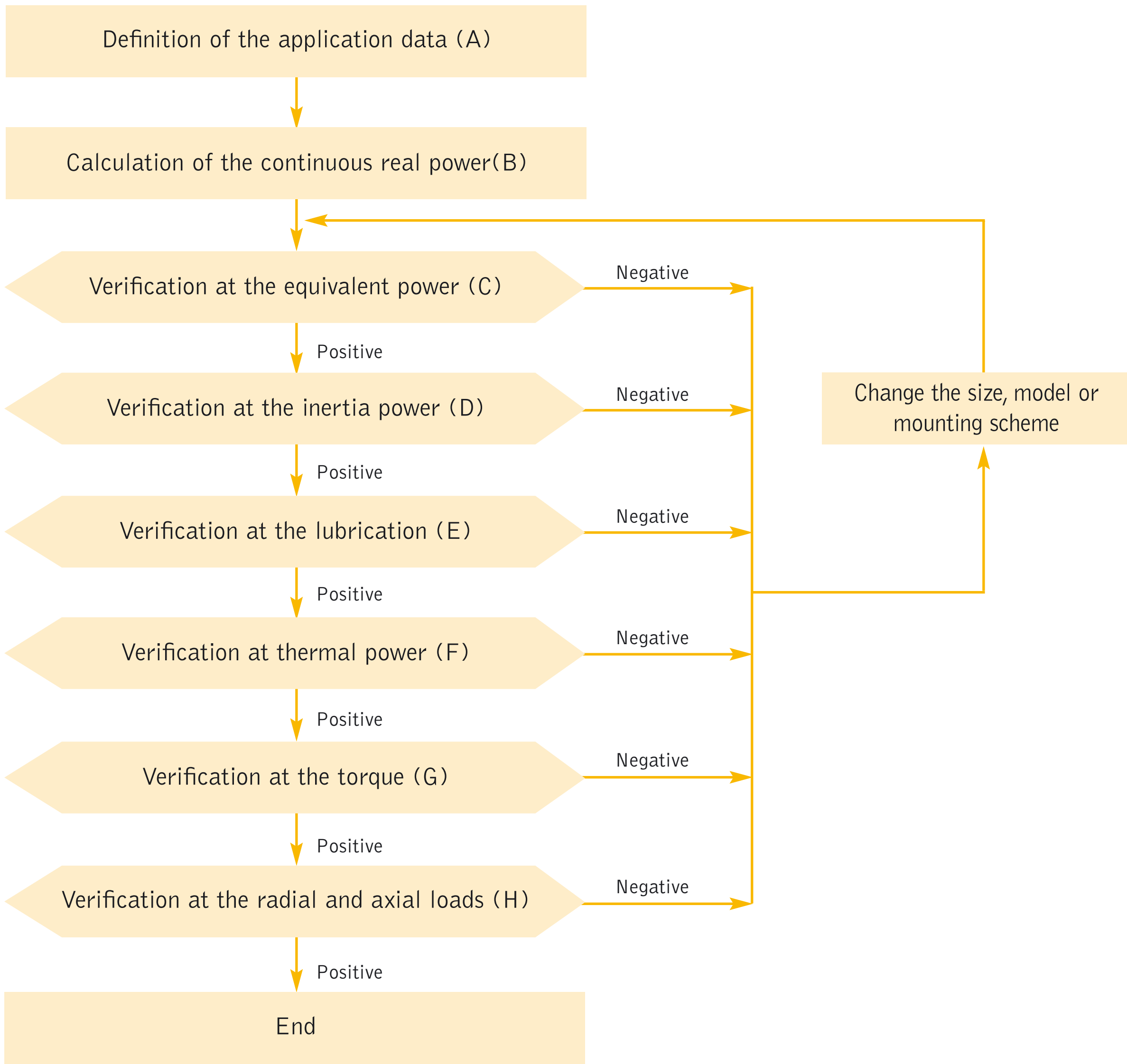
## RH Model

| | |
|---|---|
| Casing | 1 |
| Cover | 2 |
| Casing | 3 |
| Shaft (hollow –protruding- broached – with shrink disk) | 4 |
| Bevel gear | 5 |
| Bevel pinion | 5.1 |
| Shaft | 6 |
| Spacer | 7 |
| Gasket | 8 |
| Lock washer | 9 |
| Bearing | 10 |
| Bearing | 11 |
| Flange | 12 |
| Bolt | 13 |
| Seal | 14 |
| Key | 15 |
| Key | 16 |
| Bolt | 17 |
| Washer | 18 |
| Bolt | 19 |
| Plug | 20 |
| Bolt | 21 |
| Sun gear | 22 |
| Stop ring | 23 |
| Shaft | 24 |
| Planet | 25 |
| Bearing | 26 |
| Stop ring | 27 |
| Key | 28 |
| Planet-holding shaft | 29 |
| Seal | 30 |
| Cover | 31 |
| Bolt | 32 |
| Bearing | 33 |
| Stop ring | 34 |
| Seal | 35 |
| Cover | 36 |
| Bolt | 37 |
| Cover | 38 |



## DIMENSIONING OF THE BEVEL GEARBOX

For a correct dimensioning of bevel gearbox it is necessary to observe the following steps:



## A – THE APPLICATION DATA

For a right dimensioning of the bevel gearboxes it is necessary to identify the application data: POWER, TORQUE, AND REVOLUTION SPEED = a P power [kW] is defined as the product between the torque $M_t$ [daNm] and the revolution speed $\omega$ [rpm]. The input power ($P_i$) is equal to the sum of the output power ($P_u$) and the power dissipated into heat ($P_d$). The ratio of output power and input power is called running efficiency $\eta$ of the transmission.

The slow shaft revolution spee $\omega_L$ is equal to the fast shaft revolution $\omega_V$ multiplied by the reduction ratio i (meant as a fraction). Some useful formulas that link the above variables are shown below

$$P_V = \frac{M_{tV} \bullet \omega_V}{955} \qquad P_L = \frac{M_{tL} \bullet \omega_L}{955} \qquad \omega_L = \omega_V \bullet i \qquad P_i = P_u + P_d = \frac{P_u}{\eta}$$

AMBIENT VARIABLES = these values identify the environment and the operating conditions of the bevel gearbox. Among them: temperature, oxidizing and corrosive factors, working and non-working periods, vibrations, maintenance and cleaning, insertion frequency, expected lifetime etc.

MOUNTING SCHEMES = There are several ways of transferring movement by means of bevel gearboxes. A clear idea on the mounting scheme allows to correctly identify the power flow of the same.

## B – THE REAL CONTINUOUS POWER

The first step for the dimensioning of a bevel gear box is to calculate the real continuous power. By means of the formulas indicated at point A the user must calculate the input power $P_i$ according to the scheme parameters. Two calculation criteria can be adopted: using the average parameters calculated on a significant period or adopting the maximum parameters. It is obvious that the second method (the worst case) is much more protective with respect to the average one and it should be used in case you need certainty and reliability.

## C – THE POWER TABLES AND THE EQUIVALENT POWER

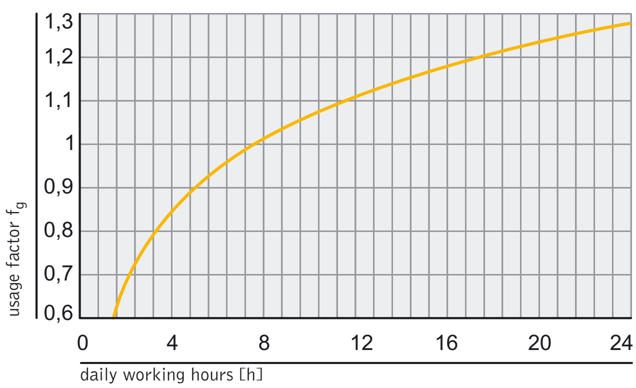
All the values listed in the catalogue refer to a use in standard conditions, that is with a 20° temperature and under a regular running, without shocks for 8 daily working hours. The use under those conditions provides a lifetime of 10.000 hours. For different application conditions the equivalent power $P_e$ should be calculated: it is the power which would be applied in standard conditions in order to have the same thermal exchange and wear effects, which the real load achieves in the real conditions of use. It is therefore advisable to calculate the equivalent load according to the following formula:

$$P_e = P_i \bullet f_g \bullet f_a \bullet f_d$$

It should be remarked that <u>the equivalent power is not the power requested by the speed modulation gearbox:</u> it is and indicator which helps in choosing the most suitable size in order to have higher reliability requisites. The power requested by the application is the input power $P_i$.

### The usage factor $f_g$

The graph below can be used to calculate the usage factor $f_g$ according to the working hours on a daily basis.



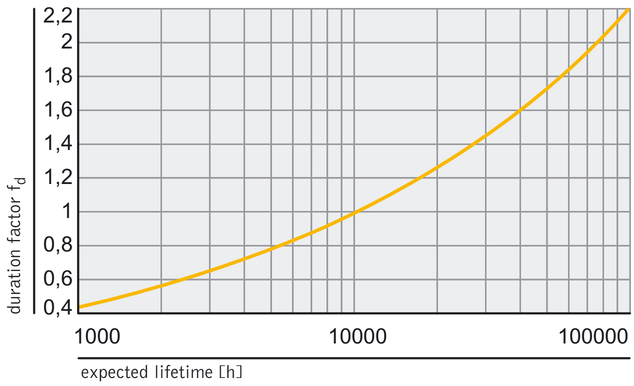
## The ambient factor $f_a$

By means of the following table it is possible to calculate the $f_a$ factor according to the operation conditions.

| Type of load | daily working hours [h]: | 3 | 8 | 24 |
|---|---|---|---|---|
| Light shocks, few insertions, regular movements | | 0,8 | 1,0 | 1,2 |
| Medium shocks, frequent insertions, regular movements | | 1,0 | 1,2 | 1,5 |
| High shocks, many insertions, irregular movements | | 1,2 | 1,8 | 2,4 |

## The duration factor $f_d$

The duration $f_d$ is obtained according to the theoretical expected lifetime (expressed in hours).




With the equivalent power value $P_e$ and according to the angular speeds and reduction ratio, it is possible to choose, on the descriptive tables the size which presents an input power higher than the one calculated.

## D – THE INERTIA POWER

In case of important accelerations and decelerations it is necessary to calculate the inertia power $P_J$. It is the power necessary to counteract the inertia forces and torques opposed by the system in case of speed changes. First of all it is necessary that the designer calculates the system inertia downstream of the bevel gearbox $J_v$ first reducing them to the slow shaft and than to the fast one. After that the bevel gearbox inertia $J_r$ must be added, which can be taken from the table below, valid for bevel gearboxes with double conical gear, than the total inertia J will be obtained. We remind that the inertia moments are expressed in [kg•m²].

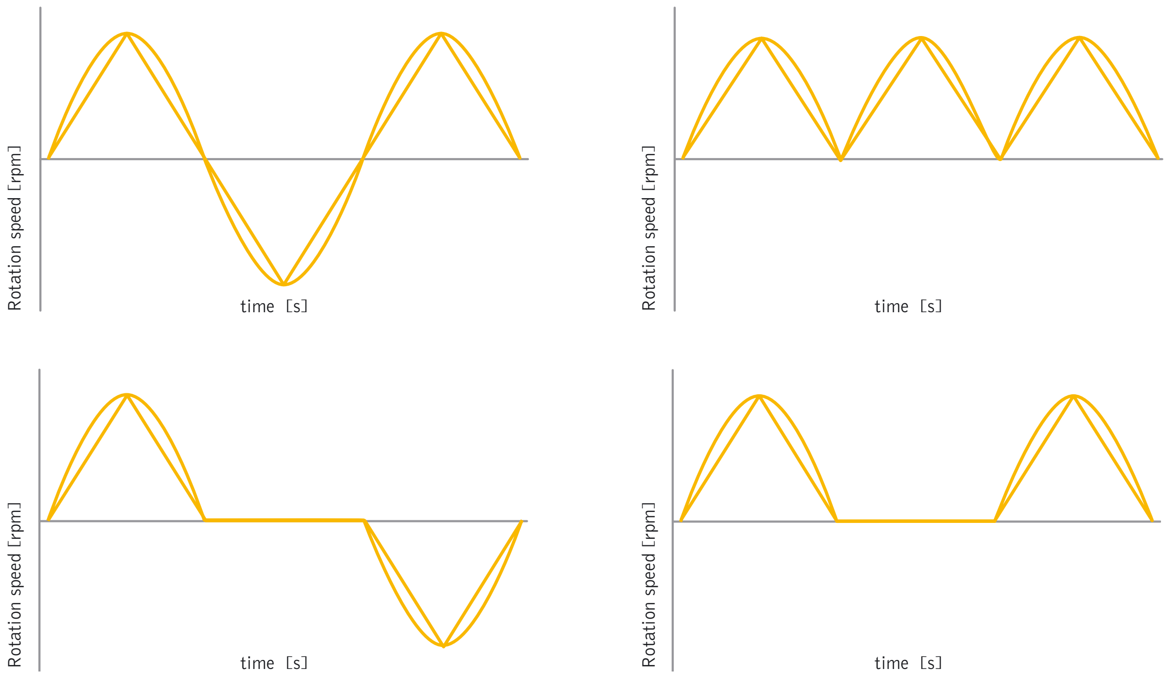
| | | | Ratio | | | | |
|---|---|---|---|---|---|---|---|
| **Size** | **Model** | | **1/1** | **1/1,5** | **1/2** | **1/3** | **1/4** |
| **54** | RC RB RA | [kg•m²] | 0,000133 | 0,000049 | 0,000026 | 0,000014 | 0,000010 |
| | RS RX | [kg•m²] | 0,000134 | 0,000050 | 0,000027 | 0,000016 | 0,000011 |
| **86** | RC RR RB RA | [kg•m²] | 0,000334 | 0,000122 | 0,000066 | 0,000034 | 0,000024 |
| | RS RP RX RZ RM | [kg•m²] | 0,000366 | 0,000136 | 0,000074 | 0,000037 | 0,000026 |
| **110** | RC RR RB RA | [kg•m²] | 0,000733 | 0,000270 | 0,000151 | 0,000081 | 0,000059 |
| | RS RP RX RZ RM | [kg•m²] | 0,000798 | 0,000299 | 0,000168 | 0,000089 | 0,000063 |
| **134** | RC RR RB RA | [kg•m²] | 0,002440 | 0,000887 | 0,000497 | 0,000267 | 0,000197 |
| | RS RP RX RZ RM | [kg•m²] | 0,002593 | 0,000955 | 0,000535 | 0,000284 | 0,000207 |
| **166** | RC RR RB RA | [kg•m²] | 0,010363 | 0,003609 | 0,001928 | 0,000924 | 0,000618 |
| | RS RP RX RZ RM | [kg•m²] | 0,011171 | 0,003968 | 0,002130 | 0,001013 | 0,000669 |
| **200** | RC RR RB RA | [kg•m²] | 0,024061 | 0,009037 | 0,004728 | 0,002325 | 0,001576 |
| | RS RP RX RZ RM | [kg•m²] | 0,026254 | 0,010012 | 0,005276 | 0,002669 | 0,001713 |
| **250** | RC RR RB RA | [kg•m²] | 0,083743 | 0,029423 | 0,015813 | 0,007811 | 0,005348 |
| | RS RP RX RZ RM | [kg•m²] | 0,091467 | 0,032856 | 0,017744 | 0,008669 | 0,005831 |
| **350** | RC RR RB RA | [kg•m²] | 0,740939 | 0,255341 | 0,135607 | 0,060030 | 0,034340 |
| | RS RP RX RZ RM | [kg•m²] | 0,755302 | 0,261725 | 0,139198 | 0,061626 | 0,035238 |
| **500** | RC RR RB RA | [kg•m²] | 1,704159 | 0,587284 | 0,311896 | 0,138069 | 0,078982 |
| | RS RP RX RZ RM | [kg•m²] | 1,737194 | 0,601967 | 0,320155 | 0,141739 | 0,081047 |

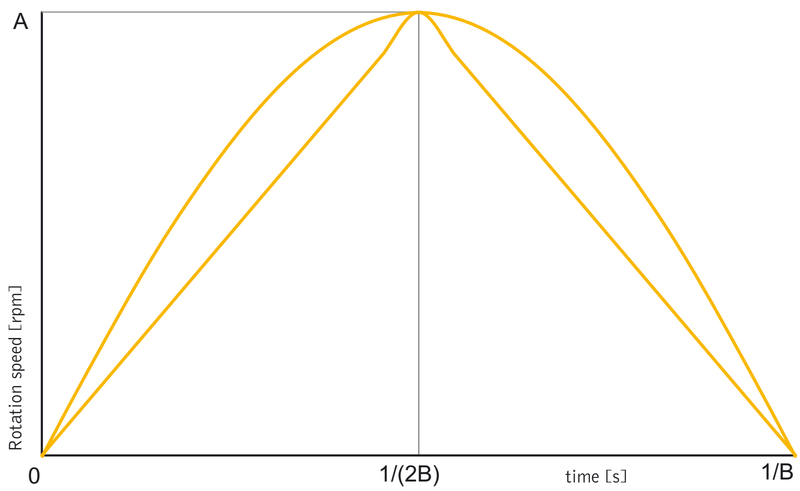
| | | | | | Ratio | | | |
|---|---|---|---|---|---|---|---|---|
| **Size** | **Model** | | **1/2** | **1/3** | **1/4,5** | **1/6** | **1/9** | **1/12** |
| **32** | REC REB | [kg•m²] | - | - | 0,003457 | 0,003067 | 0,002837 | 0,002767 |
| | REA RES | [kg•m²] | - | - | 0,003525 | 0,003105 | 0,002854 | 0,002777 |
| | RHC RHB RHA | [kg•m²] | 0,006230 | 0,005010 | - | - | - | - |
| | RHS | [kg•m²] | 0,006459 | 0,005163 | 0,003525 | - | - | - |
| **42** | REC REB | [kg•m²] | - | - | 0,014292 | 0,012611 | 0,011607 | 0,011301 |
| | REA RES | [kg•m²] | - | - | 0,014651 | 0,012813 | 0,011696 | 0,011352 |
| | RHC RHB RHA | [kg•m²] | 0,26227 | 0.021046 | - | - | - | - |
| | RHS | [kg•m²] | 0,027439 | 0,021854 | 0,014651 | - | - | - |
| **55** | REC REB | [kg•m²] | - | - | 0,029678 | 0,025369 | 0,022966 | 0,022217 |
| | REA RES | [kg•m²] | - | - | 0,030653 | 0,025917 | 0,023310 | 0,022354 |
| | RHC RHB RHA | [kg•m²] | 0,056732 | 0,044702 | - | - | - | - |
| | RHS | [kg•m²] | 0,060022 | 0,046895 | 0,030653 | - | - | - |

Given $\omega_v$ the fast revolution speed and $\alpha_v$ the angular acceleration of the fast shaft, the inertia torque which is necessary to counteract is equal to $J \cdot \alpha_v$ and the respective inertia power $P_j$ is equal to $J \cdot \omega_v \cdot \alpha_v$. In case the time curve of the fast shaft speed $\omega_v$ can be traced back to one of the four schemes below, linear or sinusoidal, where A is the maximum speed in [rpm] and B is the cycle frequency in [Hz], the calculation of the inertia power in [kW] can be simplified, by taking A and B parameters and by calculating:

$$P_J = \frac{2 \cdot J \cdot A^2 \cdot B}{91188}$$

The power $P_j$ must be added to the equivalent power $P_e$ and a verification of the correctness of the size chosen on the descriptive tables must be carried out. If not correct it will be necessary to change the size and effect new verifications.



## E – LUBRICATION

After a first dimensioning according to the power, it is advisable to check whether the only splash lubrication is enough or if a forced lubrication system is necessary. In should be therefore checked, by means of the graph illustrated in the "lubrication" paragraph, whether the average speed of the fast shaft is above or below the border value. In case of speed reaching the border value it will be necessary to contact our technical office. If, in a status of forced lubrication, it is possible to carry out the mounting, it is advisable to calculate the requested lubricant flow-rate Q [l/min.], being known the input power $P_i$ [kW], the running efficiency $\eta$, the lubricant specific heat $c_p$ [J/(kg•°C)], the ambient temperature ta and the maximum temperature which can be reached by the bevel gearbox $t_r$ [°C].

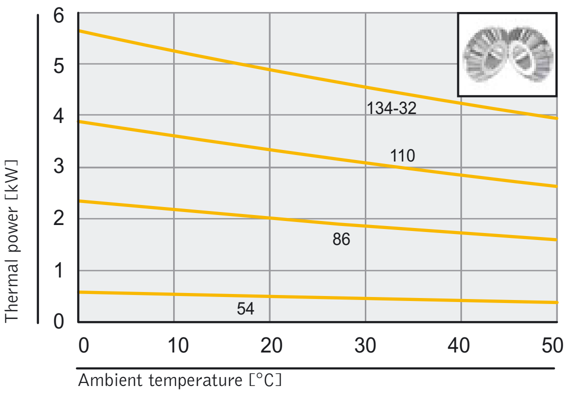
$$Q = \frac{67000 \cdot (1-\eta) \cdot P_i}{c_p \cdot (t_r - t_a)}$$

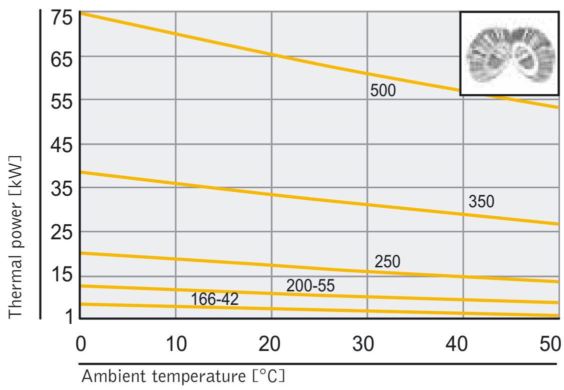
In case it is not possible to provide a forced lubrication system it is necessary to change the size.

## F – THE THERMAL POWER

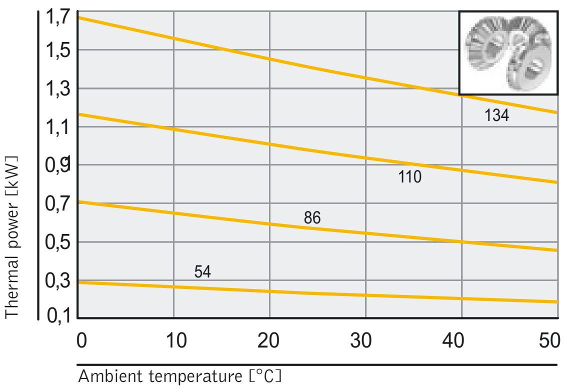
When on the descriptive tables the input power values fall into the coloured area, this means that it is necessary to check the thermal power. This dimension, a function of the bevel gearbox size and of the ambient temperature, indicates the input power establishing a thermal balance with the ambient at the bevel gearbox surface temperature of 90°C. The following graphs show the waves of the thermal power in case of two or three gears transmission.

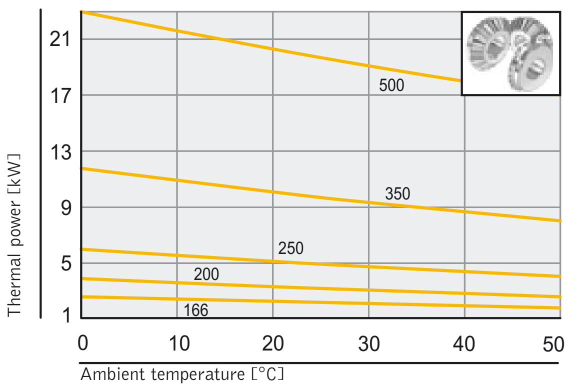
### TWO GEARS TRANSMISSION



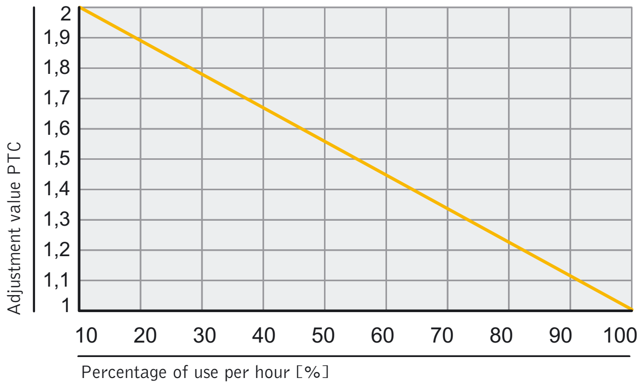




### THREE GEARS TRANSMISSION



In case there are non-working times in the bevel gearbox operation, the thermal power can be increased of a factor PTC obtainable from the graph below, where the abscissas is the use percentage as referred to the hour.




In case the thermal power is lower that the requested power Pi, it will be necessary to change the bevel gearbox size or to pass to forced lubrication. For the capacity calculation see paragraph E.

## G - THE TORQUE

When one or more bevel gearboxes are mounted in series, it is necessary to check that the torque referred to the common axis does not exceed the value shown in the table below.

| Model | Size | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 | 32 | 42 | 55 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RC RA RB | [daNm] | 4 | 9 | 18 | 32 | 77 | 174 | 391 | 1205 | 5392 | - | - | - |
| RR RM RIS | | | | | | | | | | | | | |
| RS RP | [daNm] | 13 | 32 | 41 | 77 | 214 | 391 | 807 | 1446 | 5387 | - | - | - |
| RHA RHB RHC | [daNm] | - | - | - | - | - | - | - | - | - | 32 | 77 | 174 |
| RHS (1/2 1/3) | [daNm] | - | - | - | - | - | - | - | - | - | 77 | 214 | 391 |
| RHS (1/4,5) | [daNm] | - | - | - | - | - | - | - | - | - | 32 | 77 | 174 |

## H- RADIAL AND AXIAL LOADS

The last step is to verify the bevel gearbox strength to radial and axial loads. The border values of said loads are shown on pages 172-175. If the result of such verification is not positive, it will be necessary to change the size.

## RC RR RB RA RS RP RX RZ RIS

| Ratio 1/1 | | 54 | | 86 | | 110 | | 134 | | 166 | | 200 | | 250 | | 350 | | 500 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fast shaft revolution speed $\omega_v$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] |
| 3000 | 3000 | 4,14 | 1,26 | 19,4 | 5,92 | 29,4 | 8,98 | 53,6 | 16,2 | 148 | 44,7 | 256 | 76,6 | 453 | 135 | 1184 | 354 | - | - |
| 1500 | 1500 | 2,20 | 1,34 | 10,4 | 6,35 | 15,7 | 9,59 | 28,7 | 17,3 | 80,3 | 48,5 | 140 | 83,7 | 249 | 149 | 660 | 394 | 1650 | 945 |
| 1000 | 1000 | 1,80 | 1,65 | 7,57 | 6,94 | 10,9 | 9,99 | 20,0 | 18,1 | 56,3 | 51,0 | 98,5 | 88,4 | 176 | 158 | 469 | 421 | 1266 | 1088 |
| 750 | 750 | 1,45 | 1,77 | 6,12 | 7,48 | 8,84 | 10,8 | 16,2 | 19,5 | 45,8 | 55,4 | 80,3 | 96,1 | 143 | 171 | 385 | 460 | 1044 | 1196 |
| 500 | 500 | 1,07 | 1,96 | 4,51 | 8,26 | 6,53 | 11,9 | 12,0 | 21,7 | 34,0 | 61,6 | 59,8 | 107 | 107 | 192 | 290 | 520 | 790 | 1358 |
| 250 | 250 | 0,62 | 2,27 | 2,66 | 9,75 | 3,86 | 14,1 | 7,15 | 25,9 | 20,3 | 73,6 | 35,8 | 128 | 64,6 | 231 | 176 | 631 | 483 | 1660 |
| 100 | 100 | 0,30 | 2,75 | 1,31 | 12,0 | 1,90 | 17,4 | 3,54 | 32,1 | 10,1 | 91,6 | 17,9 | 160 | 32,4 | 290 | 89,0 | 798 | 246 | 2114 |
| 50 | 50 | 0,18 | 3,30 | 0,76 | 13,9 | 1,11 | 20,3 | 2,06 | 37,3 | 5,91 | 107 | 10,4 | 186 | 19,0 | 341 | 52,5 | 942 | 146 | 2510 |

## RC RR RB RA RS RP RM RX RZ

| Ratio 1/1,5 | | 54 | | 86 | | 110 | | 134 | | 166 | | 200 | | 250 | | 350 | | 500 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fast shaft revolution speed $\omega_v$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] |
| 3000 | 2000 | 2,46 | 1,12 | 10,3 | 4,72 | 13,0 | 5,95 | 28,5 | 12,9 | 88,1 | 39,9 | 159 | 71,3 | 238 | 106 | 610 | 273 | - | - |
| 1500 | 1000 | 1,28 | 1,17 | 5,54 | 5,07 | 6,96 | 6,38 | 15,3 | 13,8 | 47,2 | 42,8 | 85,7 | 76,9 | 129 | 115 | 335 | 300 | 907 | 779 |
| 1000 | 667 | 0,88 | 1,21 | 4,15 | 5,70 | 4,91 | 6,75 | 10,8 | 14,6 | 32,9 | 44,7 | 60,0 | 80,7 | 90,7 | 122 | 237 | 319 | 690 | 890 |
| 750 | 500 | 0,71 | 1,30 | 3,30 | 6,05 | 3,96 | 7,26 | 8,78 | 15,9 | 26,7 | 48,4 | 48,7 | 87,4 | 73,8 | 132 | 193 | 346 | 566 | 973 |
| 500 | 333 | 0,52 | 1,43 | 2,30 | 6,32 | 2,91 | 8,00 | 6,48 | 17,6 | 19,7 | 53,6 | 36,2 | 97,4 | 54,9 | 147 | 145 | 390 | 425 | 1096 |
| 250 | 167 | 0,30 | 1,65 | 1,41 | 7,75 | 1,71 | 9,40 | 3,82 | 20,7 | 11,7 | 63,6 | 21,5 | 115 | 32,7 | 176 | 87,1 | 469 | 258 | 1330 |
| 100 | 66,7 | 0,15 | 2,06 | 0,65 | 8,93 | 0,84 | 11,5 | 1,88 | 25,5 | 5,80 | 78,9 | 10,6 | 142 | 16,3 | 219 | 43,7 | 588 | 130 | 1675 |
| 50 | 33,3 | 0,08 | 2,20 | 0,38 | 10,4 | 0,49 | 13,4 | 1,09 | 29,6 | 3,38 | 91,9 | 6,24 | 168 | 9,54 | 256 | 25,6 | 689 | 76,8 | 1980 |

## RC RR RB RA RS RP RX RZ RIS

| Ratio 1/2 | | 54 | | 86 | | 110 | | 134 | | 166 | | 200 | | 250 | | 350 | | 500 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fast shaft revolution speed $\omega_v$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] |
| 3000 | 1500 | 1,53 | 0,93 | 6,04 | 3,69 | 8,20 | 5,01 | 20,7 | 12,5 | 43,8 | 26,4 | 91,2 | 54,5 | 170 | 101 | 538 | 321 | - | - |
| 1500 | 750 | 0,80 | 0,97 | 3,20 | 3,91 | 4,35 | 5,31 | 11,0 | 13,3 | 23,5 | 28,4 | 49,3 | 59,0 | 91,5 | 109 | 293 | 350 | 588 | 674 |
| 1000 | 500 | 0,57 | 1,04 | 2,41 | 4,41 | 3,32 | 6,08 | 8,87 | 16,0 | 18,9 | 34,2 | 34,8 | 62,4 | 63,9 | 114 | 206 | 369 | 457 | 785 |
| 750 | 375 | 0,45 | 1,10 | 1,94 | 4,74 | 2,67 | 6,52 | 7,15 | 17,2 | 15,3 | 37,0 | 28,2 | 67,5 | 51,9 | 124 | 168 | 402 | 373 | 855 |
| 500 | 250 | 0,34 | 1,24 | 1,42 | 5,20 | 1,96 | 7,18 | 5,27 | 19,1 | 11,3 | 41,0 | 20,8 | 74,6 | 38,5 | 138 | 125 | 448 | 279 | 960 |
| 250 | 125 | 0,20 | 1,46 | 0,83 | 6,08 | 1,15 | 8,43 | 3,10 | 22,5 | 6,67 | 48,4 | 12,3 | 88,3 | 22,9 | 164 | 75,0 | 538 | 168 | 1155 |
| 100 | 50 | 0,09 | 1,65 | 0,41 | 7,51 | 0,57 | 10,4 | 1,52 | 27,5 | 3,28 | 59,5 | 6,09 | 109 | 11,4 | 204 | 37,4 | 671 | 84,6 | 1454 |
| 50 | 25 | 0,05 | 1,83 | 0,24 | 8,80 | 0,33 | 12,1 | 0,89 | 32,2 | 1,91 | 69,3 | 3,55 | 127 | 6,61 | 237 | 21,9 | 786 | 49,7 | 1710 |

In case the bevel gearbox is used as multiplier, and for RM models, in order to obtain the output torque value (as referred to the fast shaft) it is necessary to multiply the value on the table by the reduction ratio (meant as a fraction).

## RHC RHB RHA RHS

**Ratio 1/2**

| Fast shaft revolution speed $\omega_V$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | 32 $P_i$ [kW] | 32 $M_{tL}$ [daNm] | 42 $P_i$ [kW] | 42 $M_{tL}$ daNm] | 55 $P_i$ [kW] | 55 $M_{tL}$ [daNm] |
|---|---|---|---|---|---|---|---|
| 2000 | 1000 | 11,7 | 10,0 | 31,1 | 26,7 | 46,0 | 39,5 |
| 1500 | 750 | 10,0 | 11,4 | 24,2 | 27,7 | 36,2 | 41,4 |
| 1000 | 500 | 7,15 | 12,3 | 18,0 | 30,9 | 26,5 | 45,5 |
| 700 | 350 | 5,54 | 13,6 | 13,5 | 33,2 | 19,6 | 48,1 |
| 500 | 250 | 4,35 | 14,9 | 10,0 | 34,4 | 15,2 | 52,2 |
| 300 | 150 | 3,02 | 17,3 | 7,40 | 42,4 | 10,2 | 58,4 |
| 100 | 50 | 1,37 | 23,5 | 2,78 | 47,8 | 4,04 | 69,4 |
| 50 | 25 | 0,74 | 25,4 | 1,52 | 52,2 | 2,26 | 77,6 |

## RC RR RB RA RS RP RX RZ

**Ratio 1/3**

| Fast shaft revolution speed $\omega_V$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | 54 $P_i$ [kW] | 54 $M_{tL}$ [daNm] | 86 $P_i$ [kW] | 86 $M_{tL}$ [daNm] | 110 $P_i$ [kW] | 110 $M_{tL}$ [daNm] | 134 $P_i$ [kW] | 134 $M_{tL}$ [daNm] | 166 $P_i$ [kW] | 166 $M_{tL}$ [daNm] | 200 $P_i$ [kW] | 200 $M_{tL}$ [daNm] | 250 $P_i$ [kW] | 250 $M_{tL}$ [daNm] | 350 $P_i$ [kW] | 350 $M_{tL}$ [daNm] | 500 $P_i$ [kW] | 500 $M_{tL}$ [daNm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3000 | 1000 | 0,74 | 0,67 | 2,79 | 2,55 | 4,09 | 3,74 | 9,19 | 8,33 | 24,7 | 22,4 | 50,1 | 44,9 | 76,5 | 68,9 | 289 | 259 | - | - |
| 1500 | 500 | 0,39 | 0,71 | 1,47 | 2,96 | 2,15 | 3,94 | 4,86 | 8,81 | 13,1 | 23,7 | 26,8 | 48,1 | 41,3 | 74,1 | 155 | 278 | 300 | 515 |
| 1000 | 333 | 0,32 | 0,88 | 1,30 | 3,57 | 1,57 | 4,31 | 4,27 | 11,6 | 10,2 | 27,7 | 22,4 | 60,3 | 34,5 | 92,9 | 108 | 290 | 225 | 578 |
| 750 | 250 | 0,25 | 0,91 | 1,14 | 4,18 | 1,26 | 4,62 | 3,50 | 12,7 | 8,27 | 30,0 | 18,1 | 64,9 | 28,0 | 100 | 88,4 | 317 | 183 | 630 |
| 500 | 166 | 0,19 | 1,04 | 0,82 | 4,51 | 0,93 | 5,11 | 2,56 | 13,9 | 6,09 | 33,1 | 13,3 | 71,6 | 20,6 | 110 | 65,5 | 352 | 136 | 700 |
| 250 | 83 | 0,11 | 1,21 | 0,46 | 5,06 | 0,54 | 5,94 | 1,50 | 16,3 | 3,58 | 38,9 | 7,86 | 84,6 | 12,2 | 131 | 39,0 | 420 | 81,0 | 835 |
| 100 | 33 | 0,06 | 1,37 | 0,21 | 5,77 | 0,26 | 7,15 | 0,74 | 20,1 | 1,75 | 47,6 | 3,87 | 104 | 6,01 | 161 | 19,3 | 519 | 40,5 | 1044 |
| 50 | 16,7 | 0,03 | 1,65 | 0,12 | 6,60 | 0,15 | 8,25 | 0,42 | 22,8 | 1,02 | 55,5 | 2,24 | 120 | 3,50 | 188 | 11,2 | 603 | 23,8 | 1227 |

## RHC RHB RHA RHS

**Ratio 1/3**

| Fast shaft revolution speed $\omega_V$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | 32 $P_i$ [kW] | 32 $M_{tL}$ [daNm] | 42 $P_i$ [kW] | 42 $M_{tL}$ [daNm] | 55 $P_i$ [kW] | 55 $M_{tL}$ [daNm] |
|---|---|---|---|---|---|---|---|
| 3000 | 1000 | 13,3 | 11,4 | - | - | - | - |
| 2000 | 667 | 9,69 | 12,4 | 22,4 | 28,8 | 32,9 | 42,3 |
| 1500 | 500 | 7,72 | 13,2 | 18,0 | 30,9 | 26,5 | 45,6 |
| 1000 | 333 | 5,81 | 14,9 | 13,5 | 34,8 | 20,0 | 51,6 |
| 700 | 233 | 4,21 | 15,5 | 9,82 | 36,2 | 14,4 | 53,1 |
| 500 | 166 | 3,26 | 16,7 | 7,63 | 39,2 | 11,1 | 57,1 |
| 300 | 100 | 2,27 | 19,5 | 5,17 | 44,4 | 7,50 | 64,4 |
| 100 | 33 | 0,95 | 24,5 | 1,94 | 50,0 | 3,01 | 77,7 |
| 50 | 16,7 | 0,54 | 27,8 | 1,05 | 54,0 | 1,61 | 82,5 |

## RC RR RB RA RS RP RX RZ

**Ratio 1/4**

| Fast shaft revolution speed $\omega_V$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | 54 | | 86 | | 110 | | 134 | | 166 | | 200 | | 250 | | 350 | | 500 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] |
| 3000 | 750 | 0,45 | 0,55 | 1,89 | 2,31 | 2,73 | 3,33 | 6,37 | 7,70 | 12,2 | 14,7 | 30,8 | 36,8 | 45,3 | 54,2 | 189 | 226 | - | - |
| 1500 | 375 | 0,24 | 0,58 | 1,00 | 2,44 | 1,43 | 3,49 | 3,36 | 8,12 | 6,49 | 15,7 | 16,4 | 39,2 | 24,2 | 57,9 | 100 | 239 | 155 | 355 |
| 1000 | 250 | 0,21 | 0,77 | 0,89 | 3,26 | 1,22 | 4,47 | 2,86 | 10,3 | 5,54 | 20,1 | 13,0 | 46,6 | 20,8 | 74,6 | 70,2 | 252 | 144 | 496 |
| 750 | 188 | 0,19 | 0,92 | 0,73 | 3,56 | 0,98 | 4,79 | 2,30 | 11,1 | 4,46 | 21,5 | 10,5 | 50,2 | 16,7 | 79,9 | 56,8 | 271 | 117 | 536 |
| 500 | 125 | 0,14 | 1,02 | 0,54 | 3,96 | 0,71 | 5,20 | 1,68 | 12,1 | 3,27 | 23,7 | 7,73 | 55,5 | 12,3 | 88,3 | 42,0 | 301 | 87,0 | 600 |
| 250 | 62,5 | 0,08 | 1,17 | 0,31 | 4,54 | 0,42 | 6,16 | 0,98 | 14,2 | 1,92 | 27,8 | 4,53 | 65,0 | 7,26 | 104 | 24,9 | 357 | 51,7 | 711 |
| 100 | 25 | 0,04 | 1,46 | 0,15 | 5,50 | 0,20 | 7,33 | 0,48 | 17,4 | 0,94 | 34,1 | 2,22 | 79,7 | 3,57 | 128 | 12,3 | 441 | 25,6 | 880 |
| 50 | 12,5 | 0,02 | 1,68 | 0,09 | 6,60 | 0,12 | 8,80 | 0,28 | 20,3 | 0,55 | 39,9 | 1,30 | 93,3 | 2,08 | 149 | 7,16 | 514 | 14,9 | 1024 |

## RHS

**Ratio 1/4,5**

| Fast shaft revolution speed $\omega_V$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | 32 | | 42 | | 55 | |
|---|---|---|---|---|---|---|---|
| | | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] |
| 3000 | 667 | 9,69 | 12,4 | 22,4 | 28,8 | - | - |
| 2000 | 444 | 7,07 | 13,6 | 16,5 | 31,9 | 24,2 | 46,8 |
| 1500 | 333 | 5,81 | 14,9 | 13,5 | 34,8 | 20,0 | 51,6 |
| 1000 | 222 | 4,02 | 15,5 | 9,70 | 37,5 | 13,9 | 53,8 |
| 700 | 156 | 3,10 | 17,1 | 7,29 | 40,1 | 10,4 | 57,3 |
| 500 | 111 | 2,35 | 18,2 | 5,54 | 42,9 | 8,05 | 62,3 |
| 300 | 66,7 | 1,65 | 21,3 | 3,57 | 46,0 | 5,21 | 67,1 |
| 100 | 22,2 | 0,65 | 25,1 | 1,34 | 51,8 | 2,37 | 91,7 |
| 50 | 11,1 | 0,44 | 34,0 | 0,84 | 65,0 | 1,31 | 101 |

## REC REB REA RES

**Ratio 1/4,5**

| Fast shaft revolution speed $\omega_V$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | 32 | | 42 | | 55 | |
|---|---|---|---|---|---|---|---|
| | | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] |
| 3000 | 667 | 11,3 | 14,5 | 29,6 | 38,1 | 43,7 | 56,3 |
| 2000 | 444 | 8,46 | 16,3 | 21,3 | 41,1 | 31,3 | 60,5 |
| 1500 | 333 | 6,82 | 17,5 | 17,1 | 44,0 | 25,2 | 64,9 |
| 1000 | 222 | 5,00 | 19,3 | 12,9 | 49,8 | 19,2 | 73,4 |
| 700 | 156 | 3,81 | 21,0 | 9,30 | 51,3 | 13,7 | 75,6 |
| 500 | 111 | 2,94 | 22,6 | 7,20 | 55,6 | 10,6 | 82,0 |
| 300 | 66,7 | 1,97 | 25,3 | 4,90 | 63,1 | 7,12 | 91,5 |
| 100 | 22,2 | 0,83 | 32,1 | 1,90 | 73,4 | 2,81 | 108 |
| 50 | 11,1 | 0,42 | 32,4 | 1,00 | 77,3 | 1,52 | 116 |

## REC REB REA RES

| Ratio 1/6 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 32 | | 42 | | 55 | |
| Fast shaft revolution speed $\omega_V$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] |
| 3000 | 500 | 9,33 | 16,0 | 19,8 | 34,0 | 36,6 | 62,9 |
| 2000 | 333 | 6,88 | 17,7 | 14,7 | 37,8 | 27,1 | 69,8 |
| 1500 | 250 | 5,54 | 19,0 | 11,8 | 40,5 | 21,8 | 74,9 |
| 1000 | 167 | 4,06 | 20,9 | 8,73 | 45,0 | 16,1 | 83,1 |
| 700 | 117 | 3,08 | 22,7 | 6,64 | 48,9 | 12,2 | 90,0 |
| 500 | 83,3 | 2,37 | 24,3 | 5,13 | 52,8 | 9,52 | 97,9 |
| 300 | 50 | 1,60 | 27,5 | 3,45 | 59,3 | 6,41 | 110 |
| 100 | 16,7 | 0,64 | 33,0 | 1,38 | 71,2 | 2,56 | 132 |
| 50 | 8,33 | 0,34 | 34,8 | 0,73 | 75,1 | 1,36 | 139 |

## REC REB REA RES

| Ratio 1/9 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 32 | | 42 | | 55 | |
| Fast shaft revolution speed $\omega_V$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] |
| 3000 | 333 | 4,49 | 11,5 | 10,7 | 27,5 | 23,5 | 60,5 |
| 2000 | 222 | 3,36 | 12,9 | 7,96 | 30,7 | 17,3 | 66,8 |
| 1500 | 167 | 2,69 | 13,8 | 6,41 | 33,0 | 14,0 | 72,1 |
| 1000 | 111 | 1,96 | 15,1 | 4,69 | 36,3 | 10,3 | 79,7 |
| 700 | 77,8 | 1,49 | 16,4 | 3,56 | 39,3 | 7,83 | 86,6 |
| 500 | 55,6 | 1,14 | 17,6 | 2,74 | 42,3 | 6,05 | 93,4 |
| 300 | 33,3 | 0,77 | 19,8 | 1,84 | 47,4 | 4,07 | 104 |
| 100 | 11,1 | 0,30 | 23,2 | 0,75 | 58,0 | 1,62 | 125 |
| 50 | 5,56 | 0,16 | 24,7 | 0,39 | 60,2 | 0,86 | 132 |

## REC REB REA RES

| Ratio 1/12 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 32 | | 42 | | 55 | |
| Fast shaft revolution speed $\omega_V$ [rpm] | Fast shaft revolution speed $\omega_L$ [rpm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] | $P_i$ [kW] | $M_{tL}$ [daNm] |
| 3000 | 250 | 3,01 | 10,3 | 5,83 | 20,0 | 13,6 | 46,7 |
| 2000 | 167 | 2,21 | 11,3 | 4,28 | 22,0 | 10,1 | 52,0 |
| 1500 | 125 | 1,76 | 12,1 | 3,44 | 23,6 | 8,13 | 55,9 |
| 1000 | 83,3 | 1,29 | 13,3 | 2,51 | 25,9 | 5,94 | 61,3 |
| 700 | 58,3 | 0,97 | 14,3 | 1,90 | 28,0 | 4,51 | 66,5 |
| 500 | 41,7 | 0,75 | 15,4 | 1,46 | 30,0 | 3,48 | 71,6 |
| 300 | 25 | 0,50 | 17,1 | 0,98 | 33,6 | 2,33 | 80,1 |
| 100 | 8,33 | 0,21 | 21,6 | 0,38 | 39,2 | 0,93 | 96,0 |
| 50 | 4,17 | 0,11 | 22,6 | 0,20 | 41,1 | 0,49 | 100 |

## NIPLOY treatment

For applications in oxidizing environments, it is possible to protect some bevel gearbox components which do not undergo any sliding, by means of a chemical nickel treatment, the so-called Niploy. It creates a non permanent surface coating on casings and covers.

## The stainless steel series

For applications where a permanent resistance to oxidizing is necessary, it is possible to supply the components in stainless steel. Sizes 86, 110 and 134 foresee a model in AISI 316, as a standard production, for all components: shafts, covers, bolts, casings, and motor flanges; the stainless steel series can be applied in the sea environment without any oxidizing problems. It is possible to supply all the remaining dimensions in AISI 304 or 316 steel as special components. For further information see pages 226-229.

## NORMS

### ATEX directive (94/9/CE)

The 94/9/CE directive is better known as the "ATEX directive". All UNIMEC's products may be classified as "components" according to the definition quoted in art.1 par.3 c), and therefore they do not require an ATEX mark.
A conformity declaration in accordance to what stated in art.8 par.3 can be supplied upon end user's request, subject to the filling up of a questionnaire with the indication of the working parameters.

### Machinery directive (98/37/CE)

The 98/37/CE directive is better known as the "Machinery directive". UNIMEC's components are included in the products categories which do not need to affix the CE mark, as they are "intended to be incorporated or assembled with other machinery" (art.4 par.2). Upon end user's request a manufacturer declaration can be supplied in accordance to what is foreseen at Annex II, point B. The new machine directory (06/42/CE) will be acknowledged by 29/12/2009. UNIMEC guarantees that every new duty in mechanical transmission will be followed by such date.

### ROHS directive (02/95/CE)

The 02/95/CE directive is better known as the "ROHS directive". All UNIMEC's suppliers of electromechanical equipments have issued a conformity certification to the above norms for their products. A copy of said certificates can be supplied upon final user's request.

### REACH directive (06/121/CE)

The 06/121/CE is better known as "REACH" directive and applies as the rule CE 1907/2006. UNIMEC products present only inside lubricants as "substances", so being disciplined by art. 7 of above mentioned rule. By art. 7 par. 1 b) UNIMEC declares that its products are not subjected to any declaration or registration because the substances in them are not "to be lost in normal and reasonable previewed usage conditions"; in facts lubricant losses are typical of malfunctions or heavy anomalies. By art. 33 of the rule CE 1907/2006, UNIMEC declares that inside its products there aren't substances identified by art. 57 in percentage to be dangerous.

### UNI EN ISO 9001:2000 norm

UNIMEC has always considered the company's quality system management as a very important subject. That is why, since the year 1996, UNIMEC is able to show its UNI EN ISO 9001 certification, at the beginning in accordance to the 1994 norms and now meeting the requirements of the version published in the year 2000. 13 years of company's quality, certified by UKAS, the world's most accredited certification body, take shape into an organization which is efficient at each stage of the working process. In date 31/10/2008 the new version of this norm was published. UNIMEC will evaluate every news reported in this revision.

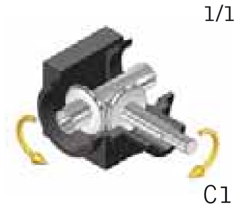
UKAS QUALITY MANAGEMENT

### Painting

Our products are all painted in color RAL 5015 blue. An oven-dry system enables the products to have a perfect adhesivity. Different colors as well as epoxidic paints are available.

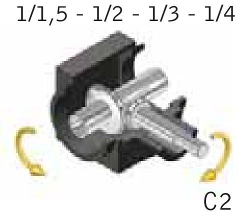
**Basic constructive forms**

ratio:
1/1

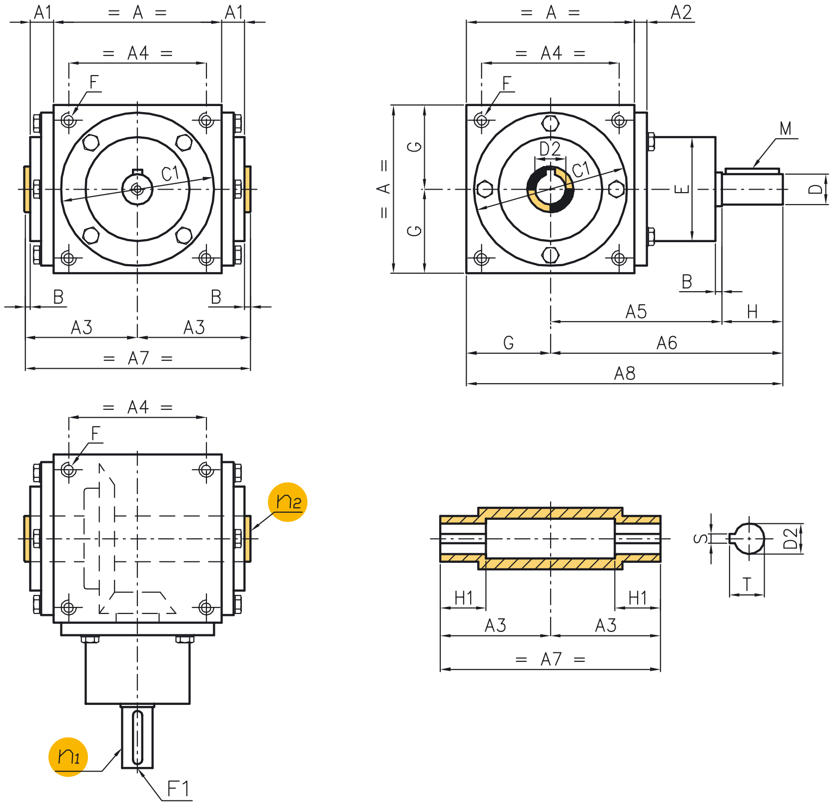


C1

ratio:
1/1,5 - 1/2 - 1/3 - 1/4



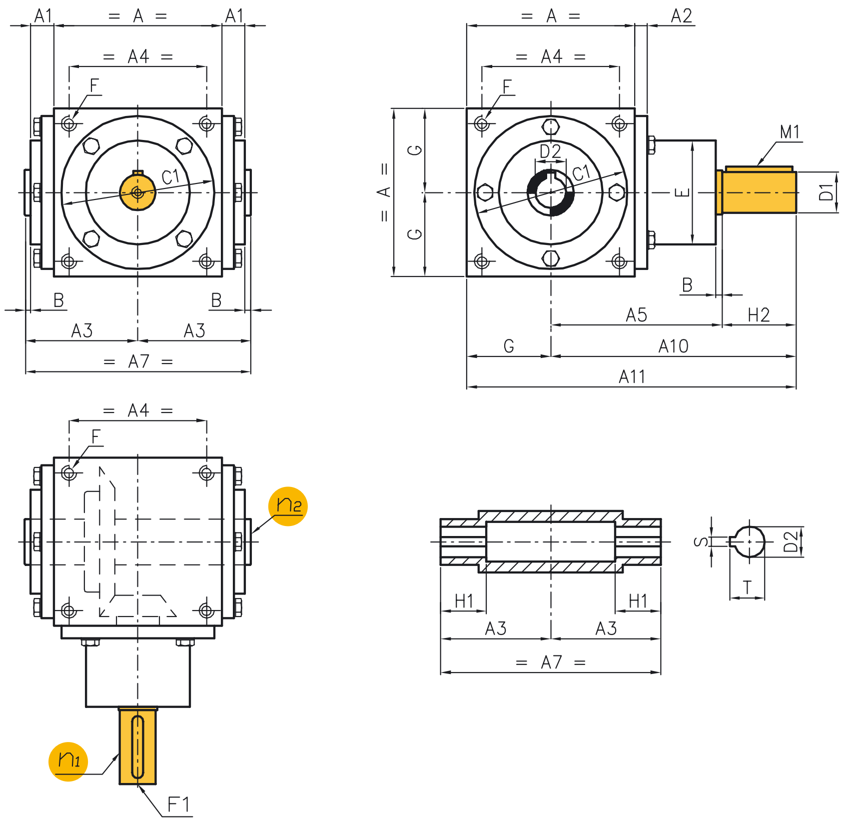
C2




## Hollow shaft bevel gearbox RC

| | XRC Models* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Size** | **54** | **86** | **110** | **134** | **166** | **200** | **250** | **350** | **500** |
| A | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
| A1 | 8,5 | 15 | 15 | 18 | 21 | 23 | 22 | 30 | 35 |
| A2 | 10 | 10 | 8 | 9 | 11 | 11 | 11 | 15 | 20 |
| A3 | 37 | 60 | 72 | 87 | 106 | 125 | 150 | 210 | 295 |
| A4 | 44 | 70 | 90 | 114 | 144 | 174 | 216 | 320 | 450 |
| A5 | 72 | 84 | 110 | 132 | 152 | 182 | 218 | 330 | 415 |
| A6 | 95 | 114 | 150 | 182 | 217 | 267 | 318 | 450 | 585 |
| A7 | 74 | 120 | 144 | 174 | 212 | 250 | 300 | 420 | 590 |
| A8 | 122 | 157 | 205 | 249 | 300 | 367 | 443 | 625 | 835 |
| B | 1,5 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 10 |
| C1 Ø f7 | 53 | 84 | 100 | 122 | 156 | 185 | 230 | 345 | 485 |
| D Ø h7 | 11 | 16 | 20 | 24 | 32 | 42 | 55 | 65 | 120 |
| D2 Ø H7 | 12 | 16 | 20 | 24 | 32 | 42 | 55 | 80 | 120 |
| E Ø | 52,8 | 59 | 68 | 80 | 107 | 120 | 152 | 240 | 320 |
| F | M4x12 | M8x20 | M10x25 | M10x25 | M12x30 | M14x35 | M16x40 | M20x60 | M30x80 |
| F1 | M4x10 | M6x12 | M8x20 | M8x20 | M10x25 | M10x25 | M12x25 | M12x25 | M20x50 |
| G | 27 | 43 | 55 | 67 | 83 | 100 | 125 | 175 | 250 |
| H | 23 | 30 | 40 | 50 | 65 | 85 | 100 | 120 | 170 |
| H1 | 22 | 30 | 30 | 35 | 45 | 50 | 55 | 65 | 100 |
| M | 4x4x20 | 5x5x25 | 6x6x35 | 8x7x45 | 10x8x60 | 12x8x80 | 16x10x90 | 18x11x110 | 32x18x150 |
| S | 4 | 5 | 6 | 8 | 10 | 12 | 16 | 22 | 32 |
| T | 13,8 | 18,3 | 22,8 | 27,3 | 35,3 | 45,3 | 59,3 | 85,4 | 127,4 |

* XRC model: stainless steel version




**Basic constructive forms**

ratio:
1/1

C1

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

C2

| Hollow shaft bevel gearbox with reinforced hub shaft RR | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | XRR Models* | | | | | | | |
| **Size** | | **86** | **110** | **134** | **166** | **200** | **250** | **350** | **500** |
| A | | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
| A1 | | 15 | 15 | 18 | 21 | 23 | 22 | 30 | 35 |
| A2 | | 10 | 8 | 9 | 11 | 11 | 11 | 15 | 20 |
| A3 | | 60 | 72 | 87 | 106 | 125 | 150 | 210 | 295 |
| A4 | | 70 | 90 | 114 | 144 | 174 | 216 | 320 | 450 |
| A5 | | 84 | 110 | 132 | 152 | 182 | 218 | 330 | 415 |
| A7 | | 120 | 144 | 174 | 212 | 250 | 300 | 420 | 590 |
| A10 | | 134 | 165 | 197 | 242 | 292 | 358 | 500 | 625 |
| A11 | | 177 | 220 | 264 | 325 | 392 | 483 | 675 | 875 |
| B | | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 10 |
| C1 Ø f7 | | 84 | 100 | 122 | 156 | 185 | 230 | 345 | 485 |
| D1 Ø h7 | | 24 | 26 | 32 | 45 | 55 | 70 | 85 | 140 |
| D2 Ø H7 | | 16 | 20 | 24 | 32 | 42 | 55 | 80 | 120 |
| E Ø | | 59 | 68 | 80 | 107 | 120 | 152 | 240 | 320 |
| F | | M8x20 | M10x25 | M10x25 | M12x30 | M14x35 | M16x40 | M20x60 | M30x80 |
| F1 | | M6x12 | M8x20 | M8x20 | M10x25 | M10x25 | M12x25 | M12x25 | M20x50 |
| G | | 43 | 55 | 67 | 83 | 100 | 125 | 175 | 250 |
| H1 | | 30 | 30 | 35 | 45 | 50 | 55 | 65 | 100 |
| H2 | | 50 | 55 | 65 | 90 | 110 | 140 | 170 | 210 |
| M1 | | 8x7x40 | 8x7x45 | 10x8x55 | 14x9x80 | 16x10x100 | 20x12x120 | 22x14x150 | 36x20x200 |
| S | | 5 | 6 | 8 | 10 | 12 | 12 | 22 | 32 |
| T | | 18,3 | 22,8 | 27,3 | 35,3 | 45,3 | 59,3 | 85,4 | 127,4 |

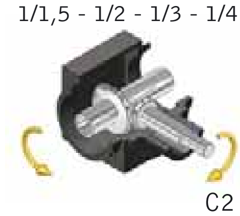
* XRR model: stainless steel version

**Basic constructive forms**

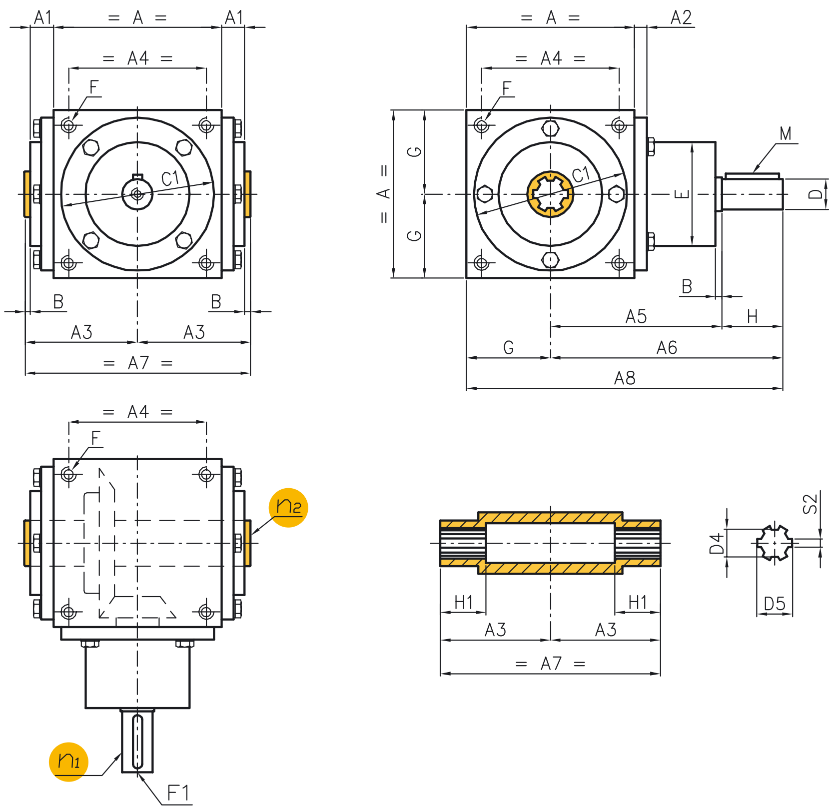
ratio:
1/1

C1

ratio:
1/1,5 - 1/2 - 1/3 - 1/4



C2

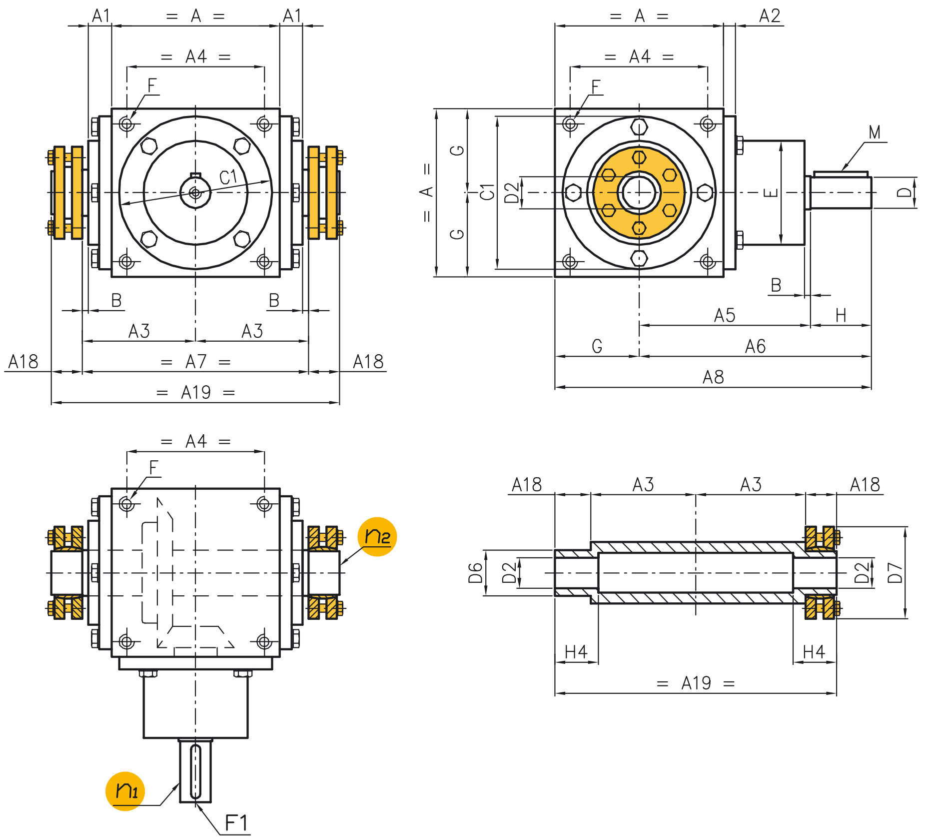



| | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|
| **Broached hollow shaft bevel gear box RB** | | | | | | | | | |
| | | **XRB Models*** | | | | | | | |
| **Size** | **54** | **86** | **110** | **134** | **166** | **200** | **250** | **350** | **500** |
| A | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
| A1 | 8,5 | 15 | 15 | 18 | 21 | 23 | 22 | 30 | 35 |
| A2 | 10 | 10 | 8 | 9 | 11 | 11 | 11 | 15 | 20 |
| A3 | 37 | 60 | 72 | 87 | 106 | 125 | 150 | 210 | 295 |
| A4 | 44 | 70 | 90 | 114 | 144 | 174 | 216 | 320 | 450 |
| A5 | 72 | 84 | 110 | 132 | 152 | 182 | 218 | 330 | 415 |
| A6 | 95 | 114 | 150 | 182 | 217 | 267 | 318 | 450 | 585 |
| A7 | 74 | 120 | 144 | 174 | 212 | 250 | 300 | 420 | 590 |
| A8 | 122 | 157 | 205 | 249 | 300 | 367 | 443 | 625 | 835 |
| B | 1,5 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 10 |
| C1 Ø f7 | 53 | 84 | 100 | 122 | 156 | 185 | 230 | 345 | 485 |
| D Ø h7 | 11 | 16 | 20 | 24 | 32 | 42 | 55 | 65 | 120 |
| D4 Ø H7 | 11 | 13 | 18 | 21 | 28 | 36 | 46 | 72 | 102 |
| D5 Ø H10 | 14 | 16 | 22 | 25 | 34 | 42 | 54 | 82 | 112 |
| E Ø | 52,8 | 59 | 68 | 80 | 107 | 120 | 152 | 240 | 320 |
| F | M4x12 | M8x20 | M10x25 | M10x25 | M12x30 | M14x35 | M16x40 | M20x60 | M30x80 |
| F1 | M4x10 | M6x12 | M8x20 | M8x20 | M10x25 | M10x25 | M12x25 | M12x25 | M20x50 |
| G | 27 | 43 | 55 | 67 | 83 | 100 | 125 | 175 | 250 |
| H | 23 | 30 | 40 | 50 | 65 | 85 | 100 | 120 | 170 |
| H5 | 13 | 15 | 20 | 25 | 30 | 35 | 40 | 50 | 65 |
| M | 4x4x20 | 5x5x25 | 6x6x35 | 8x7x45 | 10x8x60 | 12x8x80 | 16x10x90 | 18x11x110 | 32x18x150 |
| S2 H9 | 3 | 3,5 | 5 | 5 | 7 | 7 | 9 | 12 | 16 |
| Number of slots | 6 | 6 | 6 | 6 | 6 | 8 | 8 | 10 | 10 |
| Broached shaft UNI 8953 NT | 6x11x14 | 6x13x16 | 6x18x22 | 6x21x25 | 6x28x34 | 8x36x42 | 8x46x54 | 10x72x82 | 10x102x112 |

The broached shaft which is to be coupled with the hollow shaft of the bevel gearbox must respect the following tolerance parameters, depending on whether it is sliding or fixed.

| **Size** | **54** | **86** | **110** | **134** | **166** | **200** | **250** | **350** | **500** |
|---|---|---|---|---|---|---|---|---|---|
| **Sliding coupling** | | | | | | | | | |
| D5 a11 | 14 | 16 | 22 | 25 | 34 | 42 | 54 | 82 | 112 |
| D4 f7 | 11 | 13 | 18 | 21 | 28 | 36 | 46 | 72 | 102 |
| S2 d10 | 3 | 3,5 | 5 | 5 | 7 | 7 | 9 | 12 | 16 |
| **Fixed coupling** | | | | | | | | | |
| D5 a11 | 14 | 16 | 22 | 25 | 34 | 42 | 54 | 82 | 112 |
| D4 h7 | 11 | 13 | 18 | 21 | 28 | 36 | 46 | 72 | 102 |
| S2 h10 | 3 | 3,5 | 5 | 5 | 7 | 7 | 9 | 12 | 16 |

* XRB model: stainless steel version




## Hollow shaft bevel gearbox with shrink-disk RA

### XRA Models*

| Size | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|
| A | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
| A1 | 8,5 | 15 | 15 | 18 | 21 | 23 | 22 | 30 | 35 |
| A2 | 10 | 10 | 8 | 9 | 11 | 11 | 11 | 15 | 20 |
| A3 | 37 | 60 | 72 | 87 | 106 | 125 | 150 | 210 | 295 |
| A4 | 44 | 70 | 90 | 114 | 144 | 174 | 216 | 320 | 450 |
| A5 | 72 | 84 | 110 | 132 | 152 | 182 | 218 | 330 | 415 |
| A6 | 95 | 114 | 150 | 182 | 217 | 267 | 318 | 450 | 585 |
| A7 | 74 | 120 | 144 | 174 | 212 | 250 | 300 | 420 | 590 |
| A8 | 122 | 157 | 205 | 249 | 300 | 367 | 443 | 625 | 835 |
| A18 | 15 | 23 | 23 | 25 | 30 | 32 | 35 | 50 | 75 |
| A19 | 104 | 166 | 190 | 224 | 272 | 314 | 370 | 370 | 740 |
| B | 1,5 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 10 |
| C1 Ø f7 | 53 | 84 | 100 | 122 | 156 | 185 | 230 | 345 | 485 |
| D Ø h7 | 11 | 16 | 20 | 24 | 32 | 42 | 55 | 65 | 120 |
| D2 Ø H7 | 12 | 16 | 20 | 24 | 32 | 42 | 55 | 80 | 120 |
| D6 Ø h7 | 14 | 24 | 24 | 30 | 44 | 50 | 68 | 100 | 160 |
| D7 Ø | 38 | 50 | 50 | 60 | 80 | 90 | 115 | 170 | 265 |
| E Ø | 52,8 | 59 | 68 | 80 | 107 | 120 | 152 | 240 | 320 |
| F | M4x12 | M8x20 | M10x25 | M10x25 | M12x30 | M14x35 | M16x40 | M20x60 | M30x80 |
| F1 | M4x10 | M6x12 | M8x20 | M8x20 | M10x25 | M10x25 | M12x25 | M12x25 | M20x50 |
| G | 27 | 43 | 55 | 67 | 83 | 100 | 125 | 175 | 250 |
| H | 23 | 30 | 40 | 50 | 65 | 85 | 100 | 120 | 170 |
| H4 | 22 | 30 | 30 | 35 | 45 | 50 | 55 | 65 | 90 |
| M | 4x4x20 | 5x5x25 | 6x6x35 | 8x7x45 | 10x8x60 | 12x8x80 | 16x10x90 | 18x11x110 | 32x18x150 |

| Size | | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|
| Torque moment | Mt [daNm] | 5 | 12 | 21 | 30 | 62 | 138 | 250 | 900 | 2860 |
| Axial force | Fa [daN] | 900 | 1900 | 2700 | 2900 | 6400 | 9200 | 10600 | 24000 | 51000 |
| Fastening | n. of screws | 4xM5 | 6xM5 | 6xM5 | 7xM5 | 7xM6 | 8xM6 | 10xM6 | 12xM8 | 12xM12 |
| | Torque [daNm] | 0,4 | 0,4 | 0,4 | 0,4 | 1,2 | 1,2 | 1,2 | 3 | 10 |

* XRA model: stainless steel version

**Basic constructive forms**

ratio:
1/1

C1

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

C2

The table on the left shows the characteristic values for each single shrink-disk.

**Basic constructive forms**

ratio:
1/1

S1

S3

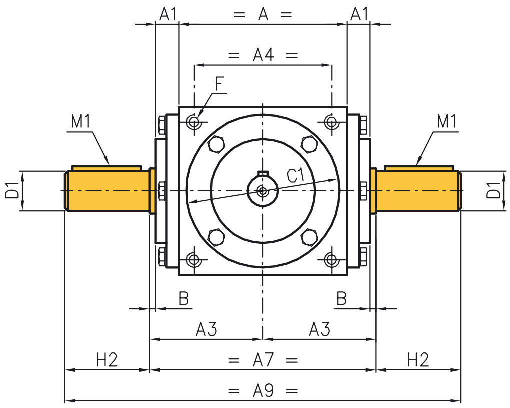
S4

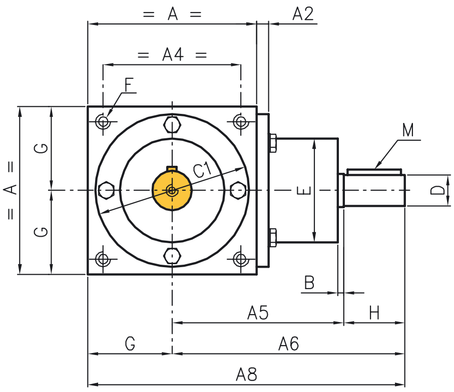
ratio:
1/1,5 - 1/2 - 1/3 - 1/4

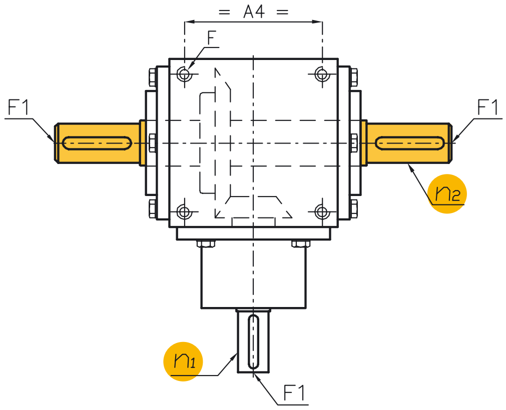
S2

S9

S10

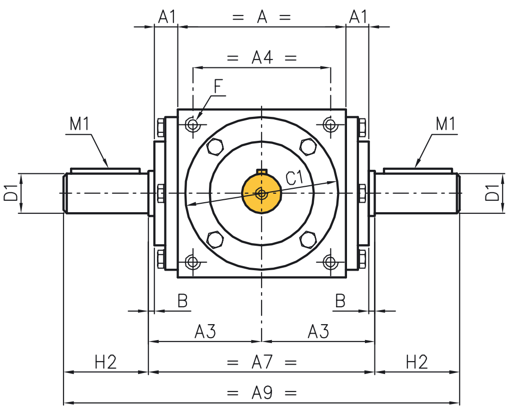


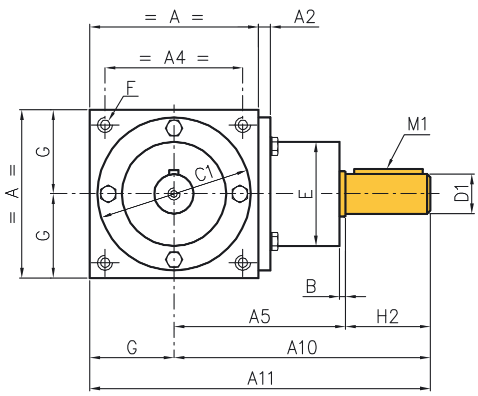



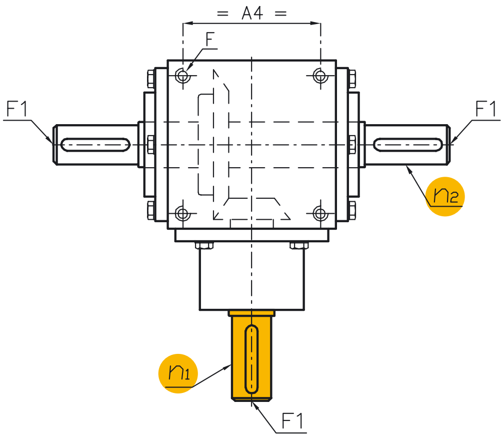




| Protruding shaft bevel gearbox RS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | XRS Models* | | | | | | | |
| **Size** | **54** | **86** | **110** | **134** | **166** | **200** | **250** | **350** | **500** |
| A | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
| A1 | 8,5 | 15 | 15 | 18 | 21 | 23 | 22 | 30 | 35 |
| A2 | 10 | 10 | 8 | 9 | 11 | 11 | 11 | 15 | 20 |
| A3 | 37 | 60 | 72 | 87 | 106 | 125 | 150 | 210 | 295 |
| A4 | 44 | 70 | 90 | 114 | 144 | 174 | 216 | 320 | 450 |
| A5 | 72 | 84 | 110 | 132 | 152 | 182 | 218 | 330 | 415 |
| A6 | 95 | 114 | 150 | 182 | 217 | 267 | 318 | 450 | 585 |
| A7 | 74 | 120 | 144 | 174 | 212 | 250 | 300 | 420 | 590 |
| A8 | 122 | 157 | 205 | 249 | 300 | 367 | 443 | 625 | 835 |
| A9 | 144 | 220 | 254 | 304 | 392 | 470 | 580 | 760 | 1010 |
| B | 1,5 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 10 |
| C1 Ø f7 | 53 | 84 | 100 | 122 | 156 | 185 | 230 | 345 | 485 |
| D Ø h7 | 11 | 16 | 20 | 24 | 32 | 42 | 55 | 65 | 120 |
| D1 Ø H7 | 18 | 24 | 26 | 32 | 45 | 55 | 70 | 85 | 140 |
| E Ø | 52,8 | 59 | 68 | 80 | 107 | 120 | 152 | 240 | 320 |
| F | M4x12 | M8x20 | M10x25 | M10x25 | M12x30 | M14x35 | M16x40 | M20x60 | M30x80 |
| F1 | M4x10 | M6x12 | M8x20 | M8x20 | M10x25 | M10x25 | M12x25 | M12x25 | M20x50 |
| G | 27 | 43 | 55 | 67 | 83 | 100 | 125 | 175 | 250 |
| H | 23 | 30 | 40 | 50 | 65 | 85 | 100 | 120 | 170 |
| H2 | 35 | 50 | 55 | 65 | 90 | 110 | 140 | 170 | 210 |
| M | 4x4x20 | 5x5x25 | 6x6x35 | 8x7x45 | 10x8x60 | 12x8x80 | 16x10x90 | 18x11x110 | 32x18x150 |
| M1 | 6x6x30 | 8x7x40 | 8x7x45 | 10x8x55 | 14x9x80 | 16x10x100 | 20x12x120 | 22x14x150 | 36x20x200 |

* XRS model: stainless steel version

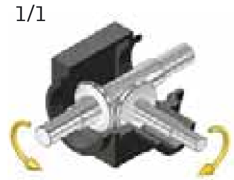



**Basic constructive forms**

ratio:
1/1



S1

S3

S4

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

S2

S9

S10

| | Protruding shaft bevel gearbox | | with reinforced hub-shaft RP | | | | | |
|---|---|---|---|---|---|---|---|---|
| | XRP Models* | | | | | | | |
| **Size** | **86** | **110** | **134** | **166** | **200** | **250** | **350** | **500** |
| A | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
| A1 | 15 | 15 | 18 | 21 | 23 | 22 | 30 | 35 |
| A2 | 10 | 8 | 9 | 11 | 11 | 11 | 15 | 20 |
| A3 | 60 | 72 | 87 | 106 | 125 | 150 | 210 | 295 |
| A4 | 70 | 90 | 114 | 144 | 174 | 216 | 320 | 450 |
| A5 | 84 | 110 | 132 | 152 | 182 | 218 | 330 | 415 |
| A7 | 120 | 144 | 174 | 212 | 250 | 300 | 420 | 590 |
| A9 | 220 | 254 | 304 | 392 | 470 | 580 | 760 | 1010 |
| A10 | 134 | 165 | 197 | 242 | 292 | 358 | 500 | 625 |
| A11 | 177 | 220 | 264 | 325 | 392 | 483 | 675 | 875 |
| B | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 10 |
| C1 Ø f7 | 84 | 100 | 122 | 156 | 185 | 230 | 345 | 485 |
| D1 Ø h7 | 24 | 26 | 32 | 45 | 55 | 70 | 85 | 140 |
| E Ø | 59 | 68 | 80 | 107 | 120 | 152 | 240 | 320 |
| F | M8x20 | M10x25 | M10x25 | M12x30 | M14x35 | M16x40 | M20x60 | M30x80 |
| F1 | M6x12 | M8x20 | M8x20 | M10x25 | M10x25 | M12x25 | M12x25 | M20x50 |
| G | 43 | 55 | 67 | 83 | 100 | 125 | 175 | 250 |
| H2 | 50 | 55 | 65 | 90 | 110 | 140 | 170 | 210 |
| M1 | 8x7x40 | 8x7x45 | 10x8x55 | 14x9x80 | 16x10x100 | 20x12x120 | 22x14x150 | 36x20x200 |

* XRP model: stainless steel version

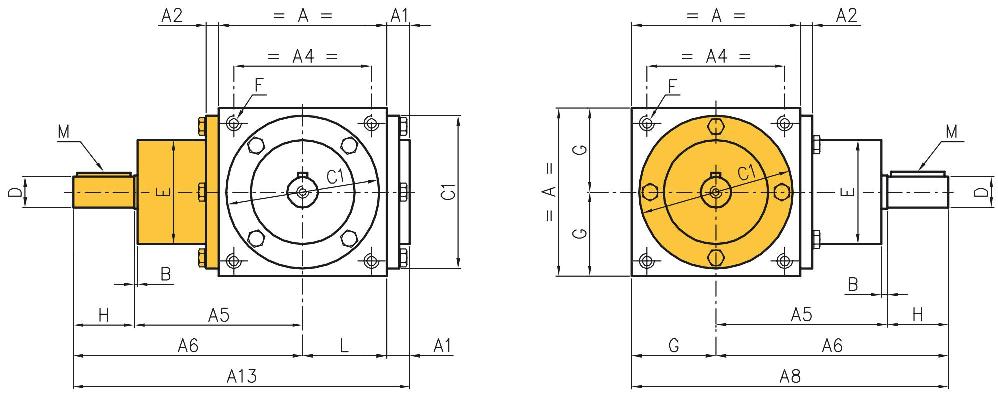
**Basic constructive forms**

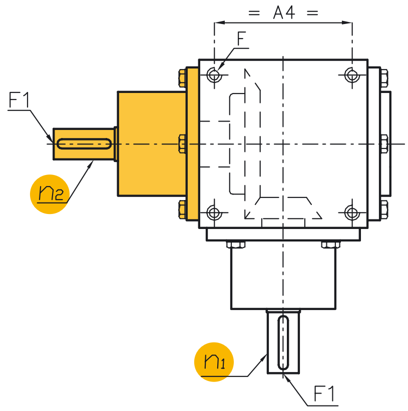
ratio:
1/1

S31

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

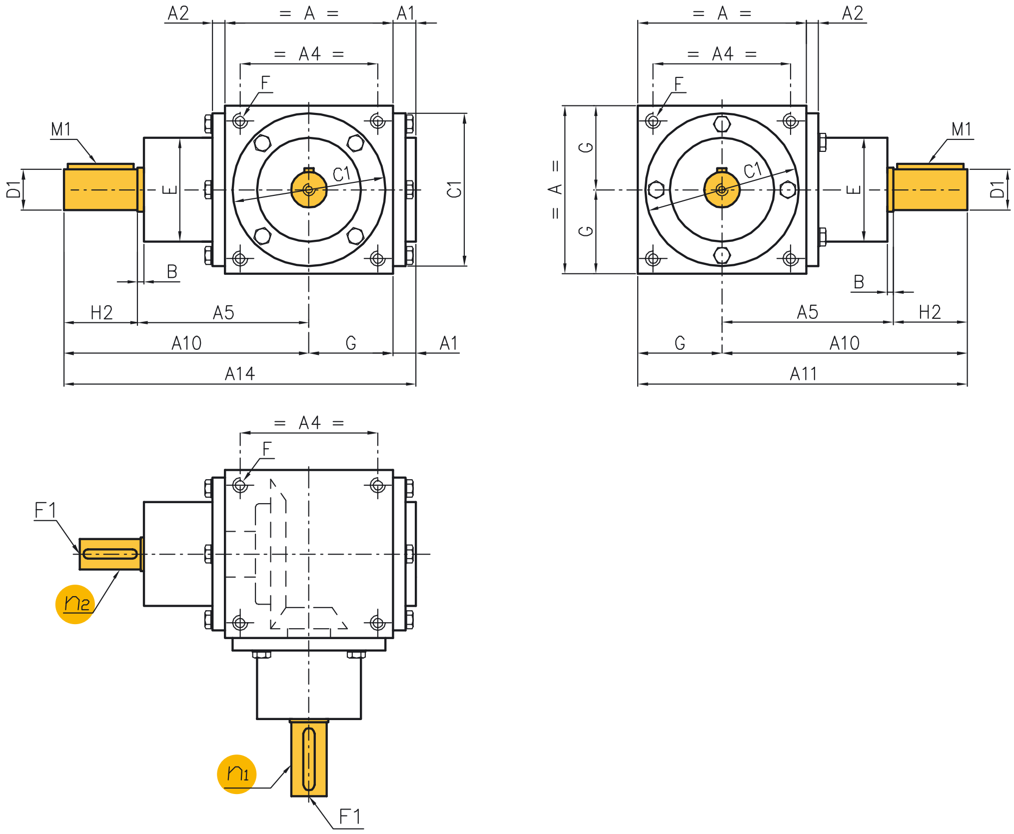
S32



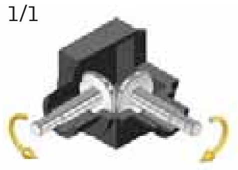

| Double hub bevel gearbox RX | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | XRX Models* | | | | | | | |
| **Size** | **54** | **86** | **110** | **134** | **166** | **200** | **250** | **350** | **500** |
| A | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
| A1 | 8,5 | 15 | 15 | 18 | 21 | 23 | 22 | 30 | 35 |
| A2 | 10 | 10 | 8 | 9 | 11 | 11 | 11 | 15 | 20 |
| A4 | 44 | 70 | 90 | 114 | 144 | 174 | 216 | 320 | 450 |
| A5 | 72 | 84 | 110 | 132 | 152 | 182 | 218 | 330 | 415 |
| A6 | 95 | 114 | 150 | 182 | 217 | 267 | 318 | 450 | 585 |
| A8 | 122 | 157 | 205 | 249 | 300 | 367 | 443 | 625 | 835 |
| A13 | 157,5 | 172 | 220 | 267 | 321 | 390 | 465 | 655 | 870 |
| B | 1,5 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 10 |
| C1 Ø f7 | 53 | 84 | 100 | 122 | 156 | 185 | 230 | 345 | 485 |
| D Ø h7 | 11 | 16 | 20 | 24 | 32 | 42 | 55 | 65 | 120 |
| E Ø | 52,8 | 59 | 68 | 80 | 107 | 120 | 152 | 240 | 320 |
| F | M4x12 | M8x20 | M10x25 | M10x25 | M12x30 | M14x35 | M16x40 | M20x60 | M30x80 |
| F1 | M4x10 | M6x12 | M8x20 | M8x20 | M10x25 | M10x25 | M12x25 | M12x25 | M20x50 |
| G | 27 | 43 | 55 | 67 | 83 | 100 | 125 | 175 | 250 |
| H | 23 | 30 | 40 | 50 | 65 | 85 | 100 | 120 | 170 |
| M | 4x4x20 | 5x5x25 | 6x6x35 | 8x7x45 | 10x8x60 | 12x8x80 | 16x10x90 | 18x11x110 | 32x18x150 |

* XRX model: stainless steel version




**Basic constructive forms**

ratio:
1/1



S31

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

S32

| | Double hub bevel gearbox with reinforced shafts RZ | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | XRZ Models* | | | | | | | |
| **Size** | **86** | **110** | **134** | **166** | **200** | **250** | **350** | **500** |
| A | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
| A1 | 15 | 15 | 18 | 21 | 23 | 22 | 30 | 35 |
| A2 | 10 | 8 | 9 | 11 | 11 | 11 | 15 | 20 |
| A4 | 70 | 90 | 114 | 144 | 174 | 216 | 320 | 450 |
| A5 | 84 | 110 | 132 | 152 | 182 | 218 | 330 | 415 |
| A10 | 134 | 165 | 197 | 242 | 292 | 358 | 500 | 625 |
| A11 | 177 | 220 | 264 | 325 | 392 | 483 | 675 | 875 |
| A14 | 192 | 235 | 282 | 346 | 415 | 505 | 705 | 910 |
| B | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 10 |
| C1 Ø f7 | 84 | 100 | 122 | 156 | 185 | 230 | 345 | 485 |
| D1 Ø h7 | 24 | 26 | 32 | 45 | 55 | 70 | 85 | 140 |
| E Ø | 59 | 68 | 80 | 107 | 120 | 152 | 240 | 320 |
| F | M8x20 | M10x25 | M10x25 | M12x30 | M14x35 | M16x40 | M20x60 | M30x80 |
| F1 | M6x12 | M8x20 | M8x20 | M10x25 | M10x25 | M12x25 | M12x25 | M20x50 |
| G | 43 | 55 | 67 | 83 | 100 | 125 | 175 | 250 |
| H2 | 50 | 55 | 65 | 90 | 110 | 140 | 170 | 210 |
| M1 | 8x7x40 | 8x7x45 | 10x8x55 | 14x9x80 | 16x10x100 | 20x12x120 | 22x14x150 | 36x20x200 |

* XRZ model: stainless steel version

**Basic constructive forms**

ratio:
1/1,5

RM-S1

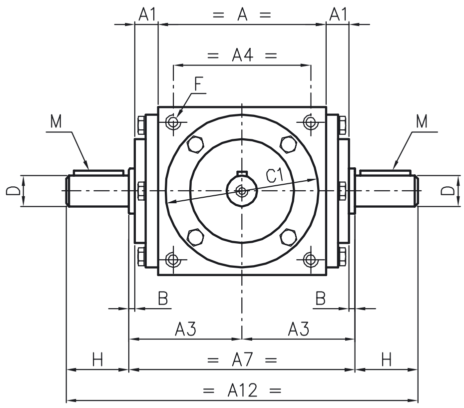
RM-S2

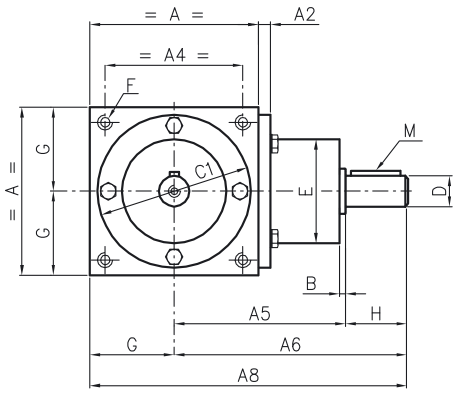
RM-S3

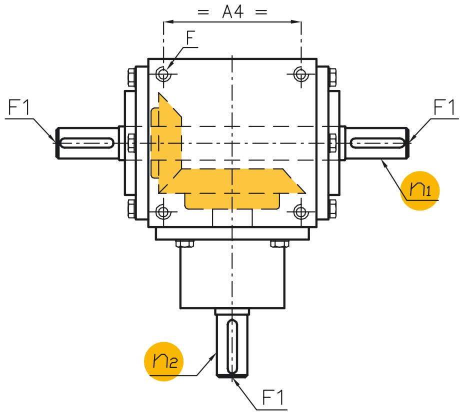
RM-S4

RM-S9

RM-S10

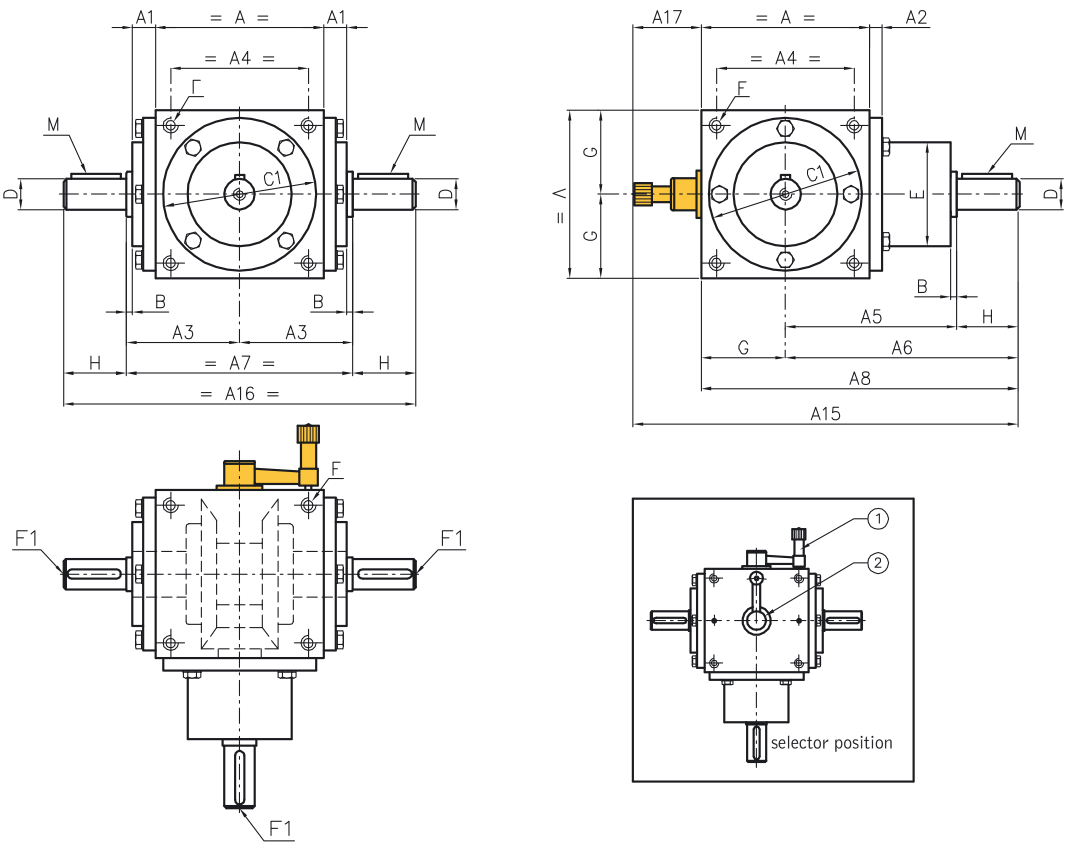


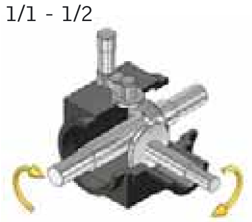

| Bevel gearbox with fast protruding shafts RM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | XRM Models* | | | | | | | |
| **Size** | **54** | **86** | **110** | **134** | **166** | **200** | **250** | **350** | **500** |
| A | 54 | 86 | 110 | 134 | 166 | 200 | 250 | 350 | 500 |
| A1 | 8,5 | 15 | 15 | 18 | 21 | 23 | 22 | 30 | 35 |
| A2 | 10 | 10 | 8 | 9 | 11 | 11 | 11 | 15 | 20 |
| A3 | 37 | 60 | 72 | 87 | 106 | 125 | 150 | 210 | 295 |
| A4 | 44 | 70 | 90 | 114 | 144 | 174 | 216 | 320 | 450 |
| A5 | 72 | 84 | 110 | 132 | 152 | 182 | 218 | 330 | 415 |
| A6 | 95 | 114 | 150 | 182 | 217 | 267 | 318 | 450 | 385 |
| A7 | 74 | 120 | 144 | 174 | 212 | 250 | 300 | 420 | 590 |
| A8 | 122 | 157 | 205 | 249 | 300 | 367 | 443 | 625 | 835 |
| A12 | 120 | 180 | 224 | 274 | 342 | 420 | 500 | 660 | 930 |
| B | 1,5 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 10 |
| C1 Ø f7 | 53 | 84 | 100 | 122 | 156 | 185 | 230 | 345 | 485 |
| D Ø h7 | 11 | 16 | 20 | 24 | 32 | 42 | 55 | 65 | 120 |
| E Ø | 52,8 | 59 | 68 | 80 | 107 | 120 | 152 | 240 | 320 |
| F | M4x12 | M8x20 | M10x25 | M10x25 | M12x30 | M14x35 | M16x40 | M20x60 | M30x80 |
| F1 | M4x10 | M6x12 | M8x20 | M8x20 | M10x25 | M10x25 | M12x25 | M12x25 | M20x50 |
| G | 27 | 43 | 55 | 67 | 83 | 100 | 125 | 175 | 250 |
| H | 23 | 30 | 40 | 50 | 65 | 85 | 100 | 120 | 170 |
| M | 4x4x20 | 5x5x25 | 6x6x35 | 8x7x45 | 10x8x60 | 12x8x80 | 16x10x90 | 18x11x110 | 32x18x150 |

* XRM model: stainless steel version



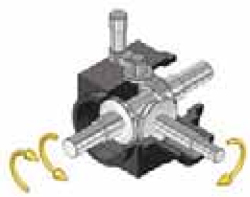

**Basic constructive forms**

ratio:
1/1 - 1/2



RIS-A

RIS-B



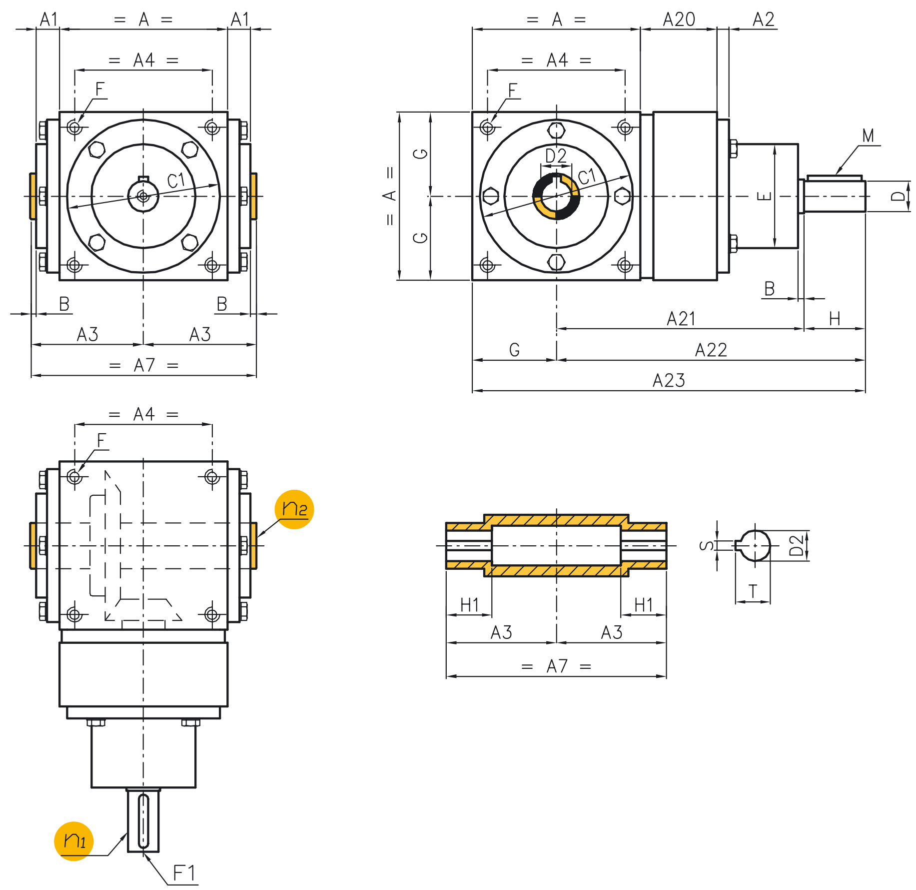
RIS-C

## Bevel gearbox with inverter RIS

| Size | 134 | 166 | 200 | 250 |
|---|---|---|---|---|
| A | 134 | 166 | 200 | 250 |
| A1 | 18 | 21 | 23 | 22 |
| A2 | 9 | 11 | 11 | 11 |
| A3 | 87 | 106 | 125 | 150 |
| A4 | 114 | 144 | 174 | 216 |
| A5 | 132 | 152 | 182 | 218 |
| A6 | 177 | 217 | 267 | 318 |
| A7 | 174 | 212 | 250 | 300 |
| A8 | 249 | 300 | 367 | 443 |
| A15 | 333 | 384 | 451 | 527 |
| A16 | 264 | 342 | 420 | 500 |
| A17 | 84 | 84 | 84 | 84 |
| B | 2 | 2 | 2 | 3 |
| C1 Ø f7 | 122 | 156 | 185 | 230 |
| D Ø h7 | 32 | 42 | 55 | 65 |
| E Ø | 80 | 107 | 120 | 152 |
| F | M10x25 | M12x30 | M14x35 | M16x40 |
| F1 | M8x20 | M10x25 | M10x25 | M12x25 |
| G | 67 | 83 | 100 | 125 |
| H | 50 | 65 | 85 | 100 |
| H3 | 45 | 60 | 85 | 100 |
| M | 10x8x40 | 12x8x50 | 16x10x70 | 16x10x90 |

In A and B versions, the lever enables the selection of : inserted shaft or idle shaft.
In C version the lever enables the selection of: inserted shaft, inserted shaft with reversed revolution or neutral. The rotation directions depend on the position of the selection lever. The selection operation by means of the lever must be actuated only when shafts are not running.

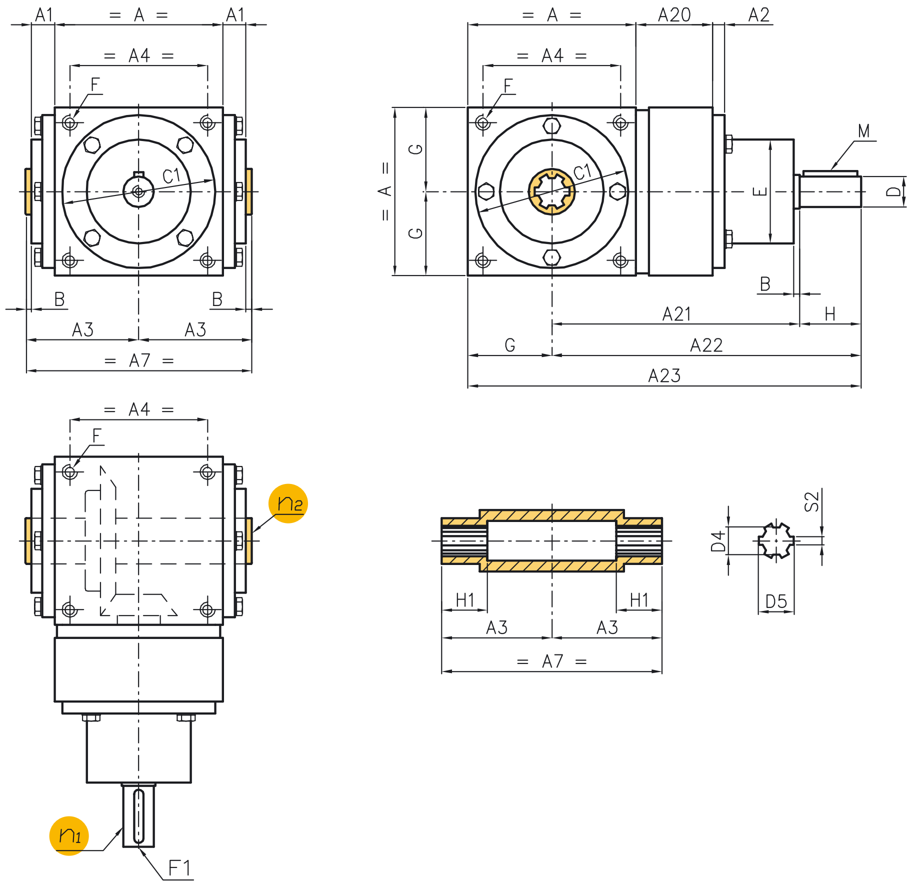
ratio:
1/4,5 - 1/6 - 1/9 - 1/12




## High reduction bevel gearbox with hollow shaft REC

| Size | 32 | 42 | 55 |
|---|---|---|---|
| A | 134 | 166 | 200 |
| A1 | 18 | 21 | 23 |
| A2 | 9 | 11 | 11 |
| A4 | 114 | 144 | 174 |
| A7 | 174 | 212 | 250 |
| A20 | 88 | 98 | 128 |
| A21 | 220 | 250 | 310 |
| A22 | 270 | 315 | 395 |
| A23 | 337 | 398 | 495 |
| B | 2 | 2 | 2 |
| C1 Ø f7 | 122 | 156 | 185 |
| D Ø h7 | 24 | 32 | 42 |
| D2 Ø H7 | 24 | 32 | 42 |
| E Ø | 80 | 107 | 120 |
| F | M10x25 | M12x30 | M14x35 |
| F1 | M8x20 | M10x25 | M10x25 |
| G | 67 | 83 | 100 |
| H | 50 | 65 | 85 |
| H1 | 35 | 45 | 50 |
| M | 8x7x45 | 10x8x60 | 12x8x80 |
| S | 8 | 10 | 12 |
| T | 27,3 | 35,3 | 45,3 |

ratio:
1/4,5 - 1/6 - 1/9 - 1/12

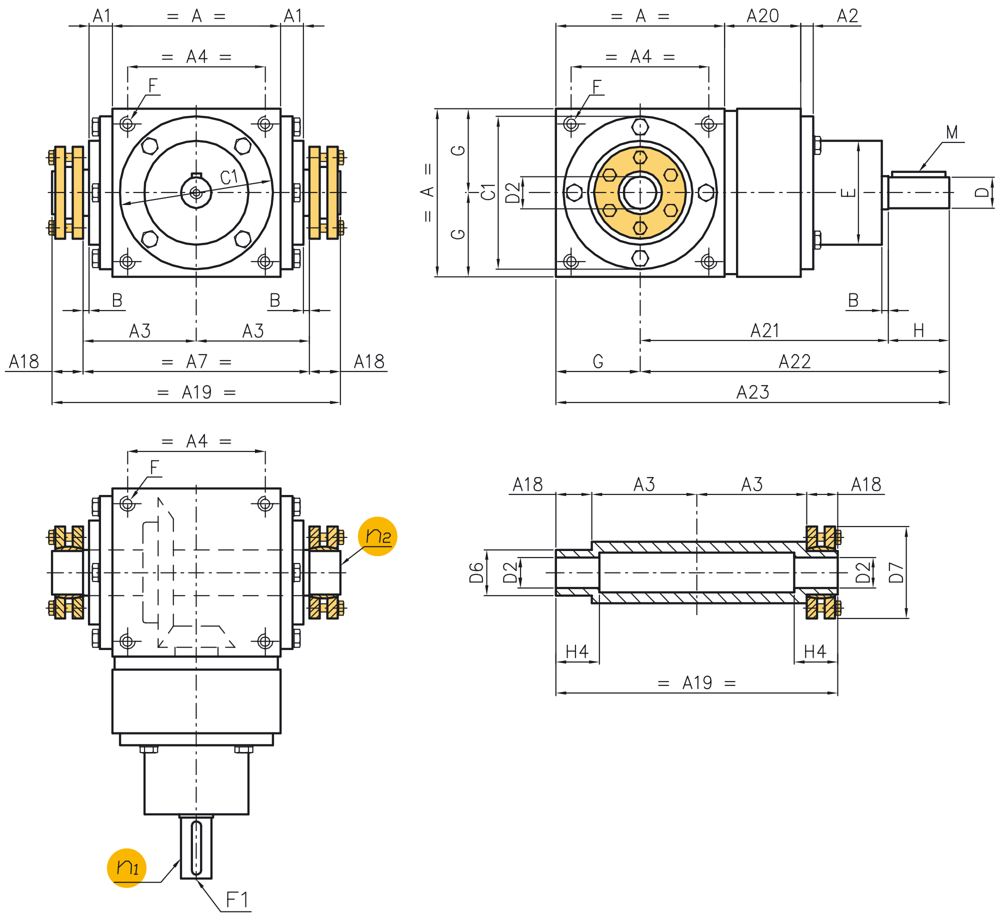



## High reduction bevel gearbox with broached hollow shaft REB

| Size | 32 | 42 | 55 |
|---|---|---|---|
| A | 134 | 166 | 200 |
| A1 | 18 | 21 | 23 |
| A2 | 9 | 11 | 11 |
| A4 | 114 | 144 | 174 |
| A7 | 174 | 212 | 250 |
| A20 | 88 | 98 | 128 |
| A21 | 220 | 250 | 310 |
| A22 | 270 | 315 | 395 |
| A23 | 337 | 398 | 495 |
| B | 2 | 2 | 2 |
| C1 Ø f7 | 122 | 156 | 185 |
| D Ø h7 | 24 | 32 | 42 |
| D4 Ø H7 | 21 | 28 | 36 |
| D5 Ø H10 | 25 | 34 | 42 |
| E Ø | 80 | 107 | 120 |
| F | M10x25 | M12x30 | M14x35 |
| F1 | M8x20 | M10x25 | M10x25 |
| G | 67 | 83 | 100 |
| H | 50 | 65 | 85 |
| H5 | 25 | 30 | 35 |
| M | 8x7x45 | 10x8x60 | 12x8x80 |
| S2 H9 | 5 | 7 | 7 |
| Number of slots | 6 | 6 | 8 |
| Broached shaft UNI 8953 NT | 6x21x25 | 6x28x34 | 8x36x42 |

For the broached shaft characteristics make reference to RB models on page 200 (sizes 134, 166 and 200)

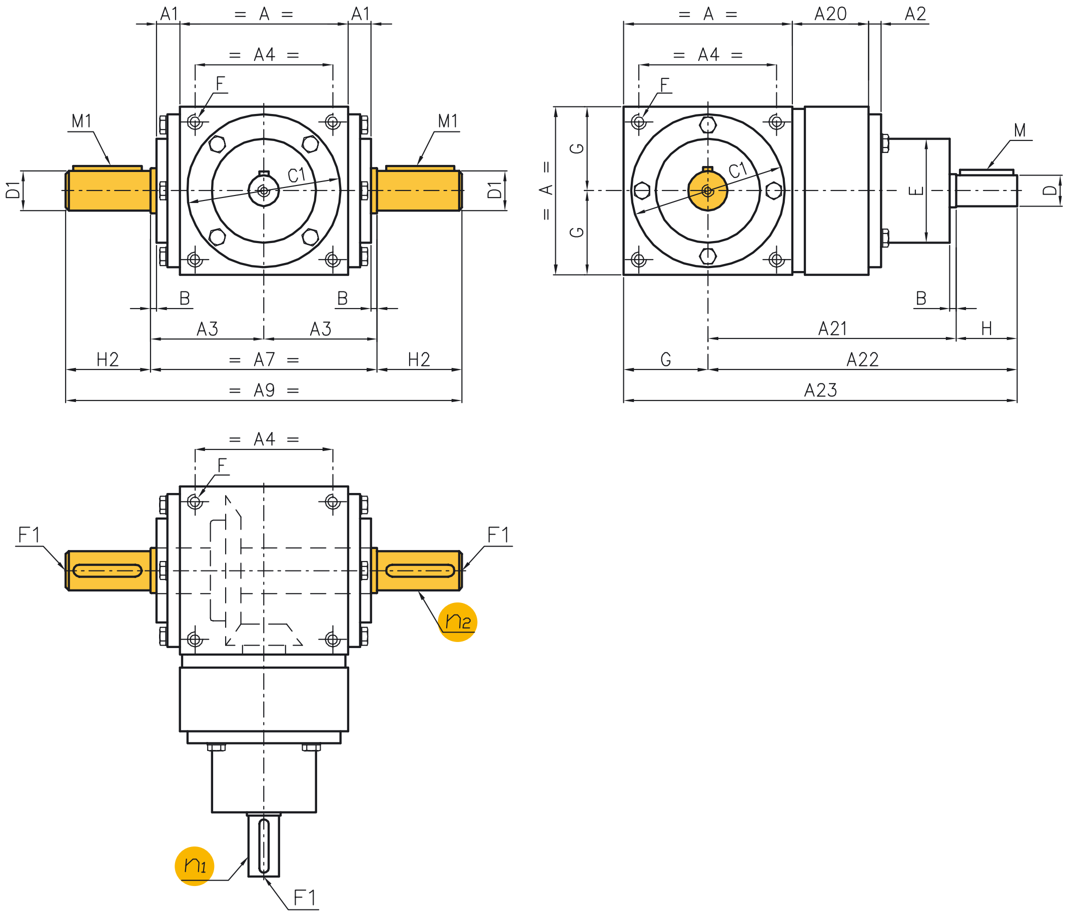
ratio:
1/4,5 - 1/6 - 1/9 - 1/12




## High reduction bevel gearbox with shrink disks REA

| **Size** | **32** | **42** | **55** |
|---|---|---|---|
| A | 134 | 166 | 200 |
| A1 | 18 | 21 | 23 |
| A2 | 9 | 11 | 11 |
| A4 | 114 | 144 | 174 |
| A7 | 174 | 212 | 250 |
| A18 | 25 | 30 | 32 |
| A20 | 88 | 98 | 128 |
| A21 | 220 | 250 | 310 |
| A22 | 270 | 315 | 395 |
| A23 | 337 | 398 | 495 |
| B | 2 | 2 | 2 |
| C1 Ø f7 | 122 | 156 | 185 |
| D Ø h7 | 24 | 32 | 42 |
| D2 Ø H7 | 24 | 32 | 42 |
| D6 Ø h7 | 30 | 44 | 50 |
| D7 | 60 | 80 | 90 |
| E Ø | 80 | 107 | 120 |
| F | M10x25 | M12x30 | M14x35 |
| F1 | M8x20 | M10x25 | M10x25 |
| G | 67 | 83 | 100 |
| H | 50 | 65 | 85 |
| H4 | 35 | 45 | 50 |
| M | 8x7x45 | 10x8x60 | 12x8x80 |

For the characteristics of shrink-disks, make reference to RA models on page 201 (sizes 134, 166 and 200)

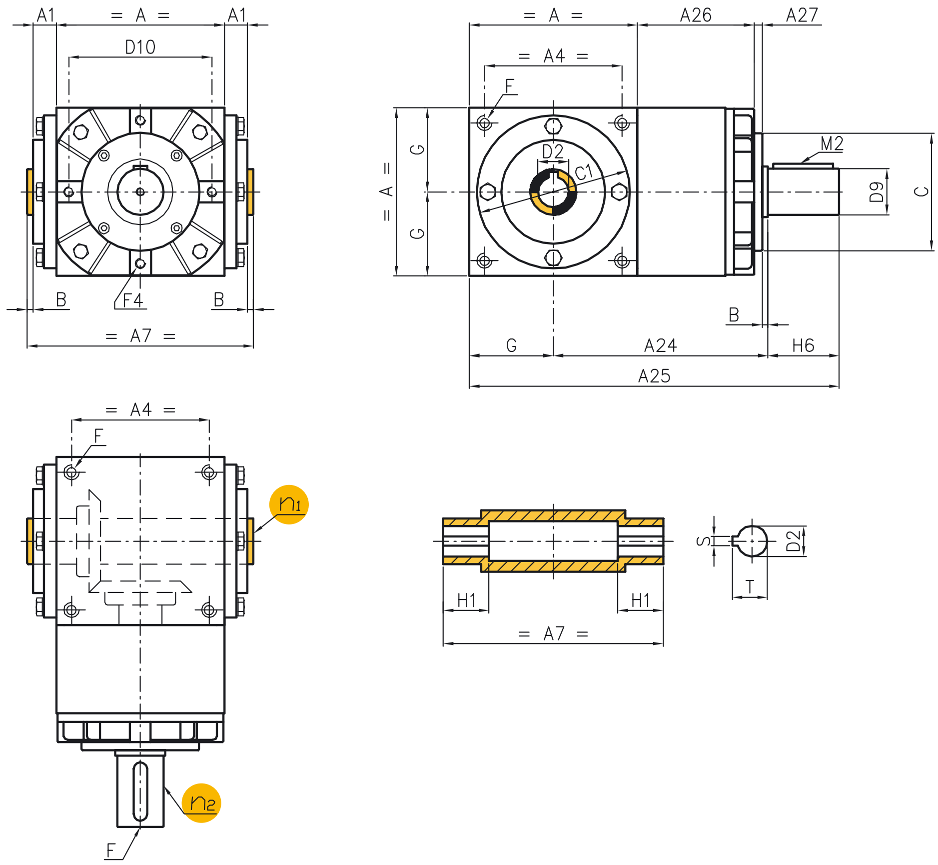



ratio:
1/4,5 - 1/6 - 1/9 - 1/12

## High reduction bevel gearbox with protruding shaft RES

| Size | 32 | 42 | 55 |
|---|---|---|---|
| A | 134 | 166 | 200 |
| A1 | 18 | 21 | 23 |
| A2 | 9 | 11 | 11 |
| A4 | 114 | 144 | 174 |
| A7 | 174 | 212 | 250 |
| A9 | 304 | 392 | 470 |
| A20 | 88 | 98 | 128 |
| A21 | 220 | 250 | 310 |
| A22 | 270 | 315 | 395 |
| A23 | 337 | 398 | 495 |
| B | 2 | 2 | 2 |
| C1 Ø f7 | 122 | 156 | 185 |
| D Ø h7 | 24 | 32 | 42 |
| D1 Ø h7 | 32 | 45 | 55 |
| E Ø | 80 | 107 | 120 |
| F | M10x25 | M12x30 | M14x35 |
| F1 | M8x20 | M10x25 | M10x25 |
| G | 67 | 83 | 100 |
| H | 50 | 65 | 85 |
| H2 | 65 | 90 | 110 |
| M | 8x7x45 | 10x8x60 | 12x8x80 |
| M1 | 10x8x45 | 14x9x80 | 16x10x100 |

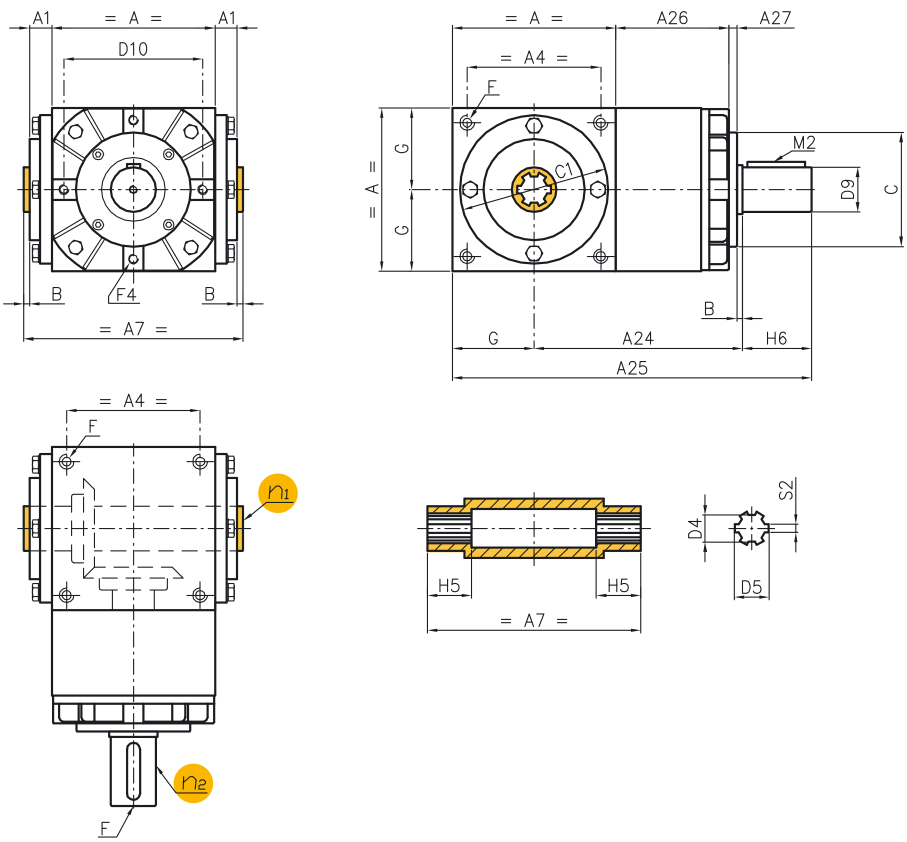
ratio:
1/2 - 1/3




## Inverted bevel gearbox with hollow shaft RHC

| Size | 32 | 42 | 55 |
|---|---|---|---|
| A | 134 | 166 | 200 |
| A1 | 18 | 21 | 23 |
| A4 | 114 | 144 | 174 |
| A7 | 174 | 212 | 250 |
| A24 | 174 | 203 | 249 |
| A25 | 286 | 346 | 434 |
| A26 | 97 | 110 | 139 |
| A27 | 10 | 10 | 10 |
| B | 2 | 2 | 2 |
| C Ø $^{-0,1}_{-0,2}$ | 99 | 116 | 140 |
| C1 Ø f7 | 122 | 156 | 185 |
| D2 Ø h7 | 24 | 32 | 42 |
| D9 Ø h7 | 32 | 42 | 55 |
| D10 | 116 | 140 | 170 |
| F | M10x25 | M12x30 | M14x35 |
| F3 | M8x16 | M10x20 | M10x20 |
| F4 | M8x18 | M10x20 | M12x24 |
| G | 67 | 83 | 100 |
| H1 | 35 | 45 | 50 |
| H6 | 45 | 60 | 85 |
| M2 | 10x8x40 | 12x8x50 | 16x10x70 |
| S | 8 | 10 | 12 |
| T | 27,3 | 35,3 | 45,3 |

ratio:
1/2 - 1/3

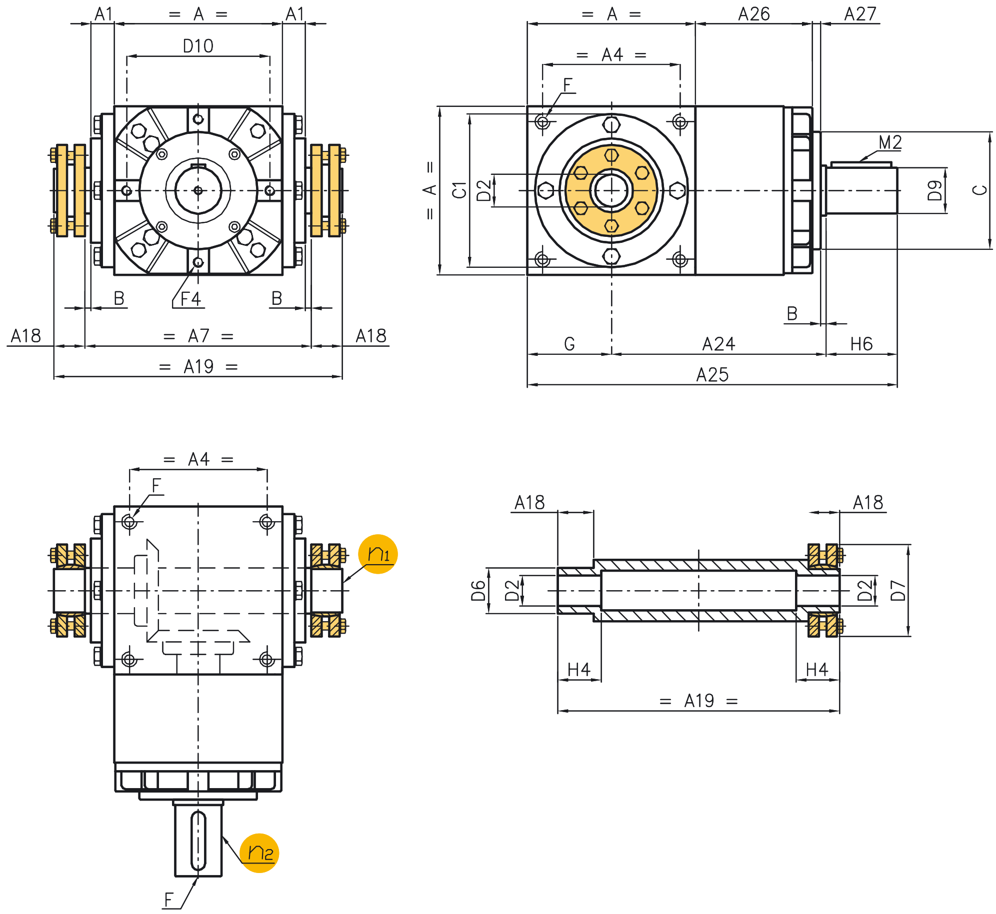



## Inverted bevel gearbox with broached hollow shaft RHB

| Size | 32 | 42 | 55 |
|---|---|---|---|
| A | 134 | 166 | 200 |
| A1 | 18 | 21 | 23 |
| A4 | 114 | 144 | 174 |
| A7 | 174 | 212 | 250 |
| A24 | 174 | 203 | 249 |
| A25 | 286 | 346 | 434 |
| A26 | 97 | 110 | 139 |
| A27 | 10 | 10 | 10 |
| B | 2 | 2 | 2 |
| C Ø $^{-0,1}_{-0,2}$ | 99 | 116 | 140 |
| C1 Ø f7 | 122 | 156 | 185 |
| D4 Ø H7 | 21 | 28 | 36 |
| D5 Ø H10 | 25 | 34 | 42 |
| D9 Ø h7 | 32 | 42 | 55 |
| D10 | 116 | 140 | 170 |
| F | M10x25 | M12x30 | M14x35 |
| F3 | M8x16 | M10x20 | M10x20 |
| F4 | M8x18 | M10x20 | M12x24 |
| G | 67 | 83 | 100 |
| H5 | 25 | 30 | 35 |
| H6 | 45 | 60 | 85 |
| M2 | 10x8x40 | 12x8x50 | 16x10x70 |
| S2 H9 | 5 | 7 | 7 |
| N° holes | 6 | 6 | 8 |
| Broached shaft UNI 8953NT | 6x21x25 | 6x28x34 | 8x36x42 |

For the broached shaft characteristics make reference to RB models on page 200 (sizes 134, 166 and 200)

ratio:
1/2 - 1/3

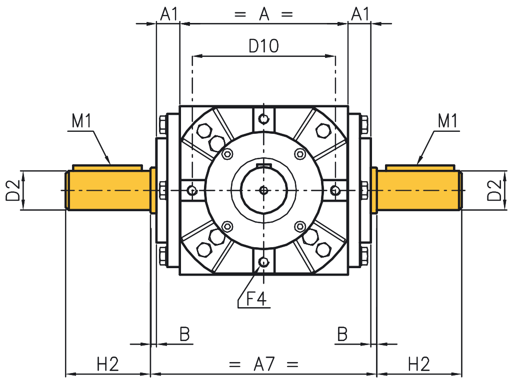


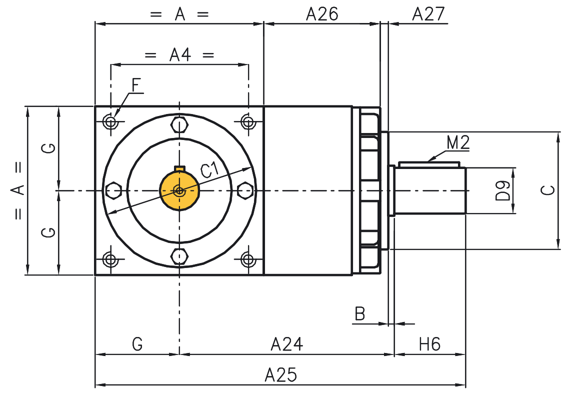

## Inverted bevel gearbox with hollow shaft with shrink-disks RHA

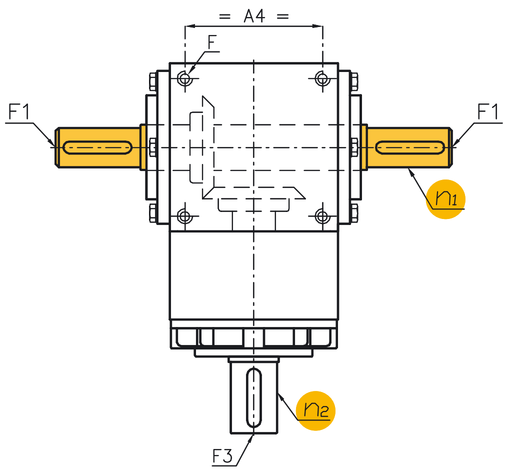
| **Size** | **32** | **42** | **55** |
|---|---|---|---|
| A | 134 | 166 | 200 |
| A1 | 18 | 21 | 23 |
| A4 | 114 | 144 | 174 |
| A7 | 174 | 212 | 250 |
| A18 | 25 | 30 | 32 |
| A24 | 174 | 203 | 249 |
| A25 | 286 | 346 | 434 |
| A26 | 97 | 110 | 139 |
| A27 | 10 | 10 | 10 |
| B | 2 | 2 | 2 |
| C Ø $^{-0,1}_{-0,2}$ | 99 | 116 | 140 |
| C1 Ø f7 | 122 | 156 | 185 |
| D2 Ø H7 | 24 | 32 | 42 |
| D6 Ø h7 | 30 | 44 | 50 |
| D7 | 60 | 80 | 90 |
| D9 Ø h7 | 32 | 42 | 55 |
| D10 | 116 | 140 | 170 |
| F | M10x25 | M12x30 | M14x35 |
| F3 | M8x16 | M10x20 | M10x20 |
| F4 | M8x18 | M10x20 | M12x24 |
| G | 67 | 83 | 100 |
| H4 | 35 | 45 | 50 |
| H6 | 45 | 60 | 85 |
| M2 | 10x8x40 | 12x8x50 | 16x10x70 |

For the characteristics of shrink-disks, make reference to RA models on page 201 (sizes 134, 166 and 200)

ratio:
1/2 - 1/3 - 1/4,5




## Inverted gearbox with protruding shafts RHS

| Size | | 32 | 42 | 55 |
|---|---|---|---|---|
| A | | 134 | 166 | 200 |
| A1 | | 18 | 21 | 23 |
| A4 | | 114 | 144 | 174 |
| A7 | | 174 | 212 | 250 |
| A24 | | 174 | 203 | 249 |
| A25 | | 286 | 346 | 434 |
| A26 | | 97 | 110 | 139 |
| A27 | | 10 | 10 | 10 |
| B | | 2 | 2 | 2 |
| C Ø $^{-0,1}_{-0,2}$ | | 99 | 116 | 140 |
| C1 Ø f7 | | 122 | 156 | 185 |
| D2 Ø h7 | Ratio 1/2 1/3 | 32 | 45 | 55 |
| | Ratio 1/4,5 | 24 | 32 | 42 |
| D9 Ø h7 | | 32 | 42 | 55 |
| D10 | | 116 | 140 | 170 |
| F | | M10x25 | M12x30 | M14x35 |
| F3 | | M8x16 | M10x20 | M10x20 |
| F4 | | M8x18 | M10x20 | M12x24 |
| G | | 67 | 83 | 100 |
| H2 | Ratio 1/2 1/3 | 65 | 90 | 110 |
| | Ratio 1/4,5 | 50 | 65 | 85 |
| H6 | | 45 | 60 | 85 |
| M1 | Ratio 1/2 1/3 | 10x8x55 | 14x9x80 | 16x10x100 |
| | Ratio 1/4,5 | 8x7x45 | 10x8x60 | 12x8x80 |
| M2 | | 10x8x40 | 12x8x50 | 16x10x70 |

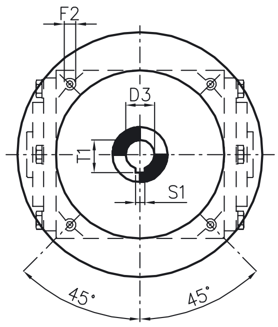
**Basic constructive forms**

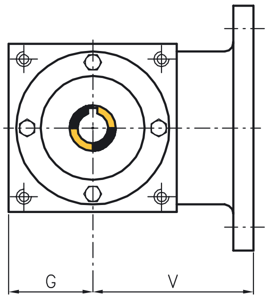
ratio:
1/1

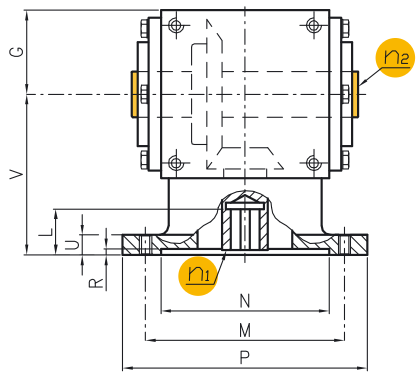
MC1

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

MC2



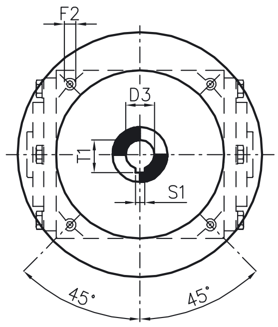



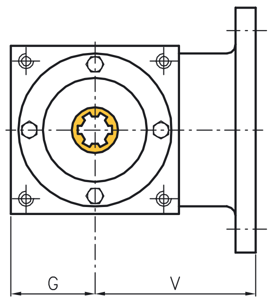

## Hollow shaft motor gearbox MRC

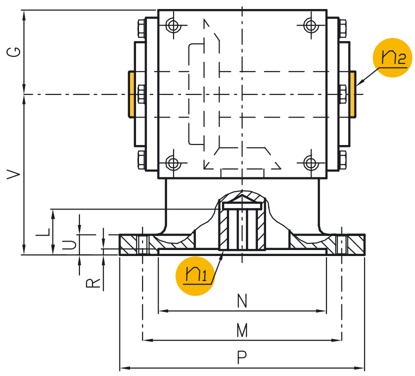
| Size | | IEC flange | D3 H7 | F2 | G | L | M | N | P | R | S1 | T1 | U | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XMRC Models* | 86 | 56 B5 | 9 | M6 | 43 | 23 | 100 | 80 | 120 | 4 | 3 | 10,4 | 13 | 90 |
| | | 63 B5 | 11 | M8 | 43 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 90 |
| | | 71 B5 | 14 | M8 | 43 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 90 |
| | | 71 B14 | 14 | 7 | 43 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 90 |
| | | 80 B5 | 19 | M10 | 43 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 100 |
| | | 80 B14 | 19 | 7 | 43 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 100 |
| | 110 | 63 B5 | 11 | M8 | 55 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 105 |
| | | 71 B5 | 14 | M8 | 55 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 105 |
| | | 71 B14 | 14 | 7 | 55 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 105 |
| | | 80 B5 | 19 | M10 | 55 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 105 |
| | | 80 B14 | 19 | 7 | 55 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 105 |
| | 134 | 71 B5 | 14 | M8 | 67 | 30 | 130 | 110 | 160 | 5 | 5 | 16,3 | 13 | 125 |
| | | 80 B5 | 19 | M10 | 67 | 40 | 165 | 130 | 200 | 5 | 6 | 21,8 | 13 | 125 |
| | | 80 B14 | 19 | 7 | 67 | 40 | 100 | 80 | 120 | 5 | 6 | 21,8 | 13 | 125 |
| | | 90 B5 | 24 | M10 | 67 | 50 | 165 | 130 | 200 | 5 | 8 | 27,3 | 13 | 125 |
| | | 90 B14 | 24 | 9 | 67 | 50 | 115 | 95 | 140 | 5 | 8 | 27,3 | 13 | 125 |
| | | 100-112 B5 | 28 | M12 | 67 | 60 | 215 | 180 | 250 | 5 | 8 | 31,3 | 13 | 135 |
| | | 100-112 B14 | 28 | 9 | 67 | 60 | 130 | 110 | 160 | 5 | 8 | 31,3 | 13 | 135 |
| | 166 | 71 B5 | 14 | 9 | 83 | 30 | 130 | 110 | 160 | 6 | 5 | 16,3 | 15 | 160 |
| | | 80 B5 | 19 | M10 | 83 | 40 | 165 | 130 | 200 | 6 | 6 | 21,8 | 15 | 160 |
| | | 90 B5 | 24 | M10 | 83 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 15 | 160 |
| | | 100-112 B5 | 28 | M12 | 83 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 15 | 160 |
| | | 100-112 B14 | 28 | 9 | 83 | 60 | 130 | 110 | 160 | 6 | 8 | 31,3 | 15 | 160 |
| | 200 | 90 B5 | 24 | 11 | 100 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 23 | 220 |
| | | 100-112 B5 | 28 | M12 | 100 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 23 | 220 |
| | | 132 B5 | 38 | M12 | 100 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 23 | 220 |
| | | 132 B14 | 38 | 11 | 100 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 23 | 220 |
| | 250 | 132 B5 | 38 | M12 | 125 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 25 | 250 |
| | | 132 B14 | 38 | 11 | 125 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 25 | 250 |
| | | 160 B5 | 42 | M16 | 125 | 110 | 300 | 250 | 350 | 6 | 12 | 45,8 | 25 | 250 |

* XMRC: stainless steel version

For non quoted dimensions make reference to the schemes on page 198.




**Basic constructive forms**

ratio:
1/1

MC1

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

MC2

## Motor gearbox with broached hollow shaft MRB

| Size | IEC flange | D3 H7 | F2 | G | L | M | N | P | R | S1 | T1 | U | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XMRB models* 86 | 56 B5 | 9 | M6 | 43 | 23 | 100 | 80 | 120 | 4 | 3 | 10,4 | 13 | 90 |
| | 63 B5 | 11 | M8 | 43 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 90 |
| | 71 B5 | 14 | M8 | 43 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 90 |
| | 71 B14 | 14 | 7 | 43 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 90 |
| | 80 B5 | 19 | M10 | 43 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 100 |
| | 80 B14 | 19 | 7 | 43 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 100 |
| 110 | 63 B5 | 11 | M8 | 55 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 105 |
| | 71 B5 | 14 | M8 | 55 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 105 |
| | 71 B14 | 14 | 7 | 55 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 105 |
| | 80 B5 | 19 | M10 | 55 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 105 |
| | 80 B14 | 19 | 7 | 55 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 105 |
| 134 | 71 B5 | 14 | M8 | 67 | 30 | 130 | 110 | 160 | 5 | 5 | 16,3 | 13 | 125 |
| | 80 B5 | 19 | M10 | 67 | 40 | 165 | 130 | 200 | 5 | 6 | 21,8 | 13 | 125 |
| | 80 B14 | 19 | 7 | 67 | 40 | 100 | 80 | 120 | 5 | 6 | 21,8 | 13 | 125 |
| | 90 B5 | 24 | M10 | 67 | 50 | 165 | 130 | 200 | 5 | 8 | 27,3 | 13 | 125 |
| | 90 B14 | 24 | 9 | 67 | 50 | 115 | 95 | 140 | 5 | 8 | 27,3 | 13 | 125 |
| | 100-112 B5 | 28 | M12 | 67 | 60 | 215 | 180 | 250 | 5 | 8 | 31,3 | 13 | 135 |
| | 100-112 B14 | 28 | 9 | 67 | 60 | 130 | 110 | 160 | 5 | 8 | 31,3 | 13 | 135 |
| 166 | 71 B5 | 14 | 9 | 83 | 30 | 130 | 110 | 160 | 6 | 5 | 16,3 | 15 | 160 |
| | 80 B5 | 19 | M10 | 83 | 40 | 165 | 130 | 200 | 6 | 6 | 21,8 | 15 | 160 |
| | 90 B5 | 24 | M10 | 83 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 15 | 160 |
| | 100-112 B5 | 28 | M12 | 83 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 15 | 160 |
| | 100-112 B14 | 28 | 9 | 83 | 60 | 130 | 110 | 160 | 6 | 8 | 31,3 | 15 | 160 |
| 200 | 90 B5 | 24 | 11 | 100 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 23 | 220 |
| | 100-112 B5 | 28 | M12 | 100 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 23 | 220 |
| | 132 B5 | 38 | M12 | 100 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 23 | 220 |
| | 132 B14 | 38 | 11 | 100 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 23 | 220 |
| 250 | 132 B5 | 38 | M12 | 125 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 25 | 250 |
| | 132 B14 | 38 | 11 | 125 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 25 | 250 |
| | 160 B5 | 42 | M16 | 125 | 110 | 300 | 250 | 350 | 6 | 12 | 45,8 | 25 | 250 |

* XMRB: stainless steel version

For the characteristics of the broached shaft, make reference to RB models on page 200.
For non quoted dimensions make reference to the schemes on page 200.

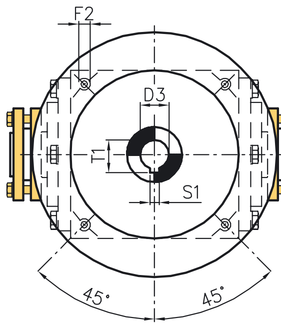
**Basic constructive forms**

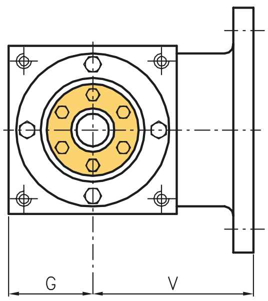
ratio:
1/1

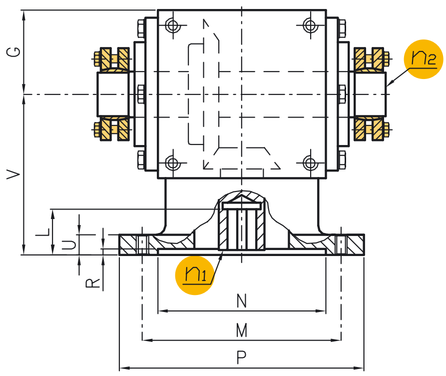
MC1

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

MC2



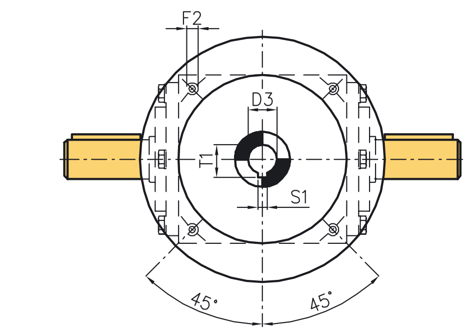



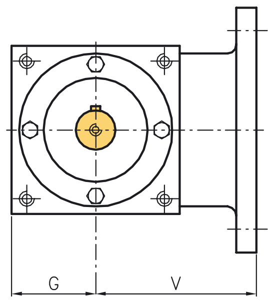

## Hollow shaft motor gearbox with shrink disks MRA

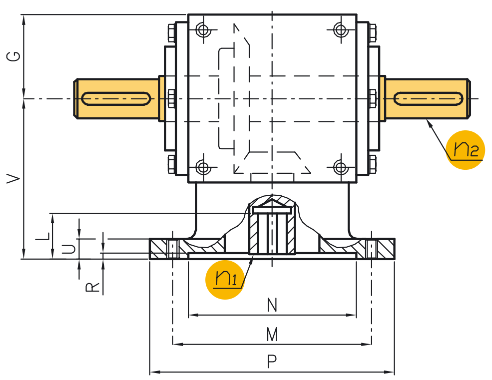
| | Size | IEC flange | D3 H7 | F2 | G | L | M | N | P | R | S1 | T1 | U | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XMRA models* | 86 | 56 B5 | 9 | M6 | 43 | 23 | 100 | 80 | 120 | 4 | 3 | 10,4 | 13 | 90 |
| | | 63 B5 | 11 | M8 | 43 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 90 |
| | | 71 B5 | 14 | M8 | 43 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 90 |
| | | 71 B14 | 14 | 7 | 43 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 90 |
| | | 80 B5 | 19 | M10 | 43 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 100 |
| | | 80 B14 | 19 | 7 | 43 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 100 |
| | 110 | 63 B5 | 11 | M8 | 55 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 105 |
| | | 71 B5 | 14 | M8 | 55 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 105 |
| | | 71 B14 | 14 | 7 | 55 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 105 |
| | | 80 B5 | 19 | M10 | 55 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 105 |
| | | 80 B14 | 19 | 7 | 55 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 105 |
| | 134 | 71 B5 | 14 | M8 | 67 | 30 | 130 | 110 | 160 | 5 | 5 | 16,3 | 13 | 125 |
| | | 80 B5 | 19 | M10 | 67 | 40 | 165 | 130 | 200 | 5 | 6 | 21,8 | 13 | 125 |
| | | 80 B14 | 19 | 7 | 67 | 40 | 100 | 80 | 120 | 5 | 6 | 21,8 | 13 | 125 |
| | | 90 B5 | 24 | M10 | 67 | 50 | 165 | 130 | 200 | 5 | 8 | 27,3 | 13 | 125 |
| | | 90 B14 | 24 | 9 | 67 | 50 | 115 | 95 | 140 | 5 | 8 | 27,3 | 13 | 125 |
| | | 100-112 B5 | 28 | M12 | 67 | 60 | 215 | 180 | 250 | 5 | 8 | 31,3 | 13 | 135 |
| | | 100-112 B14 | 28 | 9 | 67 | 60 | 130 | 110 | 160 | 5 | 8 | 31,3 | 13 | 135 |
| | 166 | 71 B5 | 14 | 9 | 83 | 30 | 130 | 110 | 160 | 6 | 5 | 16,3 | 15 | 160 |
| | | 80 B5 | 19 | M10 | 83 | 40 | 165 | 130 | 200 | 6 | 6 | 21,8 | 15 | 160 |
| | | 90 B5 | 24 | M10 | 83 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 15 | 160 |
| | | 100-112 B5 | 28 | M12 | 83 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 15 | 160 |
| | | 100-112 B14 | 28 | 9 | 83 | 60 | 130 | 110 | 160 | 6 | 8 | 31,3 | 15 | 160 |
| | 200 | 90 B5 | 24 | 11 | 100 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 23 | 220 |
| | | 100-112 B5 | 28 | M12 | 100 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 23 | 220 |
| | | 132 B5 | 38 | M12 | 100 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 23 | 220 |
| | | 132 B14 | 38 | 11 | 100 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 23 | 220 |
| | 250 | 132 B5 | 38 | M12 | 125 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 25 | 250 |
| | | 132 B14 | 38 | 11 | 125 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 25 | 250 |
| | | 160 B5 | 42 | M16 | 125 | 110 | 300 | 250 | 350 | 6 | 12 | 45,8 | 25 | 250 |

* XMRA: stainless steel version

For the characteristics of the shrink-disks, make reference to RA models on page 201.
For non quoted dimensions make reference to the schemes on page 201.




**Basic constructive forms**

ratio:
1/1

MS1

MS3

MS4

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

MS2

MS9

MS10

## Protruding shaft motor gearbox MRS

| | Size | IEC flange | D3 H7 | F2 | G | L | M | N | P | R | S1 | T1 | U | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XMRS models* | 86 | 56 B5 | 9 | M6 | 43 | 23 | 100 | 80 | 120 | 4 | 3 | 10,4 | 13 | 90 |
| | | 63 B5 | 11 | M8 | 43 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 90 |
| | | 71 B5 | 14 | M8 | 43 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 90 |
| | | 71 B14 | 14 | 7 | 43 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 90 |
| | | 80 B5 | 19 | M10 | 43 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 100 |
| | | 80 B14 | 19 | 7 | 43 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 100 |
| | 110 | 63 B5 | 11 | M8 | 55 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 105 |
| | | 71 B5 | 14 | M8 | 55 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 105 |
| | | 71 B14 | 14 | 7 | 55 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 105 |
| | | 80 B5 | 19 | M10 | 55 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 105 |
| | | 80 B14 | 19 | 7 | 55 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 105 |
| | 134 | 71 B5 | 14 | M8 | 67 | 30 | 130 | 110 | 160 | 5 | 5 | 16,3 | 13 | 125 |
| | | 80 B5 | 19 | M10 | 67 | 40 | 165 | 130 | 200 | 5 | 6 | 21,8 | 13 | 125 |
| | | 80 B14 | 19 | 7 | 67 | 40 | 100 | 80 | 120 | 5 | 6 | 21,8 | 13 | 125 |
| | | 90 B5 | 24 | M10 | 67 | 50 | 165 | 130 | 200 | 5 | 8 | 27,3 | 13 | 125 |
| | | 90 B14 | 24 | 9 | 67 | 50 | 115 | 95 | 140 | 5 | 8 | 27,3 | 13 | 125 |
| | | 100-112 B5 | 28 | M12 | 67 | 60 | 215 | 180 | 250 | 5 | 8 | 31,3 | 13 | 135 |
| | | 100-112 B14 | 28 | 9 | 67 | 60 | 130 | 110 | 160 | 5 | 8 | 31,3 | 13 | 135 |
| | 166 | 71 B5 | 14 | 9 | 83 | 30 | 130 | 110 | 160 | 6 | 5 | 16,3 | 15 | 160 |
| | | 80 B5 | 19 | M10 | 83 | 40 | 165 | 130 | 200 | 6 | 6 | 21,8 | 15 | 160 |
| | | 90 B5 | 24 | M10 | 83 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 15 | 160 |
| | | 100-112 B5 | 28 | M12 | 83 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 15 | 160 |
| | | 100-112 B14 | 28 | 9 | 83 | 60 | 130 | 110 | 160 | 6 | 8 | 31,3 | 15 | 160 |
| | 200 | 90 B5 | 24 | 11 | 100 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 23 | 220 |
| | | 100-112 B5 | 28 | M12 | 100 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 23 | 220 |
| | | 132 B5 | 38 | M12 | 100 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 23 | 220 |
| | | 132 B14 | 38 | 11 | 100 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 23 | 220 |
| | 250 | 132 B5 | 38 | M12 | 125 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 25 | 250 |
| | | 132 B14 | 38 | 11 | 125 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 25 | 250 |
| | | 160 B5 | 42 | M16 | 125 | 110 | 300 | 250 | 350 | 6 | 12 | 45,8 | 25 | 250 |

* XMRS: stainless steel version

For non quoted dimensions make reference to the schemes on page 202.

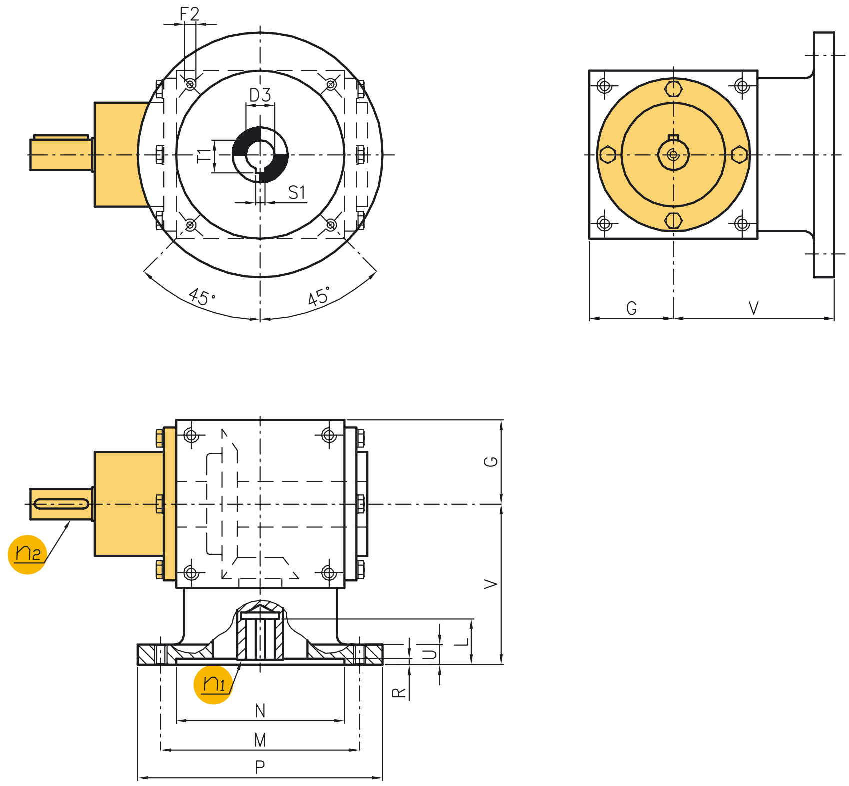
**Basic constructive forms**

ratio:
1/1

MS31

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

MS32

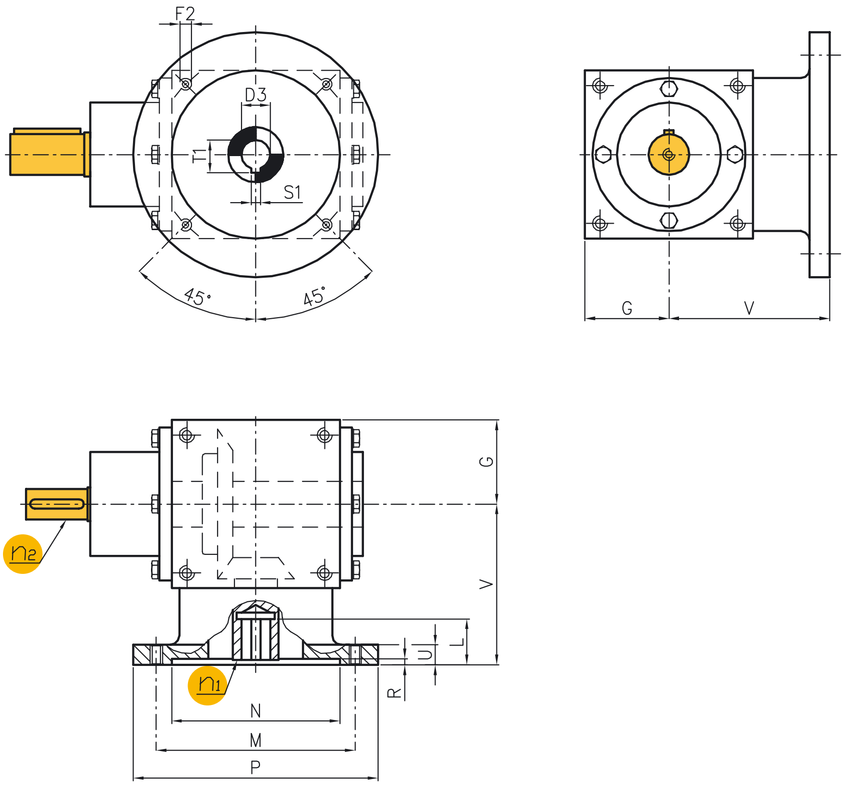



## Two hubs motor gearbox MRX

| Size | | IEC flange | D3 H7 | F2 | G | L | M | N | P | R | S1 | T1 | U | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XMRX models* | 86 | 56 B5 | 9 | M6 | 43 | 23 | 100 | 80 | 120 | 4 | 3 | 10,4 | 13 | 90 |
| | | 63 B5 | 11 | M8 | 43 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 90 |
| | | 71 B5 | 14 | M8 | 43 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 90 |
| | | 71 B14 | 14 | 7 | 43 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 90 |
| | | 80 B5 | 19 | M10 | 43 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 100 |
| | | 80 B14 | 19 | 7 | 43 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 100 |
| | 110 | 63 B5 | 11 | M8 | 55 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 105 |
| | | 71 B5 | 14 | M8 | 55 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 105 |
| | | 71 B14 | 14 | 7 | 55 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 105 |
| | | 80 B5 | 19 | M10 | 55 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 105 |
| | | 80 B14 | 19 | 7 | 55 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 105 |
| | 134 | 71 B5 | 14 | M8 | 67 | 30 | 130 | 110 | 160 | 5 | 5 | 16,3 | 13 | 125 |
| | | 80 B5 | 19 | M10 | 67 | 40 | 165 | 130 | 200 | 5 | 6 | 21,8 | 13 | 125 |
| | | 80 B14 | 19 | 7 | 67 | 40 | 100 | 80 | 120 | 5 | 6 | 21,8 | 13 | 125 |
| | | 90 B5 | 24 | M10 | 67 | 50 | 165 | 130 | 200 | 5 | 8 | 27,3 | 13 | 125 |
| | | 90 B14 | 24 | 9 | 67 | 50 | 115 | 95 | 140 | 5 | 8 | 27,3 | 13 | 125 |
| | | 100-112 B5 | 28 | M12 | 67 | 60 | 215 | 180 | 250 | 5 | 8 | 31,3 | 13 | 135 |
| | | 100-112 B14 | 28 | 9 | 67 | 60 | 130 | 110 | 160 | 5 | 8 | 31,3 | 13 | 135 |
| | 166 | 71 B5 | 14 | 9 | 83 | 30 | 130 | 110 | 160 | 6 | 5 | 16,3 | 15 | 160 |
| | | 80 B5 | 19 | M10 | 83 | 40 | 165 | 130 | 200 | 6 | 6 | 21,8 | 15 | 160 |
| | | 90 B5 | 24 | M10 | 83 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 15 | 160 |
| | | 100-112 B5 | 28 | M12 | 83 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 15 | 160 |
| | | 100-112 B14 | 28 | 9 | 83 | 60 | 130 | 110 | 160 | 6 | 8 | 31,3 | 15 | 160 |
| | 200 | 90 B5 | 24 | 11 | 100 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 23 | 220 |
| | | 100-112 B5 | 28 | M12 | 100 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 23 | 220 |
| | | 132 B5 | 38 | M12 | 100 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 23 | 220 |
| | | 132 B14 | 38 | 11 | 100 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 23 | 220 |
| | 250 | 132 B5 | 38 | M12 | 125 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 25 | 250 |
| | | 132 B14 | 38 | 11 | 125 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 25 | 250 |
| | | 160 B5 | 42 | M16 | 125 | 110 | 300 | 250 | 350 | 6 | 12 | 45,8 | 25 | 250 |

* XMRX: stainless steel version

For non quoted dimensions make reference to the schemes on page 204.




## Basic constructive forms

ratio:
1/1

MS31

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

MS32

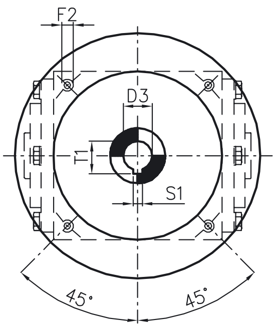
## Two hubs motor gearbox with reinforced shafts MRZ

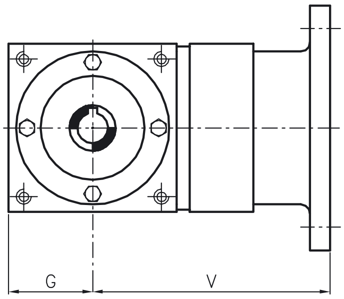
| | Size | IEC flange | D3 H7 | F2 | G | L | M | N | P | R | S1 | T1 | U | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XMRZ models* | 86 | 56 B5 | 9 | M6 | 43 | 23 | 100 | 80 | 120 | 4 | 3 | 10,4 | 13 | 90 |
| XMRZ models* | | 63 B5 | 11 | M8 | 43 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 90 |
| XMRZ models* | | 71 B5 | 14 | M8 | 43 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 90 |
| XMRZ models* | | 71 B14 | 14 | 7 | 43 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 90 |
| XMRZ models* | | 80 B5 | 19 | M10 | 43 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 100 |
| XMRZ models* | | 80 B14 | 19 | 7 | 43 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 100 |
| XMRZ models* | 110 | 63 B5 | 11 | M8 | 55 | 23 | 115 | 95 | 140 | 4 | 4 | 12,8 | 13 | 105 |
| XMRZ models* | | 71 B5 | 14 | M8 | 55 | 30 | 130 | 110 | 160 | 4 | 5 | 16,3 | 13 | 105 |
| XMRZ models* | | 71 B14 | 14 | 7 | 55 | 30 | 85 | 70 | 105 | 4 | 5 | 16,3 | 13 | 105 |
| XMRZ models* | | 80 B5 | 19 | M10 | 55 | 40 | 165 | 130 | 200 | 4 | 6 | 21,8 | 13 | 105 |
| XMRZ models* | | 80 B14 | 19 | 7 | 55 | 40 | 100 | 80 | 120 | 4 | 6 | 21,8 | 13 | 105 |
| XMRZ models* | 134 | 71 B5 | 14 | M8 | 67 | 30 | 130 | 110 | 160 | 5 | 5 | 16,3 | 13 | 125 |
| XMRZ models* | | 80 B5 | 19 | M10 | 67 | 40 | 165 | 130 | 200 | 5 | 6 | 21,8 | 13 | 125 |
| XMRZ models* | | 80 B14 | 19 | 7 | 67 | 40 | 100 | 80 | 120 | 5 | 6 | 21,8 | 13 | 125 |
| XMRZ models* | | 90 B5 | 24 | M10 | 67 | 50 | 165 | 130 | 200 | 5 | 8 | 27,3 | 13 | 125 |
| XMRZ models* | | 90 B14 | 24 | 9 | 67 | 50 | 115 | 95 | 140 | 5 | 8 | 27,3 | 13 | 125 |
| XMRZ models* | | 100-112 B5 | 28 | M12 | 67 | 60 | 215 | 180 | 250 | 5 | 8 | 31,3 | 13 | 135 |
| XMRZ models* | | 100-112 B14 | 28 | 9 | 67 | 60 | 130 | 110 | 160 | 5 | 8 | 31,3 | 13 | 135 |
| | 166 | 71 B5 | 14 | 9 | 83 | 30 | 130 | 110 | 160 | 6 | 5 | 16,3 | 15 | 160 |
| | | 80 B5 | 19 | M10 | 83 | 40 | 165 | 130 | 200 | 6 | 6 | 21,8 | 15 | 160 |
| | | 90 B5 | 24 | M10 | 83 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 15 | 160 |
| | | 100-112 B5 | 28 | M12 | 83 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 15 | 160 |
| | | 100-112 B14 | 28 | 9 | 83 | 60 | 130 | 110 | 160 | 6 | 8 | 31,3 | 15 | 160 |
| | 200 | 90 B5 | 24 | 11 | 100 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 23 | 220 |
| | | 100-112 B5 | 28 | M12 | 100 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 23 | 220 |
| | | 132 B5 | 38 | M12 | 100 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 23 | 220 |
| | | 132 B14 | 38 | 11 | 100 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 23 | 220 |
| | 250 | 132 B5 | 38 | M12 | 125 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 25 | 250 |
| | | 132 B14 | 38 | 11 | 125 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 25 | 250 |
| | | 160 B5 | 42 | M16 | 125 | 110 | 300 | 250 | 350 | 6 | 12 | 45,8 | 25 | 250 |

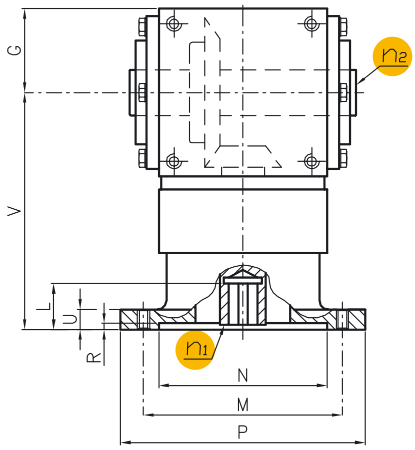
* XMRZ: stainless steel version

For non quoted dimensions make reference to the schemes on page 205.

ratio:
1/4,5 - 1/6 - 1/9 - 1/12




## High reduction motor gearbox with hollow shaft MREC
## High reduction motor gearbox with broached hollow shaft MREB
## High reduction motor gearbox with hollow shaft with shrink-disks MREA
## High reduction motor gearbox with protruding shaft MRES

| Size | IEC flange | D3 H7 | F2 | G | L | M | N | P | R | S1 | T1 | U | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **32** | 71 B5 | 14 | M8 | 67 | 30 | 130 | 110 | 160 | 5 | 5 | 16,3 | 13 | 213 |
| | 80 B5 | 19 | M10 | 67 | 40 | 165 | 130 | 200 | 5 | 6 | 21,8 | 13 | 213 |
| | 80 B14 | 19 | 7 | 67 | 40 | 100 | 80 | 120 | 5 | 6 | 21,8 | 13 | 213 |
| | 90 B5 | 24 | M10 | 67 | 50 | 165 | 130 | 200 | 5 | 8 | 27,3 | 13 | 213 |
| | 90 B14 | 24 | 9 | 67 | 50 | 115 | 95 | 140 | 5 | 8 | 27,3 | 13 | 213 |
| | 100-112 B5 | 28 | M12 | 67 | 60 | 215 | 180 | 250 | 5 | 8 | 31,3 | 13 | 223 |
| | 100-112 B14 | 28 | 9 | 67 | 60 | 130 | 110 | 160 | 5 | 8 | 31,3 | 13 | 223 |
| **42** | 71 B5 | 14 | 9 | 83 | 30 | 130 | 110 | 160 | 6 | 5 | 16,3 | 15 | 258 |
| | 80 B5 | 19 | M10 | 83 | 40 | 165 | 130 | 200 | 6 | 6 | 21,8 | 15 | 258 |
| | 90 B5 | 24 | M10 | 83 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 15 | 258 |
| | 100-112 B5 | 28 | M12 | 83 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 15 | 258 |
| | 100-112 B14 | 28 | 9 | 83 | 60 | 130 | 110 | 160 | 6 | 8 | 31,3 | 15 | 258 |
| **55** | 90B5 | 24 | 11 | 100 | 50 | 165 | 130 | 200 | 6 | 8 | 27,3 | 23 | 348 |
| | 100-112 B5 | 28 | M12 | 100 | 60 | 215 | 180 | 250 | 6 | 8 | 31,3 | 23 | 348 |
| | 132 B5 | 38 | M12 | 100 | 80 | 265 | 230 | 300 | 6 | 10 | 41,3 | 23 | 348 |
| | 132 B14 | 38 | 11 | 100 | 80 | 165 | 130 | 200 | 6 | 10 | 41,3 | 23 | 348 |

For non quoted dimensions make reference to the schemes on page 208-211.

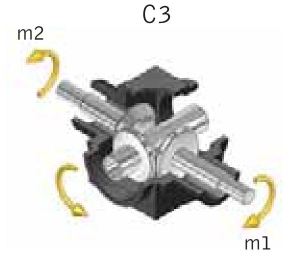
## CONSTRUCTIVE FORMS

For every mounting scheme it is possible to apply a motor flange in the positions indicated under letter m.
Order example:
- For a C3 mounting scheme and a m2 flange: C3/m2

**RC - RR - RB - RA**

ratio:
1/1

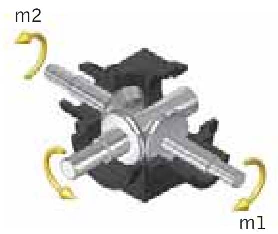
C3



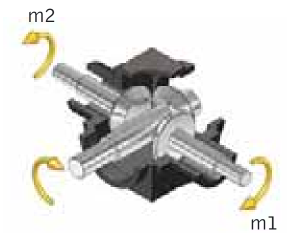

**RS - RP**

ratio:
1/1

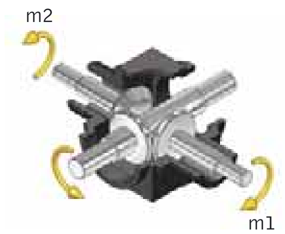
S5




S6



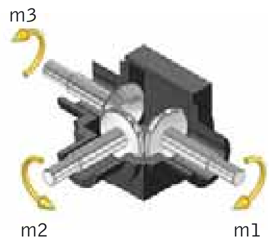

S7



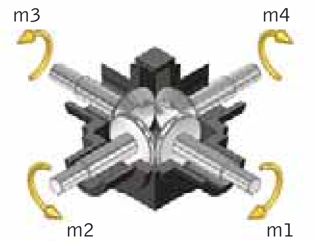

**RX - RZ**

ratio:
1/1

S8



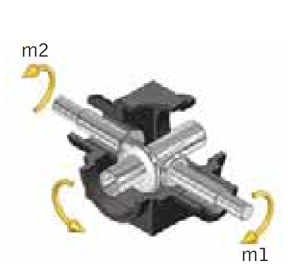

S26



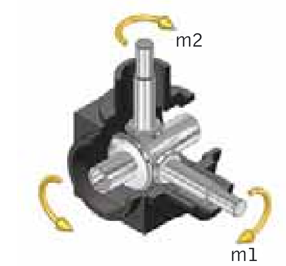

**RC - RB - RA**

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

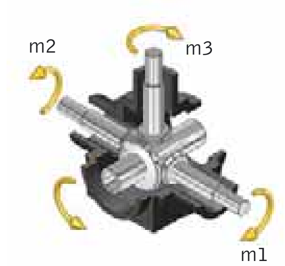
C4



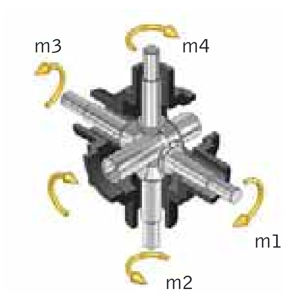

C5




C6




C7



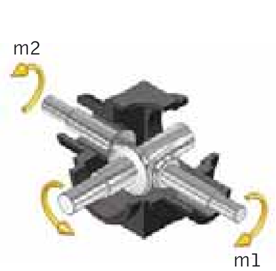


Application samples are online at www.unimec.eu - section Applications

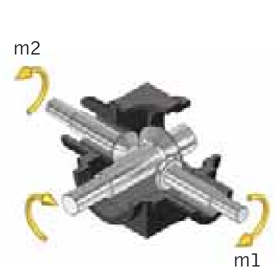
**RS - RP**

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

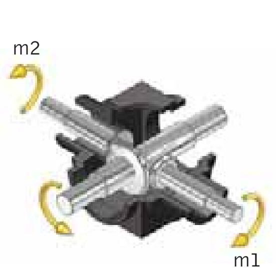
S11



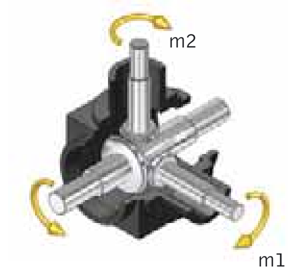

S12



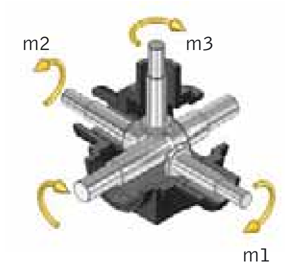

S13



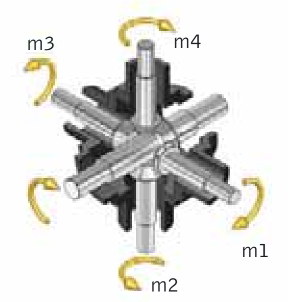

S15



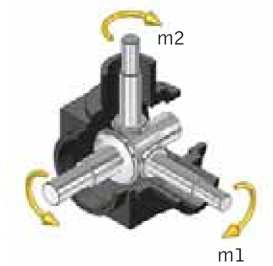

S16



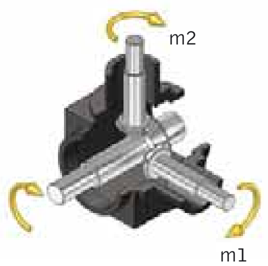

S17



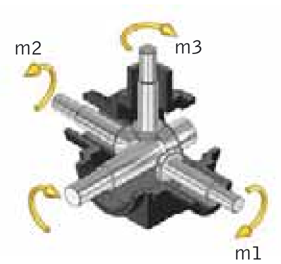

S18



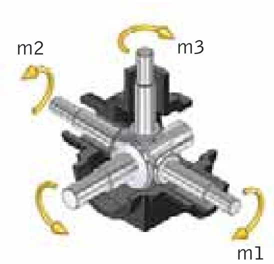

S19



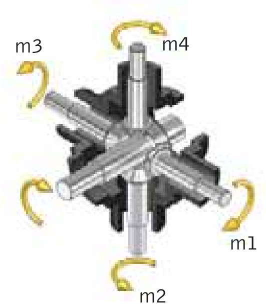

S20



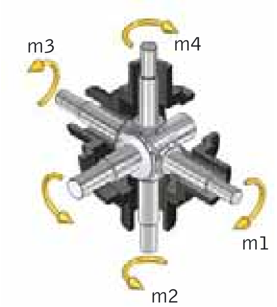

S21




S22



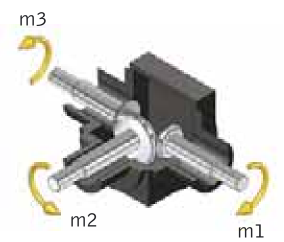

S23



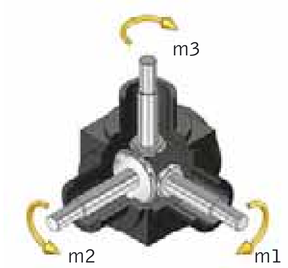

**RX - RZ**

ratio:
1/1,5 - 1/2 - 1/3 - 1/4

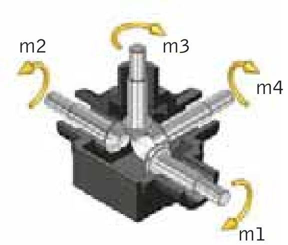
S14



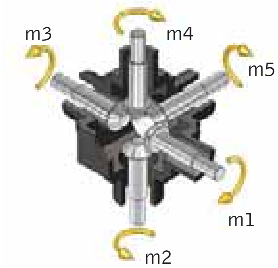

S27



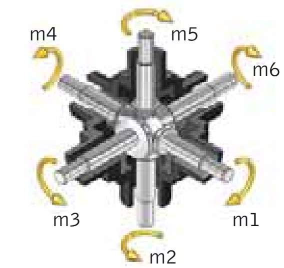

S28




S29




S30




S33