

## Heavy Duty Inline Helical Gearbox

Overhung & Axial Loads (Newtons) on Shafts

### Maximum permissible overhung loads

When a sprocket, gear etc. is mounted on the shaft a calculation, as below, must be made to determine the overhung load on the shaft, and the results compared to the maximum permissible overhung loads tabulated. Overhung loads can be reduced by increasing the diameter of the sprocket, gear, etc. If the maximum permissible overhung load is exceeded, the sprocket, gear, etc. should be mounted on a separate shaft, flexibly coupled and supported in its own bearings, or the gear unit shaft should be extended to run in an outboard bearing. Alternatively, a larger gear is often a less expensive solution.

Permissible overhung loads vary according to the direction of rotation. The values tabulated are for the most unfavourable direction with the unit transmitting full rated power and the load P applied midway along the shaft extension. Hence they can sometimes be increased for a more favourable direction of rotation, or if the power transmitted is less than the rated capacity of the gear unit, or if the load is applied nearer to the gear unit case. Refer to Textron Power Transmission for further details. In any event, the sprocket, gear etc. should be positioned as close as possible to the gear unit case in order to reduce bearing loads and shaft stresses, and to prolong life.

All units will accept 100% momentary overload on stated capacities.

### Overhung load (Newtons)

$$P = \frac{kW \times 9,500,000 \times K}{N \times R}$$

where

P = equivalent overhung load (Newtons)

kW = power transmitted by the shaft (kilowatts)

N = speed of shaft (rev/min)

R = pitch radius of sprocket, etc. (mm)

K = factor

Note: 1 Newton = 0.101972 kp = 0.227809 lbf.

### Overhung member K (factor)

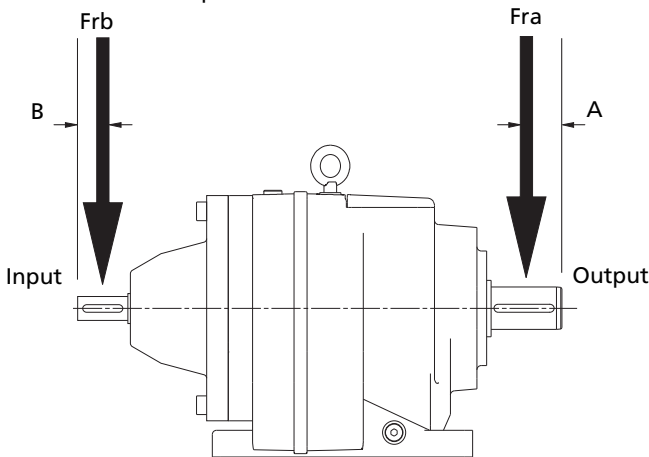
Chain sprocket\* 1.00

Spur or helical pinion 1.25

Vee belt sheave 1.50

Flat belt pulley 2.00

\* If multistrand chain drives are equally loaded and the outer strand is further than dimension Fra output or Frb input, refer to our technical department.



### Distance midway along the shaft extension

| Size of Unit | No. of Reductions | Dimension A (mm) | Dimension B (mm) |
|--------------|-------------------|------------------|------------------|
| M01          | 2 - 3             | 20               | 20               |
| M02          | 2 - 3             | 25               | 20               |
| M03          | 2 - 5             | 25               | 20               |
| M04          | 2 - 5             | 30               | 20               |
| M05          | 1                 | 25               | 20               |
| M05          | 2 - 5             | 35               | 20               |
| M06          | 1                 | 25               | 20               |
| M06          | 2 - 5             | 35               | 20               |
| M07          | 1                 | 30               | 25               |
| M07          | 2                 | 40               | 25               |
| M07          | 3                 | 40               | 20               |
| M07          | 4 - 5             | 40               | 20               |
| M08          | 1                 | 40               | 30               |
| M08          | 2                 | 50               | 30               |
| M08          | 3                 | 50               | 25               |
| M08          | 4 - 5             | 50               | 20               |
| M09          | 2                 | 60               | 40               |
| M09          | 3                 | 60               | 30               |
| M09          | 4 - 5             | 60               | 20               |
| M10          | 2                 | 70               | 55               |
| M10          | 3                 | 70               | 40               |
| M10          | 4 - 5             | 70               | 25               |
| M13          | 2 - 3             | 85               | 55               |
| M13          | 4                 | 85               | 25               |
| M13          | 5                 | 85               | 20               |
| M14          | 2 - 3             | 105              | 55               |
| M14          | 4                 | 105              | 25               |
| M14          | 5                 | 105              | 20               |

### Inputshaft Overhung Loads, Frb (Kn) 1450rpm - Two, Three, Four and Five Stage Units

| Stage | M01  | M02  | M03  | M04  | M05  | M06  | M07  | M08  | M09  | M10  | M13   | M14   |
|-------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| 2     | 1.50 | 1.65 | 1.56 | 1.20 | 1.10 | 0.90 | 1.65 | 1.50 | 1.50 | 2.55 | 6.90  | 7.10  |
| 3     | 1.65 | 1.75 | 1.75 | 1.75 | 1.50 | 1.50 | 1.80 | 2.25 | 3.50 | 4.20 | 12.00 | 12.00 |
| 4     | -    | -    | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.75 | 1.75 | 2.25 | 2.25  | 2.25  |
| 5     | -    | -    | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.75 | 1.75 | 2.25 | 2.25  | 2.25  |

### Axial Thrust Capacities (Newtons)

No check or calculation is required for axial loads (F<sub>A</sub>) towards or away from the unit up to 50% of the permissible overhung load. If axial thrust considerably exceeds these values or if there is a combination of axial thrust loads and overhung loads please contact our technical department.

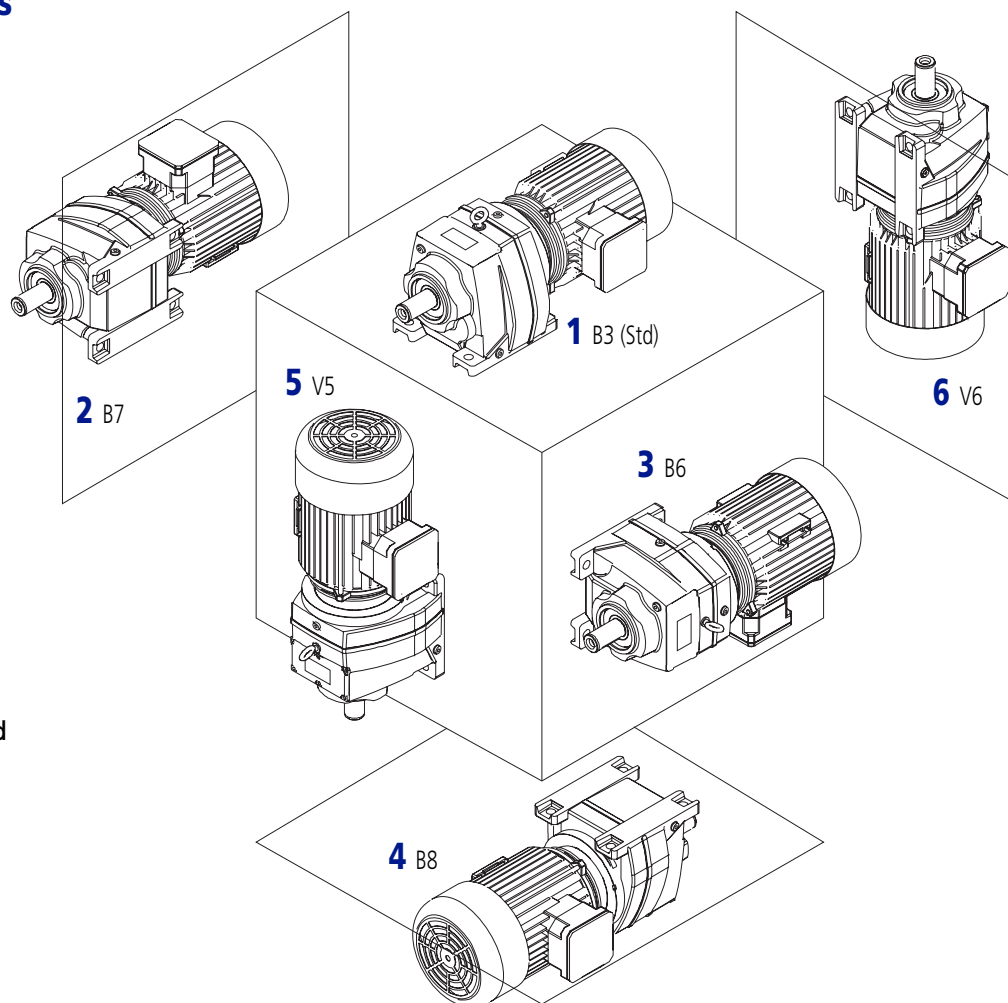
# GEARBOXES

M

## Heavy Duty Inline Helical Gearbox

Mounting Positions

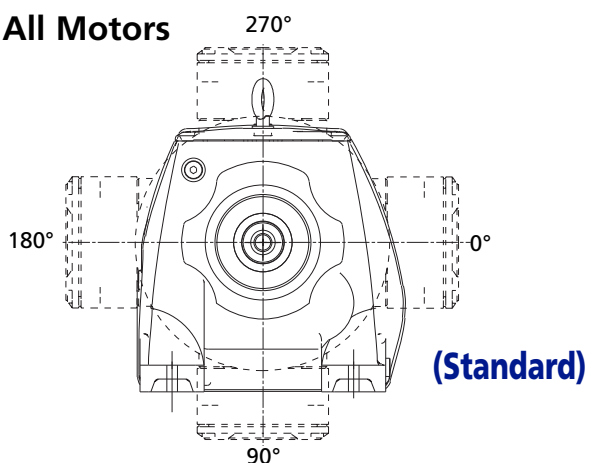
### Base Mounted Units



Gear units Size 8 and above are supplied without lubrication, customer will need to purchase and fill.

### Mounting Positions - Shown as Motorised - Applies also for Reducers

#### All Motors

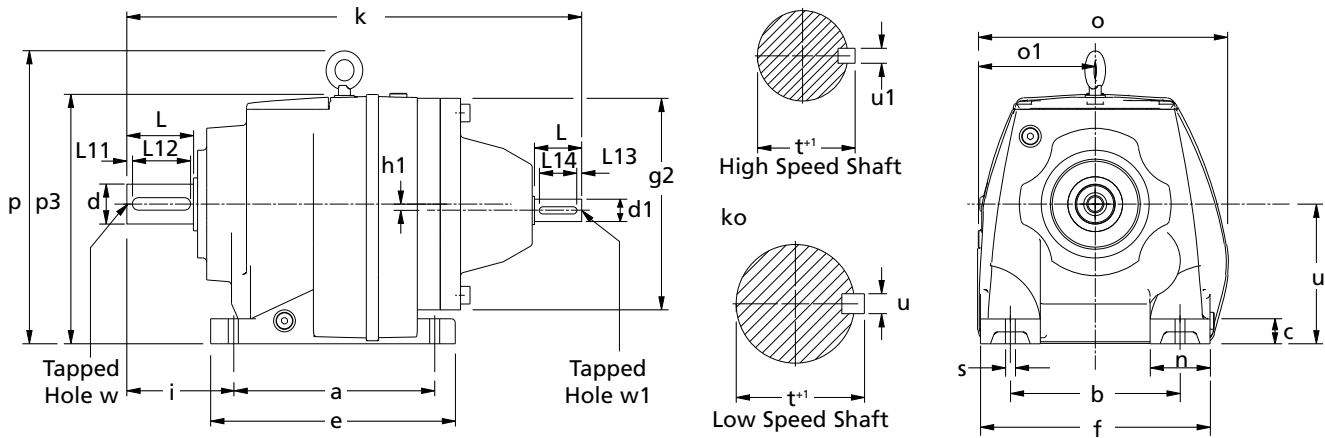


|              | Terminal Box Position      |
|--------------|----------------------------|
| A (Standard) | 0°                         |
| B            | 90°                        |
| C            | 180°                       |
| D            | 270°                       |
| -            | Reducer or no motor fitted |

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# GEARBOXES

## Heavy Duty Inline Helical Gearbox Double Reduction Reducer Unit (Shaft In/Out) Base Mount



| Size  | a   | b   | c  | e   | f   | g2  | h   | h1   | i   | k   | n  | o   | o1  | p   | p3  | s  |
|-------|-----|-----|----|-----|-----|-----|-----|------|-----|-----|----|-----|-----|-----|-----|----|
| M0122 | 110 | 110 | 12 | 131 | 135 | 140 | 75  | -    | 58  | 286 | 25 | 152 | 76  | -   | 149 | 10 |
| M0222 | 130 | 110 | 16 | 152 | 145 | 140 | 90  | -    | 75  | 317 | 35 | 170 | 84  | -   | 180 | 10 |
| M0322 | 130 | 110 | 16 | 152 | 145 | 140 | 90  | -    | 75  | 317 | 35 | 170 | 84  | -   | 180 | 10 |
| M0422 | 165 | 135 | 20 | 200 | 190 | 180 | 115 | -    | 90  | 369 | 55 | 204 | 97  | -   | 208 | 15 |
| M0522 | 165 | 135 | 20 | 200 | 190 | 180 | 115 | -    | 100 | 379 | 55 | 204 | 97  | -   | 208 | 15 |
| M0622 | 195 | 150 | 24 | 235 | 210 | 180 | 130 | 14.5 | 100 | 400 | 60 | 220 | 110 | 246 | 214 | 15 |
| M0722 | 205 | 170 | 25 | 245 | 230 | 212 | 140 | -    | 115 | 440 | 60 | 252 | 119 | 295 | 250 | 19 |
| M0822 | 260 | 215 | 35 | 310 | 290 | 250 | 180 | -    | 140 | 555 | 75 | 320 | 167 | 360 | 310 | 19 |

| Size   | d1    | L1 | HIGH SPEED SHAFT |     | t1   | u1 | w1                 |
|--------|-------|----|------------------|-----|------|----|--------------------|
|        |       |    | L13              | L14 |      |    |                    |
| M0122R | 16 k6 | 40 | 4                | 32  | 18.0 | 5  | M5x0.8<br>12 deep  |
| M0222R | 16 k6 | 40 | 4                | 32  | 18.0 | 5  | M5x0.8<br>12 deep  |
| M0322R | 16 k6 | 40 | 4                | 32  | 18.0 | 5  | M5x0.8<br>12 deep  |
| M0422R | 19 k6 | 40 | 4                | 32  | 21.5 | 6  | M6x1.0<br>16 deep  |
| M0522R | 19 k6 | 40 | 4                | 32  | 21.5 | 6  | M6x1.0<br>16 deep  |
| M0622R | 19 k6 | 40 | 4                | 32  | 21.5 | 6  | M6x1.0<br>16 deep  |
| M0722R | 24 k6 | 50 | 5                | 40  | 27.0 | 8  | M8x1.25<br>19 deep |
| M0822R | 28 k6 | 60 | 5                | 50  | 31.0 | 8  | M10x1.5<br>22 deep |

### Material

**Casing:** Cast Iron Helical. **Gears:** Hardened steel. **Lubrication:** Synthetic oil - if mounting position is different from the drawing, extra lubricant may be required. Please advise mounting position. **Ambient Temperature Range:** 0°C to +35°C

### Other info.

**Output Torque Guide Using Standard Motor:**  $\frac{\text{Motor KW}}{\text{Motor speeds}} \times 9550 = \text{input torque}$ . Input torque x exact ratio x efficiency = guide output torque.

To choose the most suitable option, please provide full details of application

### Ordering

When ordering, add motor frame then ratio to end of part number, eg. **M0622-80A-9.0** 80A = 0.55kW, 9.0 = 9.970:1 ratio.  
or reducer unit (shaft in/out), eg. **M0622R-9.0** 9.0 = 9.970:1 ratio.

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+44 (0)1246 455522

**ondrives**

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www.ondrives.com

Product information updated 1st April 2011 and subject to change. Please contact Sales for the latest prices and availability.

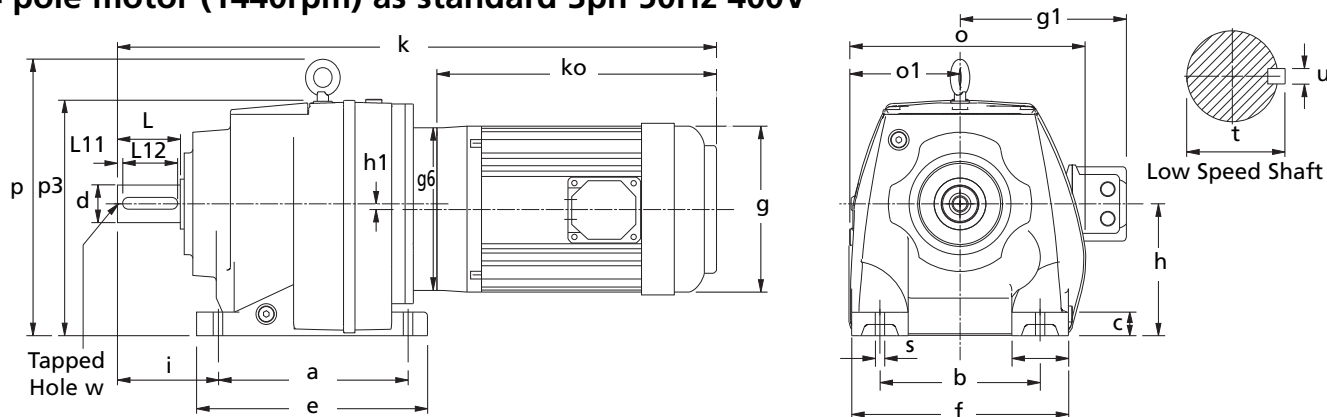
# GEARBOXES

## Heavy Duty Inline Helical Gearbox

Double Reduction Base Mount

M

4 pole motor (1440rpm) as standard 3ph 50Hz 400V



| Motor Frame Size | All Sizes |     |     |     | M122 | M222 | M322 | M422 | M522 | M622 | M722 | M822 | M921 | M1021 | M1321 | M1421 |
|------------------|-----------|-----|-----|-----|------|------|------|------|------|------|------|------|------|-------|-------|-------|
|                  | ko        | g   | g1  | g6  | k    | k    | k    | k    | k    | k    | k    | k    | k    | k     | k     | k     |
| 63               | 218       | 122 | 96  | 140 | 427  | 458  | 458  | -    | -    | -    | -    | -    | -    | -     | -     | -     |
| 71               | 221       | 138 | 102 | 105 | 434  | 465  | 465  | -    | -    | -    | -    | -    | -    | -     | -     | -     |
| 80A              | 239       | 157 | 125 | 120 | 465  | 496  | 496  | 533  | 543  | 564  | 601  | 681  | 763  | -     | -     | -     |
| 80B              | 248       | 157 | 125 | 120 | 474  | 505  | 505  | 542  | 552  | 573  | 610  | 690  | 771  | -     | -     | -     |
| 90S              | 260       | 177 | 133 | 140 | 511  | 542  | 542  | 564  | 574  | 595  | 632  | 702  | 783  | -     | -     | -     |
| 90LA             | 284       | 177 | 133 | 140 | 520  | 551  | 551  | 588  | 598  | 619  | 656  | 726  | 807  | -     | -     | -     |
| 100L             | 310       | 197 | 144 | 160 | -    | -    | -    | 639  | 649  | 670  | 692  | 752  | 833  | 906   | 1027  | 1142  |
| 112M             | 325       | 219 | 155 | 160 | -    | -    | -    | 654  | 664  | 685  | 707  | 767  | 848  | 921   | 1042  | 1157  |
| 112MA            | 344       | 219 | 155 | 160 | -    | -    | -    | 673  | 683  | 704  | 726  | 786  | 867  | 940   | 1061  | 1176  |
| 132SA            | 392       | 235 | 172 | 160 | -    | -    | -    | -    | -    | -    | 776  | 834  | 915  | 988   | 1109  | 1224  |
| 132M             | 412       | 235 | 172 | 160 | -    | -    | -    | -    | -    | -    | 796  | 854  | 935  | 1008  | 1129  | 1244  |
| 132MA            | 436       | 235 | 172 | 160 | -    | -    | -    | -    | -    | -    | 820  | 878  | 959  | 1032  | 1153  | 1268  |
| 132MB            | 472       | 235 | 172 | 160 | -    | -    | -    | -    | -    | -    | 856  | 914  | 995  | 1068  | 1189  | 1304  |
| 160M             | 455       | 273 | 282 | 350 | -    | -    | -    | -    | -    | -    | -    | 903  | 1019 | 1086  | 1165  | 1280  |
| 106L             | 500       | 273 | 282 | 350 | -    | -    | -    | -    | -    | -    | -    | 948  | 1064 | 1131  | 1210  | 1325  |
| 180M             | 557       | 382 | 307 | 350 | -    | -    | -    | -    | -    | -    | -    | -    | 1121 | 1188  | 1267  | 1382  |
| 180L             | 595       | 382 | 307 | 350 | -    | -    | -    | -    | -    | -    | -    | -    | 1159 | 1226  | 1305  | 1420  |
| 200L             | 658       | 420 | 372 | 400 | -    | -    | -    | -    | -    | -    | -    | -    | 1222 | 1289  | 1368  | 1483  |
| 225S             | 671       | 458 | 427 | 450 | -    | -    | -    | -    | -    | -    | -    | -    | 1262 | 1329  | 1381  | 1496  |
| 225M             | 696       | 458 | 427 | 450 | -    | -    | -    | -    | -    | -    | -    | -    | 1287 | 1354  | 1406  | 1521  |
| 250M             | 771       | 510 | 490 | 550 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -     | 1481  | 1596  |
| 280S             | 837       | 576 | 520 | 550 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -     | 1547  | 1662  |
| 280M             | 888       | 576 | 520 | 550 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -     | 1598  | 1713  |

Braked motors / hand braked motors P.O.A. Single Phase or other pole motors P.O.A. All parallel keys are to DIN 6885

| Size     | d     | L   | LOW SPEED SHAFT |     | t    | u  | w                   |
|----------|-------|-----|-----------------|-----|------|----|---------------------|
|          |       |     | L11             | L12 |      |    |                     |
| M0122-++ | 20 k6 | 40  | 4               | 32  | 22.5 | 6  | M6x1<br>16 deep     |
| M0222-++ | 25 k6 | 50  | 4               | 40  | 28.0 | 8  | M10x1.5<br>22 deep  |
| M0322-++ | 25 k6 | 50  | 4               | 40  | 28.0 | 8  | M10x1.5<br>22 deep  |
| M0422-++ | 30 k6 | 60  | 4               | 50  | 33.0 | 8  | M10x1.5<br>22 deep  |
| M0522-++ | 35 k6 | 70  | 7               | 60  | 33.0 | 10 | M12x1.75<br>28 deep |
| M0622-++ | 35 k6 | 70  | 7               | 60  | 38.0 | 10 | M12x1.75<br>28 deep |
| M0722-++ | 40 k6 | 80  | 5               | 70  | 43.0 | 12 | M16x2.0<br>36 deep  |
| M0822-++ | 50 k6 | 100 | 10              | 80  | 53.5 | 14 | M16x2.0<br>36 deep  |

++ See price

**M**

# GEARBOXES

## Heavy Duty Inline Helical Gearbox

Motor Unit & Shaft In/Out Version

| Motor Frame    | Price Table |        |           |        |           |        |             |        |
|----------------|-------------|--------|-----------|--------|-----------|--------|-------------|--------|
|                | M0122       |        | M0222     |        | M0322     |        | M0422       |        |
| Size           |             |        |           |        |           |        |             |        |
|                | M0122R      | £P.O.A | M0222R    | £P.O.A | M0322R    | £P.O.A | M0422R      | £P.O.A |
| 63A (0.12kW)   | M0122-63A   | £P.O.A | M0222-63A | £P.O.A | M0322-63A | £P.O.A | M0422-63A   | £P.O.A |
| 63B (0.18kW)   | M0122-63B   | £P.O.A | M0222-63B | £P.O.A | M0322-63B | £P.O.A | M0422-63B   | £P.O.A |
| 71A (0.25kW)   | M0122-71A   | £P.O.A | M0222-71A | £P.O.A | M0322-71A | £P.O.A | M0422-71A   | £P.O.A |
| 71B (0.37kW)   | M0122-71B   | £P.O.A | M0222-71B | £P.O.A | M0322-71B | £P.O.A | M0422-71B   | £P.O.A |
| 80A (0.55kW)   | M0122-80A   | £P.O.A | M0222-80A | £P.O.A | M0322-80A | £P.O.A | M0422-80A   | £P.O.A |
| 80B (0.75kW)   | M0122-80B   | £P.O.A | M0222-80B | £P.O.A | M0322-80B | £P.O.A | M0422-80B   | £P.O.A |
| 90S (1.10kW)   | M0122-90S   | £P.O.A | M0222-90S | £P.O.A | M0322-90S | £P.O.A | M0422-90S   | £P.O.A |
| 90L (1.50kW)   | M0122-90L   | £P.O.A | M0222-90L | £P.O.A | M0322-90L | £P.O.A | M0422-90L   | £P.O.A |
| 90LA (2.20kW)  | -           | -      | -         | -      | -         | -      | M0422-90LA  | £P.O.A |
| 100L (3.00kW)  | -           | -      | -         | -      | -         | -      | M0422-100L  | £P.O.A |
| 112M (4.00kW)  | -           | -      | -         | -      | -         | -      | M0422-112M  | £P.O.A |
| 112MA (5.50kW) | -           | -      | -         | -      | -         | -      | M0422-112MA | £P.O.A |

| Motor Frame     | Price Table |        |             |        |             |        |             |        |
|-----------------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|
|                 | M0522       |        | M0622       |        | M0722       |        | M0822       |        |
| Size            |             |        |             |        |             |        |             |        |
|                 | M0522R      | £P.O.A | M0622R      | £P.O.A | M0722R      | £P.O.A | M0822R      | £P.O.A |
| 63A (0.55kW)    | M0522-63A   | £P.O.A | M0622-63A   | £P.O.A | -           | -      | -           | -      |
| 63B (0.75kW)    | M0522-63B   | £P.O.A | M0622-63B   | £P.O.A | -           | -      | -           | -      |
| 71A (1.10kW)    | M0522-71A   | £P.O.A | M0622-71A   | £P.O.A | -           | -      | -           | -      |
| 71B (1.10kW)    | M0522-71B   | £P.O.A | M0622-71B   | £P.O.A | -           | -      | -           | -      |
| 80A (0.55kW)    | M0522-80A   | £P.O.A | M0622-80A   | £P.O.A | M0722-80A   | £P.O.A | M0822-80A   | £P.O.A |
| 80B (0.75kW)    | M0522-80B   | £P.O.A | M0622-80B   | £P.O.A | M0722-80B   | £P.O.A | M0822-80B   | £P.O.A |
| 90S (1.10kW)    | M0522-90S   | £P.O.A | M0622-90S   | £P.O.A | M0722-90S   | £P.O.A | M0822-90S   | £P.O.A |
| 90L (1.10kW)    | M0522-90L   | £P.O.A | M0622-90L   | £P.O.A | M0722-90L   | £P.O.A | M0822-90L   | £P.O.A |
| 90LA (2.20kW)   | M0522-90LA  | £P.O.A | M0622-90LA  | £P.O.A | M0722-90LA  | £P.O.A | M0822-90LA  | £P.O.A |
| 100L (3.00kW)   | M0522-100L  | £P.O.A | M0622-100L  | £P.O.A | M0722-100L  | £P.O.A | M0822-100L  | £P.O.A |
| 112M (4.00kW)   | M0522-112M  | £P.O.A | M0622-112M  | £P.O.A | M0722-112M  | £P.O.A | M0822-112M  | £P.O.A |
| 112MA (5.50kW)  | M0522-112MA | £P.O.A | M0622-112MA | £P.O.A | -           | -      | -           | -      |
| 132SA (5.50kW)  | -           | -      | -           | -      | M0722-132SA | £P.O.A | M0822-132SA | £P.O.A |
| 132M (7.50kW)   | -           | -      | -           | -      | M0722-132M  | £P.O.A | M0822-132M  | £P.O.A |
| 132MA (7.50kW)  | -           | -      | -           | -      | -           | -      | -           | -      |
| 132MB (11.00kW) | -           | -      | -           | -      | M0722-132MB | £P.O.A | -           | -      |
| 160MA (11.00kW) | -           | -      | -           | -      | -           | -      | M0822-160MA | £P.O.A |
| 160L (15.00kW)  | -           | -      | -           | -      | -           | -      | M0822-160L  | £P.O.A |

### Other info.

**Output Torque Guide Using Standard Motor:**  $\frac{\text{Motor KW}}{\text{Motor speeds}} \times 9550 = \text{input torque}$ . Input torque x exact ratio x efficiency = guide output torque.

To choose the most suitable option, please provide full details of application

### Ordering

When ordering, add motor frame then ratio to end of part number, eg. **M0622-80A-9.0** 80A = 0.55kW, 9.0 = 9.970:1 ratio.  
or reducer unit (shaft in/out), eg. **M0622R-9.0** 9.0 = 9.970:1 ratio.

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Product information updated 1st April 2011 and subject to change. Please contact Sales for the latest prices and availability.

# GEARBOXES

M

## Heavy Duty Inline Helical Gearbox Double Reduction - Ratings at 1450 Rpm - Sizes M01 - M08

KEY:

Pm - Input Power (kW)  
M2 - Output Torque (Nm)

i - Exact Ratio (:1)  
N2 - Output Speed (rpm)

fra - Overhung Load (kN)

| Col. Entry | Input Speed N1 (rpm) | M0122    |        |         |         |          | M0222    |        |         |         |          | M0322    |        |         |         |          | M0422    |        |         |         |          |
|------------|----------------------|----------|--------|---------|---------|----------|----------|--------|---------|---------|----------|----------|--------|---------|---------|----------|----------|--------|---------|---------|----------|
|            |                      | N2 (rpm) | i (:1) | M2 (Nm) | Pm (kW) | fra (kN) | N2 (rpm) | i (:1) | M2 (Nm) | Pm (kW) | fra (kN) | N2 (rpm) | i (:1) | M2 (Nm) | Pm (kW) | fra (kN) | N2 (rpm) | i (:1) | M2 (Nm) | Pm (kW) | fra (kN) |
| 3.6        | 1450                 | 387      | 3.750  | 59      | 2.49    | 0.98     | 404      | 3.589  | 100     | 4.39    | 3.10     | 404      | 3.589  | 118     | 5.18    | 2.30     | 404      | 3.585  | 203     | 8.87    | 2.30     |
| 5.0        | 1450                 | 286      | 5.066  | 68      | 2.09    | 0.98     | 288      | 5.034  | 116     | 3.61    | 3.10     | 288      | 5.034  | 135     | 4.22    | 2.30     | 288      | 5.040  | 237     | 7.37    | 2.45     |
| 5.6        | 1450                 | 252      | 5.762  | 71      | 1.95    | 0.98     | 261      | 5.547  | 121     | 3.41    | 3.10     | 261      | 5.547  | 140     | 3.97    | 2.30     | 257      | 5.649  | 249     | 6.91    | 2.60     |
| 6.3        | 1450                 | 222      | 6.528  | 75      | 1.80    | 0.98     | 230      | 6.299  | 127     | 3.16    | 3.10     | 230      | 6.299  | 147     | 3.67    | 2.30     | 229      | 6.341  | 262     | 6.46    | 2.90     |
| 8.0        | 1450                 | 174      | 8.348  | 79      | 1.49    | 0.98     | 181      | 8.000  | 136     | 2.67    | 3.10     | 181      | 8.000  | 161     | 3.15    | 2.30     | 180      | 8.053  | 289     | 5.61    | 3.45     |
| 9.0        | 1450                 | 161      | 8.997  | 80      | 1.40    | 1.00     | 160      | 9.088  | 140     | 2.41    | 3.10     | 160      | 9.088  | 168     | 2.89    | 2.30     | 159      | 9.129  | 299     | 5.13    | 4.60     |
| 11.0       | 1450                 | 128      | 11.359 | 84      | 1.16    | 1.02     | 130      | 11.154 | 145     | 2.04    | 3.15     | 130      | 11.154 | 179     | 2.52    | 2.30     | 133      | 10.887 | 311     | 4.46    | 4.70     |
| 12.0       | 1450                 | 113      | 12.877 | 87      | 1.06    | 1.04     | 117      | 12.371 | 148     | 1.88    | 3.20     | 117      | 12.371 | 186     | 2.36    | 2.35     | 116      | 12.536 | 320     | 3.99    | 4.75     |
| 14.0       | 1450                 | 99       | 14.715 | 90      | 0.96    | 1.09     | 103      | 14.054 | 153     | 1.71    | 3.30     | 103      | 14.054 | 194     | 2.16    | 2.35     | 99       | 14.580 | 329     | 3.53    | 4.85     |
| 16.0       | 1450                 | 89       | 16.369 | 90      | 0.86    | 1.18     | 91       | 15.968 | 160     | 1.57    | 3.50     | 91       | 15.968 | 205     | 2.02    | 2.40     | 89       | 16.312 | 338     | 3.25    | 5.10     |
| 18.0       | 1450                 | 80       | 18.047 | 90      | 0.78    | 1.35     | 82       | 17.584 | 160     | 1.43    | 3.90     | 82       | 17.584 | 208     | 1.86    | 2.45     | 83       | 17.386 | 338     | 3.04    | 5.55     |
| 20.0       | 1450                 | 73       | 19.861 | 90      | 0.71    | 1.40     | 72       | 20.226 | 160     | 1.24    | 3.95     | 72       | 20.226 | 209     | 1.62    | 2.60     | 70       | 20.605 | 338     | 2.57    | 6.00     |
| 22.0       | 1450                 | 62       | 23.269 | 90      | 0.61    | 1.45     | 66       | 21.989 | 160     | 1.14    | 4.00     | 66       | 21.989 | 209     | 1.49    | 2.75     | 66       | 22.000 | 338     | 2.41    | 6.40     |
| 28.0       | 1450                 | 52       | 29.917 | 90      | 0.51    | 1.48     | 55       | 26.397 | 160     | 0.95    | 4.00     | 55       | 26.397 | 209     | 1.25    | 2.80     | 53       | 27.300 | 338     | 1.94    | 6.70     |
| 32.0       | 1450                 | 45       | 32.542 | 90      | 0.44    | 1.50     | 46       | 31.677 | 160     | 0.80    | 4.00     | 46       | 31.677 | 209     | 1.04    | 2.90     | 45       | 32.193 | 338     | 1.65    | 7.10     |
| 36.0       | 1450                 | 40       | 36.157 | 90      | 0.39    | 1.60     | 41       | 35.692 | 160     | 0.71    | 4.00     | 41       | 35.692 | 209     | 0.92    | 3.05     | 41       | 35.250 | 338     | 1.51    | 7.20     |
| 50.0       | 1450                 | 29       | 49.907 | 72      | 0.23    | 1.90     | 31       | 47.094 | 160     | 0.54    | 4.00     | 31       | 47.094 | 203     | 0.68    | 3.10     | 30       | 48.150 | 338     | 1.11    | 7.20     |
| 56.0       | 1450                 | 26       | 56.719 | 71      | 0.20    | 1.90     | 27       | 53.538 | 160     | 0.47    | 4.00     | 27       | 53.538 | 206     | 0.61    | 3.15     | 27       | 54.000 | 270     | 0.79    | 7.20     |

| Col. Entry | Input Speed N1 (rpm) | M0522    |        |         |         |          | M0622    |        |         |         |          | M0722    |        |         |         |          | M0822    |        |         |         |          |
|------------|----------------------|----------|--------|---------|---------|----------|----------|--------|---------|---------|----------|----------|--------|---------|---------|----------|----------|--------|---------|---------|----------|
|            |                      | N2 (rpm) | i (:1) | M2 (Nm) | Pm (kW) | fra (kN) | N2 (rpm) | i (:1) | M2 (Nm) | Pm (kW) | fra (kN) | N2 (rpm) | i (:1) | M2 (Nm) | Pm (kW) | fra (kN) | N2 (rpm) | i (:1) | M2 (Nm) | Pm (kW) | fra (kN) |
| 3.6        | 1450                 | 404      | 3.585  | 292     | 12.80   | 2.80     | -        | -      | -       | -       | -        | 394      | 3.678  | 306     | 13.1    | 3.50     | 394      | 3.678  | 483     | 20.7    | 6.20     |
| 5.0        | 1450                 | 288      | 5.040  | 382     | 11.80   | 2.80     | 327      | 4.438  | 362     | 12.80   | 4.35     | 285      | 5.094  | 425     | 13.1    | 3.50     | 278      | 5.214  | 686     | 20.7    | 6.20     |
| 5.6        | 1450                 | 257      | 5.649  | 409     | 11.30   | 2.80     | 232      | 6.240  | 473     | 11.80   | 4.45     | 253      | 5.722  | 477     | 13.1    | 3.50     | 250      | 5.792  | 763     | 20.7    | 6.20     |
| 6.3        | 1450                 | 229      | 6.341  | 413     | 10.20   | 2.85     | 207      | 6.994  | 510     | 11.40   | 4.45     | 230      | 6.292  | 525     | 13.1    | 3.50     | 225      | 6.442  | 849     | 20.7    | 6.30     |
| 8.0        | 1450                 | 180      | 8.053  | 441     | 8.55    | 2.85     | 185      | 7.851  | 512     | 10.20   | 4.45     | 176      | 8.218  | 655     | 12.5    | 3.50     | 174      | 8.330  | 1100    | 20.7    | 6.35     |
| 9.0        | 1450                 | 159      | 9.129  | 450     | 7.69    | 2.90     | 145      | 9.970  | 594     | 9.30    | 4.50     | 155      | 9.344  | 689     | 11.5    | 3.50     | 155      | 9.352  | 1220    | 20.5    | 6.50     |
| 11.0       | 1450                 | 133      | 10.887 | 450     | 6.45    | 2.90     | 128      | 11.302 | 604     | 8.34    | 4.70     | 128      | 11.346 | 726     | 10.0    | 3.50     | 126      | 11.469 | 1310    | 17.9    | 6.60     |
| 12.0       | 1450                 | 116      | 12.536 | 426     | 5.31    | 2.90     | 108      | 13.479 | 613     | 7.11    | 5.20     | 116      | 12.481 | 740     | 9.28    | 3.60     | 112      | 12.923 | 1340    | 16.3    | 6.90     |
| 14.0       | 1450                 | 99       | 14.58  | 450     | 4.82    | 2.95     | 93       | 15.520 | 528     | 5.31    | 5.20     | 101      | 14.342 | 761     | 8.31    | 3.60     | 96       | 15.043 | 1410    | 14.7    | 6.90     |
| 16.0       | 1450                 | 89       | 16.312 | 450     | 4.32    | 2.95     | 80       | 18.051 | 596     | 5.16    | 5.85     | 89       | 16.263 | 786     | 7.58    | 3.50     | 87       | 16.686 | 1420    | 13.4    | 7.25     |
| 18.0       | 1450                 | 83       | 17.386 | 450     | 4.05    | 3.00     | 72       | 20.196 | 626     | 4.85    | 6.50     | 81       | 17.938 | 794     | 6.93    | 3.60     | 79       | 18.261 | 1360    | 11.7    | 8.00     |
| 20.0       | 1450                 | 70       | 20.605 | 450     | 3.42    | 3.50     | 67       | 21.526 | 626     | 4.55    | 7.20     | 71       | 20.543 | 804     | 6.14    | 3.90     | 70       | 20.659 | 1460    | 11.1    | 8.50     |
| 22.0       | 1450                 | 66       | 22.000 | 450     | 3.20    | 4.00     | 57       | 25.511 | 626     | 3.84    | 7.20     | 62       | 23.226 | 813     | 5.5     | 4.20     | 62       | 23.320 | 1540    | 10.3    | 9.00     |
| 28.0       | 1450                 | 53       | 27.300 | 450     | 2.58    | 4.25     | 53       | 27.238 | 626     | 3.60    | 7.20     | 54       | 26.928 | 825     | 4.81    | 4.50     | 51       | 28.269 | 1580    | 8.8     | 9.25     |
| 32.0       | 1450                 | 45       | 32.192 | 450     | 2.19    | 4.50     | 43       | 33.800 | 626     | 2.90    | 7.20     | 45       | 32.118 | 840     | 4.11    | 4.65     | 44       | 32.967 | 1620    | 7.72    | 9.50     |
| 36.0       | 1450                 | 41       | 35.250 | 450     | 2.01    | 5.00     | 36       | 39.857 | 626     | 2.47    | 7.20     | 41       | 35.173 | 847     | 3.79    | 5.10     | 40       | 36.213 | 1650    | 7.18    | 10.00    |
| 45.0       | 1450                 | 34       | 43.200 | 424     | 1.55    | 5.60     | 33       | 43.643 | 626     | 2.25    | 7.20     | 34       | 42.208 | 863     | 3.23    | 6.25     | 33       | 44.379 | 1690    | 5.99    | 12.30    |
| 50.0       | 1450                 | 30       | 48.150 | 379     | 1.24    | 6.30     | 27       | 53.486 | 526     | 1.55    | 7.20     | 30       | 48.562 | 700     | 2.28    | 7.40     | 30       | 48.462 | 1690    | 5.48    | 13.50    |
| 56.0       | 1450                 | 27       | 54.000 | 270     | 0.79    | 7.20     | 24       | 59.614 | 470     | 1.24    | 7.20     | 27       | 53.957 | 596     | 1.75    | 9.20     | 26       | 55.804 | 1540    | 4.36    | 16.20    |
| 63.0       | 1450                 | -        | -      | -       | -       | -        | 22       | 66.857 | 334     | 0.79    | 7.20     | -        | -      | -       | -       | -        | -        | -      | -       | -       | -        |