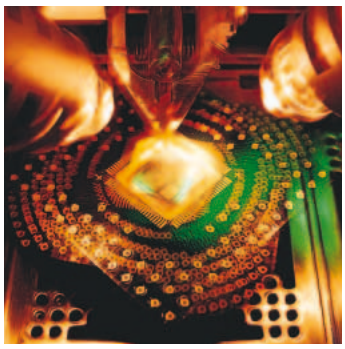
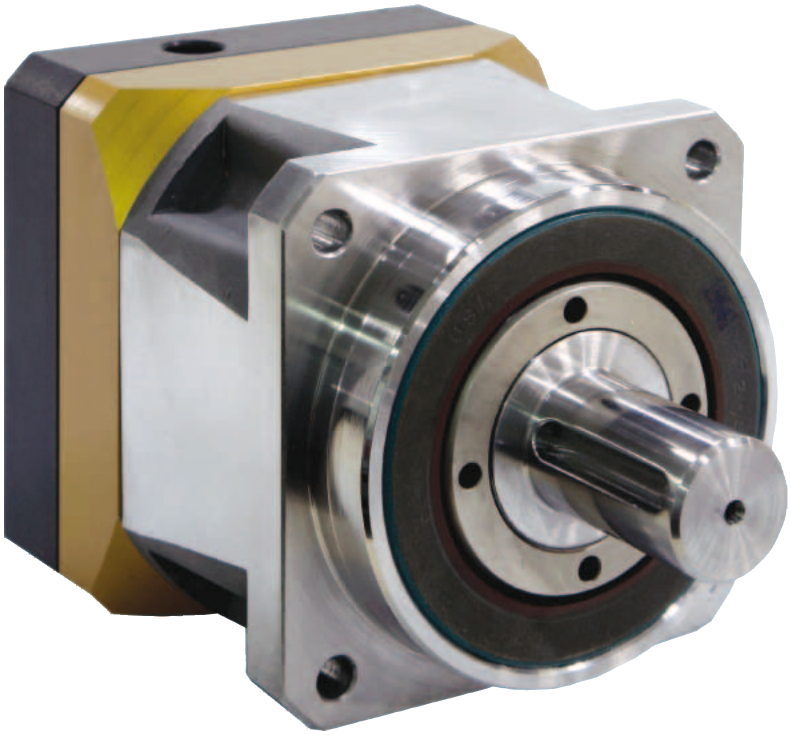
aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding





# PS / RS Series

## Precision Planetary Gearboxes

Parker

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## Precision Planetary Gearboxes PS / RS Series

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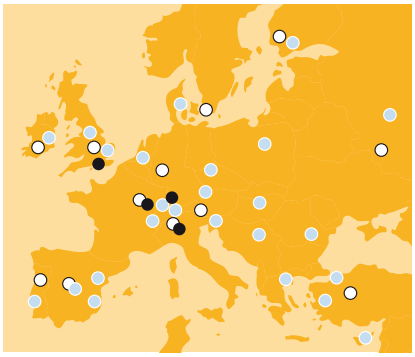


Manufacturing
Parker Sales Offices
Distributors

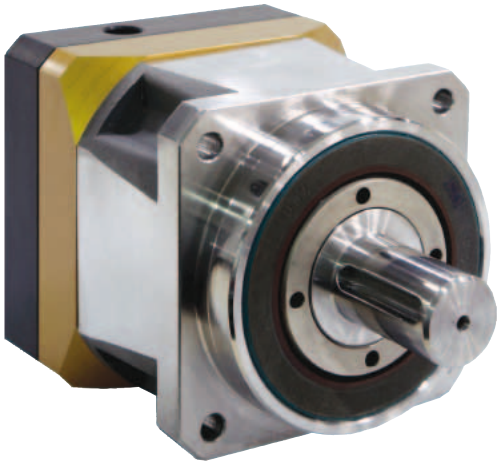

Dijon, France

# Precision Planetary Gearboxes PS / RS Series

## Overview

### Description

The Helical Planetary Gearboxes incorporate design enhancements to provide superior performance for the most demanding high performance applications.
The PS / RS gearboxes incorporate dual angular contact bearings providing higher radial load capacities while maintaining high input speeds. The design enhancements comprise among others, needle bearings to ensure a longer lifetime. Internal design changes and optimized gearing geometries provide the basis for the universal mounting position.
Common mounting kits across multiple gear head lines promote quicker deliveries and ease of mounting to any servo motor.
Mounting to any servo motor is as easy as A-B-C (adapter, bushing, collet).



### Features

- **Higher radial load capacity: Angular contact output bearings**
- **Increased service life: Needle bearings**
- **Life time lubrication**
- **Universal Mounting Kits: Quicker deliveries and easier mounting**
- **High nominal torque and low backlash: Helical planetary gearing**
- **High stiffness: Integrated planetary gear head**
- **High wear resistance: Plasma Nitriting heat treating**

### Technical Characteristics - Overview

| Series | Unit | PS | RS |
|---|---|---|---|
| Gear geometry | | Helical Planetary | Helical Planetary/ Spur Bevel |
| Type | | In-Line | Right Angle |
| Frame sizes | [mm] | 60...115 | |
| Maximum input speed | [min$^{-1}$] | up to 6000 | |
| Nominal torque | [Nm] | 27...230 | 13...220 |
| Radial force | [N] | >7500 | |
| Life | [h] | 20 000 | |
| Backlash | [arcmin] | up to <3 | up to <4 |

# PS Series: In - Line Gearboxes

## Technical Characteristics

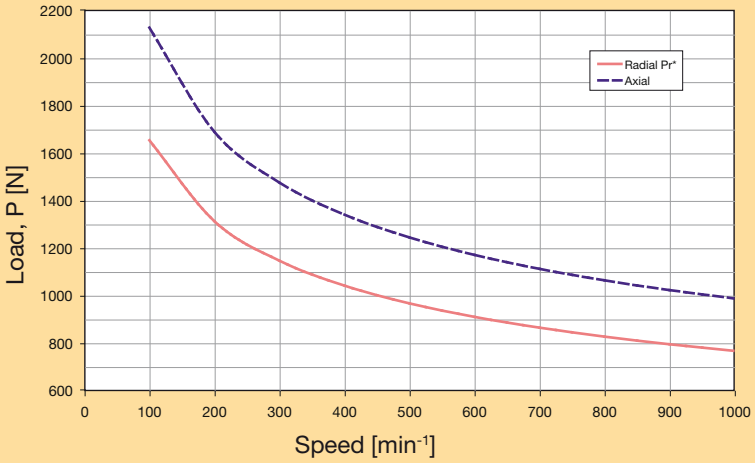
| Parameter | Unit | Ratio [8] | PS60 | PS90 | PS115 |
|---|---|---|---|---|---|
| **Nominal output torque [1] $T_{nom\ r}$** | [Nm] | **3**, 15, 30 | 27 | 76 | 172 |
| | | 4, **5**, 7, **20**, 25, 40, **50**, 70 | 37 | 110 | 230 |
| | | **10**, 100 | 32 | 93 | 205 |
| **Maximum acceleration torque $T_{acc\ r}$** | [Nm] | **3**, 15, 30 | 34 | 105 | 225 |
| | | 4, **5**, 7, **20**, 25, 40, **50**, 70 | 48 | 123 | 285 |
| | | **10**, 100 | 37 | 112 | 240 |
| **Emergency stop output torque [2] $T_{em\ r}$** | [Nm] | **3**, 15, 30 | 80 | 260 | 600 |
| | | 4, **5**, 7, **20**, 25, 40, **50**, 70 | 70 | 230 | 500 |
| | | **10**, 100 | 60 | 200 | 430 |
| **Nominal drive speed $N_{nom\ r}$** | [$min^{-1}$] | **3** | 3000 | 2500 | 2000 |
| | | 4, **5** | 3500 | 3000 | 2500 |
| | | 7, **10**, 15 | 4000 | 3500 | 3000 |
| | | **20**, 25, 30 | 4500 | 4000 | 3500 |
| | | 40, **50** | 4800 | 4400 | 3800 |
| | | 70, 100 | 5200 | 4800 | 4200 |
| **Maximum input speed $N_{max\ r}$ [3]** | [$min^{-1}$] | 3...100 | 6000 | 5500 | 4500 |
| **Maximum radial force $Pr_{max}$ [4]** | [N] | | 1650 | 4800 | 7500 |
| **Maximum axial load $Pa_{max}$ [5]** | [N] | | 2100 | 3600 | 6800 |
| **Life** | [h] | | 20 000 (lifetime lubrication) | | |
| **Backlash - standard [6]** | [arcmin] | 3...10 (1 step) | <6 | <6 | <4 |
| | | 15...100 (2 step) | <8 | <8 | <6 |
| **Backlash - reduced [6]** | [arcmin] | 3...10 (1 step) | <4 | <4 | <3 |
| | | 15...100 (2 step) | <6 | <6 | <5 |
| **Efficiency at nominal torque** | % | 3...10 | 97 | 97 | 97 |
| | | 15...100 | 94 | 94 | 94 |
| **Noise level at 3000 $min^{-1}$ [7]** | [db] | 3...100 | <62 | <62 | <65 |
| **Torsional rigidity** | [Nm/arcmin] | 3...100 | 3 | 12 | 27 |
| **Operating temperature** | [°C] | 3...100 | -20...90 | | |
| **Lubrication** | | 3...100 | per maintenance schedule | | |
| **Orientation** | | 3...100 | any | | |
| **Direction of Rotation** | | 3...100 | same as input | | |
| **Enclosure rating** | | | IP65 | | |
| **Rotor inertia** | | | see page 8 | | |
| **Weight** | [kg] | 3...10 | 1.3 | 3.0 | 7.0 |
| | | 15...100 | 1.7 | 5.0 | 10.0 |

[1] At nominal speed $N_{nom\ r}$.
[2] Maximum of 1000 stops.
[3] Cycle mode.
[4] Max. radial load applied to the center of the shaft at 100 $min^{-1}$
[5] Max. axial load at 100 $min^{-1}$.
[6] Measured at 2 % of rated torque.
[7] Measure at 1 m.
[8] Gearboxes in bold print - ratios with standard reversing play are on stock.

## Load on Input Shaft

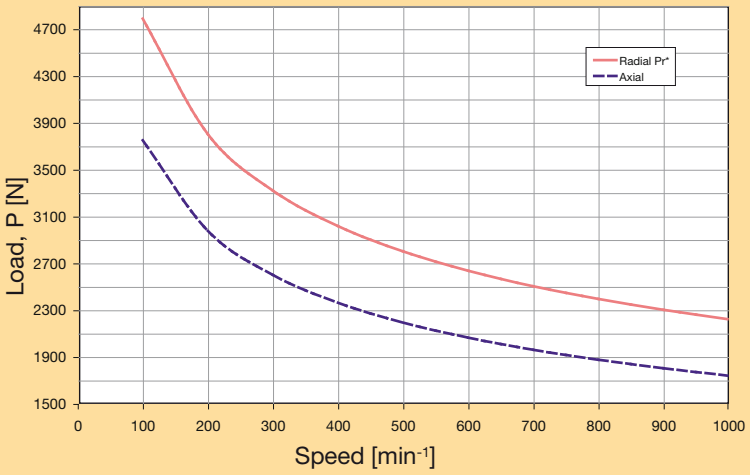
Formulas to calculate radial load (Prx) at any distance "X" from the gearbox mounting surface:

### PS60



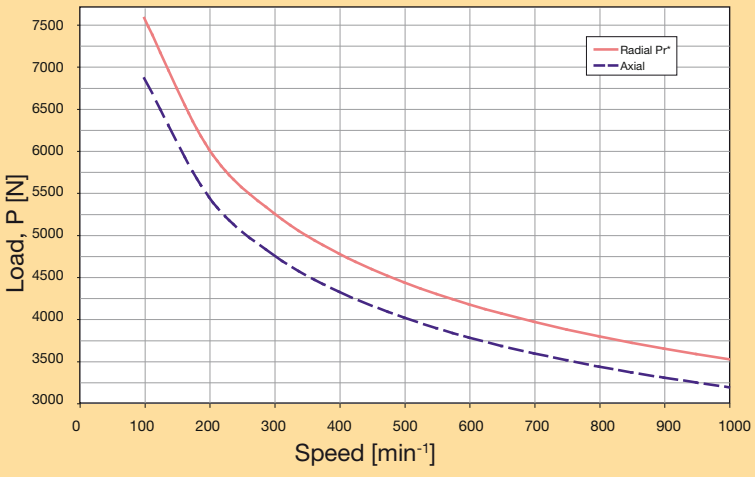

Prx = Pr * 75 mm / (49 mm + X)

### PS90




Prx = Pr * 96 mm / (62 mm + X)

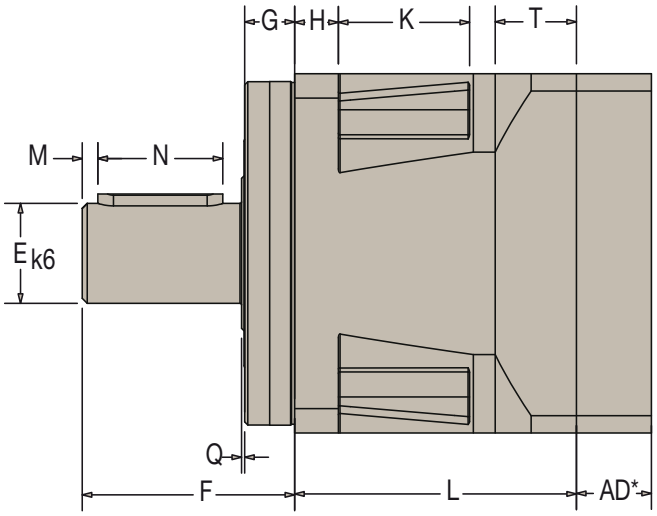
### PS115

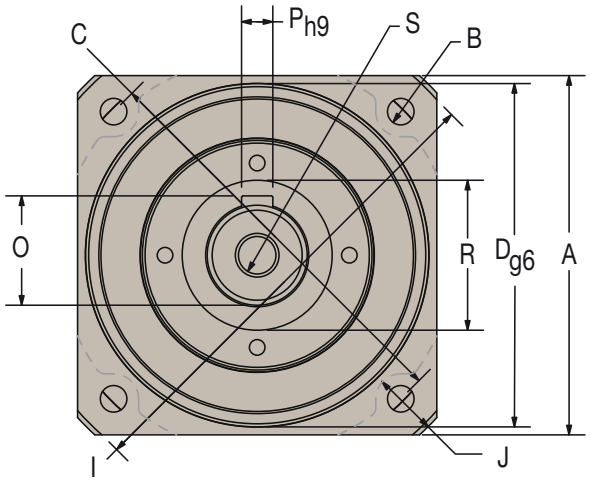



Prx = Pr * 124 mm / (81 mm + X)

* Radial load applied to center of the shaft.

## Dimensions




AD*: see table "Universal Mounting Kits"

| Frame size | All dimensions in mm | PS60 | PS90 | PS115 |
|---|---|---|---|---|
| A | Flange cross section | 62 | 90 | 115 |
| B | Fixing bore | 5.5 | 6.5 | 8.5 |
| C | Bolt circle | 70 | 100 | 130 |
| D | Motor pilot Ø | 50 | 80 | 110 |
| E | Drive shaftØ | 16 | 22 | 32 |
| F | Drive shaft length | 40 | 52 | 68 |
| G | Motor pilot depth | 11 | 15 | 16 |
| H | Flange width | 8 | 10 | 14 |
| I | Ø Housing | 80 | 116 | 152 |
| J | Housing recess | 5 | 6.5 | 7.5 |
| K | Recess length | 24 | 33 | 42 |
| L1 | Length single stage | 59.8 | 69.5 | 90.2 |
| L2 | Length double stage | 94.8 | 113 | 143.4 |
| M | Distance from shaft end | 2 | 3 | 5 |
| N | Keyway length | 25 | 32 | 40 |
| O | Key height | 18 | 24.5 | 35 |
| P | Keyway width | 5 | 6 | 10 |
| Q | Collar height | 1 | 1 | 1.5 |
| R | Collar Ø | 22 | 35 | 50 |
| S | Center bore (shaft end) | M5x8 | M8x16 | M12x25 |
| T | Width of flange on output side | 20.5 | 20 | 26 |

## Universal Mounting Kits

### Adapter length “AD” dimension

| Frame size | Motor shaft length | Gearbox adapter length |
|---|---|---|
| | [mm] | [mm] |
| 60 | 16...35<br>35.1...41 | 16.5<br>22.5 |
| 90 | 20...40<br>40.1...48 | 20<br>28.5 |
| 115 | 22...50<br>50.1...61 | 24<br>35 |

## PS: Rotor Inertia

### All rotor inertias refer to the gearbox input

| Ratio | Unit | PS60 | PS90 | PS115 |
|---|---|---|---|---|
| 3 | [kgmm²] | 25 | 97 | 340 |
| 4 | [kgmm²] | 17 | 67 | 220 |
| 5 | [kgmm²] | 15 | 51 | 170 |
| 7 | [kgmm²] | 14 | 41 | 130 |
| 10 | [kgmm²] | 14 | 37 | 110 |
| 15 | [kgmm²] | 15 | 52 | 170 |
| 20 | [kgmm²] | 15 | 51 | 170 |
| 25 | [kgmm²] | 15 | 51 | 170 |
| 30, 40, 50, 70, 100 | [kgmm²] | 13 | 37 | 110 |

# RS Series: Right - Angle Gearboxes

## Technical Characteristics

| Parameter | Unit | Ratio | RS60 | RS90 | RS115 |
|---|---|---|---|---|---|
| **Nominal output torque** (1) $T_{nom\ r}$ | [Nm] | 5 | 13 | 55 | 85 |
| | | 10 | 24 | 80 | 160 |
| | | 15, 20, 25, 50 | 35 | 88 | 220 |
| | | 30, 40, 100 | 30 | 86 | 195 |
| **Maximum acceleration torque** $T_{acc\ r}$ | [Nm] | 5 | 19 | 83 | 127 |
| | | 10 | 36 | 120 | 240 |
| | | 15, 20, 25, 50 | 45 | 123 | 255 |
| | | 30, 40, 100 | 37 | 112 | 240 |
| **Emergency stop output torque** (2) $T_{em\ r}$ | [Nm] | 5 | 40 | 150 | 270 |
| | | 10 | 72 | 240 | 480 |
| | | 15, 20, 25, 50 | 80 | 250 | 510 |
| | | 30, 40, 100 | 60 | 200 | 430 |
| **Nominal drive speed** $N_{nom\ r}$ | [$min^{-1}$] | 5, 10 | 3200 | 2800 | 2400 |
| | | 15, 20, 25, 30, 40 | 3700 | 3300 | 2900 |
| | | 50, 100 | 4200 | 3800 | 3400 |
| **Maximum input speed** $N_{max\ r}$ (3) | [$min^{-1}$] | 5...100 | 6000 | 5300 | 4500 |
| **Maximum radial force** $Pr_{max}$ (4) | [N] | | 1650 | 4800 | 7500 |
| **Maximum axial load** $Pa_{max}$ (5) | [N] | | 2100 | 3600 | 6800 |
| **Life** | [h] | | 20 000 (lifetime lubrication) | | |
| **Backlash - standard** (6) | [arcmin] | 5...10 (1 step) | <14 | <12 | <12 |
| | | 15...100 (2 step) | <12 | <10 | <10 |
| **Backlash - reduced** (6) | [arcmin] | 5...10 (1 step) | <10 | <8 | <8 |
| | | 15...100 (2 step) | <8 | <6 | <6 |
| **Efficiency at nominal torque** | % | 5...10 | 94 | 94 | 94 |
| **Noise level at 3000 $min^{-1}$** (7) | [db] | 5...100 | <65 | <68 | <68 |
| **Torsional rigidity** | [Nm/arcmin] | 5...100 | 2.5 | 10 | 22 |
| **Operating temperature** | [°C] | 5...100 | -20...90 | | |
| **Lubrication** | | 5...100 | per maintenance schedule | | |
| **Orientation** | | 5...100 | any, details see ordering information | | |
| **Direction of Rotation** | | 3...100 | Direction turns | | |
| **Enclosure rating** | | | IP65 | | |
| **Rotor inertia** | | | see page 11 | | |
| **Weight** | [kg] | 5...10 | 2.0 | 6.0 | 11.0 |

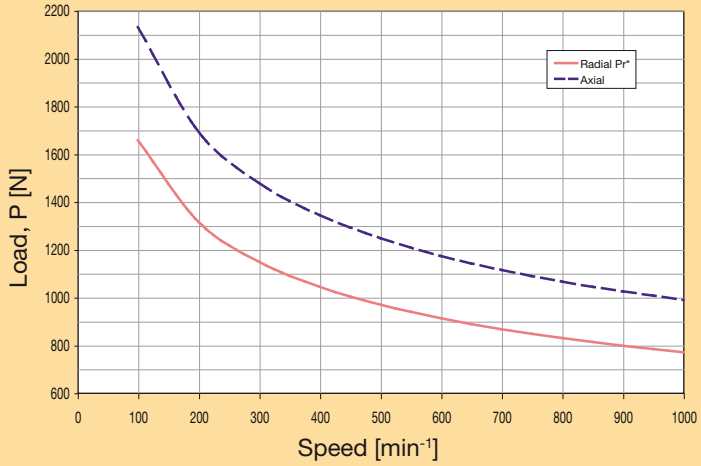
(1) At nominal speed $N_{nom\ r}$.
(2) Maximum of 1000 stops.
(3) Cycle mode.
(4) Max. radial load applied to the center of the shaft at 100 $min^{-1}$
(5) Max. axial load at 100 $min^{-1}$.
(6) Measured at 2 % of rated torque.
(7) Measure at 1 m.

**In- / out direction**

The direction turns

## Load on Input shaft

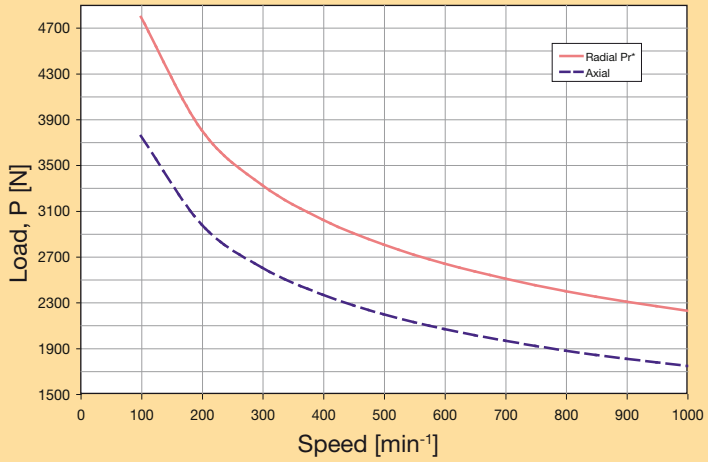
### RS60




Formulas to calculate radial load (Prx) at any distance "X" from the gearbox mounting surface:

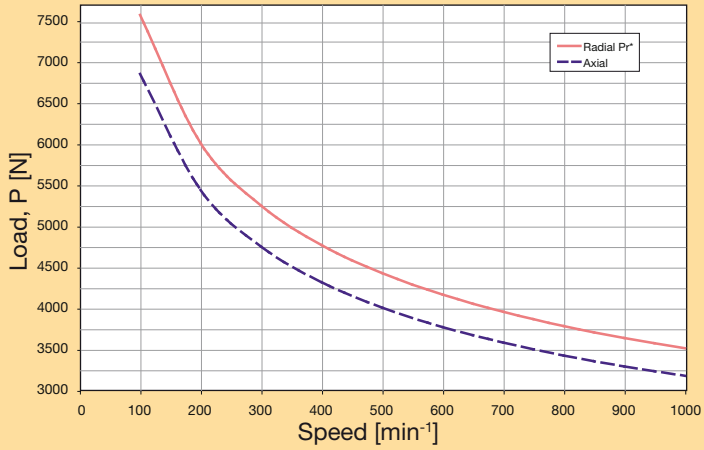
Prx = Pr * 75 mm / (49 mm + X)

### RS90




Prx = Pr * 96 mm / (62 mm + X)

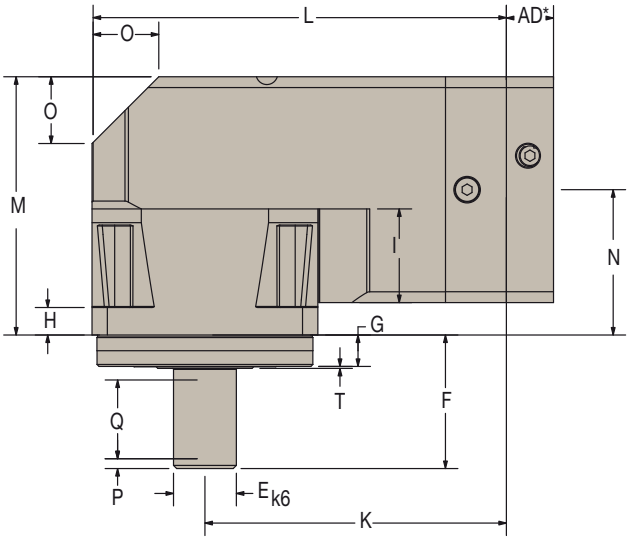
### RS115

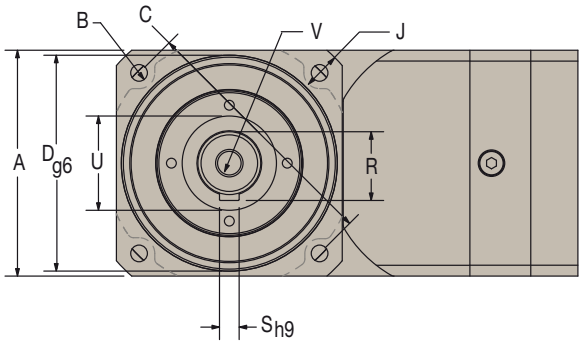



Prx = Pr * 124 mm / (81 mm + X)

* Radial load applied to center of the shaft.

## Dimensions




AD*: see table "Universal Mounting Kits"

| Frame size | All dimensions in mm | RS60 | RS90 | RS115 |
|---|---|---|---|---|
| A | Flange cross section | 62 | 90 | 115 |
| B | Mounting bore | 5.5 | 6.5 | 8.5 |
| C | Bolt circle | 70 | 100 | 130 |
| D | Motor pilot Ø | 50 | 80 | 110 |
| E | Input shaftØ | 16 | 22 | 32 |
| F | Length of input shaft | 40 | 52 | 68 |
| G | Motor pilot depth | 11 | 15 | 16 |
| H | Flange width | 8 | 10 | 14 |
| I | Enclosure recess | 23.5 | 40.5 | 47.5 |
| J | Recess length | 5 | 6.5 | 7.5 |
| K | Distance to output centerline | 93.7 | 132 | 153.5 |
| L | Housing length | 124.7 | 177 | 211 |
| M | Housing width | 76.8 | 103 | 132 |
| N | Distance to input centerline | 47 | 58 | 74 |
| O | Bevel height | 14 | 25 | 32 |
| P | Distance from shaft end | 2 | 3 | 5 |
| Q | Keyway length | 25 | 32 | 40 |
| R | Key height | 18 | 24.5 | 35 |
| S | Keyway width | 5 | 6 | 10 |
| T | Collar height | 0.5 | 0.5 | 1 |
| U | Collar Ø | 22 | 35 | 45 |
| V | Center bore (shaft end) | M5x8 | M8x16 | M12x25 |

## Universal Mounting Kits

### Adapter length “AD” dimension

| Frame size | Motor shaft length | Gearbox adapter length |
|---|---|---|
| | [mm] | [mm] |
| 60 | 16...35<br>35.1...41 | 16.5<br>22.5 |
| 90 | 20...40<br>40.1...48 | 20<br>28.5 |
| 115 | 22...50<br>50.1...61 | 24<br>35 |

## RS: Rotor Inertia

### All rotor inertias refer to the gearbox input

| Ratio | Unit | RS60 | RS90 | RS115 |
|---|---|---|---|---|
| 5 | [kgmm²] | 22 | 81 | 250 |
| 10 | [kgmm²] | 19 | 61 | 190 |
| 15 | [kgmm²] | 18 | 60 | 170 |
| 20 | [kgmm²] | 17 | 51 | 140 |
| 25 | [kgmm²] | 16 | 42 | 130 |
| 30 | [kgmm²] | 18 | 60 | 170 |
| 40 | [kgmm²] | 17 | 51 | 140 |
| 50 | [kgmm²] | 15 | 40 | 110 |
| 100 | [kgmm²] | 15 | 40 | 110 |

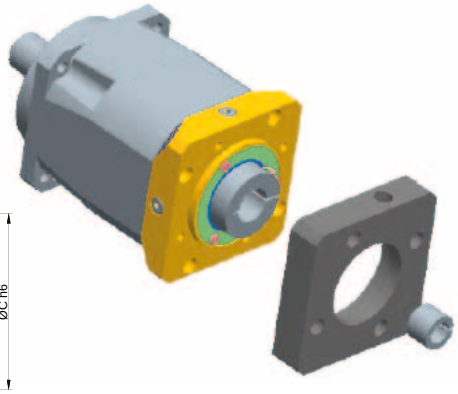
# Adapter Flange / Motor - Dimensions (Gear Unit Input Side)

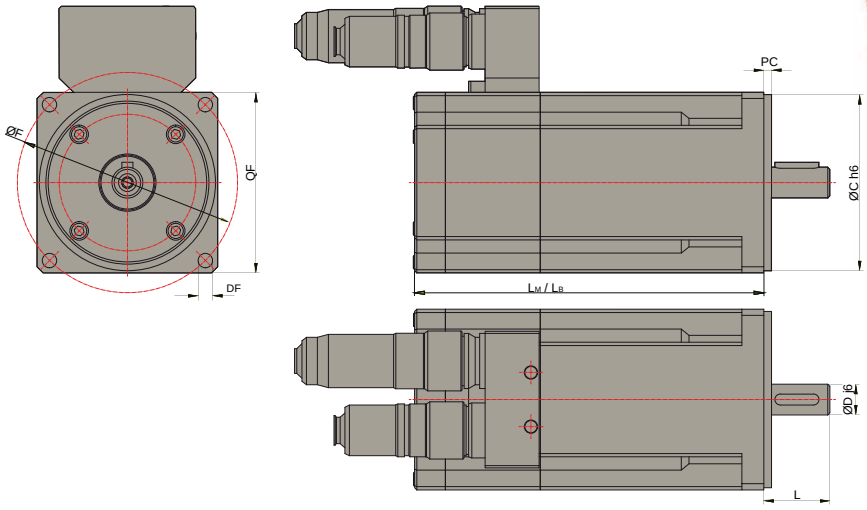
Dimensions [mm]

| Motor [1] | Flange Type | Motor flange | Flange depth | Bolt circle Ø | Bore Ø | Pilot Ø | Pilot depth | Shaft Ø | Shaft length | Adapter flange | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | QF | PC | F | DF | C | S | D | L | Order No. | Fastening thread | AD [2] (short) |
| SM_60,###,##,5,11,S | B5 | 70 | 7 | **75** | 6 | **60** | **2.5** | **11** | **23** | **MU60-001** | M5 | 16.5 |
| M_70,###,##,5,11,S | B5 | 70 | 7 | **75** | 6 | **60** | **2.5** | **11** | **23** | **MU60-001** | M5 | 16.5 |
| NX3 | | 56 | 8.5 | **75** | 5.5 | **60** | **2.5** | **11** | **23** | **MU60-001** | M5 | 16.5 |
| M_56,###,##,5,9,S | B5 | 56 | 6.5 | **63** | 5.5 | **40** | **2.5** | **9** | **20** | **MU60-003** | M5 | 16.5 |
| SM_60,###,##,8,9,S | B5 | 60 | 7 | **63** | 5.5 | **40** | **2.5** | **9** | **20** | **MU60-003** | M5 | 16.5 |
| SY56# | Nema23 | 56.5 | 4.83 | **66.67** | 5.3 | **38.1** | **1.6** | **6.35** | **25.4** | **MU60-005** | M5 | 16.5 |
| M_56,###,##,5,11,S | B5 | 56 | 6.5 | **63** | 5.5 | **40** | **2.5** | **11** | **23** | **MU60-254** | M5 | 16.5 |
| NX2 | | 56 | 7.2-18 | **63** | 5.5 | **40** | **2.5** | **11** | **25** | **MU60-254** | M5 | 16.5 |
| NX1 | | 42.5 | 6 | **50** | 3.2 | **30** | **2.5** | **9** | **25** | **MU60-255** | M3 | 16.5 |
| SM_82,###,###,8,14,S | B8 | 82 | 10 | **100** | 6.5 | **80** | **3.5** | **14** | **30** | **MU60-321** | M6 | 16.5 |
| SM_82,###,##,8,14,S | B8 | 82 | 10 | **100** | 6.5 | **80** | **3.5** | **14** | **30** | **MU90-001** | M6 | 20 |
| SM_82,###,##,8,19,S | B8 | 82 | 10 | **100** | 6.5 | **80** | **3.5** | **19** | **40** | **MU90-085** | M6 | 20 |
| NX4 | | 91.5 | 10.5 | **100** | 7 | **80** | **3** | **19** | **40** | **MU90-085** | M6 | 20 |
| M_105,###,##,5,19,S | B5 | 105 | 10 | **115** | 9.5 | **95** | **3.5** | **19** | **40** | **MU90-088** | M9 | 20 |
| SM_100,###,##,5,19,S | B5 | 100 | 10 | **115** | 9 | **95** | **3.5** | **19** | **40** | **MU90-088** | M8 | 20 |
| SM_115,###,##,8,19,S | B8 | 115 | 10 | **130** | 9 | **95** | **3.5** | **19** | **40** | **MU90-345** | M8 | 20 |
| M_105,###,##,5,24,S | B5 | 105 | 10 | **115** | 9.5 | **95** | **3.5** | **24** | **50** | **MU115-005** | M8 | 24 |
| SM_100,###,##,5,24,S | B5 | 100 | 10 | **115** | 9 | **95** | **3.5** | **24** | **50** | **MU115-005** | M8 | 24 |
| SM_115,###,##,8,19,S | B8 | 115 | 10 | **130** | 9 | **95** | **3.5** | **19** | **40** | **MU115-006** | M8 | 24 |
| M_105,###,##,6,24,S | B6 | 105 | 10 | **130** | 9 | **110** | **3.5** | **24** | **50** | **MU115-010** | M8 | 24 |
| SM_115,###,##,7,24,S | B7 | 130 | 10 | **130** | 9 | **110** | **3.5** | **24** | **50** | **MU115-010** | M8 | 24 |
| NX6 | | 121 | 10.5 | **130** | 9 | **110** | **3.5** | **24** | **50** | **MU115-010** | M8 | 24 |
| SM_82,###,##,8,14,S | B8 | 82 | 10 | **100** | 6.5 | **80** | **3.5** | **14** | **30** | **MU115-015** | M6 | 24 |
| SM_115,###,##,5,24,S | B5 | 145 | 10 | **165** | 11 | **130** | **3.5** | **24** | **50** | **MU115-026** | M10 | 24 |
| SM_142,###,##,5,24,S | B5 | 145 | 10 | **165** | 11 | **130** | **3.5** | **24** | **50** | **MU115-026** | M10 | 24 |
| SM_82,###,##,5,19,S | B5 | 100 | 10 | **115** | 9 | **95** | **3.5** | **19** | **40** | **MU115-039** | M8 | 24 |
| SM_100,###,##,5,19,S | B5 | 100 | 10 | **115** | 9 | **95** | **3.5** | **19** | **40** | **MU115-039** | M8 | 24 |
| SM_82,###,##,8,19,S | B8 | 82 | 10 | **100** | 6.5 | **80** | **3.5** | **19** | **40** | **MU115-089** | M6 | 24 |
| SM_115,###,##,8,24,S | B8 | 115 | 10 | **130** | 9 | **95** | **3.5** | **24** | **50** | **MU115-257** | M8 | 24 |
| M_105,###,##,9,24,S | B9 | 96 | 10 | **100** | 7 | **80** | **3.5** | **24** | **50** | **MU115-269** | M6 | 24 |

[1] MB/SMB: for drives TPDM, SLVDN, TwinN, SPDN, HiDrive
MH/SMH: for drive Compax3

[2] AD: Adapter length (please refer to the "dimensions" chapter)



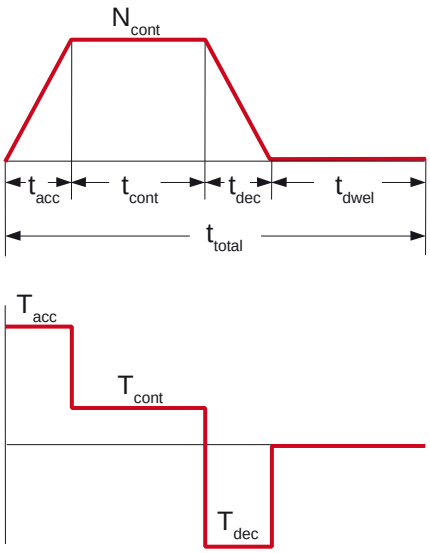


# Gearbox Sizing

Parker has prepared the following procedure to provide a quick method for selecting a gearbox.

**1) Application parameters:**

- Acceleration time ($t_{acc}$)
- Continuous run time ($t_{cont}$)
- Deceleration time ($t_{dec}$)
- Dwell time ($t_{dwel}$)
- Acceleration torque ($T_{acc}$)
- Continuous torque ($T_{cont}$)
- Deceleration torque ($T_{dec}$)
- Application speed ($N_{cont}$)
- Transmission ratio (i)
- Gearbox nominal torque ($T_{nom\ r}$)
- Max. permissible acceleration torque ($T_{acc\ r}$)
- Percentage of acceleration torque vs. continuous cycle time ($t_{total}$)
- Max. input speed ($N_{max\ r}$)




**2) Duty cycle:**

Duty cycle = $t_{acc}+t_{cont}+t_{dec} / t_{total} \times 100$ %

If duty cycle is <60 % and ($t_{acc}+t_{cont}+t_{dec}$) is less than 20 minutes, the motion is considered to be intermittent.

If duty cycle is <60 % and ($t_{acc}+t_{cont}+t_{dec}$) is more than 20 minutes, the motion is considered to be continuous.

**3) For Cycle mode applies:**

Determine $T_{acc}$ % of ($T_{acc} + T_{cont} + T_{dec}$) :
$T_{acc} / (T_{acc} + T_{cont} + T_{dec}) \times 100\%$

Define the ratio: $T_{cont} / T_{acc}$

Use the table to select the load factor K.

Compare Accel/Decel torque to the maximum permissible accel torque of the gearbox $T_{acc\ r}$: $T_{acc} < T_{acc\ r} \times K$ , if not, please select a more suitable gearbox.

Compare the required maximum speed to the maximum rated speed of the gearbox.
$N_{max} < N_{max\ r} / i$ i-gearbox ratio)

**4) For continuous operation applies:**

$T_{nom} < T_{nom\ r}$
$N_{nom} < N_{nom\ r} / i$

**5) Check the Emergency Stop Torque Rating.**

**6) Verify Radial and Axial Shaft Load of the Application for the selected Gearbox.**

**Table: Load Factor K**

| $T_{acc}$ % | $0 < T_{cont} / T_{acc} < 0.25$ | $0.25 < T_{cont} / T_{acc} < 0.5$ |
|---|---|---|
| 10-15 | 1.0 | 1.0 |
| 15-20 | 1.0 | 0.95 |
| 20-25 | 0.94 | 0.89 |
| 25-30 | 0.88 | 0.84 |
| 30-35 | 0.81 | 0.79 |
| 35-40 | 0.76 | 0.75 |
| 40-45 | 0.71 | 0.70 |
| 45-50 | 0.66 | 0.66 |

# Order Code

## PS / RS Gearboxes

| | 1 | 2 | | 3 | | 4 | 5 | | 6 |
|---|---|---|---|---|---|---|---|---|---|
| Order example | **PS** | **60** | **-** | **003** | **-** | **S** | **2** | **/** | **MU60-088** |

| 1 | **Gearbox type** | |
|---|---|---|
| ● | **PS** | Gearbox for in-line mounting |
| | **RS** | Right-angle gearboxes |

| 2 | | |
|---|---|---|
| ● | **60** | Flange 60 |
| ● | **90** | Flange 90 |
| ● | **115** | Flange 1150 |

| 3 | **Ratio** | | | |
|---|---|---|---|---|
| | | i | PS | RS |
| | **003** | 3 | ● x | |
| | **004** | 4 | x | |
| | **005** | 5 | ● x | x |
| | **007** | 7 | x | |
| | **010** | 10 | ● x | x |
| | **015** | 15 | x | x |
| | **020** | 20 | ● x | x |
| | **025** | 25 | x | x |
| | **030** | 30 | x | x |
| | **040** | 40 | x | x |
| | **050** | 50 | ● x | x |
| | **070** | 70 | x | |
| | **100** | 100 | x | x |

| 4 | **Reverse play / orientation** | |
|---|---|---|
| ● | **S** | Standard |
| | **L** | Reduced |

| 5 | **Series** | |
|---|---|---|
| ● | **2** | Gen 2 Gearboxes |

● **On stock, short delivery times**

| 6 | **Adapter flange / Motor assignment** (Dimensions see next page) | |
|---|---|---|
| ● | **MU60-001** | SMH60,###,##,5,11,S<br>MH70,###,##,5,11,S<br>NX3 |
| ● | **MU60-003** | MH56,###,##,5,9,S<br>SMH60,###,##,8,9,S |
| | **MU60-005** | SY56 |
| ● | **MU60-254** | MH56,###,##,5,11,S<br>NX2 |
| ● | **MU60-255** | NX1 |
| ● | **MU60-321** | SMH,###,###,8,14,S |
| ● | **MU90-001** | SMH82,###,##,8,14,S |
| ● | **MU90-085** | SMH82,###,##,8,19,S<br>NX4 |
| ● | **MU90-088** | MH105,###,##,5,19,S<br>SMH100,###,##,5,19,S |
| | **MU90-345** | SMH115,###,##,8,19,S |
| ● | **MU115-005** | MH105,###,##,5,24,S<br>SMH100,###,##,5,24,S |
| ● | **MU115-006** | SMH115,###,##,8,19,S |
| ● | **MU115-010** | MH105,###,##,6,24,S<br>SMH115,###,##,7,24,S<br>NX6 |
| | **MU115-015** | SMH82,###,##,8,14,S |
| ● | **MU115-026** | SMH115,###,##,5,24,S<br>SMH142,###,##,5,24,S |
| ● | **MU115-039** | SMH82,###,##,5,19,S<br>SMH100,###,##,5,19,S |
| ● | **MU115-089** | SMH82,###,##,8,19,S |
| | **MU115-257** | SMH115,###,##,8,24,S |
| ● | **MU115-269** | MH105,###,##,9,24,S |
| | **MUxxx-yyy** | Additional motors: Selection of the adapter flange on www.parker-eme.com/gear_kits |

# Parker's Motion & Control Technologies

**At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374.**

## AEROSPACE

### Key Markets
- Aircraft engines
- Business & general aviation
- Commercial transports
- Land-based weapons systems
- Military aircraft
- Missiles & launch vehicles
- Regional transports
- Unmanned aerial vehicles

### Key Products
- Flight control systems & components
- Fluid conveyance systems
- Fluid metering delivery & atomization devices
- Fuel systems & components
- Hydraulic systems & components
- Inert nitrogen generating systems
- Pneumatic systems & components
- Wheels & brakes

## CLIMATE CONTROL

### Key Markets
- Agriculture
- Air conditioning
- Food, beverage & dairy
- Life sciences & medical
- Precision cooling
- Processing
- Transportation

### Key Products
- $CO^2$ controls
- Electronic controllers
- Filter driers
- Hand shut-off valves
- Hose & fittings
- Pressure regulating valves
- Refrigerant distributors
- Safety relief valves
- Solenoid valves
- Thermostatic expansion valves

## ELECTROMECHANICAL

### Key Markets
- Aerospace
- Factory automation
- Food & beverage
- Life science & medical
- Machine tools
- Packaging machinery
- Paper machinery
- Plastics machinery & converting
- Primary metals
- Semiconductor & electronics
- Textile
- Wire & cable

### Key Products
- AC/DC drives & systems
- Electric actuators
- Controllers
- Gantry robots
- Gearheads
- Human machine interfaces
- Industrial PCs
- Inverters
- Linear motors, slides and stages
- Precision stages
- Stepper motors
- Servo motors, drives & controls
- Structural extrusions

## FILTRATION

### Key Markets
- Food & beverage
- Industrial machinery
- Life sciences
- Marine
- Mobile equipment
- Oil & gas
- Power generation
- Process
- Transportation

### Key Products
- Analytical gas generators
- Compressed air & gas filters
- Condition monitoring
- Engine air, fuel & oil filtration & systems
- Hydraulic, lubrication & coolant filters
- Process, chemical, water & microfiltration filters
- Nitrogen, hydrogen & zero air generators

## FLUID & GAS HANDLING

### Key Markets
- Aerospace
- Agriculture
- Bulk chemical handling
- Construction machinery
- Food & beverage
- Fuel & gas delivery
- Industrial machinery
- Mobile
- Oil & gas
- Transportation
- Welding

### Key Products
- Brass fittings & valves
- Diagnostic equipment
- Fluid conveyance systems
- Industrial hose
- PTFE & PFA hose, tubing & plastic fittings
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects

## HYDRAULICS

### Key Markets
- Aerospace
- Aerial lift
- Agriculture
- Construction machinery
- Forestry
- Industrial machinery
- Mining
- Oil & gas
- Power generation & energy
- Truck hydraulics

### Key Products
- Diagnostic equipment
- Hydraulic cylinders & accumulators
- Hydraulic motors & pumps
- Hydraulic systems
- Hydraulic valves & controls
- Power take-offs
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects

## PNEUMATICS

### Key Markets
- Aerospace
- Conveyor & material handling
- Factory automation
- Food & beverage
- Life science & medical
- Machine tools
- Packaging machinery
- Transportation & automotive

### Key Products
- Air preparation
- Compact cylinders
- Field bus valve systems
- Grippers
- Guided cylinders
- Manifolds
- Miniature fluidics
- Pneumatic accessories
- Pneumatic actuators & grippers
- Pneumatic valves and controls
- Rodless cylinders
- Rotary actuators
- Tie rod cylinders
- Vacuum generators, cups & sensors

## PROCESS CONTROL

### Key Markets
- Chemical & refining
- Food, beverage & dairy
- Medical & dental
- Microelectronics
- Oil & gas
- Power generation

### Key Products
- Analytical sample conditioning products & systems
- Fluoropolymer chemical delivery fittings, valves & pumps
- High purity gas delivery fittings, valves & regulators
- Instrumentation fittings, valves & regulators
- Medium pressure fittings & valves
- Process control manifolds

## SEALING & SHIELDING

### Key Markets
- Aerospace
- Chemical processing
- Consumer
- Energy, oil & gas
- Fluid power
- General industrial
- Information technology
- Life sciences
- Military
- Semiconductor
- Telecommunications
- Transportation

### Key Products
- Dynamic seals
- Elastomeric o-rings
- EMI shielding
- Extruded & precision-cut, fabricated elastomeric seals
- Homogeneous & inserted elastomeric shapes
- High temperature metal seals
- Metal & plastic retained composite seals
- Thermal management

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1. reprint 21.11.2011



192-753014N4 Oktober 2011

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