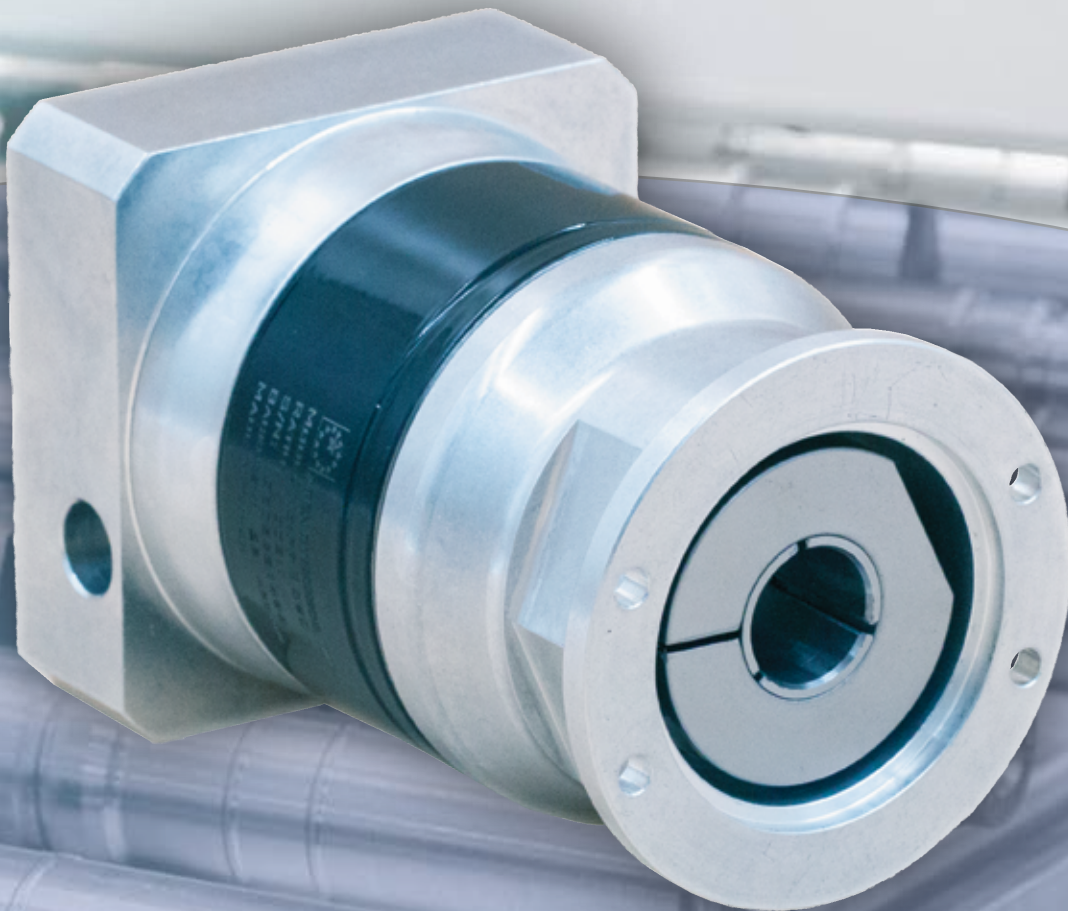


# ***PFI Series***

***Female Input - Female Output***



- **3 Frame Sizes**
- **Ratios up to 1000:1**
- **Accuracy down to 5 arc-min**
- **Versatile mounting specific to motor**
- **Customized adapters for shaft actuators**



The PFII Series planetary gearbox is designed to drive shafts with power and accuracy. Our hardened planetary gears are designed to provide high torque and accuracy with low noise and high speed capability. A lower weight is achieved by employing aluminum adapter housings, without sacrificing the performance of an alloy steel internal gear for the planetary housing. The PFII series provides high performance and reliability for shaft driven actuators and machine axes in an economical package.

## Ordering Code

**PFII090**

-

**005**

/

**MOTOR**

**Gearbox Size:**  
PFII070, PFII090, PFII120

**Motor Designation:**  
Manufacturer Name and Model

### Ratio:

1 Stage: 3, 4, 5, 7, 9, 10

2 Stage: 12, 15, 16, 20, 25, 30, 40, 50, 70, 81, 100

3 Stage\*: 120, 160, 200, 280, 350, 500, 700, 1000

\*Size 70 and 90

**Ordering Example: PFII090-0005 / SIEMENS 1FT6 041-4AF71**

# Specifications

| Model No.                                                               |           | Stages | Ratio <sup>(1)</sup> | Type  | PFII070                                        | PFII090 | PFII120 |
|-------------------------------------------------------------------------|-----------|--------|----------------------|-------|------------------------------------------------|---------|---------|
| Nominal Output Torque T <sub>2N</sub>                                   | Nm        | 1      | 3                    | All   | 42                                             | 100     | 217     |
|                                                                         |           |        | 4                    |       | 42                                             | 100     | 223     |
|                                                                         |           |        | 5                    |       | 40                                             | 100     | 220     |
|                                                                         |           |        | 7                    |       | 35                                             | 96      | 198     |
|                                                                         |           |        | 9                    |       | 24                                             | 60      | 125     |
|                                                                         |           |        | 10                   |       | 27                                             | 68      | 155     |
|                                                                         |           | 2      | 12                   |       | 42                                             | 100     | 217     |
|                                                                         |           |        | 15                   |       | 40                                             | 100     | 213     |
|                                                                         |           |        | 16                   |       | 42                                             | 100     | 228     |
|                                                                         |           |        | 20                   |       | 42                                             | 100     | 230     |
|                                                                         |           |        | 25                   |       | 40                                             | 100     | 228     |
|                                                                         |           |        | 30                   |       | 40                                             | 100     | 212     |
|                                                                         |           |        | 35                   |       | 35                                             | 100     | 206     |
|                                                                         |           |        | 40                   |       | 43                                             | 100     | 232     |
|                                                                         |           |        | 50                   |       | 40                                             | 100     | 228     |
|                                                                         |           |        | 70                   |       | 35                                             | 100     | 206     |
|                                                                         |           |        | 81                   |       | 24                                             | 59      | 131     |
|                                                                         |           |        | 100                  |       | 27                                             | 70      | 162     |
|                                                                         |           | 3      | 120                  |       | 50                                             | 100     | -       |
|                                                                         |           |        | 160                  |       | 43                                             | 100     | -       |
|                                                                         |           |        | 200                  |       | 43                                             | 100     | -       |
|                                                                         |           |        | 280                  |       | 35                                             | 99      | -       |
|                                                                         |           |        | 350                  |       | 35                                             | 99      | -       |
|                                                                         |           |        | 500                  |       | 40                                             | 100     | -       |
|                                                                         |           |        | 700                  |       | 35                                             | 99      | -       |
|                                                                         |           |        | 1000                 |       | 27                                             | 70      | -       |
| Emergency Stop Torque T <sub>2NOT</sub>                                 | Nm        | 1,2,3  | 3~1000               | All   | 3 times T <sub>2N</sub>                        |         |         |
| Max. Acceleration Torque T <sub>2B</sub>                                | Nm        | 1,2,3  | 3~1000               | All   | T = $\frac{T_{2B}}{2}$ 60% of T <sub>NOT</sub> |         |         |
| No Load Running Torque <sup>(3)</sup>                                   | Nm        | 1      | 3~10                 | PF II | 0.10                                           | 0.40    | 0.80    |
|                                                                         |           | 2      | 12~100               | PF II | 0.10                                           | 0.30    | 0.40    |
|                                                                         |           | 3      | 120~1000             | PF II | 0.10                                           | 0.40    | -       |
| Backlash <sup>(2)</sup>                                                 | arcmin    | 1      | 3~10                 | PF II | ≥ 7                                            | ≥ 6     | ≥ 6     |
|                                                                         |           | 2      | 12~100               | PF II | ≥ 9                                            | ≥ 8     | ≥ 8     |
|                                                                         |           | 3      | 120~1000             | PF II | ≥ 11                                           | ≥ 10    | -       |
| Torsional Rigidity                                                      | Nm/arcmin | 1,2,3  | 3~1000               | All   | 2                                              | 8       | 12      |
| Nominal Input Speed n <sub>1N</sub>                                     | rpm       | 1,2,3  | 3~1000               | All   | 4,000                                          | 3,600   | 3,600   |
| Max. Input Speed n <sub>1B</sub>                                        | rpm       | 1,2,3  | 3~1000               | All   | 6,000                                          | 6,000   | 4,800   |
| Operating Temp                                                          | °C        | 1,2,3  | 3~1000               | All   | 0° C~ +90° C                                   |         |         |
| Degree of Gearbox Protection                                            |           | 1,2,3  | 3~1000               | All   | IP65                                           |         |         |
| Lubrication                                                             |           | 1,2,3  | 3~1000               | All   | Synthetic lubrication grease                   |         |         |
| Mounting Position                                                       |           | 1,2,3  | 3~1000               | All   | All directions                                 |         |         |
| Running Noise <sup>(3)</sup>                                            | dB(A)     | 1,2,3  | 3~1000               | PF II | ≥ 62                                           | ≥ 64    | ≥ 66    |
| Max. bending moment based on the gearbox input flange Mb <sup>(4)</sup> | Nm        | 1,2,3  | 3~1000               | PF II | 12                                             | 22      | 45      |
| Efficiency η                                                            | %         | 1      | 3~10                 | PF II | ≥ 97%                                          |         |         |
|                                                                         |           | 2      | 12~100               | PF II | ≥ 94%                                          |         |         |
|                                                                         |           | 3      | 120~1000             | PF II | ≥ 91%                                          |         |         |

(1) Ratio (i= N<sub>in</sub> / N<sub>out</sub>).

(2) Backlash is measured at 2% of Nominal Output Torque T<sub>2N</sub>.

(3) The dB values are measured by gearbox with ratio 10 (1-stage) or ratio 100 (2-stage), or ratio 1,000 (3-stage) no loading at 3,000 RPM or at the respective Nominal Input Speed by bigger model size.

By lower ratio and/or higher RPM, the noise level could be 3 to 5 dB higher.

(4) Max. motor weight\* (kg) =  $\frac{0.1 \times Mb}{\text{motor length (m)}}$

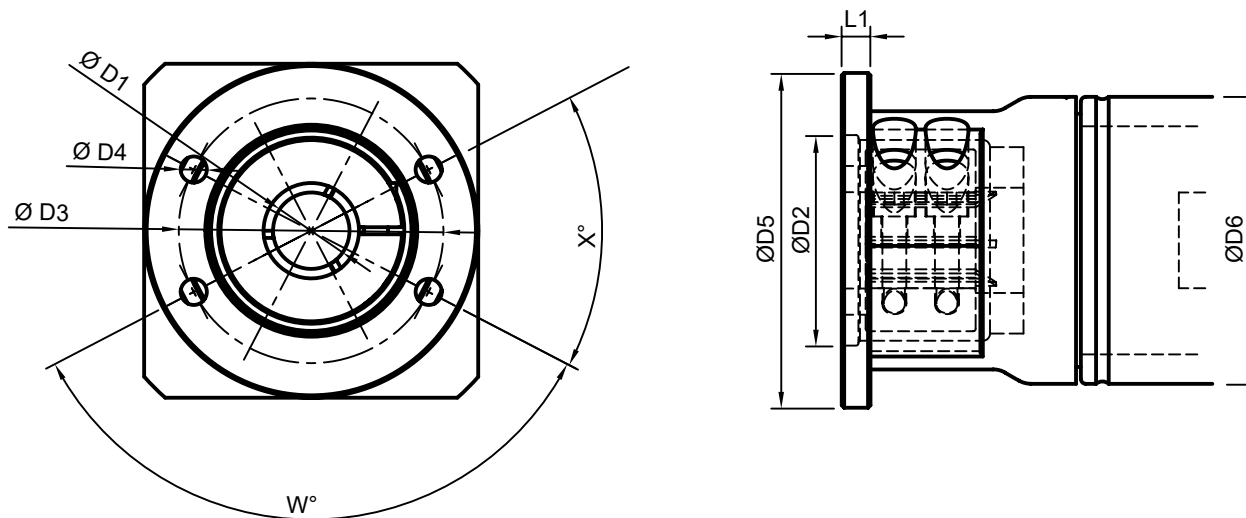
\*with symmetrically distributed motor weight

\*with horizontal and stationary mounting

# Gearbox Inertia

| Model No.              |                    | PF II 070 |        |        | PF II 090 |      |      | PF II 120 |       |
|------------------------|--------------------|-----------|--------|--------|-----------|------|------|-----------|-------|
| $\emptyset^{(A)}$ (C3) |                    | 1-st.1    | 2-st.2 | 3-st.3 | -st.      | -st. | -st. | 1-st.     | 2-st. |
| 8                      | kg.cm <sup>2</sup> | 0.12      | 0.10   | 0.10   | --        |      | -    | --        |       |
| 11                     |                    | 0.19      | 0.16   | 0.16   | --        |      | -    | --        |       |
| 14                     |                    | 0.22      | 0.20   | 0.20   | 0.36      | 0.24 | 0.20 | --        |       |
| 19                     |                    | 1.53      | 1.51   | 1.51   | 1.70      | 1.58 | 1.54 | 2.20      | 1.73  |
| 24                     |                    | --        |        | -      | 2.24      | 2.12 | 2.09 | 2.74      | 2.27  |
| 28                     |                    | --        |        | -      | 2.68      | 2.55 | 2.52 | 3.17      | 2.70  |
| 32                     |                    | --        |        | -      | --        |      | -    | 7.77      | 7.30  |
| 35                     |                    | --        |        | -      | --        |      | -    | 10.80     | 10.30 |
| 38                     |                    | --        |        | -      | --        |      | -    | 14.00     | 13.50 |
| 42                     |                    | --        |        | -      | --        |      | -    | --        |       |

## Output Dimensions



|    |                        | PFII070 | PFII090 | PFII120 |
|----|------------------------|---------|---------|---------|
| D1 | Bore Diameter          | 16      | 20      | 30      |
| D2 | Pilot Diameter         | 44 H7   | 60 H7   | 80 H7   |
| D3 | Bolt Circle Diameter   | 55.5    | 73      | 105     |
| D4 | Mounting Hole Diameter | 5.5     | 5.5     | 6.6     |
| D5 | Flange Diameter        | 70      | 84      | 118     |
| D6 | Body Diameter          | 60      | 86      | 114     |
| L1 | Flange Thickness       | 6       | 6       | 6.6     |
| X  | Angle 1                | 55      | 45      | 45      |
| W  | Angle 2                | 125     | 135     | 135     |