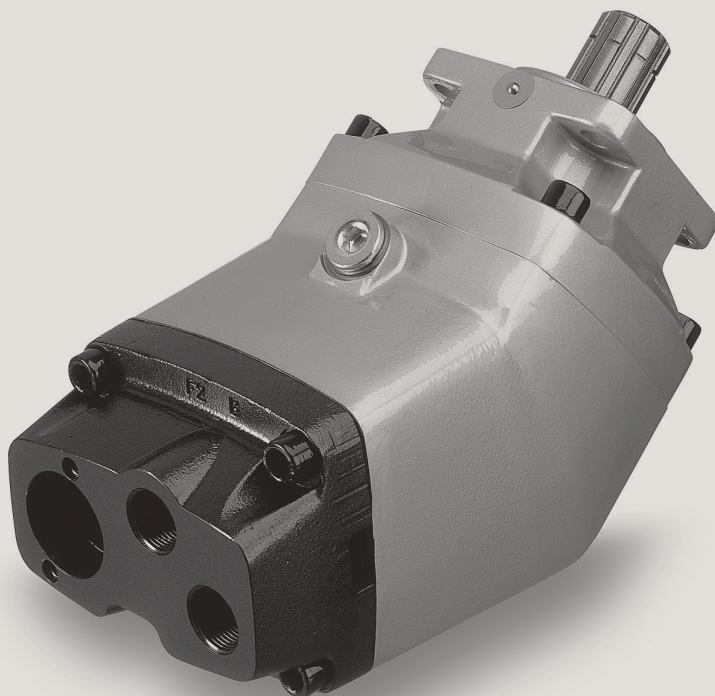


F2 Twin-flow Pump



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## Specifications

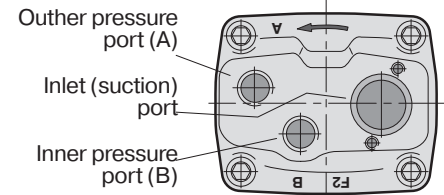
| Frame size F2-                                        | 42/42  | 53/53  | 55/28  | 70/35  | 70/70           |
|-------------------------------------------------------|--------|--------|--------|--------|-----------------|
| <b>Displacement</b> [cm <sup>3</sup> /rev]            |        |        |        |        |                 |
| Port A                                                | 43     | 55     | 55     | 69     | 68              |
| Port B                                                | 41     | 52     | 28     | 36     | 68              |
| <b>Max operating pressure</b> [bar]                   |        |        |        |        |                 |
| continuous                                            | 350    | 350    | 350    | 350    | 300             |
| intermittent <sup>3)</sup>                            | 400    | 400    | 400    | 400    | 350             |
| <b>Mass moment of inertia J</b> [kgm <sup>2</sup> ]   | 0.0092 | 0.0091 | 0.0091 | 0.0090 | 0.0104          |
| <b>Max Shaft speed</b> [rpm]                          |        |        |        |        |                 |
| (unloaded pump; low pressure)                         | 2550   | 2550   | 2550   | 2550   | — <sup>3)</sup> |
| <b>Max selfpriming speed</b> [rpm]                    |        |        |        |        |                 |
| Ports A <sup>1)</sup> and B <sup>1)</sup> pressurised | 1800   | 1800   | 1800   | 1800   | 1650            |
| Port A <sup>1)</sup> unloaded, pressure in port B     | 2100   | 2100   | 2100   | 2100   | 2100            |
| <b>Max input power</b> <sup>2)</sup> [kW]             | 100    | 127    | 100    | 126    | 131             |
| <b>Weight</b> [kg]                                    | 19     | 19     | 19     | 19     | 19              |

<sup>1)</sup> Valid at an inlet pressure of 1.0 bar (abs.) when operating on mineral oil at a viscosity of 30 mm<sup>2</sup>/s (cSt).

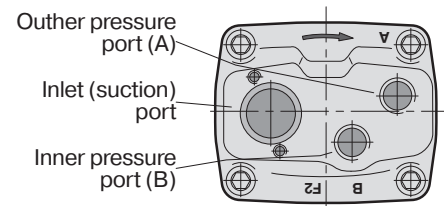
<sup>2)</sup> Max 6 seconds in any one minute.

<sup>3)</sup> Not suitable for engine-PTO

### 'Left hand' and 'right hand' end caps



End cap for right hand rotating pump



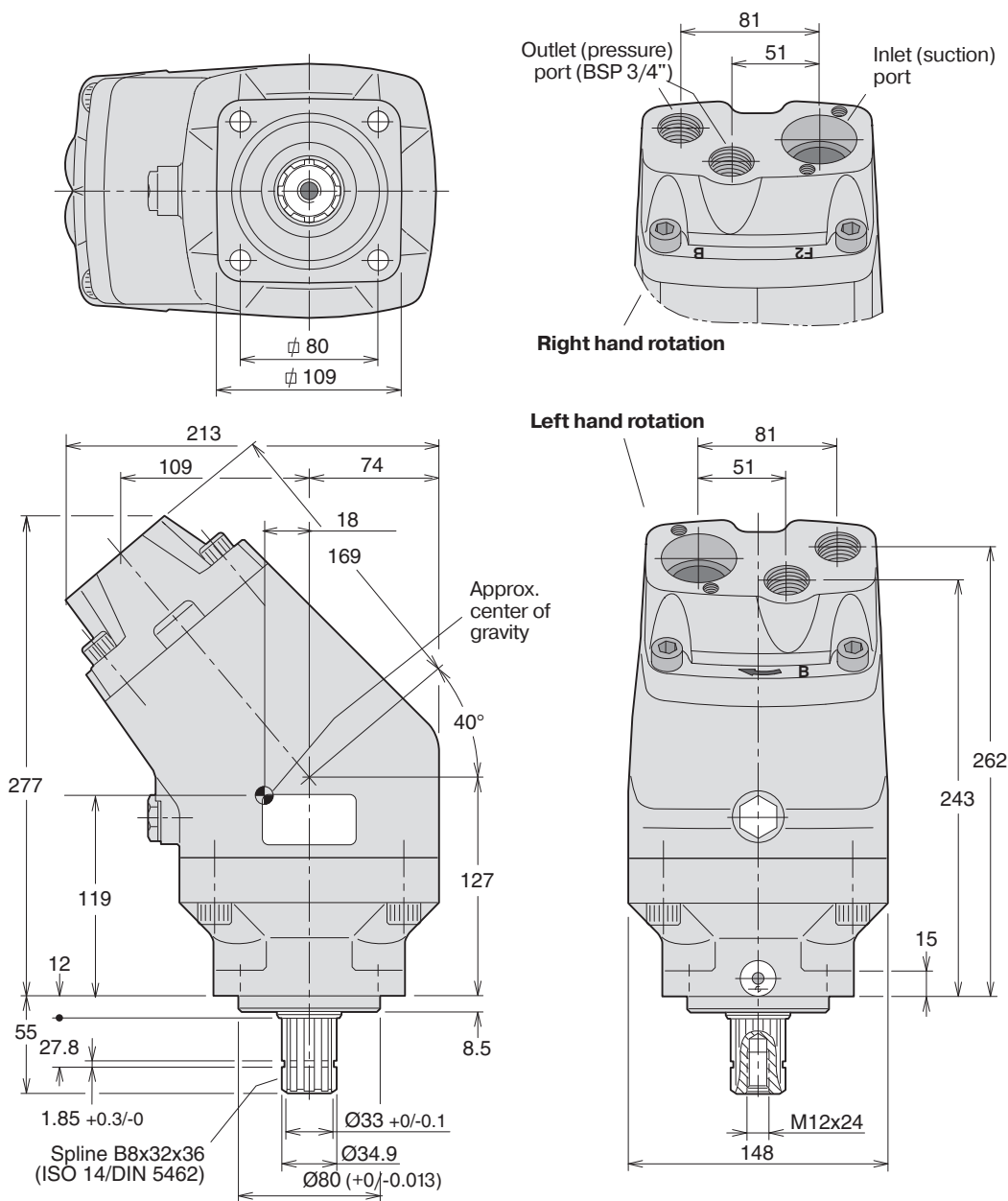
End cap for left hand rotating pump

## Flow vs. shaft speed (theoretical)

| Pump speed [rpm]                                                                            | 800 | 1000 | 1200 | 1400 | 1600 | 1800 | 1900 | 2000 | 2100 |
|---------------------------------------------------------------------------------------------|-----|------|------|------|------|------|------|------|------|
| <b>F2-53/53 flow</b> [l/min]                                                                |     |      |      |      |      |      |      |      |      |
| Port A                                                                                      | 43  | 54   | 65   | 76   | 86   | 97   | -    | -    | -    |
| Port B                                                                                      | 42  | 52   | 62   | 73   | 83   | 94   | 99   | 104  | 109  |
| Total (ports A + B)                                                                         | 85  | 106  | 127  | 149  | 169  | 191  | -    | -    | -    |
| <b>Note: 42/42 values is 80 % of 53/53 values<br/>70/70 values is 130 % of 53/53 values</b> |     |      |      |      |      |      |      |      |      |
| <b>F2-70/35 flow</b> [l/min]                                                                |     |      |      |      |      |      |      |      |      |
| Port A                                                                                      | 55  | 69   | 83   | 97   | 110  | 124  | -    | -    | -    |
| Port B                                                                                      | 29  | 36   | 43   | 50   | 58   | 65   | 68   | 72   | 76   |
| Total (ports A + B)                                                                         | 84  | 105  | 126  | 147  | 168  | 189  | -    | -    | -    |
| <b>Note: 55/28 values is 80 % of 70/35 values</b>                                           |     |      |      |      |      |      |      |      |      |

## Shaft torque vs. pressure (theoretical)

| Pressure [bar]                                                                              | 150 | 200 | 250 | 300 | 350 |
|---------------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|
| <b>F2-53/53 torque</b> [Nm]                                                                 |     |     |     |     |     |
| Port A                                                                                      | 129 | 171 | 214 | 257 | 300 |
| Port B                                                                                      | 124 | 165 | 206 | 248 | 289 |
| Total (ports A + B)                                                                         | 253 | 336 | 420 | 505 | 589 |
| <b>Note: 42/42 values is 80 % of 53/53 values<br/>70/70 values is 130 % of 53/53 values</b> |     |     |     |     |     |
| <b>F2-70/35 torque</b> [Nm]                                                                 |     |     |     |     |     |
| Port A                                                                                      | 164 | 219 | 274 | 329 | 383 |
| Port B                                                                                      | 86  | 114 | 143 | 171 | 200 |
| Total (ports A + B)                                                                         | 250 | 333 | 417 | 500 | 583 |
| <b>Note: 55/28 values is 80 % of 70/35 values</b>                                           |     |     |     |     |     |



## Ordering code

Example: **F2 - 53/53 - L**

Frame size [cm<sup>3</sup>/rev]

**42/42**

**53/53**

**55/28**

**70/35**

**70/70**

Direction of rotation

**L** Left hand

**R** Right hand

### NOTE:

- Before start-up, tighten the inspection port plug to 70 – 100 Nm.
- To change the direction of rotation, **the end cap must be replaced.**

### NOTE:

The pump **does not** include a suction fitting; it must be ordered separately. See page 63ff..

## Standard versions

| Designation | Ordering no. |
|-------------|--------------|
| F2-42/42-R  | 378 4042     |
| F2-42/42-L  | 378 4043     |
| F2-53/53-R  | 378 1453     |
| F2-53/53-L  | 378 1454     |
| F2-55/28-R  | 378 4128     |
| F2-55/28-L  | 378 4129     |
| F2-70/35-R  | 378 1470     |
| F2-70/35-L  | 378 1471     |
| F2-70/70-R  | 378 4070     |
| F2-70/70-L  | 378 4071     |

F3 Pump



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## F3-81 and -101, ISO Specifications

| Frame size F3-                             | 81   | 101   |
|--------------------------------------------|------|-------|
| <b>Displacement</b> [cm <sup>3</sup> /rev] | 81.6 | 102.9 |
| <b>Max flow</b> <sup>1)</sup> [l/min]      | 180  | 216   |
| <b>Max operating pressure</b> [bar]        | 400  | 400   |
| <b>Shaft speed</b> [rpm]                   |      |       |
| - short circuited pump (low press.)        | 2300 | 2300  |
| - max selfpriming speed <sup>2)</sup>      | 2200 | 2100  |
| <b>Torque</b> <sup>1)</sup> [Nm]           | 518  | 653   |
| <b>Max input power</b> <sup>3)</sup> [kW]  | 105  | 126   |
| <b>Weight</b> [kg]                         | 20.3 | 20.1  |

<sup>1)</sup> Theoretical values

<sup>2)</sup> Valid at an inlet pressure of 1.0 bar (abs.) when operating on mineral oil at a viscosity of 30 mm<sup>2</sup>/s (cSt).

<sup>3)</sup> Max 6 seconds in any one minute.

**NOTE:** For noise level information, contact Parker Hannifin.

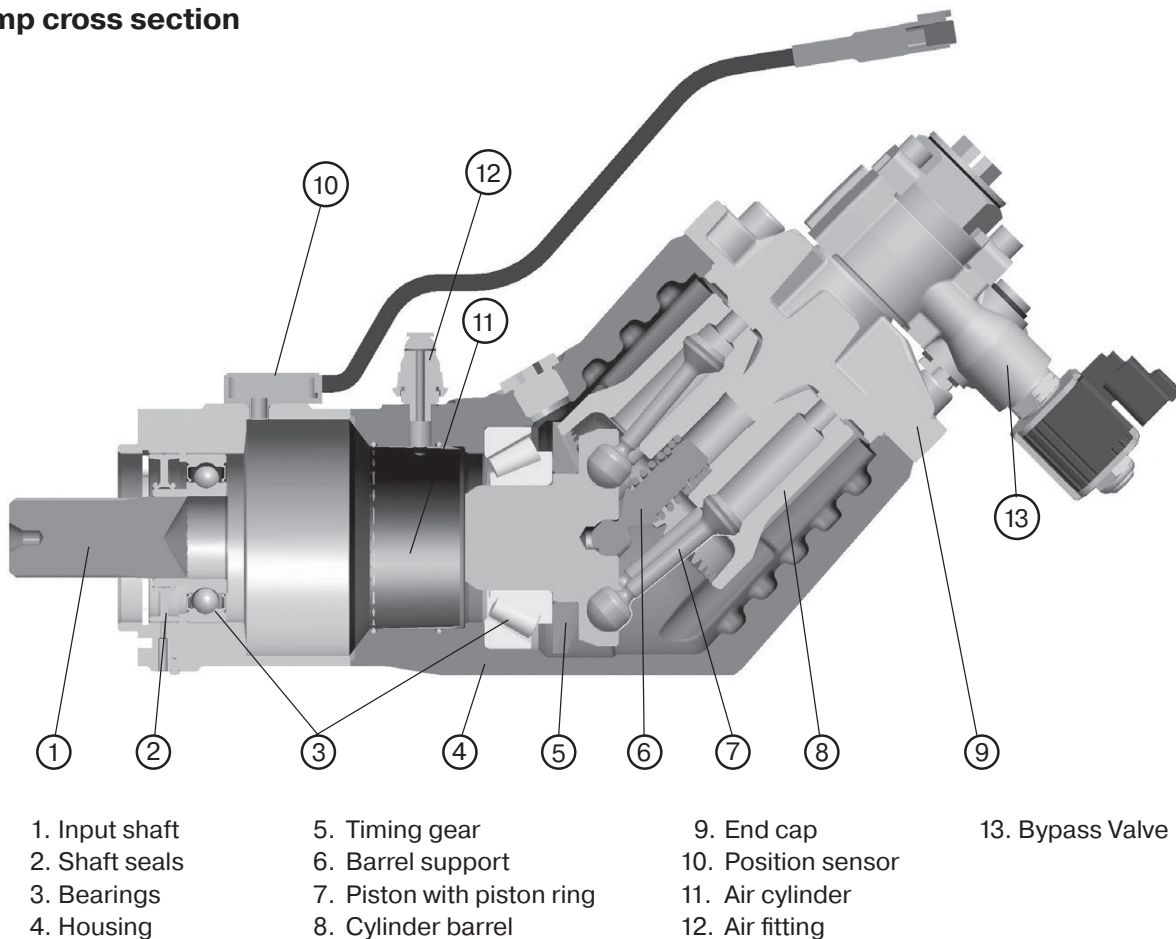
## BPV-F3 Bypass valve 12 or 24 VDC Without manual override

| Bypass valve, type       | BPV-F3                                    |
|--------------------------|-------------------------------------------|
| Max pressure, continuous | 350 bar                                   |
| intermittent             | 400 bar                                   |
| Solenoid voltage         | 12 or 24 VDC,                             |
| Power requirement        | 14 W                                      |
| Operating mode           | Activated solenoid:<br>Check valve closed |

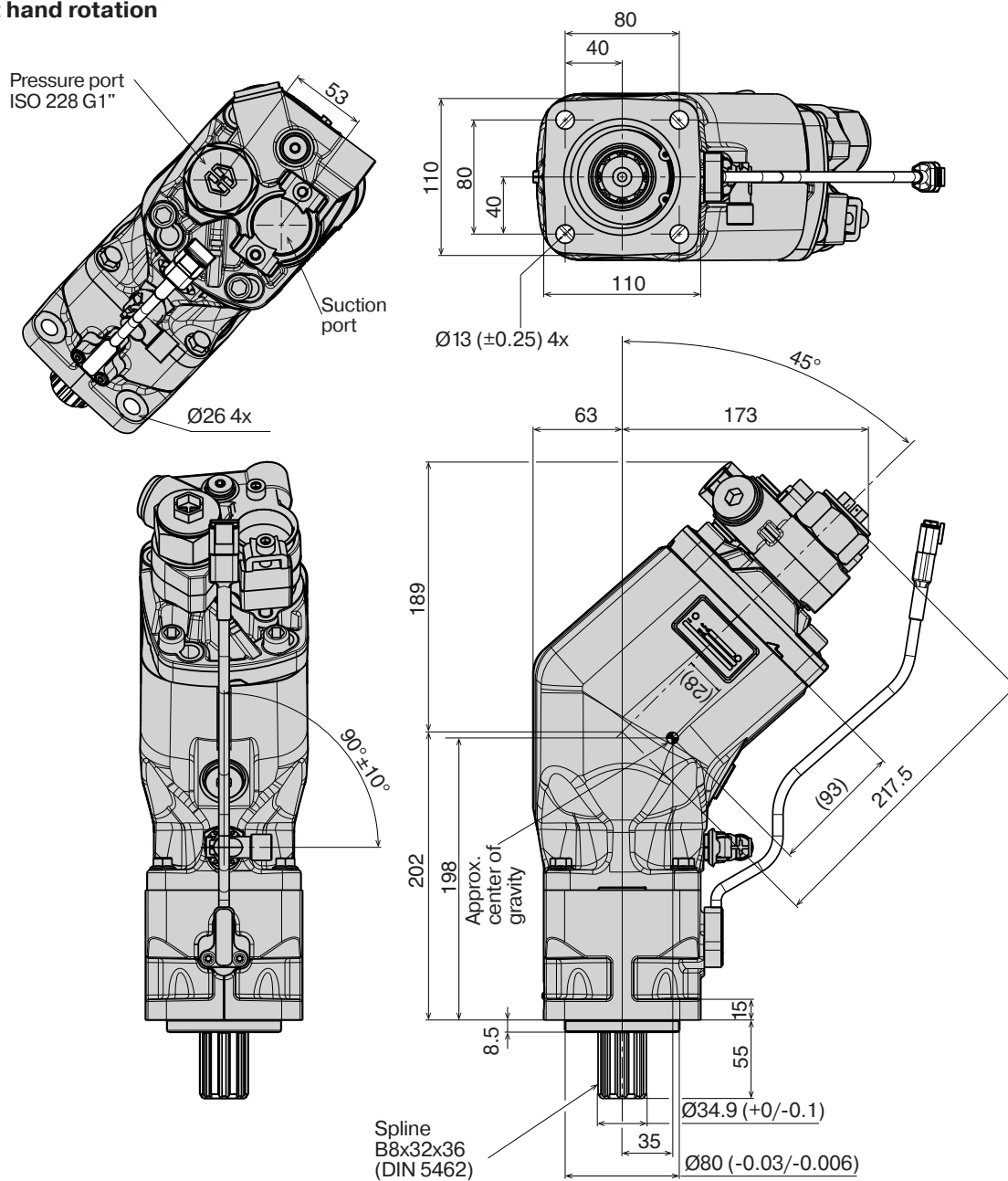
Accessories / Spare Parts see page 64

- As the BPV valve is symmetrical, it can be 'turned 180°' to prevent interference with chassis components; it can be utilised for either left hand or right hand pumps.
- The valve function must only be activated or released (by means of the 24 VDC solenoid) at no-load (below 20 bar) system pressure.

## Pump cross section



## F3-81 and -101 Right hand rotation



## Port size

| F3 frame size | Pressure port <sup>1)</sup> |
|---------------|-----------------------------|
| -81           | 1"                          |
| -121          | 1"                          |

<sup>1)</sup> BSP thread (fitting not included).

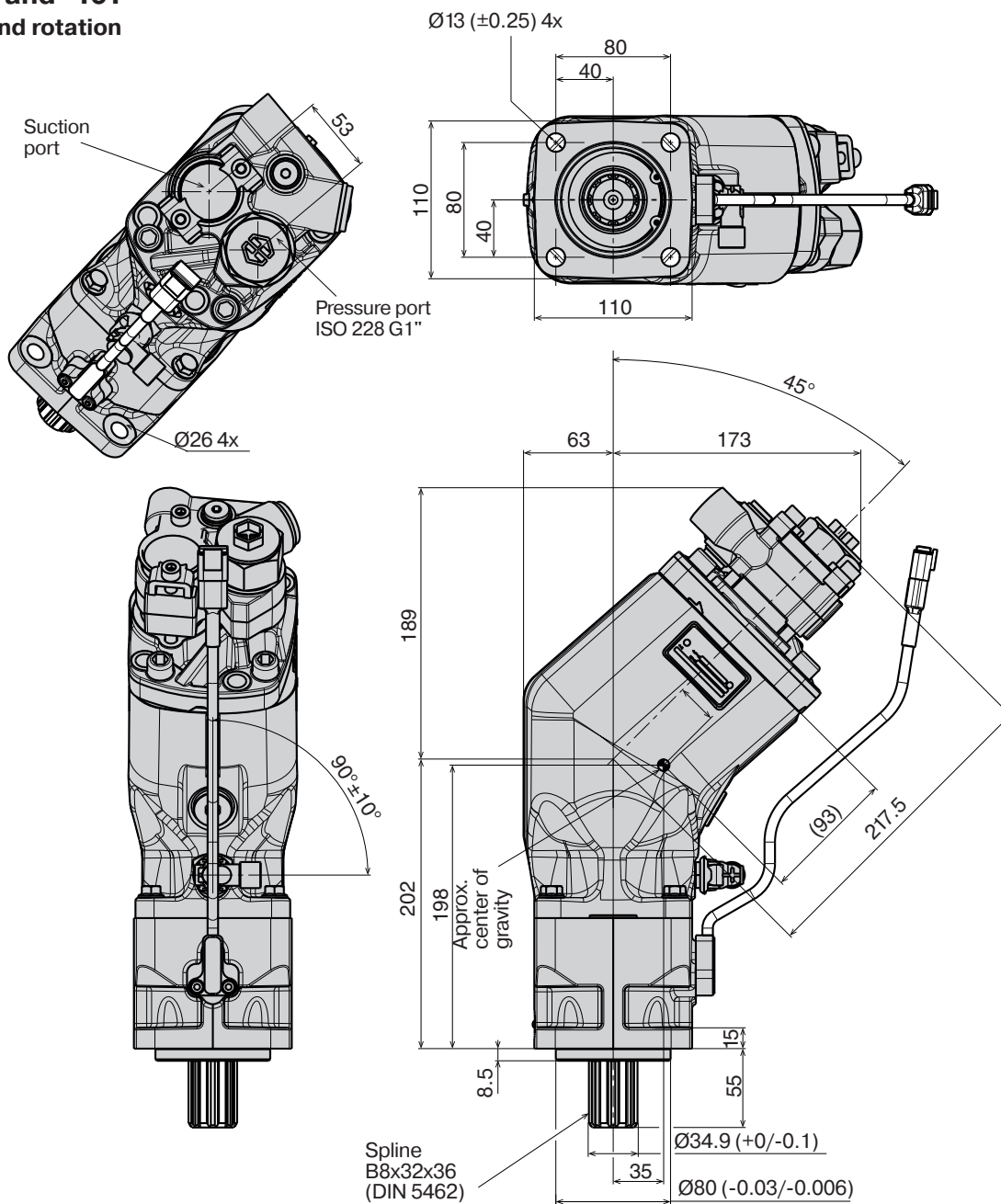
**NOTE:** The pump **does not** include a suction fitting; it must be ordered separately. See page 63ff..

## Standard versions

| Designation | Ordering no.<br>24 VDC | Ordering no.<br>12 VDC |
|-------------|------------------------|------------------------|
| F3-81-R-    | 372 0091               | 3720382                |
| F3-101-R-   | 372 0093               | 3720384                |

## F3-81 and -101

Left hand rotation



## Port size

| F3 frame size | Pressure port <sup>1)</sup> |
|---------------|-----------------------------|
| -81           | 1"                          |
| -121          | 1"                          |

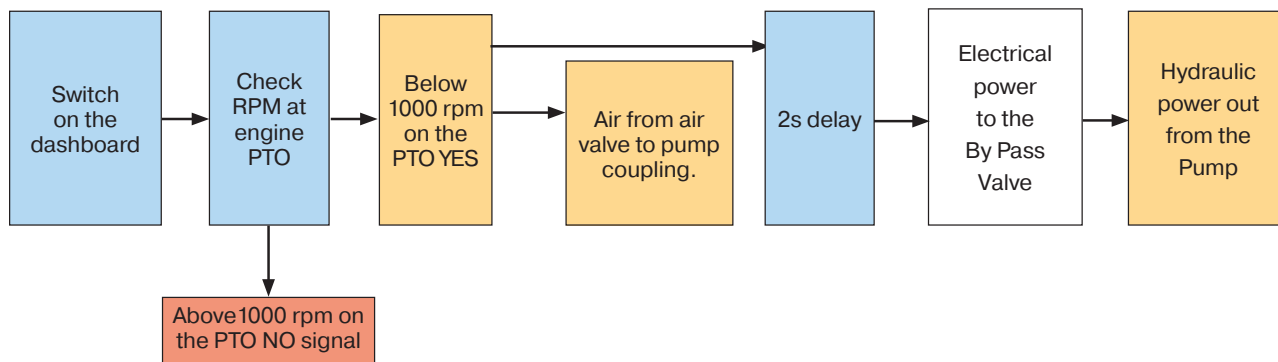
<sup>1)</sup> BSP thread (fitting not included).

**NOTE:** The pump **does not** include a suction fitting; it must be ordered separately. See page 63ff.

## Standard versions

| Designation | Ordering no. 24 VDC | Ordering no. 12 VDC |
|-------------|---------------------|---------------------|
| F3-81-L-    | 372 0092            | 3720383             |
| F3-101-L-   | 372 0094            | 3720385             |

## Block diagram engaging the F3 pump



## Product Demand

- Max pump shaft speed before the F3 can be engaged is 1000 rpm. (verify engine PTO speed)
- Air pressure > 5 bar before the clutch can start to engage the pump

- \* For electrical diagram, contact Parker Hannifin
- \* Check the bending torque limit on the PTO mount.  
F3 - Bending torque 33 Nm

## Interface

