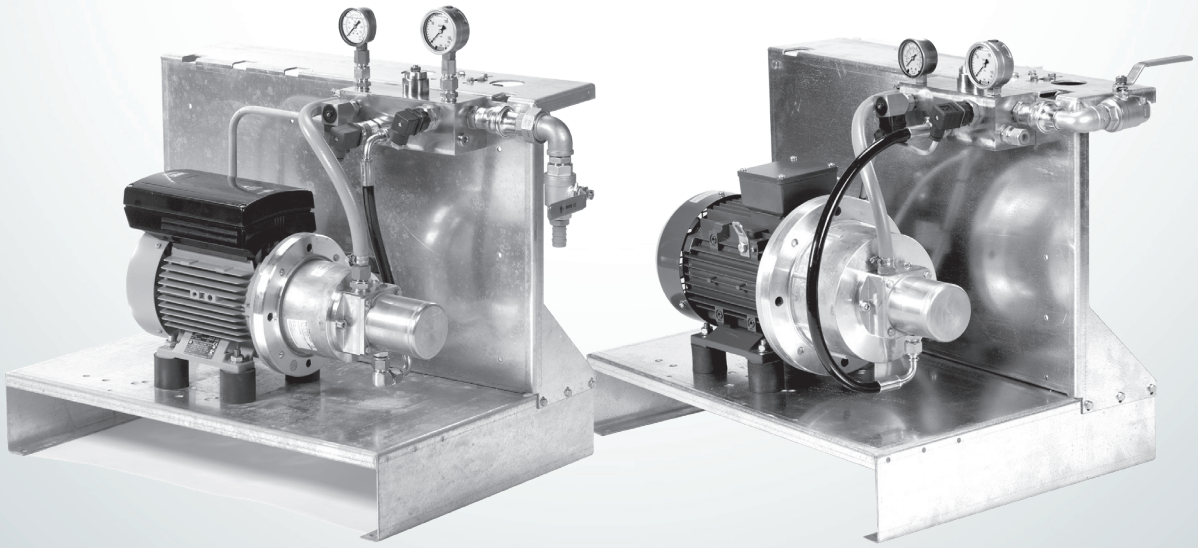
ENGINEERING
TOMORROW

Installation guide.

Plug and spray unit NPS



hpp.danfoss.com

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1. Introduction

Congratulations on your Danfoss Plug & spray unit. To ensure the best performance and service life of our product, please read this instruction carefully and follow the recommendations how to integrate the Plug & spray unit into your system.

2. General performance

The high-pressure water products from Danfoss are designed to operate on clean tap or potable water and technical water with low conductivity (De-Mineralized, De-Ionized, distilled). Danfoss defines clean tap water as water filtered to 10 µm absolute, β value > than 5000. This means that the water is filtered to a level where 99.995% of all particles larger than10 µm have been filtered out. Since Danfoss high-pressure pumps are water lubricated and cooled, failing to meet the water quality specification will reduce the expected service life of the components and void the limited warranty. It should be noted that systems with high-pressure atomization nozzles require a high filtration degree of the water to ensure optimal performance of the spray nozzles.

It is the responsibility of the end-user to provide sufficient feed water.
The system must be properly bled of air to prevent the pump from cavitating and running dry. Improper bleeding will cause cavitation and damage the pump (see chapter on commissioning).

Danfoss High pressure products are manufactured to operate properly at water temperatures of 3 °C–50 °C (37 °F–122 °F). Operation outside this area may cause damage to the system.

The Plug & spray unit must be operated within the specifications stated in this instruction. Sustained operation of components above the recommended limits will cause excessive wear and shorter service life.

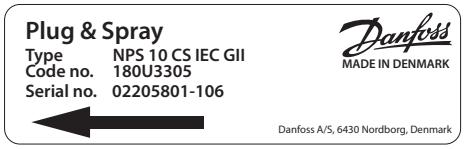
3. General warranty issues

Component warranty is provided through the system manufacturer. All questions concerning warranty must be made with the system Original Equipment Manufacturer. Danfoss will not honour any warranty claims made directly to Danfoss from the end-user.

Danfoss will furthermore not accept warranty claims on components having operated outside the general and specific performance specifications and guidelines.

Spare parts and components are available through the system provider.

4. Identification



The Plug & spray unit carries a nameplate sticker on the mounting plate indicating type and serial number of the unit. The pump carries a name plate sticker too.

Please have all serial numbers and code numbers handy for service claims.

5. Safety

The Plug & spray unit is capable of generating very high pressure that can be harmful to human beings.

It is recommended to wear appropriate personal protection equipment when commissioning and servicing the system.

6. System design

The Plug & spray units are designed for humidification and adiabatic cooling with high-pressure atomization. The units come in a constant speed version with IEC or Nema electric motor as well as in a version with constant pressure regulation using a Danfoss FCP 300 variable speed drive motor.

The Plug & spray units are available with 6 different pump sizes (see technical data) to match the required flow demand. The motor power is dimensioned to provide design flow at a system pressure of max. 100 barg or 1450 psig.

The Danfoss high-pressure axial-piston pumps provide excellent pressure stability at high efficiency and low noise level. Accumulators are superfluous. The Plug & spray units comprise all necessary components to ensure the best possible performance, maximum service life with maximum protection of the pump. The units are very compact and require very little space and are suitable for both wall and floor mounting.

7. Mechanical installation

The Plug & spray units can be floor mounted. It is also possible to mount the unit on supports on a wall.

The optional electric connecting box can be mounted on a suitable wall or on supports at eye level on the pump unit.

7.1. Compact design

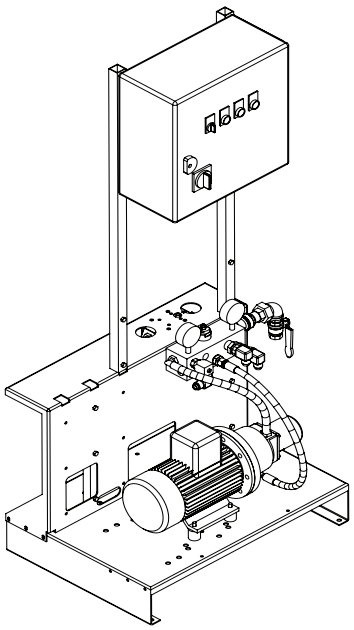
The Plug & spray unit is placed on a suitable flat area and fixed to the floor with 4 bolts. If required, the unit can also be placed on angle supports mounted in required height.

7.2. Free-standing arrangement

For free-standing arrangement, the optional electric connecting box or, as required, the control unit is mounted on supports at the pump unit. The supports are dismantled during transport.

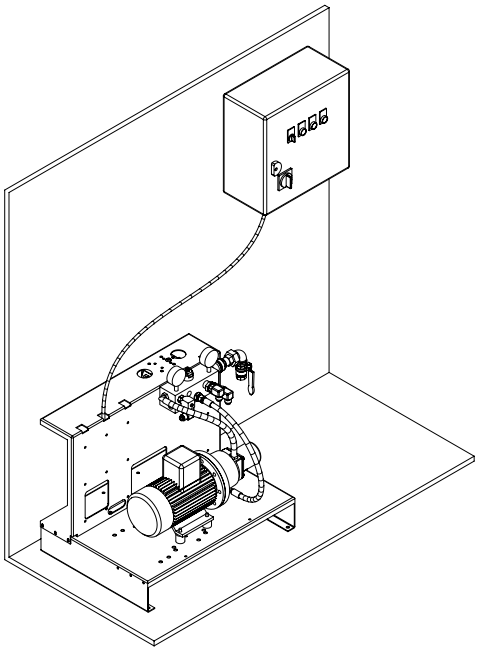
The upper support part is inserted into the bottom part during installation and joined together with the supplied screws.

NB: The mounting plate must be fixed to the floor with 4 bolts to secure the system against tipping.



7.3. Wall mounting

In units for wall mounting, the optional electric connecting box or, as required, the control unit is connected to the pump unit by a 2-metres cable from factory. Usually the pump unit is placed on the floor and the connecting box wall mounted.

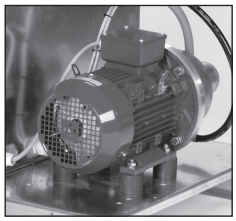


8. Electrical connection

NOTE: The electrical connection for the Plug & spray units is only to be installed by authorized and skilled personnel. Local directions must be followed under any circumstance.

8.1. Basic unit without electrical connecting box Constant speed version (CS)

Electric motor

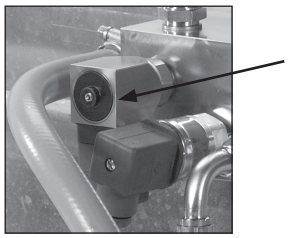


The electric motor is a standard IEC or Nema AC motor and has to be wired and protected against overload according to local codes. See the motor nameplate for technical data.

Connect to the motor terminals as necessary.

The motor is wound for 3 × 230/400 V in IEC version and 3 × 230/460 V in Nema version. Special versions with single-phase motors or other supply voltages are available on request. Check the nameplate data!.

Water supply low-pressure switch

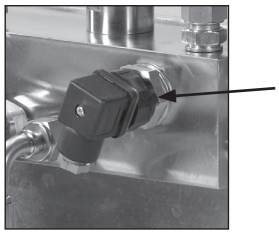


The switch protects the pump against cavitation (insufficient supply pressure) or from running dry (no water supply). Wire the break contact to your control system to stop the motor at insufficient supply pressure. The contact 1-3 is made when the pressure is sufficient.

The switch is set to be activated at 1.6 barg.

Max. load: 250 V AC / 24 V DC, 0.5 A.

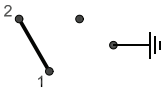
Water temperature switch



The switch protects the system against overheating. Wire the break contact to your control system to stop the motor at high temperature. The contact 1–2 is made when the temperature is below 50 °C.

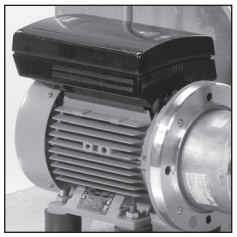
The switch is set to be activated at 50 °C ± 5 °C.

Max. load: 250 V AC / 24 V DC, 0.5 A.



8.2. Basic unit without electrical connecting box Variable speed version (VS)

FCP 106 drive motor

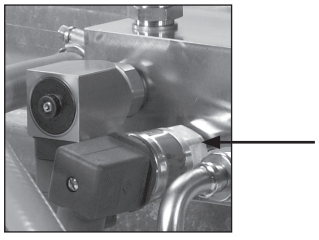


The Danfoss FCP 106 drive motor has to be connected to a 380–480 V 50/60 Hz 3-phase power supply as described in the operation instruction (delivered with variable speed Plug & spray units).

Please read the instruction carefully.

The low-pressure switch and the high-temperature switch are integrated in the safety loop of the FCP 106 from factory (please see diagram).
Motor coast, inverse
Terminal 27

MBS 3050 pressure transmitter



The MBS 3050 pressure transmitter is already wired into the FCP 106 drive motor (terminal 6 for 24 V DC power supply and terminal 1 analogue input 4–20 mA).

8.3. Additional wiring of the FCP 106 drive motor

See Design Guide for FCP106 from Danfoss Drives Division.

The FCP 106 drive motor provides numerous possibilities for additional connections to the control system.

8.4. Units with electrical connecting box Constant speed version (CS)

Plug & spray units equipped with electrical connecting box from factory are fully wired and prepared for direct power supply connection.

The following connections must be made:
- 3-phase power supply (3 × 400 V)
- Start-signal through external potential-free contact
- Fault relay

Please refer to the wiring diagram delivered with the system.

8.5. Units with electrical connecting box Variable speed version (VS)

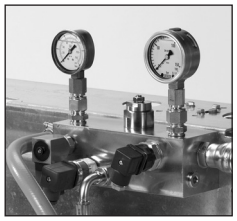
Plug & spray units equipped with electrical connecting box from factory are fully wired and prepared for direct power supply connection. The operator's control is placed in the front panel of the drive motor connecting box.

The following connections must be made:
- 3-phase power supply (3 × 400 V)
- Start-signal through external potential-free contact
- Fault relay

Please refer to the wiring diagram and the manual delivered with the FCP 106 drive motor.

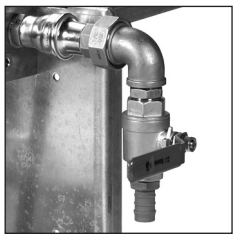
9. Water connection

9.1. Water supply



Connection of water supply, filter, low-pressure switch and manometer are integrated in the common connection block of the Plug and spray unit.

Water supply



The Plug & spray units can operate on tap water or technical water, such as water from a reverse osmosis plant.

Included in the consignment are a ball valve, rotating fittings and a check valve preventing return flow into the supply.

The water temperature must be kept between 3 °C and 50 °C, respectively 37 °F and 122 °F.

The supply pressure must not exceed 2 and 4 barg. In case of unstable or peak water pressure, a pressure reduction valve and an electrical shut off valve are recommendable.

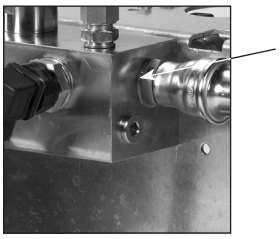
A supply pressure of at least 2 barg / 29 psig is recommended to compensate for the pressure loss in the filter element depending on the degree of contamination. The low-pressure protection switch is set to 1,6 barg.

Checking the water supply pressure

Make sure that the water supply pressure is neither insufficient nor excessive. Check the reading of the manometer.
The manometer measures the pressure after the filter and can thus be used to monitor the filter condition.

Cavitation or over-pressurization can cause severe damage to the pump.

High-pressure connection



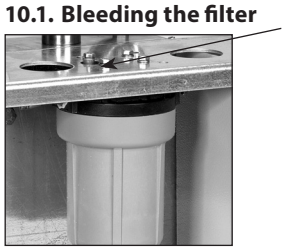
Two high-pressure connections are integrated in the common Plug and spray connecting block.

The ports are G 3/8" female. One of the connections is plugged from factory.

On request, a 3/8" NPT adapter is available.

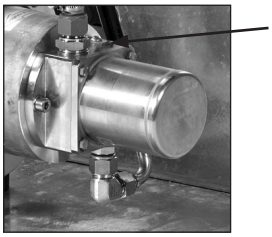
10. Commissioning

10.1. Bleeding the filter



Turn on the water and open the ball valve. Press the red button several times to bleed the filter housing. Repeat until no more air escapes from the filter, just water.

Bleeding the pump



Untighten the bleeding plug of the pump approximately one-two revolutions. Bleed the pump until no more air escapes from the pump.

Close and tighten the bleeding plug!

Repeat the bleeding procedure for filter and pump after short operation of the pump to prevent any remaining air from accumulating in the pump.

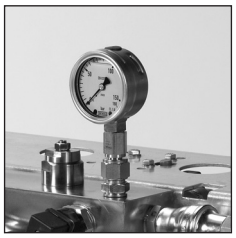
Direction of rotation

Check the direction of rotation of the motor by briefly starting the motor and watch the cooling fan. During this, the high-pressure connection should not be connected (pressure less testing.) The fan wheel has to turn clockwise. Compare with the arrow on the pump or pump support.

If the direction is incorrect, swap two supply phases and check again. With units with drive motor FCP 106 please check the programming (see section on programming of the FCP 106 below).

Insufficient flushing can cause bacteria growth resulting in health problems!

Adjusting the pressure relief valve



A pressure relief valve, type VRH 5 (30) CA cartridge is installed in the common connection block of the Plug & spray units allowing adjusting the discharge pressure between 25–100 barg / 363–1,450 psig (25–140 barg / 363–2,031 psig).

Adjust the desired pressure at zero flow, by means when all nozzles (consumers) are not in operation.

In units with variable speed, the relief pressure valve should always be adjusted slightly higher than the PID controller set point, i.e. at set point 70 barg, set the relief valve to at least 80–85 barg.

Untighten the retaining nut, turn the adjustment screw until the desired pressure is read on the manometer, and tighten the retaining nut to fix the setting.

Checking the joint connections – and for leakages

As soon as the system has reached steady operating conditions, however, no later than after 10 hours' operation, the system is stopped and all pipe connections and fixing devices checked and, if required, tightened (various parts may get loose during transport or installation).

Minimum programming of the FCP 106 drive motor

- Using the Danfoss "Local Control Panel" (LCP 102) or
- The Danfoss PC software

Both solutions connect into the RS 485 interface of the drive motor (X 100).

In general, the FCP 106 drive motor comes with a standard factory setting. A few parameters must, however, be set to adapt the FCP to the Plug and spray setup. Danfoss has programmed the minimum setup as described below (deviation from factory setting)
To start with, please set the language in parameter 001 to *English* if necessary.
Par. 310, preset reference 1:
The setting of this parameter determines the set point of the PID-controller and thus the system pressure. The setting is expressed as a percentage of 160 barg..

Par. No.	Parameter description	Required setting
100	Configuration	Process closed loop
106	Rotation direction	132 Hz counter clockwise
412	Min. output frequency	16.7 Hz (equals 1000 rpm)
		33 Hz for NPS 10, 12.5 VS (equals 1000 rpm)
414	Max. output frequency	50 Hz (equals 3000 rpm)
		85 Hz for NPS 10, 12.5 (equals 2400 rpm)
310	Preset reference 1	Depends on application, see description below
511	Input 2, digital	No operation
512	Input 5, digital	Motor coast inverse
2093	Process PID proportional gain	To be programmed on commissioning, eg 2.00 s
2094	Process PID integral time	To be programmed on commissioning, eg 4.00 s

Par. 310, preset reference 1:
The setting of this parameter determines the set point of the PID-controller and thus the system pressure. The setting is expressed as a percentage of 160 barg..

Example:
Transmitter range 0…160 barg, desired set point 70 barg: 70/160 = 0,4375 Program 43,75% in parameter 310.
To program the FCP 106 according to the additional wiring described above, please refer to the FCP Design Guide or Operation Manual.

When finished programming the FCP 106, make sure to press START before unplugging the LCP 102 or the PC software. Then disconnect power; otherwise the system will not start when applying power next time.

11. Maintenance

11.1. Filter replacement

The supply pressure manometer allows to check the supply pressure and to monitor it for preventative maintenance, e.g. changing filter. When the pressure drop across the filter increases over time as the filter becomes dirty, the pressure will decrease. To avoid an unforeseen system stop, replace the filter cartridge before reaching the cut-off pressure level of 1.6 barg (23 psig).

- Use only original Danfoss spare part
- Shut the ball valve
- Relief pressure from the system by pressing the red button
- Remove the filter housing and the used cartridge
- Attach the gaskets on both ends (thin type) to the new cartridge
- Insert the new cartridge
- Please be careful with the O-ring in the filter housing
- Turn the filter house carefully when reapplying
- Make sure that the gasket stays in proper position
- Only hand tighten the filter house, do not use a tool!

Never run the system without filter cartridge! Improper filtration may result in severe damage or reduced lifetime. Danfoss will not accept warranty claims due to contamination.

11.2. Pump replacement

Danfoss high-pressure pumps are maintenance-free. Under normal operation conditions and with sufficient filtration, the pump service life is at least 8000 operating hours. Only when the pump performance is decreasing or the noise level increasing, the pump should be replaced immediately.

In systems with high availability demands, Danfoss recommends a preventive pump replacement after 8000 operating hours.

The replacement must only be made by an authorized Danfoss service partner.

11.3. Decommissioning

Humidification and adiabatic cooling systems are often seasonally operated. This may result in longer periods of no operation and the following problems:

- Hygiene problems due to bacteria growth (bio film)
- Corrosion of vital parts (if air accumulates in the system over time)

The best way to avoid both problems is to run the system - although not needed - for a couple of minutes every day to entirely replace the water in the system. An optional drain valve may be installed to drain the system to the sewer. If this is not feasible, the system should be preserved as described in the following chapter about frost protection.

11.4. Frost protection

If the Plug & spray unit is exposed to temperatures below freezing, the system must be frost protected with a glycol mixture (minimum 35% of monopropylene glycol).

Follow this procedure:

- Disconnect the water supply; connect the supply to a canister with glycol mixture
- Drain the system as much as possible, remove the filter housing to drain it
- Connect the high-pressure discharge to the same canister with glycol mixture
- Briefly run the pump pressure-less to entirely fill the system with glycol mixture
- To re-commission, flush the system as described above
- It is recommended to renew the filter cartridge shortly after re-commissioning!

Never just drain the system! Remaining water will result in corrosion and damage! Always refill the system with water or glycol mixture.

12. Trouble Shooting

Motor does not start:
- Use only original Danfoss spare part
- Check start permission from control system
- FCP 106:
  - Check programming
  - Is a start signal applied to terminal 18?
  - Is the supply pressure sufficient?
  - Is the water temperature below 50 °C / 122 °F
  - Is line 2 blinking when using an LCP? If so, press START
  - Reset the FCP after a fault or trip condition

Pump does not generate pressure:
- Check water supply:
  - Ball valve open?
  - Supply pressure OK?
  - Filter OK, not clogged?
- Repeat bleeding procedure
  - Bleed the filter
  - Bleed the pump
- Check application:
  - Is any dump valve open?
  - Are all nozzles properly installed and tight?
  - Is there still any air in pipes and hoses?
- After pump replacement:
  - Have the installation instructions for the pump been observed?
  - Has the flexible coupling between motor and pump been installed properly? No axial load is tolerated!

Pump generates too low pressure:
- Is the pressure relief valve properly adjusted?
- Is the FCP 106 pressure set point programmed correctly?
- Are there any leakages in the system?
- Do all nozzles spray as expected?
- Is the Plug & spray unit properly sized in relation to the nozzles?

Pump is noisy:
- A noisy pump is often a sign of cavitation
  - Is the system properly bleeded?
  - Is the supply pressure sufficient?
  - In case of a mechanical failure, stop th pump immediately and return it for inspection.

Pressure decreases over time:
- The pump is providing less and less pressure over time
  - Has the resistance of the nozzles changed?
  - Are there any leakages in the system?
  - Is the pressure relief valve still adjusted correctly?
  - The pump may have reached its service life and requires a refurbishment.

13. Technical data

Water supply	
Water supply	ø19 mm hose fitting or G 3/4" female thread
Pressure	min. 2 barg (28 psig), max. 4 barg (56 psig)
Filter	10 µm absolute beta > 5000, 5" or 10" (10, 12.5 VS)
Pressure switch	1.6 barg (23 psig), make or break 250 V AC / 24 V DC 0.5 A
Temperature switch	50 °C +/- 5 °C, break 250 V AC / 24 V DC 0.5 A
High pressure pump	
Max. discharge pressure	100 barg (1450 psig), continuous
Min. pump speed	1000 rpm
Max. pump speed	3000 rpm, 2400 rpm NPS10, 12.5 VS
Discharge connection	G 3/8" female, 3/8" NPT adapter on request
Pressure relief valve	
Type	VRH 5 (30) CA cartridge
Capacity	max. 30 l/min/1800 l/h (8 gpm)
Adjustment range	25–100 barg / 363–1,450 psig (25–140 barg / 363–2,031 psig)
Environmental conditions	
Water temperature supply	3 °C–50 °C / 37 °F–122 °F
Ambient temperature	3 °C–50 °C / 37 °F–122 °F, VS units max. 40 °C / 104 °F
Storage temperature	-25 °C–65 °C / 13 °F–149 °F with frost protection!
Operation & storage humidity	5–95% rF, non condensing

Type		NPS 1CS	NPS 2CS	NPS 3.2CS	NPS 4CS	NPS 6.3CS	NPS 10CS
Ordering code		180U3300	180U3301	180U3302	180U3303	180U3304	180U3305
Pump type		PAHT 2	PAHT 2	PAHT 3.2	PAHT 4	PAHT 6.3	PAHT 10
Min. flow at 100 barg / 1450 psig*	l/h	7.5	10.0	20.0	30.0	50.0	75.0
	gal/h	2.0	2.6	5.3	7.9	13.2	19.8
Max. flow at 100 barg / 1450 psig*	l/h	75	100	200	300	500	750
	gal/h	2.0	26.4	52.8	79.2	132.0	198.0
Motor type	Pole	6	4	4	4	4	4
Rated power	kW @ 50 Hz	0.55	0.75	1.50	1.50	2.20	3.00
	kW @ 60 Hz	0.66	0.90	1.80	1.80	2.65	3.60
Motor voltage	V @ 50 Hz	3×230/400	3×230/400	3×230/400	3×230/400	3×230/400	3×230/400
	V @ 60 Hz	3x280/480	3x280/480	3x280/480	3x280/480	3x280/480	3x280/480
Motor current FLA	A	1.7	1.9	3.5	3.5	4.7	6.3
	V	400	400	400	400	400	400
Cos φ		0.72	0.77	0.79	0.79	0.82	0.83
Speed	rpm	900	1,400	1,400	1,400	1,420	1,420
Weight without options	kg	55	55	58	58	67	73
	lbs	121	121	128	128	148	161
Shipping	kg	85	85	88	88	97	103
	lbs	187	187	194	194	214	227
Crate size (H×W×D)	m	0.8 x 0.6 x 0.8	0.8 x 0.6 x 0.8	0.8 x 0.6 x 0.8	0.8 x 0.6 x 0.8	0.8 x 0.6 x 0.8	0.8 x 0.6 x 0.8
	inch	31.5 x 23.6 x 31.5	31.5 x 23.6 x 31.5	31.5 x 23.6 x 31.5	31.5 x 23.6 x 31.5	31.5 x 23.6 x 31.5	31.5 x 23.6 x 31.5

* Minimum and maximum flow increase with decreasing system pressure. Please observe technical data in pump data sheet.

			Mounted with with Danfoss FCP 106 Drive Motor					
Type		NPS	NPS	NPS	NPS	NPS	NPS	NPS
		12.5CS	2VS	3.2VS	4VS	6.3VS	10VS **	12.5VS **
Ordering code		180U3306	180U3307	180U3308	180U3309	180U3310	180U3311	180U3312
Pump type		PAHT 12.5	PAHT 2	PAHT 3.2	PAHT 4	PAHT 6.3	PAHT 10	PAHT 12.5
Min. flow at 100 barg*	l/h	100	10	20	30	50	75	100
	gph	26.4	2.64	5.3	7.92	13.2	19.8	26.4
Max. flow at 100 barg*	l/h	1,000	300	450	600	1,000	1,350	1,650
	gph	264.0	79.2	119.0	158.0	264.0	356.0	443.0
Motor type	Pole	4	2	2	2	2	4	4
Rated power	kW @ 50 Hz	4.00	1.50	2.20	2.20	4.00	7.50	7.50
	kW @ 60 Hz	4.80	1.80	2.65	2.65	4.80	9.00	9.00
Motor voltage	V @ 50 Hz	3×400/690	3×230/400	3×230/400	3×230/400	3×400/690	3×400/690	3×400/690
	V @ 60 Hz	3x480/830	3x280/480	3x280/480	3x280/480	3x480/830	3x480/830	3x480/830
Motor current FLA	A	8.2	3.3/2.6	4.7/3.7	4.7/3.7	7.9/6.4	11/8.7	11/8.7
	V	400	380/480	380/480	380/480	380/480	380/480	380/480
Cos φ		0.83	1	1	1	1	1	1
Speed	rpm	1,440	1,000–3,000	1,000–3,000	1,000–3,000	1,000–3,000	1,000–2,400	1,000–2,400
Weight without options	kg	76	64	70	70	81	104	104
	lbs	168	141	154	154	179	229	229
Shipping	kg	106	94	100	100	111	134	134
	lbs	234	207	220	220	245	295	295
Crate size (H×W×D)	m	0.8 x 0.6 x 0.8	0.8 x 0.6 x 0.8	0.8 x 0.6 x 0.8	0.8 x 0.6 x 0.8	0.8 x 0.6 x 0.8	0.8 x 0.6 x 0.8	0.8 x 0.6 x 0.8
	inch	31.5 x 23.6 x 31.5	31.5 x 23.6 x 31.5	31.5 x 23.6 x 31.5	31.5 x 23.6 x 31.5	31.5 x 23.6 x 31.5	31.5 x 23.6 x 31.5	31.5 x 23.6 x 31.5

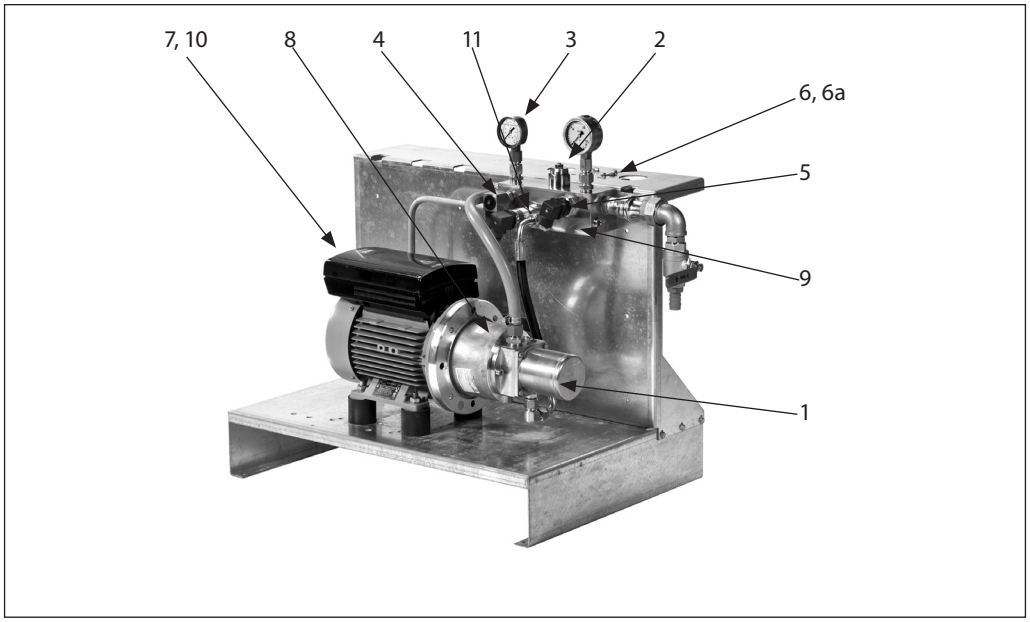
* Minimum and maximum flow increase with decreasing system pressure. Please observe technical data in pump data sheet.
** Mounted with VRH 30 CA (180G0032)

14. Purchase of spare parts: Spare Part list

For the purchase of spare parts or other replacement units, type and serial number of the components to replace must always be stated. And if possible, the serial number for the whole system should be stated too.

Pos.	Qnty.	Description	Spare part no.
1	1	Pump PAHT 2 (NPS 1)	180B0031
		Pump PAHT 2 (NPS 2)	180B0031
		Pump PAHT 3.2 (NPS 3.2)	180B0077
		Pump PAHT 4 (NPS 4)	180B0030
		Pump PAHT 6.3 (NPS 6.3)	180B0029
		Pump PAHT 10 (NPS 10)	180B0032
		Pump PAHT 12.5 (NPS 12.5)	180B0033
2	1	VRH 5/30 CA***	180G0033 / 180G0032
3		High-pressure manometer 0–160 barg	180Z4035
		Low-pressure manometer 0–10 barg	180Z4034
4	1	Water supply switch 1.6 barg	180Z0395
5	1	Water temperature switch 50° switch	180Z4044
6	1	Filter housing 5" (NPS 1-12.5 CS, 2-6.3 VS)	180Z0281
		Filter housing 10" (NPS 10-12.5 VS)	180X5224
6a	1	Filter cartridge 5" 10 µm abs	180Z0037
		Filter cartridge 10" 10 µm abs	180X5225
7	1	Electric motor 0.55 kW (NPS 1 CS-IEC)	On request
		Electric motor 0.75 kW (NPS 2 CS-IEC)	180Z0210
		Electric motor 1.5 kW (NPS 3.2 4 CS-IEC)	180Z0069
		Electric motor 2.2 kW (NPS 6.3 CS-IEC)	180Z0214
		Electric motor 3 kW (NPS 10 CS-IEC)	180Z0070
		Electric motor 4 kW (NPS 12.5 CS-IEC)	180Z0012
8	1	Coupling kit (NPS 1-2 CS)	180Z0600
		Coupling kit (NPS 3.2-4 CS, 2 VS))	180Z0601
		Coupling kit (NPS 6.3- 10 CS, 3.2-6.3 VS)	180Z0602
		Coupling kit (NPS 12.5 CS, 10-12.5 VS)	180Z0603
		Flexible coupling (NPS 1-2 CS)	180Z0241
		Flexible coupling (NPS 3.2-4 CS, 2 VS)	180Z0242
		Flexible coupling (NPS 6. 3-10 CS, 3.2-6.3 VS)	180Z0243
		Flexible coupling (NPS 12.5 CS, 10-12.5 VS)	180Z0244
9	1	Connection block with connecting parts CS	180G0079
		Connection block with connecting parts VS	180G4017
		Connection block without connecting parts	180Z0625
10		Electric motor with VFD (NPS 2 VS)	On request
		Electric motor with VFD (NPS 3.2- 4 VS)	On request
		Electric motor with VFD (NPS 6.3 VS)	On request
		Electric motor with VFD (NPS 10, 12.5 VS)	On request
11**	1	Pressure transmitter MBS 3050 0–160 barg	060G1152
12*	1	LCP102 local control display (Graphical LCP only)	130B1107
		LCP102 remote mounting kit	134B0564

* For price and delivery time, please contact Danfoss Power Electronics.
** For price and delivery time, please contact Danfoss Industrial Automation
***NPS 10/12,5 VS mounted with VRH 30 CA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