

Operating Instructions



Centrifugal Immersion Pumps

Type

F 620 ...

F 640 ...

F 700 ...

F 706 ...

F 716 ...

F 726 ...

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Centrifugal Immersion Pumps

Pump types :

Type	Design			Drive Motor				Type of bearing			Pump Type				
	version with support tube	version with support bars	consisting of an inner and outer tube	standard-dimensioned three-phase motor	integral three-phase motor with extended shaft	standard three-phase motor with pedestal	nominal speed	kW-rating	shaft bearing lubricated permanently	shaft bearing lubricated by the liquid	free-flying shaft	mechanical seal in contact with the liquid	suitable for dry operation	continuous operation (operating time exceeding 4 h/day)	
F 620	X		X	X			2850 rpm	0,75 kW to 4,0 kW	X			X	No	No	F 620 S - 15 F 620 S - 30 F 620 S - 30 TR
F 640	X		X	X			2850 rpm	0,75 kW to 4,0 kW	X			X	No	No	F 640 PP - 15 F 640 PP - 15 Z F 640 PP - 30 F 640 PP - 30 Z F 640 PP - 30 TR F 640 PP/PVDF - 185 F 640 PP - 230 TR
F 700	X		X	X			1450 / 2850 rpm	0,75 kW to 4,0 kW	X			X	No	No	F 700 PP - 230 F 700 PVDF - 230
F 706	X			X			1450 / 2850 rpm	0,37 kW to 5,5 kW		X			No	Yes	F 706 PP1 - 135 F 706 PP1 - 185 F 706 PP1 - 230 F 706 PP1 - 350
F 716	X				X		2850 rpm	0,37 kW to 5,5 kW			X		Yes	Yes	F 716 PP1 - 115 F 716 PP1 - 135 F 716 PP1 - 185 F 716 PP1 - 230
		X			X						X		Yes	Yes	F 716 PP2 - 115 F 716 PVDF2 - 115 F 716 PP2 - 135 F 716 PVDF2 - 135 F 716 PP2 - 185 F 716 PVDF2 - 185 F 716 PP2 - 230 F 716 PVDF2 - 230
F 726		X				X	1450 / 2850 rpm	0,37 kW to 5,5 kW			X		Yes	Yes	F 726 PP2 - 115 F 726 PVDF2 - 115 F 726 PP2 - 135 F 726 PVDF2 - 135 F 726 PP2 - 185 F 726 PVDF2 - 185 F 726 PP2 - 230 F 726 PVDF2 - 230

Centrifugal Immersion Pumps

Temperature limitations :

Type	Operating temperature		
	material	version with support tube	version with support bars
F 620	S (316 Ti)	0°C up to max. +100°C	-
F 640 - 15/30/15Z/30Z	PP	0°C up to max. +50°C	-
F 640 - 185	PP	0°C up to max. +60°C	
	PVDF	0°C up to max. +80°C	
F 700	PP / PVDF	0°C up to max. +60°C	-
F 706	PP	0°C up to max. +60°C	-
F 716	PP	0°C up to max. +60°C	0°C up to max. +80°C
	PVDF	-	0°C up to max. +100°C
F 726	PP	-	0°C up to max. +80°C
	PVDF	-	0°C up to max. +100°C

Type code :

Type	Material							
	S = stainless steel 316 Ti PP = Polypropylene PVDF=Polyvinylidene fluoride	version with support tube	version with support bars	open conical impeller	closed centrifugal impeller	pump housing size	horizontal version	
F 620	S			15				
				30			TR	
F 640	PP			15				
					15Z			
				30			TR	
					30Z			
	PP / PVDF					185		
	PP					230	TR	
F 700	PP / PVDF					230		
F 706	PP					135		
						185		
						230		
						350		
F 716	PP / PVDF	1				115		
						135		
						185		
						230		
F 726	PP / PVDF	-				115		
						135		
						185		
						230		

for example:

F 620 S-15

F 640 PP-15Z

F 640 PP-30 TR

F 640 PVDF-185

F 716 PP1-115

F 726 PVDF2-230

Safety instructions

- When exceeding the temperature limitations, the pump will be damaged.
- The pumps are not allowed for use with flammable liquids (ZONE 0).
- Only use the pump for its intended purpose.
- Only use the pump in connection with suitable pipelines, fittings and/or flexible hoses.
- Regularly check the pipelines, fittings, flexible hoses and power supply cables to ensure safe operation.
- Keep solvents away from the power supply cable.
- The pump should not be exposed to the weather.



- Comply with all relevant safety instructions. Wear appropriate protective clothing. (Face shield, protective gloves, etc.)



- On three-phase motors comply with the safety instructions contained with the terminal box.
- Installation, maintenance and repairs to three-phase motors should only be carried out by suitably qualified personnel.
- Only use three-phase motors with a starter including and overload cut-out.



- Make sure that the supply voltage corresponds to the voltage indicated on the name plate.
- Comply with technical requirements of local power supply companies.
- Check direction of rotation of the three-phase motor. In case of portable use, check the conformity of phases at each socket to guarantee always the same direction of rotation. (Direction of rotation according to the arrow on the bearing flange).
- Before inserting the electrical plug into the socket, ensure that the starter is set to "0" (Stop).

Storage

- Always store the pump in a vertical position.
- Temperature during storage should not drop below -10°C.
- Before starting operation, warm up the pump to operating temperature.

Use in hazardous areas



Only use three-phase motors which are approved for use in hazardous areas (ZONE 1).

- Explosion-proof three-phase motors 0,37 to 5,5 kW, 1450 or 2850 rpm.



Observe Test Certificate or Certificate of Conformity.

The installation and operation must comply with the relevant Health & Safety Regulations. (In the Federal Republic of Germany these are "TRbF" and "BG Chemie").

Mounting instructions



- **When fitting the mounting flange onto the container, no tensions must be transmitted to the pump.** Only fit the pump to a stable support to ensure a vibration-free running.
- **When pipelines are connected to the pump, no tensions must be transmitted to the pump.** In case of higher operating temperatures, bellow expansion joints have to be installed into the discharge pipe.
- **Avoid dry running on pump types F 620, F 640, F 700 and F 706.**
On models with extension tube make sure that the motor will not be switched on, when the level of the liquid is underneath the pump housing.
(Minimum and maximum liquid level see dimensional drawing supplied with the pump).
- **Distance to the bottom of the container should be approx. 40 - 80 mm**
The distance to the bottom of the container depends on the immersion length of the pump. Temperature variations will cause variations in pump length.
- **In case of intense turbulences within the container in operating pump types F 620, F 640 and F 700** with longer immersion lengths, support the pump at approx. 2 m in a way that ensures that it may expand in axial direction
(Thermal elongation of the pump).
- **The site of operation should be set up in a way that leakage may not cause any damage.**



- **Before undertaking any maintenance or repair to three-phase motors, disconnect them from the mains.**



- **Completely drain the pump for repair.**
Liquid may be retained within the cavities of the pump.



- **Comply with all relevant safety instructions. Wear appropriate protective clothing.**
(Face shield, protective gloves, etc.)



- **Make sure that the pump is securely mounted.**

Cleaning

Clean the pump by flushing an appropriate cleaning agent.

- Pump, flexible hose, pipelines and/or other fittings must be compatible with the cleaning agent.
- Do not use flammable cleaning agents.

Repairs

- Repairs to FLUX Centrifugal Immersion Pumps should only be carried out by suitably qualified personnel.
- Only cleaned and completely drained pumps may be returned to us for repair.

Type F 620 / F 640

**version with support tube and open conical impeller
for thin to medium viscosity liquids up to 2500 mPas (cP)**

Type F 620 S-15 / F 620 S-30

Replacement of conical impeller

1. Remove drive motor. Afterwards the pump shaft can be locked at the coupling.
2. Unscrew entry housing ! Left-hand thread.
3. Unscrew cap nut.
4. Remove conical impeller.

Type F 640 PP-15 / F 640 PP-30

Replacement of conical impeller

1. Remove drive motor. Afterwards the pump shaft can be locked at the coupling.
2. Unscrew entry housing ! Left-hand thread.
3. Unscrew impeller cap and the nut below.
4. Unscrew conical impeller (⚠ Make sure not to damage the mechanical seal).

Type F 640-15Z / -30Z

**version with support tube and closed centrifugal impeller
for thin liquids up to 150 mPas (cP)**

Replacement of centrifugal impeller

1. Remove drive motor. Afterwards the pump shaft can be locked at the coupling.
2. Unscrew entry housing ! Left-hand thread.
3. Unscrew impeller cap and the nut below.
4. Unscrew centrifugal impeller (⚠ Make sure not to damage the mechanical seal).

Type F 620 S-30 TR / F 640 PP-30 TR / F 640 PP-230 TR for horizontal use

Mounting instructions

- Only switch on the pump with a liquid feeding line connected to the pump inlet.
- Make sure that the pump is always filled with liquid.



- Make sure that the complete contents of the container can be collected in case of leakage. The site of operation should be set up in a way that leakage may not cause any damage.

- Stop valves should be installed at the pump inlet and outlet.
- Bellow expansion joints have to be installed into the discharge line of the pump (Compensation of: temperature, pressure ...).

Replacement of centrifugal impeller



- Before undertaking any maintenance or repair to the pump, disconnect three-phase motor from the mains.




- Comply with all relevant safety instructions. Wear appropriate protective clothing.
(Face shield, protective gloves, etc.)

1. Close the stop valves at the pump inlet and outlet.
2. Remove the pump.
3. Mark the stop valves and secure them against unintentional opening.



- **Completely drain the pump.**
Liquid may be retained within the cavities of the pump.

4. Remove drive motor. Afterwards the pump shaft can be locked at the coupling.
5. Remove the screws and take off the cover of the pump housing or the entry housing.
6. On model F 640 PP-30 TR unscrew impeller cap and the nut below.
- 6a. On model F 620 S-30 TR unscrew cap nut.
7. On model F 620 S-30 TR remove conical impeller.
On model F 640 PP-230 TR unscrew centrifugal impeller.
 Make sure not to damage the mechanical seal.

Type F 640-185 / F 700-230 version with support tube

1. Remove drive motor. Afterwards the pump shaft can be locked at the coupling.
2. Remove screws (circlip) on the pump housing and take off cover of the pump housing.
3. Unscrew impeller cap and the nut below.
4. Unscrew centrifugal impeller (⚠ Make sur not to damage the mechanical seal).

Variation in length depending on the temperature

As all materials will expand or contract with temperature variations, it is important to know which minimum or maximum temperatures will be acceptable within the pump.

Variation in length in mm
per 1000 mm pump length

Temperature [°C]	PP	PVDF	S
-20	-4,00	-4,40	-0,66
-10	-3,00	-3,30	-0,50
0	-2,00	-2,20	-0,33
10	-1,00	-1,10	-0,17
20	0,00	0,00	0,00
30	1,80	1,30	0,17
40	3,60	2,60	0,33
50	5,40	3,90	0,50
60	7,20	5,20	0,66
70	9,00	6,50	0,83
80	10,80	7,80	0,99
90	12,60	9,10	1,16
100	14,40	10,40	1,32

Example:

Pump of **2000 mm** immersion length *in version with support tube* in **PP**.
The pump must tolerate temperature variations in climate throughout the year, i.e. **0 °C** in winter up to **+40°C** in summer.

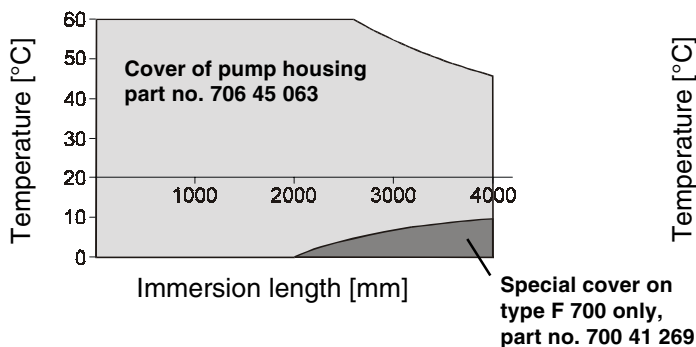
The **variation in length** of the **support tube** will be :
-2 mm per 1000 mm in winter and **+3,6mm per 1000 mm** in summer.
This means -4 mm up to +7,2 mm at a length of 2000 mm.

The **variation in length** of the **pump shaft** will be :
-0,33mm per 1000mm in winter and **+0,33 mm per 1000 mm** in summer.
This means -0,7 mm up to +0,7 mm at a length of 2000 mm.

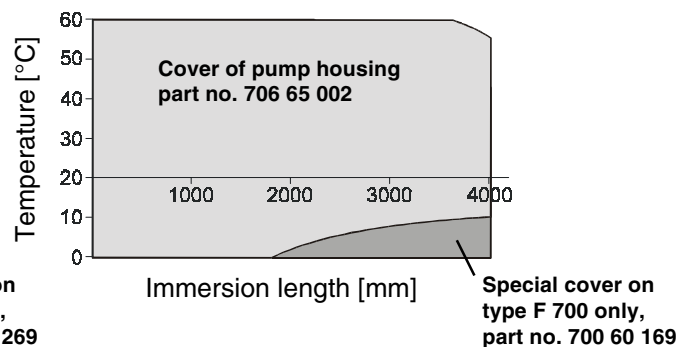
On the version with support bars in PP and PVDF, variations in length are similar to stainless steel values.

As the variations in length of the support tube and of the pump shaft are quite different, this has a direct effect on the size of the gap between the pump housing and the centrifugal impeller, which will have a direct influence on the delivery rate of the pump and its efficiency.

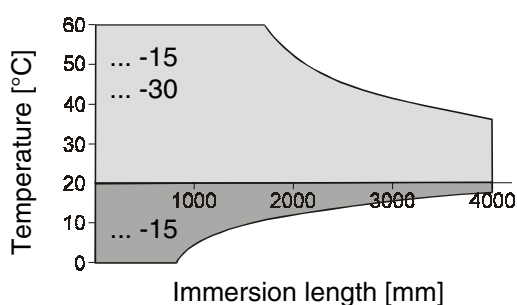
F 640 PP-185
F 700 PP-230



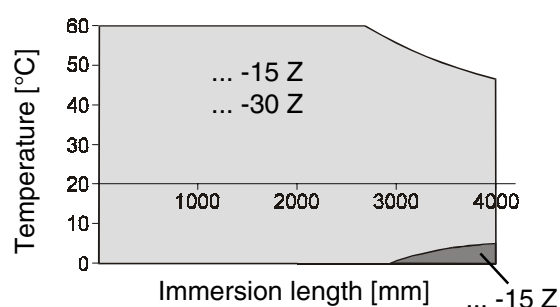
F 640 PVDF-185
F 700 PVDF-230



F 640 PP-15 / -30



F 640 PP-15 Z / -30 Z



Type F 706 PP version with support tube

Size 135 / 185 / 230 / 350



On pump sizes 185 and 350 thoroughly clean the circlip and its groove on the pump housing.
Make sure that the circlip is properly engaged.
On pump sizes 135 and 230 screw the plastic screws with a maximum torque of 5 Nm.

1. Remove drive motor. Afterwards the pump shaft can be locked at the coupling.
2. Remove circlip (plastic screws) and take off cover of the pump housing.
3. Unscrew impeller cap as well as the nut below.
- 3a. **Pump size 135:** Unscrew impeller body and remove impeller cover.
4. Remove impeller.

Type F 716 / F 726 version with support tube and version with support bars

On pumps type F 716 remove motor cover.
Afterwards the pump shaft can be locked at the ventilator blade.

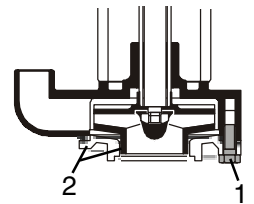
On pumps type F 726 remove drive motor.
Afterwards the pump shaft can be locked at the coupling.

Size 115 and 135



Torque to impeller body is max. 15 Nm.
Only screw on plastic screws until they closely fit to the cover of the pump housing.

1. Unscrew the screws and take off cover of the pump housing.
2. Unscrew impeller body and remove impeller cover.

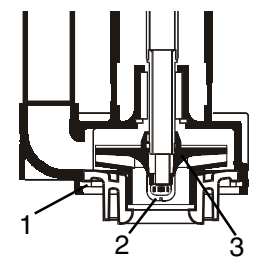


Size 185



Thoroughly clean circlip and its groove on the pump housing.
Make sure that the circlip is properly engaged.

1. Remove circlip and take off cover of the pump housing.
2. Unscrew impeller cap and the nut below.
3. Remove impeller.



Size 230



Torque to screws on PP (grey) pumps is max. 5 Nm.
Torque to screws on PVDF (white) pumps is max. 7 Nm.

1. Unscrew the screws and take off the cover of the pump housing.
2. Unscrew impeller cap and the nut below.
3. Remove impeller.

