

Bedienungsanleitung



*Motoren für Fass-,
Behälter- und
Containerpumpen*

*Typ F 414 , F 414 Ex,
F 416 Ex, F 416-1 Ex, F 416-2 Ex,
F 417, F 417 EL,
F 457, F 457 EL,
F 458, F 458 EL, F 458-1,
F 460 Ex, F 460 Ex EL, F 460-1 Ex*



Operating Instructions
Motors for Barrel and Container Pumps

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Mode d'Emploi
Moteurs pour Pompes vide-fûts

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Possible Motor - Pump Combinations



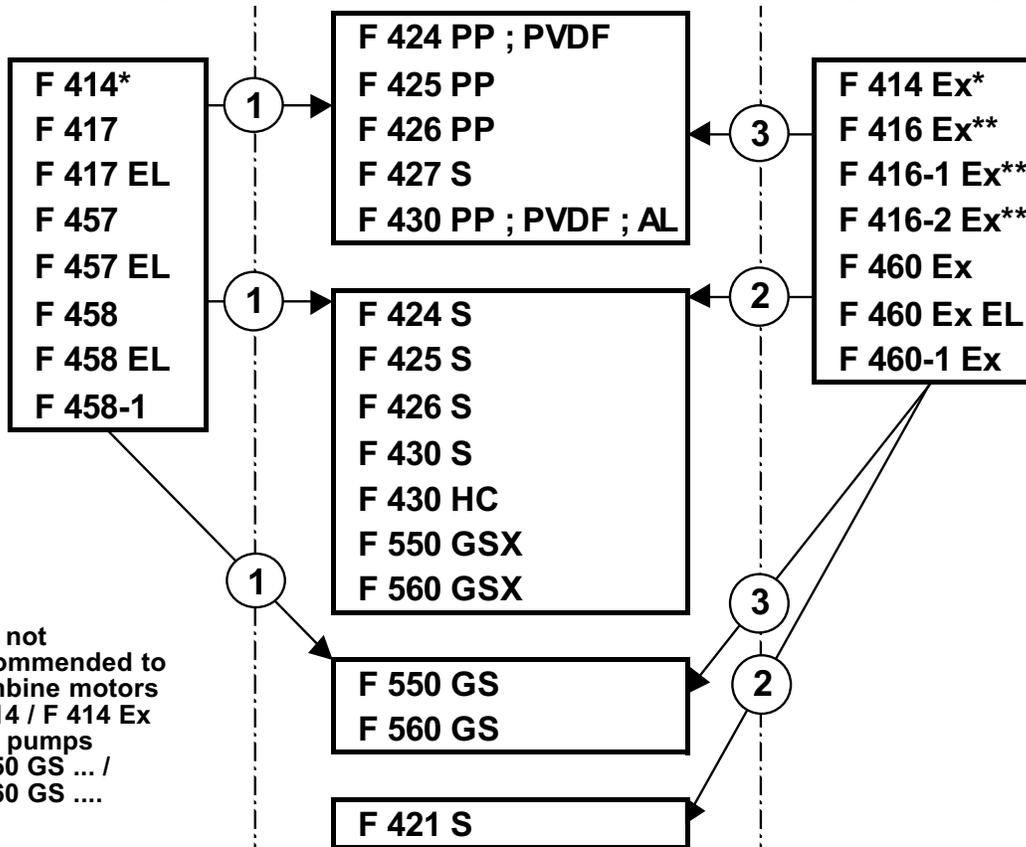
- Only use motors and pumps in the following combinations.

- 1 Do not operate motor in hazardous locations.
Do not use the pump for transferring flammable liquids.
- 2 For use in hazardous locations only use explosion-proof electric motors which are approved for category 2 (ZONE 1) or compressed air motors.
For transferring flammable liquids only use pumps which are approved for category 1 (ZONE 0).
- 3 For use in hazardous locations only use explosion-proof electric motors which are approved for category 2 (ZONE 1) or compressed air motors.
Do not use the pump for transferring flammable liquids.

Motors
not explosion-proof

Pumps

Motors
explosion-proof



* It is not recommended to combine motors F 414 / F 414 Ex and pumps F 550 GS ... / F 560 GS

General View

The motors F 414, F 417, F 417 EL, F 457, F 457 EL, F 458, F 458 EL and F 458-1 are not explosion-proof.



- Do not use in hazardous locations.
- Do not use for transferring flammable liquids.

Type	Design	Protection	Protection Class
F 414	Three-phase Gearmotor	IP 55	I
F 417	Commutator Motor internally cooled	IP 24	II
F 417 EL	Commutator Motor internally cooled Speed Variator	IP 24	II
F 457	Commutator Motor internally cooled	IP 24	II

Type	Design	Protection	Protection Class
F 457 EL	Commutator Motor internally cooled Speed Variator	IP 24	II
F 458	Commutator Motor externally cooled	IP 55	I
F 458 EL	Commutator Motor externally cooled Speed Variator	IP 55	I
F 458-1	Commutator Motor externally cooled	IP 55	I

The motors F 414 Ex, F 460 Ex, F 460 Ex EL, F 460-1 Ex, F 416 Ex, F 416-1 Ex and F 416-2 Ex are approved for use in hazardous locations category 2 (ZONE 1).



- Observe the EC-Type-Examination Certificate or the Certificate of Conformity.

Type	Design	Protection	Protection class
F 414 Ex	Three-phase Gearmotor	IP 55	I
F 416 Ex	Air Motor with on/off operating trigger	--	--
F 416-1 Ex	Air Motor without on/off operating trigger	--	--
F 416-2 Ex	Air Motor with ball valve	--	--

Type	Design	Protection	Protection Class
F 460 Ex	Commutator Motor externally cooled	IP 55	I
F 460 Ex EL	Commutator Motor externally cooled Speed Variator	IP 55	I
F 460-1 Ex	Commutator Motor externally cooled	IP 55	I

Safety Instructions

- Only use the pump for its intended purpose.
- Install the pump in a way which ensures that it cannot fall into the container.
- Never leave the pump unattended.
- Only use the pump with a suitable hose.
- Ensure that the hose is securely fixed to the hosetail.
- Regularly check the motor, pump and hose to ensure safe operation.
- The pump should not be immersed deeper into the liquid than the outlet connection.



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

- Comply with the operating instructions of the pump.
- Never operate pump dry.
- The pump should not be exposed to the weather.
- Before removing the motor from the pump: Completely drain pump, hose and hand tap.
- Clean after each operation.
- Never store the motor in areas in which corrosive vapours exist.
- Before inserting the electrical plug into the socket or connecting the air supply hose to the air motor, ensure that the Start/Stop switch is set to "0" (Stop).
- Regularly check the motors according to the relevant national safety regulations and/or rules for prevention of accidents. (In the Federal Republic of Germany these are for example BGV A2 (VBG 4)).



- **Power supply must include a fault current breaker.**
Dirt accumulation, high humidity or material damage on the motor housing may lead to dangerous current surges.

- **The commutator motors Type F 458 EL and F 460 Ex EL are equipped with a thermal switch. All other commutator motors are equipped with an integral overload cut-out switch.**

The motor is switched off automatically in case of overloading. After having cooled down, the motor can be switched on again by actuating the Start/Stop switch.

- **Motors with integral no-volt release are protected against unintentional re-starting after a voltage discontinuity (name plate marked: $U <$).**
Only by actuating the Start/Stop switch the motor can be switched on again.

- **Make sure that motors without no-volt release are secured against unintentional re-starting.**
The pump is to be arranged in a way that no friction and impinge sparks form.

Replacement of power supply cable

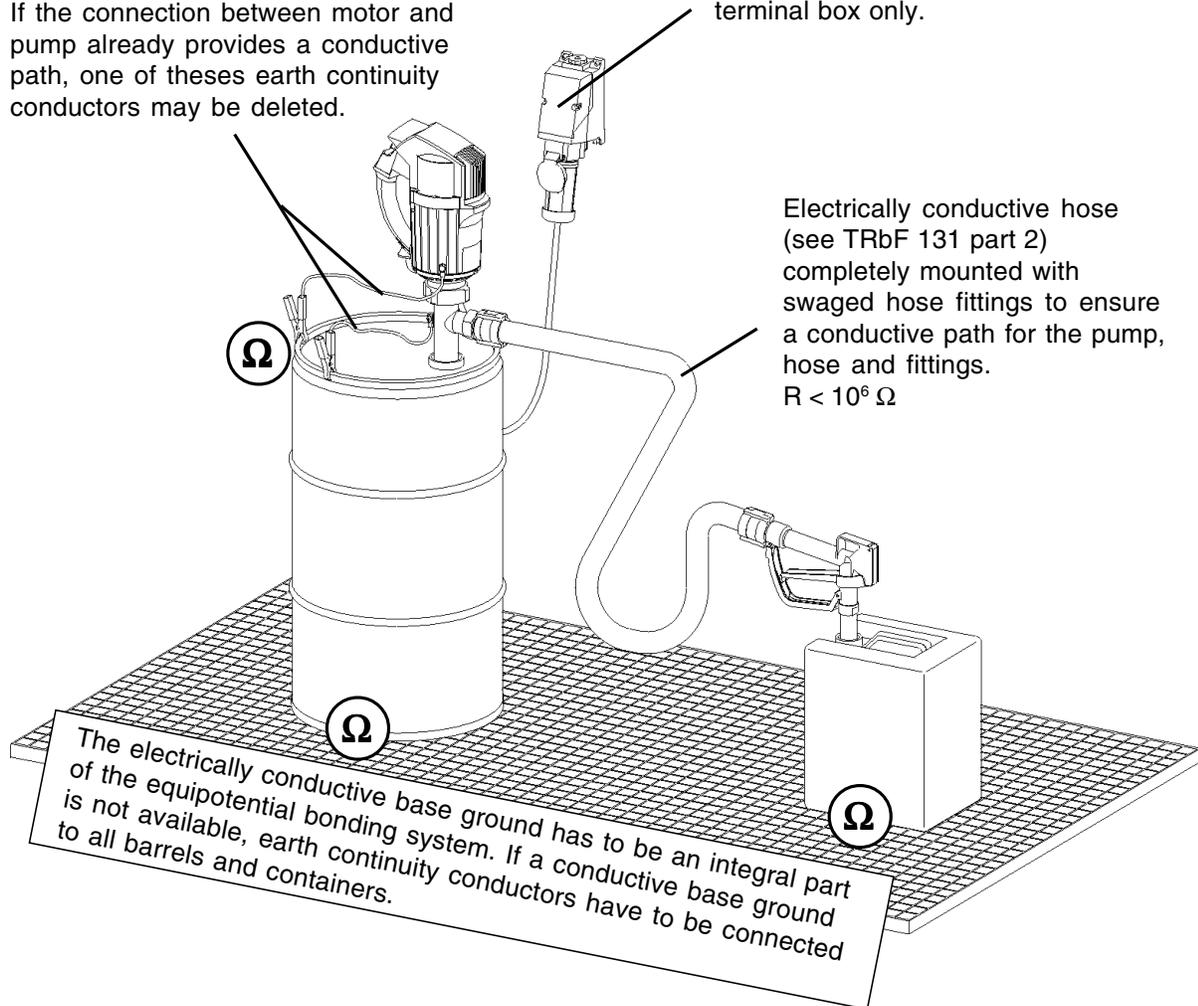
- When replacing the cables, the following types have to be used at least :

Motor	Supply Voltage	
	100 V -240 V	12 - 24 V
F 414 / F 414 Ex	H 07 RN-F 5G 1,5	-
F 417 / F 417 EL	H 05 RN-F 2X 0,75	-
F 457 / F 457 EL	H 05 RN-F 2X 1,0	-
F 458 / F 458 EL / F 458-1 F 460 Ex / F 460 Ex EL / F 460-1 Ex	H 07 RN-F 3G 1,5	H 07 RN-F 2X 4

Before starting operation in hazardous locations

Connect the earth continuity conductors (earth wires) to the designated screw on the explosion-proof motor and pump. If the connection between motor and pump already provides a conductive path, one of these earth continuity conductors may be deleted.

Connection to the mains via an explosion-proof plug device or an explosion-proof cable terminal box only.



- ⊕ Remove paint and dirt from all connection points of earth continuity conductors and containers to electrically conductive base ground, to ensure good conductivity.



The use of the commutator motor in combination with the pump requires a complete and definite equipotential bonding. An equipotential bonding consists in an electrically conductive connection between the motor and the pump according to EN 50 014:1994-03 Paragraph 15 and DIN VDE 0165:1991-02 Paragraph 5.3.3.

The pump has to be arranged in a way that no friction and impinge sparks form and that the operating conditions ensure safe operation.

For use in hazardous locations

- Only use explosion-proof electric motors which are approved for category 2 (ZONE 1) or compressed air motors.



- Observe the EC-Type-Examination Certificate or the Certificate of Conformity .
- The explosion-proof motor has to be outside the container.
- If the electrical socket or terminal box is positively located outside the hazardous area, connection to explosion-proof equipment must not be undertaken.
- For transferring flammable liquids explosion group IIA and IIB and temperature class T1 up to T4 only use pumps which are approved for category 1 (ZONE 0).
- Only clean the power supply cable outside of the hazardous area.



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

Testing / Repair



- Regularly check motors according to the relevant national safety regulations and/or rules for prevention of accidents (In the Federal Republic of Germany these are e.g. BGV A2 (VBG 4)).
- Repairs to explosion-proof motors should only be carried out by the manufacturer or by an authorized repair depot.

Starting Operation

Available drive motors :

- **Commutator motors** F 417, F 417 EL, F 457, F 457 EL, F 458, F 458 EL, F 458-1, F 460 Ex, F 460 Ex EL, F 460-1 Ex.
- **Three-phase gearmotors** F 414, F 414 Ex.
- **Compressed air motors** F 416 Ex, F 416-1 Ex, F 416-2 Ex.

- Make sure that the supply voltage corresponds to the voltage indicated on the name plate. When using air motors, please do not exceed the maximum operating pressure and always use a filter-regulator-lubricator unit.
- Put the motor onto the pump.



- Never operate the pump unless the union nut between pump and motor has been firmly tightened by hand.
- Immerse the pump into the liquid and secure it in a vertical position by the use of a compression gland or a container clamp.
- Always check the power supply cable for damage before starting operation.
- Keep solvents away from the power supply cable.
- Before inserting the electrical plug into the socket or connecting the air supply hose to the air motor, ensure that the Start/Stop switch is set to "0" (Stop).
- Insert the plug or connect the air supply hose.
- Switch on the motor.
- On motors F 417 EL, F 457 EL, F 458 EL and F 460 Ex EL the speed may be regulated by the adjustment knob (control of delivery rate).

Three-phase Gearmotor F 414, F 414 Ex



- Repairs to three-phase gearmotors should only be carried out by suitably qualified personnel.
- Only use three-phase motors with a starter including an overload cut-out.
- Check direction of rotation of the motor.
(Direction of rotation according to the arrow on the motor).

In case of portable use of three-phase motors :

- Before inserting the electrical plug into the socket, ensure that the Start/Stop switch is set to "0" (Stop).
- Check direction of rotation when switching on the motor.
(Direction of rotation according to the arrow on the motor).



- Observe additional safety instructions which are contained with the terminal box of the three-phase gearmotor.

Air Motor F 416 Ex, F416-1 Ex, F 416-2 Ex



- Before connecting the air supply hose to the motor, set the Start/Stop switch to "0" (Stop).
(On model F 416 Ex unlock locking mechanism of the on/off operating trigger).
- Use a silencer or an exhaust air hose.
- Air consumption F 416 Ex, F 416-1 Ex, F 416-2 Ex :

At 3 bar operating pressure ~ 7 l/sec.

At 6 bar operating pressure ~14 l/sec.