

# Service Guide

## Diesel Exhaust Fluid Pump

### Description

#### General

Read this documentation carefully before installation. Installation must comply with the safety regulations of the country in which the product is installed. Failure to comply with the safety regulations can cause risk to personal safety, damage to the equipment, and void of warranty.

Self-priming centrifugal jet pumps have excellent suction capacity. This pump is particularly suitable for pumping Diesel Exhaust Fluid from totes, above and below ground storage tanks.

The product has been designed and built for pumping clean liquids, free from explosive substances and solid particles or fibers. The fluid to be pumped must not exceed a density of 1000 kg/m, a kinematic viscosity of 1 mm<sup>2</sup>/s, and must be chemically nonaggressive liquids.

#### Installation

Use is allowed only if the electric system is in possession of safety precautions in accordance with the regulations enforced in the country where the product is installed.



#### CAUTION

**The installation must be done by skilled personnel who possess technical skills that are required by law.**



**Figure 1** Diesel Exhaust Fluid Pump Model 8420

The term skilled personnel means persons whose training, experience and instruction, as well as their knowledge of the respective standards and requirements for accident prevention and working conditions, have been approved by the person in charge of plant safety, authorizing them to perform all the necessary activities, during which they are able to recognize and avoid all dangers.

#### Checking motor shaft rotation

Before installing the pump, you must check that the rotating parts turn freely. For this purpose, remove the fan cover (13) from its seat in the motor end cover (11). Next, insert a screwdriver in the notch on the motor shaft from the ventilation side. If there is a blockage, turn the screwdriver, tapping it gently with a hammer. FIG.A

Pump Model	Supply Voltage (See Data Plate)	Delivery	Head	Degree of Motor Protection	Terminal Board Protection	Protection Class	Cable Clamp	Max Operating Pressure	Liquid Temp. Range	Storage Temp
8420	115V 60HZ	2-16 GPM	Up to 160 Ft	IP44 (NEMA 4)	IP55 (NEMA 4R)	F	PG 11 and/or PG 13.5	4,5 bar (450 kPa)	0+ +35°C	-10°C to +40°C

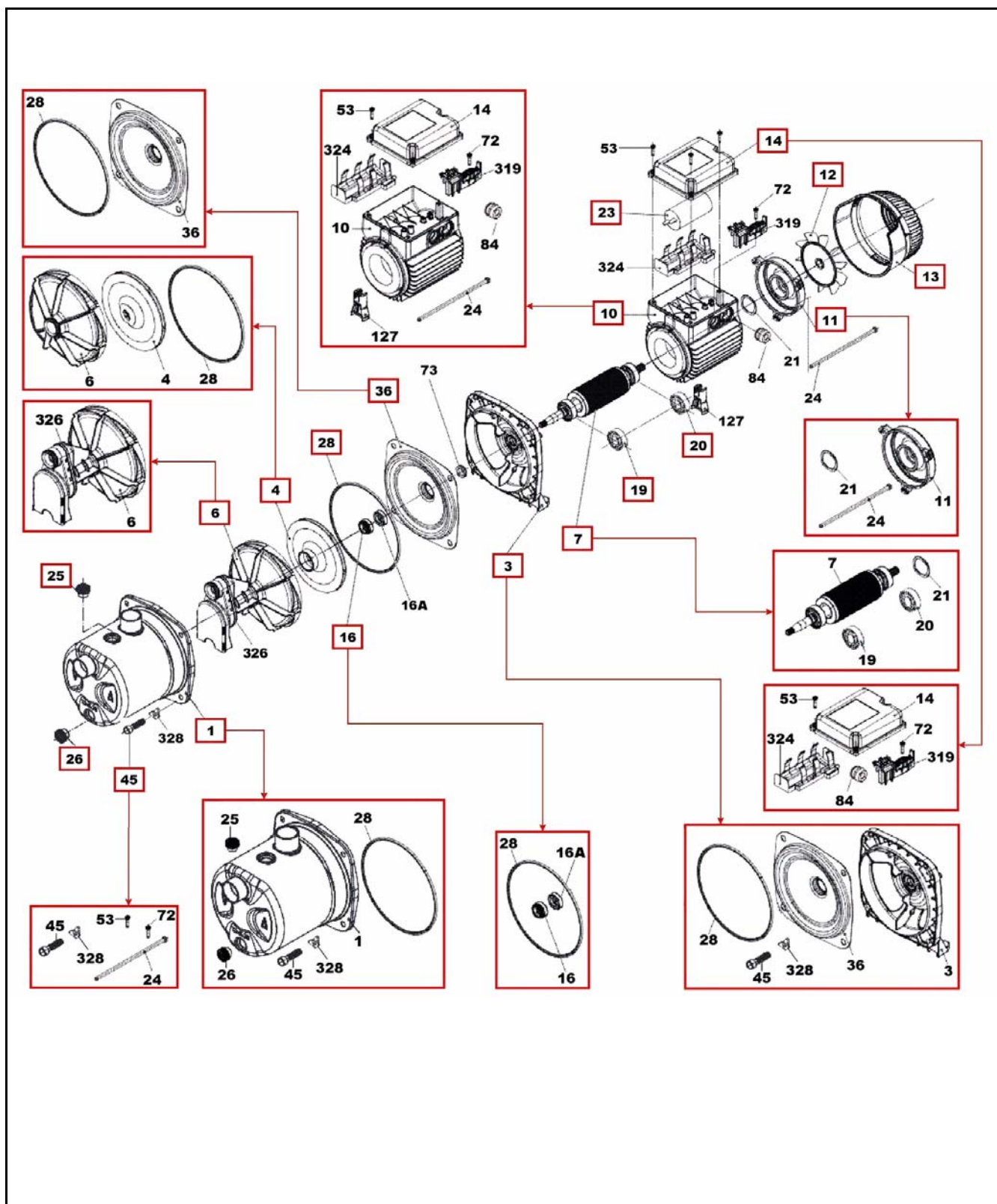
**Figure 1** Diesel Exhaust Fluid Pump Range of Use

Alemite, LLC  
167 Rowland Drive, Johnson City, Tennessee 37601  
www.alemite.com

Copyright © 2011 by Alemite, LLC

This document contains confidential information that is the property of Alemite, LLC and is not to be copied, used, or disclosed to others without express written permission.

SER 8420  
Revision (1-11)



**Figure 2** Diesel Exhaust Fluid Pump 8420 -Exploded View

Item No.	Part No.	Description	Qty	Notes	
1	393802-1	Pump Body, Stainless Steel AISI 303	1		
2					
3	393802-4	Support	1		
4	393802-11	Impeller, Technopolymer A	1		
5					
6	393802-14	Diffuser assembly, Technopolymer A	1		
7	393802-5	Motor Shaft, Stainless Steel AISI 303	1		
8					
9					
10	393802-13	Motor	1		
11	393802-12	Motor Cover	1		
12	393802-3	Fan	1		
13	393802-2	Fan Guard	1		
14	393802-16	Terminal board	1		
15					
16	393802-15	Seal, Viton	1		
17					
18					
19	393802-8	Front bearing	1		
20	393802-9	Rear bearing	1		
21					
22					
23	393802-10	Capacitor	1		
24					
25	393802-18	Load plug	1		
26	393802-19	Discharge plug	1		
27					
28	393802-6	O-Ring, Viton	1		
29					
30					
31					
32					
33					
34					
35					
36	393802-17	Mechanical seal cover	1		
45	393802-7	Nuts and Bolts	1		
<b>Legend:</b> Part numbers left blank (or in <i>italics</i> ) are not available separately					

1. The pump must be fitted in a well ventilated place, protected from unfavorable weather conditions and with an environment temperature not exceeding 104°F. Fig.B
2. A firm anchoring of the pump to the bearing surface allows the absorption of any vibrations caused by pump operation. Fig. C
3. Ensure that the metal pipes do not exert undue strain on the apertures, thus preventing deformations or breakages. Fig. C
4. It is always good practice to place the pump as close as possible to the liquid to be pumped. The pump must be installed only in horizontal position. The internal diameters of the pipes must never be smaller than that of the mouth of the pump. It is advisable to fit a foot valve on suction. Fig. D For suction depths of over four metres or with long horizontal stretches it is advisable to use an intake hose with a diameter larger than that of the intake aperture of the pump. To prevent the formation of air pockets, the intake hose must slope slightly upwards towards the pump. Fig. D
5. If the intake pipe is made of rubber or flexible material, always check that it is of the reinforced type to avoid throttling due to suction.
1. Before starting up, check that the pump is properly primed; fill it completely with Diesel Exhaust Fluid by means of the hole provided after having removed the filler cap on the pump body. This ensures that the mechanical seal is well lubricated.
2. The pump should not be started more than 20 times in one hour.
3. Do not operate the pump for longer than 6 minutes in a “Dead Head” mode (does not apply to SMART START application) Excessive time will result in increased temperature of the DEF and will begin to overheat the material and over time cause mechanical seal failure.
4. **DANGER OF FROST:** When the pump remains inactive for a long time at temperatures of less than 0°C, the pump body must be completely emptied through the drain cap (26) Fig. H, to prevent possible cracking of the hydraulic components. This operation is advisable even in the event of prolonged inactivity at normal temperature.
5. When starting after long periods of inactivity, the starting—up operations listed above must be repeated.

## Maintenance and Cleaning

In normal operation, the pump does not require any specific maintenance. **The pump must not be dismantled unless by skilled personnel in possession of the qualifications required by the regulations in force.** In any case, all repairs and maintenance jobs must be carried out only after having disconnected the pump from the power mains. Modifications and Spare Parts

**Any modification not authorized beforehand relieves the manufacturer of all responsibility.**

The Manufacturer does not vouch for correct operation of the pumps if they are tampered with or modified, run outside the recommended work range or in contrast with the other instructions given in this manual.

The Manufacturer declines all responsibility for possible errors in this instructions manual, if due to misprints or errors in copying. The company reserves the right to make any modifications to products that it may consider necessary or useful, without affecting the essential characteristics.

All the spare parts used in repairs must be original ones and the accessories must be approved by the manufacturer so as to be able to guarantee maximum safety of the machines and systems in which they may be fitted.

**In the event of damage to the power cable, the repair must be carried out by skilled personnel.**

## Electrical Connection



### CAUTION

**Always follow the safety regulations. Scrupulously follow wiring diagrams inside the terminal board box.**

6. Electric installation must be carried out by skilled and authorized electrician who accepts all the responsibility for the job.
7. Ensure that the main power supply voltage is the same as the value shown on the motor plate. MAKING A GROUND CONNECTION. Fig. E
8. In fixed installations, International Safety Standards require the use of isolating switches with a Fuse-carrier base.

## Starting the Pump



### CAUTION

**Do not start the pump unless it has been completely filled with fluid. Dry operation causes irreparable damage to the mechanical seal.**

Before starting removal and replacement of the supply cable, ensure that the pump is not connected to the power network.

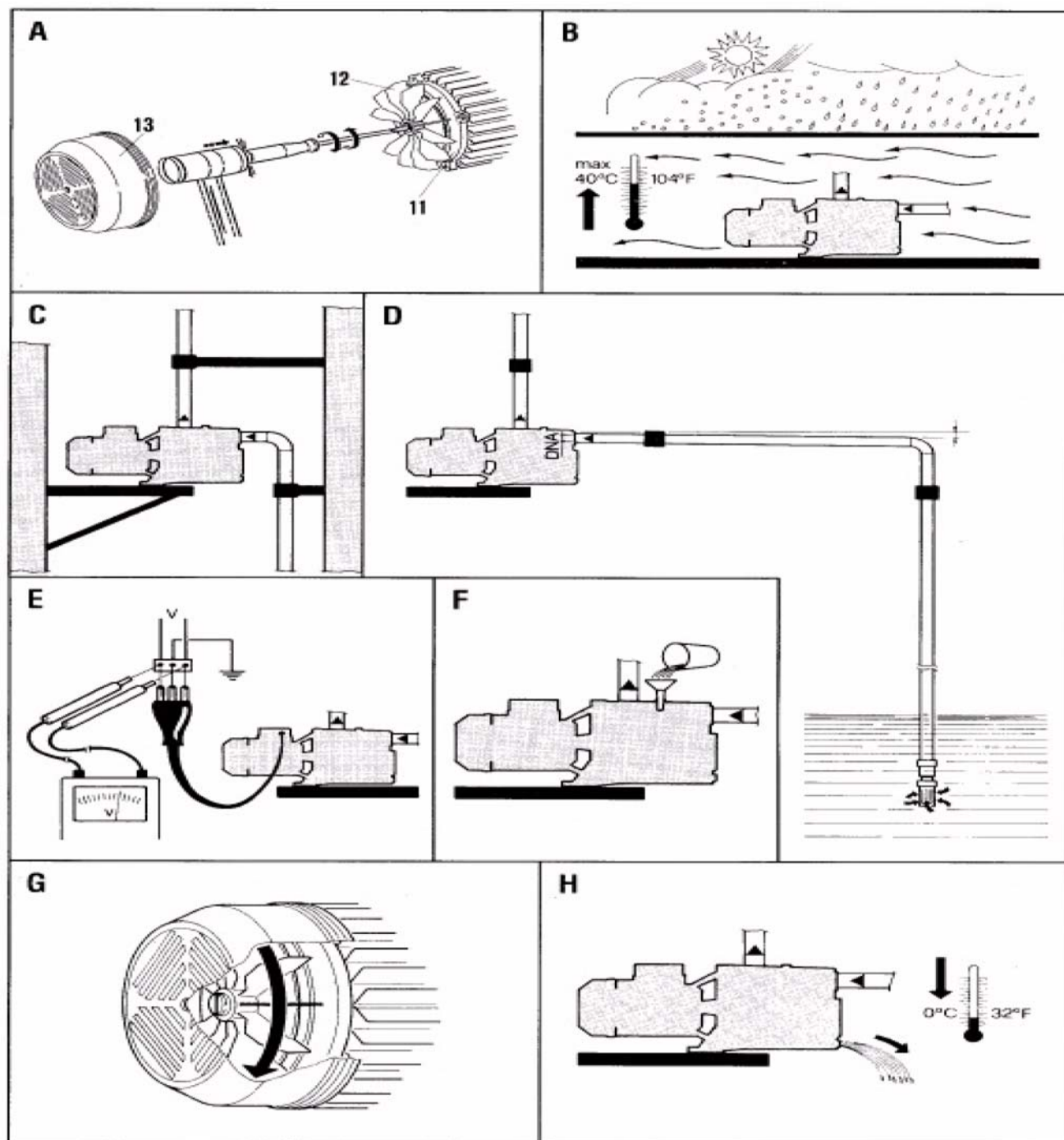
## Modifications and Spare Parts

### Storage

All the pumps must be stored indoors, in a vibration-free and dust-free environment. They are supplied in their original packaging and must remain there until the time of installation.

### Transport

Avoid subjecting the products to jolts or collisions. To lift and transport the unit, use lifting equipment and the pallet supplied standard (if applicable).



Pump Indications	Possible Problems	Solution
The motor does not start and makes no noise.	<ol style="list-style-type: none"> <li>1. Check the electric connections</li> <li>2. Check that the motor is live.</li> <li>3. Check the protection fuses</li> </ol>	<ol style="list-style-type: none"> <li>3. If they are burnt-out, change them. If the fault is repeated immediately this means that the motor is short circuiting</li> </ol>
The motor does not start but makes noise.	<ol style="list-style-type: none"> <li>1. Ensure that the mains voltage is the same as the value on the plate.</li> <li>2. Ensure that the connections have been made correctly.</li> <li>3. Look for possible blockages in the pump or motor.</li> <li>4. Check the condition of the capacitor.</li> </ol>	<ol style="list-style-type: none"> <li>2. Correct any errors.</li> <li>3. Remove the blockage,</li> <li>4. Replace the capacitor.</li> </ol>
The motor turns with difficulty.	<ol style="list-style-type: none"> <li>1. Check the voltage which may be insufficient.</li> <li>2. Check whether any moving parts are scraping against fixed parts.</li> </ol>	<ol style="list-style-type: none"> <li>2. Eliminate the cause of the scraping</li> </ol>
The pump does not deliver.	<ol style="list-style-type: none"> <li>1. The pump has not been primed correctly.</li> <li>2. The diameter of the intake pipe is insufficient,</li> <li>3. Blocked foot valve,</li> </ol>	<ol style="list-style-type: none"> <li>2. Replace the pipe with one with a larger diameter.</li> <li>3. Clean the foot valve.</li> </ol>
The pump does not prime.	<ol style="list-style-type: none"> <li>1. The intake pipe or the foot valve is taking in air.</li> <li>2. The downward slope of the intake pipe favours the formation of air pockets.</li> </ol>	<ol style="list-style-type: none"> <li>1. Eliminate the phenomenon and prime again.</li> <li>2. Correct the inclination of the intake pipe.</li> </ol>
The pump supplies insufficient flow.	<ol style="list-style-type: none"> <li>1. Blocked foot valve,</li> <li>2. The impeller is worn or blocked,</li> <li>3. The diameter of the intake pipe is insufficient,</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the foot valve,</li> <li>2. Remove the obstructions or replace the worn parts.</li> <li>3. Replace the pipe with one with a larger diameter.</li> </ol>
The pump vibrates	<ol style="list-style-type: none"> <li>1. Check that the pump and the pipes are and operates noisily.</li> <li>2. There is cavitation in the pump, which means the demand for fluid is higher than it is able to pump.</li> <li>3. The pump is running above its plate characteristics.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fix the loose parts more carefully, firmly anchored.</li> <li>2. Reduce the intake height or check for load losses.</li> <li>3. It may be useful to limit the flow at delivery.</li> </ol>

**Changes Since Last Printing**

Initial Release



## Caution

**Warranty** may be void if pump is not **fully primed** prior to initial startup, and all suction lines with Quick Coupler fitting are not tightened properly. Seal damage will occur if pump is run without **full prime** and warranty may be Void.

See Instruction manual for proper pump priming procedures

---

## Model 8420 (DEF) Pump

### Startup Instructions

***NOTE:** Do not start the **Alemite Pump** unless it has been completely filled with DEF Fluid*

Before starting up, check that the pump is properly primed: Fill it completely with DEFfluid by means of the Screw hole provided, on the top of the Stainless steel pump housing.

This will ensure that the internal Mechanical seals are well lubricated and that the pump immediately starts to pump.

Dry operation will cause irreparable damage to the Mechanical seals and may void manufacture warranty.

Upon completion of the set up instructions posted above, your Smart Start Pump will be ready for operation.