



X



PA1 70A - PA2 80 PA2 100 - PA3 150

ITALIANO
(lingua originale)

IT

ENGLISH
(translation of original instructions)

EN





USE AND MAINTENANCE MANUAL

Machine: DIESEL FUEL PUMP
Models: PA1 70A, PA2 80, PA2 100, PA3 150



the use and maintenance manual must be carefully stored near the machine in an environment protected against humidity and heat. The manual must accompany the machine if sold. It is prohibited to damage, modify or remove any part of the manual.

EC DECLARATION OF CONFORMITY




(Annex II A DIR. 2006/42/EC)

THE MANUFACTURER

We, ADAM PUMPS S.p.A., with our registered office in Via della Resistenza, 46/48, 41011, Campogalliano (MO), ITALY; represented by Davide Stassi, authorised to compile the relevant technical file at the undersigned premises,

DECLARES THAT THE MACHINE

Used as a diesel fuel pump to be integrated into a system for transferring fuel from a gravity tank.

	  
Batch of	
Model	Code : PA7A00
Description	PUMP PA1 70 - 230V
Technical specifications	230 Volt - 50 Hz - IP 55 - 550W - 2.5 A 2800 rpm - Condensator: 450 v-16 µF
Weight	Weight Kg.: 8

COMPLIES WITH DIRECTIVES

Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC.

Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.

Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.

Place and date of the document

Campogalliano, January 14, 2020

The legal representative

Davide Stassi

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1 - GENERAL WARNINGS

! *IMPORTANT: It is essential to have understood the entire instruction manual before performing any operation, so as to safeguard operator safety and to avoid potential product damage.*

Storing the manual:

This manual must be kept intact and fully legible. The end user and the skilled technicians authorised with installation and maintenance of the product in question must be able to consult it at all times.

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2 - MACHINE SPECIFICATIONS

2.1 - Intended use

The pumps described in this manual, once you have unpacked and inserted them in a pumping system, are machines that can fill a receiving tank with diesel fuel sucked from a gravity storage tank.

2.2 - Description of the machine

The pump is made up of the following parts:

- PUMP** volumetric self-priming rotary vane electric pump fitted with a bypass valve.
MOTOR Single-phase and three-phase asynchronous motor, 2-pole, closed (protection class IP55 in compliance with Standard EN60034-5-86), self-ventilating, directly flanged to the pump body.
FILTER stainless steel basket filter, can be inspected.

2.3 - Technical specifications

PUMP MODEL	POWER SUPPLY	MAXIMUM CURRENT [AMP](*)	(*) RATED POWER [WATT]	(**) WORK CYCLE [MIN]	MAX FLOW RATE [L/MIN]:	INPUT/ OUTPUT [BSP-G]:	(***) NOISE [DBA]
PA1 70A 230V/50-60Hz	AC 230V / 50Hz / 60Hz	2,9 / 3,5	550 / 650	(S1) Continuos	> 70	1" - 1"	< 70 / < 75
PA1 70A 115V/60Hz	AC 115V / 60Hz	8	805	(S1) Continuos	> 70	1" - 1"	< 75
PA1 70A 380V/50Hz	AC 380V / 50Hz	1	300	(S1) Continuos	> 70	1" - 1"	< 75
PA2 80 230V/50Hz	AC 230V / 50Hz	4,1	750	(S1) Continuos	> 80	1" - 1"	< 85
PA2 80 115V/50-60Hz	AC 115V / 50-60Hz	10 / 7,5	1150 / 750	(S2) 30	> 80	1" - 1"	< 85
PA2 100 230V/50-60Hz	AC 230V / 50Hz / 60Hz	4,5 / 5	805 / 900	(S1) Continuos	> 100	1" - 1"	< 85
PA2 100 115V/50-60Hz	AC 115V / 50Hz / 60Hz	14 / 8,5	1610 / 1000	(S2) 30	> 100	1" - 1"	< 85

PUMP MODEL	POWER SUPPLY	MAXIMUM CURRENT [AMP](*)	(*) RATED POWER [WATT]	(**) WORK CYCLE [MIN]	MAX FLOW RATE [L/MIN]:	INPUT/ OUTPUT [BSP-G]:	(***) NOISE [DBA]
PA3 150 230V/50Hz	AC 230V / 50Hz	14,9	3000	(S2) 30	> 150	1" - 1"	< 87

(*) The values refer to operation of the pump in bypass (maximum performance)

(**) **CAUTION! Operation in bypass is allowed only for brief periods (1-2 minutes at most)**

(***) The noise levels are measured at a distance of 1 metre from the electric pump in normal operating conditions.

In order to maximise performance, pressure losses have to be minimised in the pump suction line as follows:

- shorten the suction pipe as much as possible
- avoid, if possible, installing elbow fittings and/or throttling in the hydraulic circuit
- use a pipe with the same diameter or a diameter larger than the minimum specified in chapter - INSTALLATION
- always keep the filter inside the pump clean and regularly inspected

3 - OPERATING CONDITIONS

3.1 Environmental conditions

Temperature

min. -20°C / max. +60°C (*)

Relative humidity

max. 90%

(*) Caution! The temperature limits shown refer to the components making up the pump and should be respected to prevent any damages or malfunctions from occurring.

3.2 - Power supply

Depending on the model, the pump must be powered by the single-phase or three-phase AC line whose values are given in the table in section 2.3 - Technical specifications. Powering the pump with values outside these limits can damage the electrical components or cause them to malfunction.

The maximum power supply variations allowed are:

Voltage: +/- 5% of the nominal value

Frequency: +/- 2% of the nominal value

3.3 - Allowed fluids forbidden fluids

Allowed

DIESEL FUEL with 2 to 5.5 cSt viscosity (at 38°C).

Minimum flash point (MF): 55 °C

Forbidden

petrol, flammable liquids (MF <55°C), solvents, liquids with > 20 cSt viscosity
food liquids, corrosive chemicals, water

4 - TRANSPORT AND HANDLING

4.1 - Transport

The weight and dimensions of the pump allow it to be easily transported by hand. The pump does not require lifting equipment to move it.

! CAUTION! The Manufacturer shall not be held liable for harm to people or animals or damage to property resulting from use of lifting systems other than those specified.

Upon receipt, make sure the packaging is intact and in good condition. Any damage must be reported immediately.

4.2 - Unpacking

Unpack the product as follows:

1. Place the box on the floor in the direction drawn on the packaging
2. Carefully open the box, remove the pump and place it on the floor or on a stable surface
3. After ensuring that the pump and any accessories are intact, remove the two plugs and install it as described in the next chapter (5 - INSTALLATION).

4.3 - Storage

Prior to its use, the pump, still in its original packaging, should be stored in a dry and protected place in an environment with the conditions described in Section 3.1 - Environmental conditions. Failure to follow these instructions may affect proper operation of the pump

5 - PRELIMINARY CHECKS

5.1 - Preliminary checks and positioning the pump

Make sure the pump has not been damaged while being transported or stored. Remove any remaining packaging material from the product (e.g. protective caps) and carefully clean the suction and discharge outlets. Install the pump in any position (pump axis either horizontal or vertical), in a place sheltered from rain and weather events. Position and fix the pump with screws that are suitably sized for the holes on the motor flange. The best performance in terms of noise and vibration reduction is achieved by placing 4 vibration dampers of suitable height between the pump and the base. For the centre distances of the holes, see section 12.3 - Overall dimensions and weights.

⚠ CAUTION! The motors are not explosion-proof. They must not be installed in areas with flammable vapours or open flames.

5.2 - Hydraulic pipe connection

Before connecting the pump, make sure the tank, fittings and pipes used are clean and free from waste or processing residues. Before connecting the discharge pipe to the pump, we recommend partially filling the pump body with diesel fuel to lubricate and facilitate the priming procedure.

⚠ CAUTION! Do not use couplings or connection fittings with conical threading, as these could damage the pump coupling outlets if tightened too much.

We recommend using ADAM PUMPS suction and discharge pipes, which are designed specifically for the pump in use; alternatively, respect the dimensions and specifications in the table below.

	PA1 70A		PA2 80 & PA2 100		PA3 150	
	Suction	Discharge	Suction	Discharge	Suction	Discharge
Pump inlet connection thread	1" G - BSP	1" G - BSP	1" G - BSP	1" G - BSP	1" G - BSP	1" G - BSP
Recommended minimum internal diameters	ø25 mm	ø19 mm	ø25 mm	ø25 mm	ø30 mm	ø30 mm
Recommended rated pressure	10 Bar	10 Bar	10 Bar	10 Bar	15 Bar	15 Bar
Pipe suitable for operation under negative pressure	•		•		•	

5.3 - Remarks on the suction lines

SUCTION LINE

The electric pumps in this manual are self-priming and can draw the liquid from a maximum height of 2 metres. Caution, proper priming and the time required for this can be affected by an automatic nozzle on the discharge line, which prevents normal air extraction from the pipe. It is therefore always advisable to prime the pump for the first time without the automatic nozzle and with the discharge pipe emptied from the liquid. To facilitate the subsequent start-up operations of the pump so that they are immediate, it is always recommended to install a foot valve to prevent the suction pipe from emptying and to keep the pump wet. When the system is in operation, the pump can work with negative pressure at the suction inlet up to 0.5 Bar, after which cavitation phenomena can start with consequent reduction of the flow rate and increase in noise. To prevent this phenomenon from occurring it is important to ensure low suction negative pressure, by using short pipes or pipes with a diameter larger than or the same as those recommended, minimising bends and using large section suction filters and foot valves with the least resistance possible. Moreover, it is very important to keep all suction filters clean to prevent the system resistance from increasing when they are clogged.

DISCHARGE LINE

The electric pump must be chosen based on the system's specifications. Incorrect combinations of the length of the pipe, of its diameter, of the flow rate of the diesel fuel and/or of the accessories installed on the line, can create a counterpressure on the discharge line that is higher than the maximum set and so cause the pump bypass to open (partially) with consequent reduction in the flow rate dispensed. To prevent this from happening and allow the pump to work properly, the system resistance has to be reduced using pipes that are shorter and/or with a larger diameter and line accessories with less resistance (e.g. an automatic nozzle for greater flow rates).

5.4 - Electrical connection of the pump

SINGLE-PHASE MOTORS

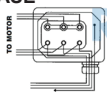


Pumps with single-phase motors are supplied with a 2 m cable and plug.

To change the power cable, open the capacitor box cover and follow the connection diagram to the side. Single-phase motors are equipped with phase capacitor and double-pole switch.

The capacitor specifications are indicated for each model on the pump's rating plate.

THREE-PHASE MOTORS



Pumps with three-phase motors are supplied with capacitor box and terminal board.

To connect the electric motor to the power line, open the capacitor box cover and follow the connection diagram to the side.

For proper installation and electrical maintenance of the system, please follow these instructions:

- make sure the power lines are not live when installing or carrying out maintenance operations on the system
- use cables with minimum section, rated voltages and type of installation suitable for the system's specifications
- make sure the three-phase motors are rotating in the right direction
- always connect the pump's earth terminal to the electricity grid's earth line.

! **CAUTION!** The pumps are provided without safety devices such as fuses, motor protectors, systems against accidental restart after a power failure. Even the switch, if any, will only start/stop the pump and can in no way replace a suitable circuit breaker. It is therefore the direct responsibility of the installer to connect the pump to the main electrical panel in compliance with the regulations in force in the country of use.

6 - INTENDED USE

6.1 - Preliminary checks and start-up

After ensuring there is diesel fuel in the suction tank, that all pipes and components on the hydraulic line are in good condition and properly sealed, and the nozzle is closed, the pump can be started. After

inserting the nozzle into the filling hole, switch the pump on, gradually release the nozzle lever and start transferring the diesel fuel. When you have finished filling, close the nozzle and switch the pump off. If you are using an automatic nozzle, it will automatically close as soon as you have finished filling.

⚠ WARNINGS! *Never leave the filling position to prevent accidental diesel fuel spillage. Do not start the pump before having connected the suction and discharge pipes. Do not start or stop the pump by inserting or unplugging any plugs. Do not touch any switches with wet hands. Avoid direct contact of the diesel fuel with skin or eyes as it may cause harm. Use of goggles and gloves is recommended. The single-phase motors are fitted with motor protectors and systems against accidental restart. In the event of a power failure, remember to switch the pump off and unplug it before restoring it. Work cycles that are continuous or in extreme conditions for the pump can cause the motor temperature to rise and its subsequent shutdown by the circuit breaker. Switch the pump off and wait for it to cool down before resuming work. The circuit breaker automatically switches off when the motor has cooled sufficiently.*

⚠ CAUTION! *During the first priming phase, the pump must be able to discharge the air, initially present in the suction pipe and in the pump, from the discharge line. To facilitate this procedure, make sure the nozzle or the discharge outlet is kept open. If an automatic nozzle is installed on the discharge line, it is recommended to temporarily disassemble the nozzle to facilitate pump suction during first start-up.*

6.2 - Intended use

- If hoses are used, make sure the ends are properly connected to the tanks. Firmly hold the end of the discharge pipe to prevent accidental spillage.
- Before starting the pump, make sure the discharge valve or the nozzle is closed.
- When you are ready, switch the pump on. The pump can remain in bypass (internal circulation if the discharge is closed) only for brief periods.
- With the pump on and in bypass, open the discharge valve or nozzle holding it firmly.
- When you have finished dispensing, close the valve or nozzle and switch the pump off.

⚠ CAUTION! *Operation of the pump with discharge closed is allowed only for brief periods (max 1-2 minutes). Make sure the pump is switched off after use.*

If there is a power failure:

1. Close the discharge valve or nozzle
2. Put the end of the discharge pipe into its housing on the tank
3. Switch the pump OFF

When the power has returned, restart the unit as described at the beginning of the section.

6.3 - Noise level

Under normal operating conditions the noise emitted by all models does not exceed 70 dB at a distance of 1 metre from the electric pump.

6.4 - Compatibility in an electromagnetic environment

The machine is designed to operate correctly in an industrial electromagnetic environment, and staying within the Emission and Immunity limits laid down in the following Harmonised Standards:

- IEC EN 61000-6-2** Electromagnetic compatibility (EMC) - Generic standards - Immunity for industrial environments
- IEC EN 61000-6-4** Electromagnetic compatibility (EMC) - Generic standards - Emission standard for industrial environments

7 - TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
THE PUMP DOES NOT START UP	Power failure	Check the electrical connections and the safety devices
	The circuit breaker has tripped	Use the electric pump in the recommended operating conditions and according to its intended use (chap. 2 - chap. 5)
	Impeller blocked	Make sure there are no obstructions in the pump body or along the suction and discharge lines
	Defective motor	Contact the dealer (fault code M1)
PUMP IS VERY NOISY	Cavitation	Reduce the negative suction pressure
		Make sure there are no leaks or restrictions on the suction part (recommended pipes chap. 5.2)
	Air in the hydraulic circuit	Make sure there are no suction leaks Dispense to bleed the air from the circuit
LIQUID LEAK	Clamps loosened	Make sure all clamps are properly tightened
	Gaskets worn	Replace the worn gaskets
	Non-compatible liquids used	Check compatibility of the fluid used (chap. 3.3)
	Shaft seal ring dirty or damaged	Contact the dealer (fault code A1)
LOW OR NO FLOW RATE	Low level of liquid in the tank	Fill the tank
	Filter dirty or clogged	Clean or replace the filter
	Foot valve dirty or clogged	Clean or replace the foot valve
	Pipe or dispensing nozzle damaged	Replace the damaged components
	Excessive negative pressure to the suction line	Make sure there are no leaks or restrictions on the suction part (recommended pipes chap. 5.2)
	High pressure drops in the circuit	Change the hydraulic discharge configuration
	Bypass valve open or blocked	Check the condition of the valve and clean or replace it if necessary
	Vanes blocked	Check and clean the vanes and their housings
	Excessive wear of the vanes or impeller	Replace the worn components
	Leaks from the gaskets	Make sure the gaskets are properly tightened and not worn
	Incorrect power supply voltage	Power the pump as specified on the rating plate
	Defective motor	Contact the dealer (fault code M2)

8 - MAINTENANCE

Maintenance includes inspections, checks and interventions which, to prevent interruptions and breakdowns, systematically keep the machine lubrication status and the parts subject to wear under control. These operations, although simple, must be carried out by Qualified Personnel. The machine is designed to minimise routine maintenance. It is the operator's responsibility to assess the status and its suitability for use. We recommend stopping the operations and performing maintenance every time operation is not perfect. This will always allow maximum efficiency. Always use the appropriate PPE (Personal Protective Equipment):

CAUTION! Make sure the pump is disconnected from the power supply and is not in operation before carrying out any maintenance.



Safety footwear



Protective clothing



Protective gloves



Safety goggles

WARNING! Failure to comply with these requirements will release the manufacturer from any liability resulting from the effects of the Warranty.

MAINTENANCE	FREQUENCY	MACHINE STATUS	SYMBOL
Make sure the pipes and couplings are properly connected	Every month	Isolation for Maintenance purposes	
Check/clean pipes and fittings	Every 12 months	Isolation for Maintenance purposes	
Check/clean filter and fittings	Every month	Isolation for Maintenance purposes	
Check/clean pump body	Every month	Isolation for Maintenance purposes	

9 - DEMOLITION AND DISPOSAL

If the electric pump is to be scrapped, its parts are to be given to companies specialised in disposing of and recycling industrial waste, as shown on the table below:

PARTS TO BE DISPOSED OF

DISPOSAL METHOD

PACKAGING

The packaging consists of biodegradable cardboard which can be sent to companies for normal pulp recycling.

METAL PARTS

The metal parts, whether painted or stainless steel, are usually recycled by companies specialised in the scrap metal industry.

ELECTRICAL AND ELECTRONIC COMPONENTS

These must be disposed of by companies specialised in disposing of electronic components, in compliance with the requirements of Directive 2002/96/EC (see Directive text below).

PARTS OF A DIFFERENT NATURE

Other parts of the system in which the electric pump is installed, such as pipes, rubber gaskets, plastic parts and wiring, are to be given to companies specialised in disposing of industrial waste.



APPLICABLE REGULATIONS FOR CUSTOMERS IN THE EUROPEAN UNION

The European Directive 2002/96/EC states that the equipment bearing this symbol on the product and/or on the packaging is not to be disposed of with unsorted municipal waste. The symbol indicates that this product must not be disposed of with normal household waste. It is the responsibility of the owner to dispose of these products and the other electrical and electronic equipment through specific collection facilities appointed by the government or by local authorities.

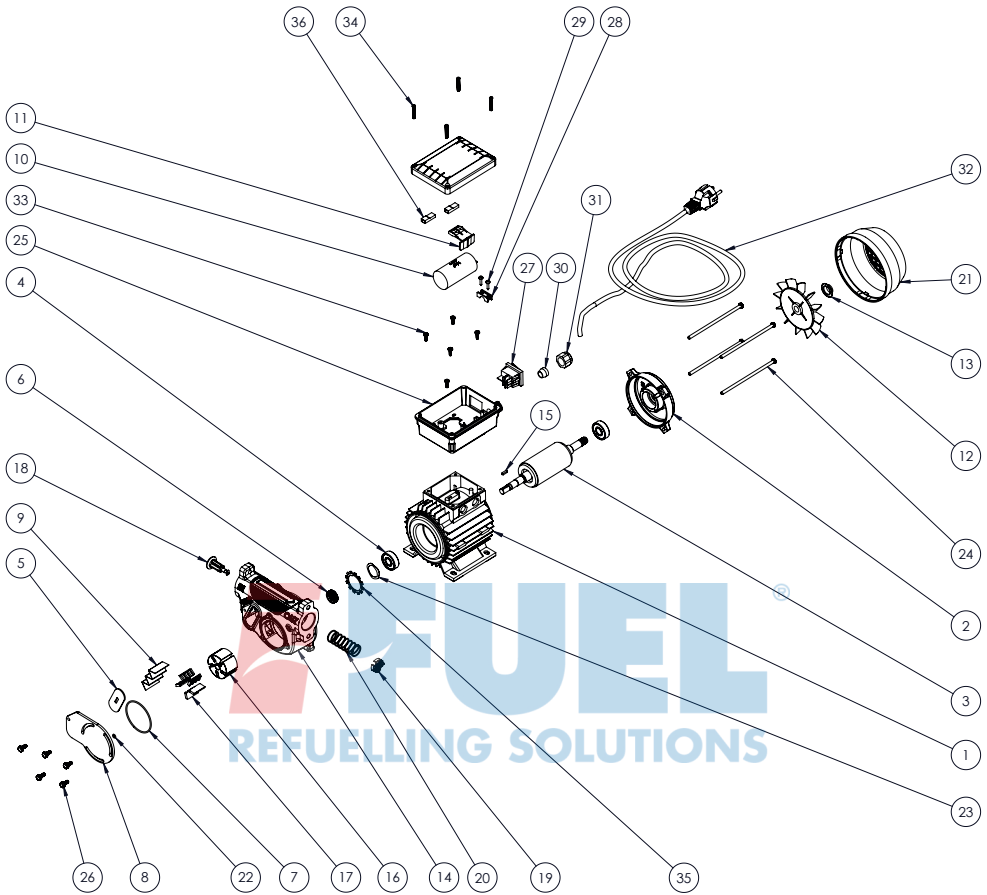
10 - WARRANTY

The warranty provided by the manufacturer Adam Pumps Spa covers the product for 2 years from the date of production. Adam Pumps Spa (manufacturer) provides its customers with:

- a warranty that covers problems resulting from production and conformity defects in the purchased products
- the warranty period starts from the date indicated on the CE label which indicates the date of manufacture.A

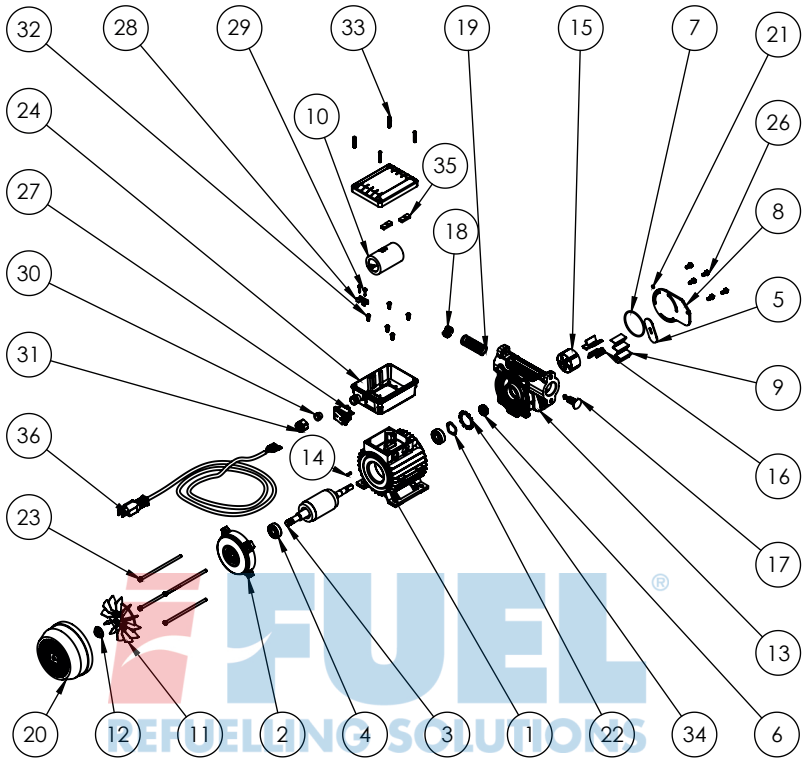
EXPLODED VIEWS

PA1 70A 230V



	CODE	DESCRIPTION	QTY				
1	ME033	wound stator p80	1	19	PA037	black reinforced bypass cap	1
2	ME032	machined shield p.80	1	20	16001005	by-pass spring	1
3	ME034	motor shaft p.80	1	21	140250500000	mec 63 fan cover	1
4	101001600000	bearing 6201 2rs	2	22	11010040200	o-ring 2015 nbr	1
5	OR037	filter seal	1	23	VT042	compensation ring	1
6	OR038	motor shaft seal	1	24	61004600000	tie rod m5 x 125	4
7	OR039	o-ring nbr70 57x2 body pump	1	25	PA023	capacitor box	1
8	PA018	swivel locking plate	1	26	VT046	screw tc m5x12 flanged	5
9	PA019	inox filter 16x49	1	27	EL013	blue switch 22x30	1
10	PA020	capacitor 14µf	1	28	140250300000	cable lock	1
11	PA024	capacitor lock	1	29	VT004	screw tc ø3,5x16	2
12	PA025	fan fb63 d11 black wo/ring	1	30	17001011	cable gland rubber	1
13	PA026	ring d11 for fan fb63 black	1	31	17001012	cable gland ring nut	1
14	CP009X	pump body pa 70l x-treme	1	32	190200000000	shuko cable 230v	1
15	PA021	pin 3x3x12 uni 6604-a	1	33	VT048	screw tc 3,5x12	5
16	610000031	rotor ø45	1	34	VT049	screw tc 4x25	4
17	71000522	small vane	5	35	VT050	security washer	1
18	71000520	by-pass valve	1	36	190110000000 6.3	faston cover	2

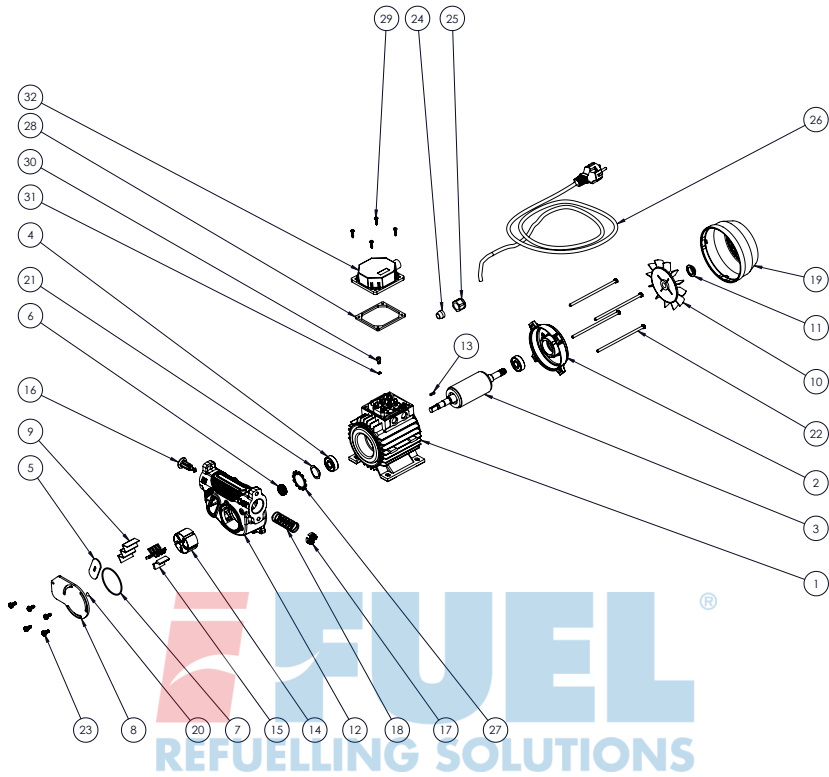
PA1 70A 115V



	CODE	DESCRIPTION	Q.ty
1	ME046	WOUND STATOR	1
2	ME032	MACHINED SHIELD	1
3	ME045	MOTOR SHAFT	1
4	101001600000	BEARING 6201 2RS	2
5	OR037	FILTER SEAL	1
6	OR038	MOTOR SHAFT SEAL	1
7	OR039	O-RING NBR70 57x2	1
8	PA018	SWIVEL LOCKING PLATE	1
9	PA019	INOX FILTER 16X49	1
10	PA035	CONDENSATOR	1
11	PA025	FAN FB63	1
12	PA026	RING D11 FOR FAN FB63	1
13	CP009X	PUMP BODY PA 70	1
14	PA021	PIN 3x3x12	1
15	61000003	ROTOR Ø45	1
16	71000522	SMALL VANE	5
17	71000520	BY-PASS VALVE	1
18	PA037	BYPASS CAP	1

	CODE	DESCRIPTION	Q.ty
19	16001005	BY-PASS SPRING	1
20	140250500000	MEC 63 FAN COVER	1
21	11010040200	O-Ring 2015 NBR	1
22	VT042	COMPENSATION RING	1
23	610046000000	TIE ROD M5 x 125	4
24	PA023	CAPACITOR BOX	1
26	VT046	SCREW TE M5X12	5
27	EL013	BLUE SWITCH 22X30	1
28	140250300000	CABLE LOCK	1
29	VT004	SCREW TC Ø3,5x16	2
30	17001011	CABLE GLAND RUBBER	1
31	17001012	CABLE GLAND RING NUT	1
32	VT048	SCREW TC 3,5X12	5
33	VT049	SCREW TC 4X25	4
34	VT050	SECURITY WASHER	1
35	190110000000	6.3 FASTON COVER	2
36	190000190000	Cavo 2.5 mt 115 U.S.A.	1

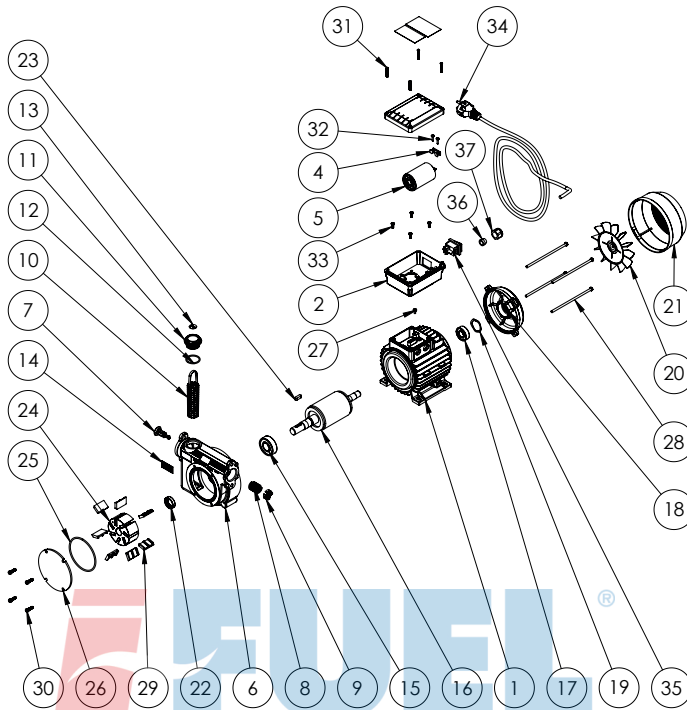
PA1 70A 380V



CODE.	DESCRIPTION	QTY
1	ME036 Stator wrapped MEC 63	1
2	ME032 worked shield MEC 63	1
3	ME037 Crankshaft MEC 63	1
4	101001600000 Radial ball bearing 6201 2RS	2
5	OR037 filter seal	1
6	OR038 inox Seal 10197 TCV 10X19X7	1
7	OR039 O-RING NBR70 57x2	1
8	PA018 swivel closing plate	1
9	PA019 inox filter 16x49	1
10	PA025 fan MEC 63	1
11	PA026 fan ring Ø12 MEC 63	1
12	CP009X body pump	1
13	PA021 Tab 3x3x15 UNI 6604-B	1
14	61000003 rotor Ø45	1
15	71000522 vane	5
16	71000520 by pass valve	1

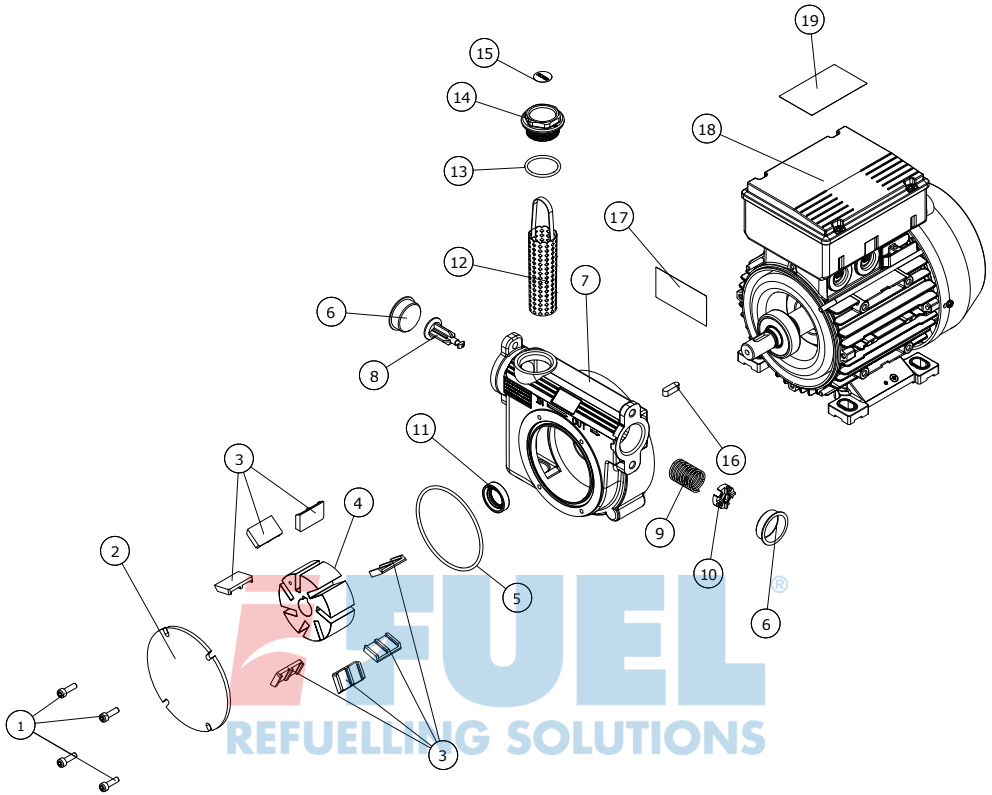
CODE.	DESCRIPTION	QTY
17	PA037 plate	1
18	16001005 by pass spring 60-80-100	1
19	140250500000 fan cover MEC 63	1
20	11010040200 O-Ring 2015 NBR	1
21	VT042 Compensation ring	1
22	61004600000 Tie M5 x 125	4
23	VT046 screw TE M5X12	5
24	17001011 Grommet cable press	1
25	17001012 Cable ring nut	1
26	190200000000 cable + schuko plug 230V	1
27	VT050 security washer	1
28	PA032 seal FV 63 / 71 - 2	1
29	VT004 screw TC Cross Ø3,5x16	4
30	VT002 screw TCCE M5x8 DIN 7500 E	1
31	80301400000 washer Grower Ø4	1
32	PA031 board cover MEC63 380V	1

PA2 80 - 100



	CODE.	DESCRIPTION	Q.TY		CODE.	DESCRIPTION	Q.TY
1	6410000000	Wrapped stator MEC 71 230V	1	20	140260400000	fan MEC 71 with ring Ø14	1
2	PA023	capacitor holder + cap	1	21	140260500000	fan holder MEC 71	1
4	140250300000	Cable lock	1	22	12001015020	Sealing ring 20x30x7 SNBR	1
5	190061000000	Capacitor 25 µF	1	23	905050500000	pin 6X6X20 UNI 6604-A	1
6	71000060	body pump 80 L 1"BSPG		24	61000010	Rotor Ø72	1
	71000079	body pump 100 L 1"BSPG		25	18001022	O-Ring 85X3 NBR	1
7	71000520	bypass valve	1	26	71000063	pump holder 80-100 Lt.	1
8	16001005	by pass spring	1	27	82301410100	screw TC Cross M4 x 8	1
9	PA037	plate	1	28	6100450000Z	Tie M5X135 ZnB	4
10	41410000	inox filter	1	29	71000569	big vane	7
11	17001094	cap 1 "	1	30	13001007	screw TCCE M5x16	4
12	18001008	O-Ring 3118 NBR	1	31	VT049	screw TC 4X25 UNI 9707	4
13	71000587	label "FILTER"	1	32	VT004	screw TC cross Ø3,5x16	2
14	71000546	label "clear filter"	1	33	VT037	screw TC cross M4x6	4
15	101001880000	Radial ball bearing	1	34	190200000000	cabl + schuko plug 230V	1
16	629017000000	crankshaft MEC71	1	35	EL013	switch 22X30	1
17	101001700000	Radial ball bearing	1	36	17001011	grommet gland	1
18	15502600000X	worked shield MEC 71	1	37	17001012	Cabl gland nut	1
19	845050000000	Compensation ring Ø35	1				

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	CODE	DESCRIPTION	QTY
1	13001007	screw M5X16	4
2	71000063	pump cover	1
3	71000569	large vane	7
4	61000010	rotor ø72	1
5	18001022	O-Ring 85X3 NBR	1
6	163013500000	protection cap ø31	2
7	CP004	pump body 150l	1
8	71000520	bypass valve	1
9	16001005	bypass spring	1
10	PA037	plate	1

	CODE	DESCRIPTION	QTY
11	12001015020	sealing ring 20x30x7	1
12	41410000	filter	1
13	18001008	O-Ring 3118 NBR	1
14	17001094	cap 1"	1
15	71000587	"filter" label	1
16	90505050000	key 6x6x20	1
17	-	ce label	1
18	ME002	motor 150l	1
19	71000653	"danger" label	1