

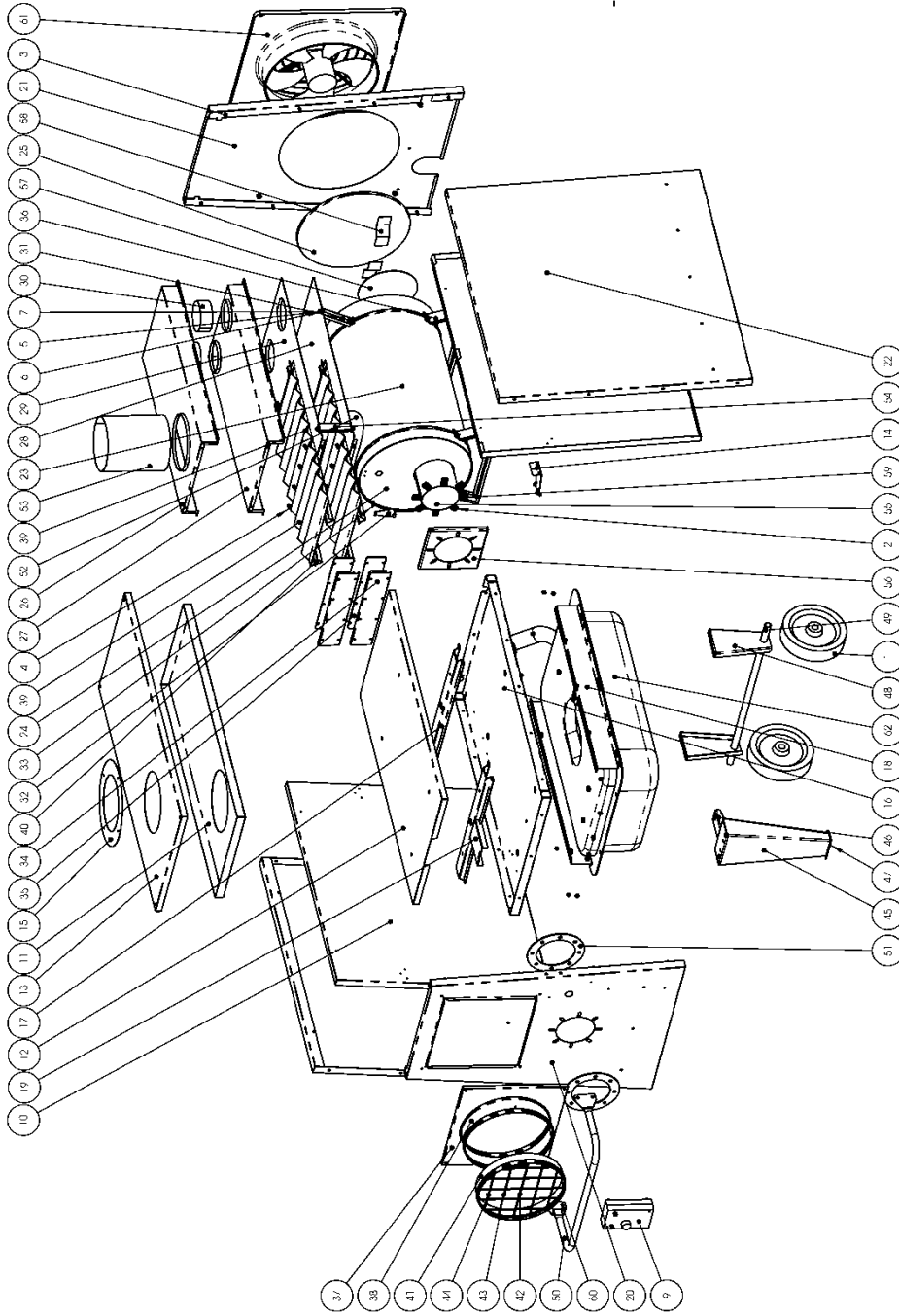
# proton

## T-40, T-40W AND T-70 BLOWER HEATERS EQUIPPED WITH OIL BURNER

Instruction and user manual



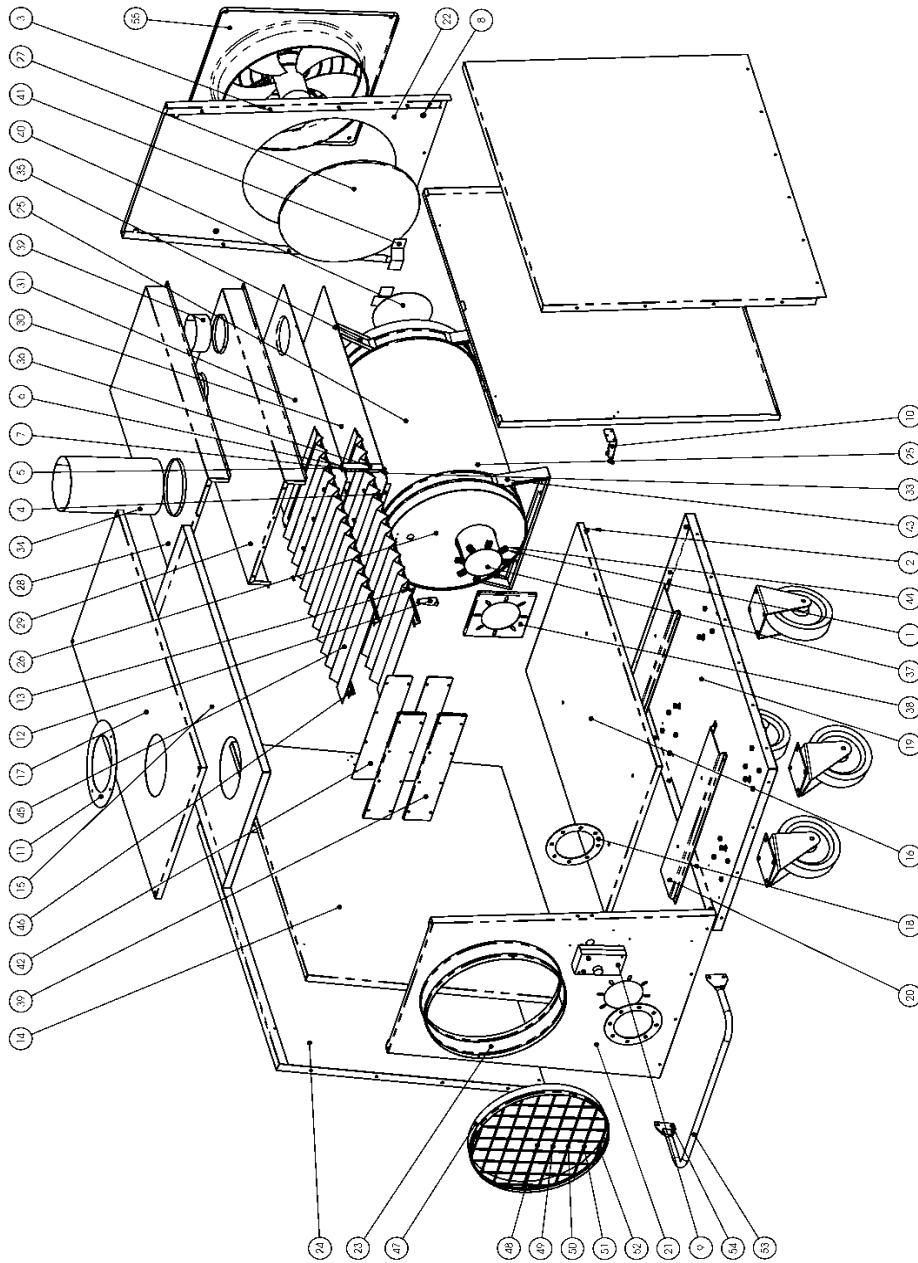
# Fig.1 T40 construction



62	Zbiornik 20kV	01	Zbiornik				1	
61	Wzrostki 20kV	01	Wzrostki	Bielony 6200			1	
60	10x30	01	10x30	Bielony 6200			2	
59	10x30	01	10x30	Bielony 6200			2	
58	10x30	01	10x30	Bielony 6200			2	
57	10x30	01	10x30	Bielony 6200			2	
56	10x30	01	10x30	Bielony 6200			2	
55	10x30	01	10x30	Bielony 6200			2	
54	10x30	01	10x30	Bielony 6200			2	
53	10x30	01	10x30	Bielony 6200			2	
52	10x30	01	10x30	Bielony 6200			2	
51	10x30	01	10x30	Bielony 6200			2	
50	10x30	01	10x30	Bielony 6200			2	
49	10x30	01	10x30	Bielony 6200			2	
48	10x30	01	10x30	Bielony 6200			2	
47	10x30	01	10x30	Bielony 6200			2	
46	10x30	01	10x30	Bielony 6200			2	
45	10x30	01	10x30	Bielony 6200			2	
44	10x30	01	10x30	Bielony 6200			2	
43	10x30	01	10x30	Bielony 6200			2	
42	10x30	01	10x30	Bielony 6200			2	
41	10x30	01	10x30	Bielony 6200			2	
40	10x30	01	10x30	Bielony 6200			2	
39	10x30	01	10x30	Bielony 6200			2	
38	10x30	01	10x30	Bielony 6200			2	
37	10x30	01	10x30	Bielony 6200			2	
36	10x30	01	10x30	Bielony 6200			2	
35	10x30	01	10x30	Bielony 6200			2	
34	10x30	01	10x30	Bielony 6200			2	
33	10x30	01	10x30	Bielony 6200			2	
32	10x30	01	10x30	Bielony 6200			2	
31	10x30	01	10x30	Bielony 6200			2	
30	10x30	01	10x30	Bielony 6200			2	
29	10x30	01	10x30	Bielony 6200			2	
28	10x30	01	10x30	Bielony 6200			2	
27	10x30	01	10x30	Bielony 6200			2	
26	10x30	01	10x30	Bielony 6200			2	
25	10x30	01	10x30	Bielony 6200			2	
24	10x30	01	10x30	Bielony 6200			2	
23	10x30	01	10x30	Bielony 6200			2	
22	10x30	01	10x30	Bielony 6200			2	
21	10x30	01	10x30	Bielony 6200			2	
20	10x30	01	10x30	Bielony 6200			2	
19	10x30	01	10x30	Bielony 6200			2	
18	10x30	01	10x30	Bielony 6200			2	
17	10x30	01	10x30	Bielony 6200			2	
16	10x30	01	10x30	Bielony 6200			2	
15	10x30	01	10x30	Bielony 6200			2	
14	10x30	01	10x30	Bielony 6200			2	
13	10x30	01	10x30	Bielony 6200			2	
12	10x30	01	10x30	Bielony 6200			2	
11	10x30	01	10x30	Bielony 6200			2	
10	10x30	01	10x30	Bielony 6200			2	
9	10x30	01	10x30	Bielony 6200			2	
8	10x30	01	10x30	Bielony 6200			2	
7	10x30	01	10x30	Bielony 6200			2	
6	10x30	01	10x30	Bielony 6200			2	
5	10x30	01	10x30	Bielony 6200			2	
4	10x30	01	10x30	Bielony 6200			2	
3	10x30	01	10x30	Bielony 6200			2	
2	10x30	01	10x30	Bielony 6200			2	
1	10x30	01	10x30	Bielony 6200			2	
E.FRENITULI							Wsk.	
E.FRENITULI							CP 5	
E.FRENITULI							Gliniec	
E.FRENITULI							Matka	
E.FRENITULI							Cu, izolacja	OSK

PART NO	DESCRIPTION	PART NO	DESCRIPTION
1	Wheel_200x50	32	End cap
2	Screw cup	33	Clamp
3	Stud-bolt	34	Front cover
4	Hexagonal head screw	35	Insulating gasket
5	Hexagonal head screw	36	Combustion chamber support
6	Round washer	37	Air outlet cover
7	Hex cap screw	38	Air outlet point
8	Hex cap screw	39	Turbulator
9	T40/T70	40	Turbulator support
10	Side screen	41	Air outlet grille
11	Upper screen	42	Protective grille
12	Bottom screen	43	Protective grille
13	Upper cover	44	Protective grille
14	Support	45	Foot
15	Lid	46	Support
16	Footing	47	Slider
17	Cleat	48	Undercarriage support
18	Tank support	49	Undercarriage axis
19	Foot support	50	Handle pull
20	Front/rear panel	51	Insulating plate
21	Front/rear panel	52	Bigger flue
22	Side panel	53	Outlet pipe
23	Combustion chamber cover	54	Exchanger support
24	Front crown	55	Inlet pipe
25	Rear crown	56	Inlet flange
26	Upper part A/B	57	Crown cover
27	Upper part A/B	58	Cover flap
28	Bottom part A/B	59	Basket
29	Bottom part A/B	60	Handle end cap
30	Smaller flue	61	Fan
31	Support	62	Tank

## Fig.2 T70 construction



55	WYPR. 4E-250E	01	Wspornik	4	
54	170-132	01	UCHO. UCHWYTU	2	
53	170-131	01	RURA UCHWYTU	1	
52	170-122A	05	Piel. kratki	4	
51	170-122A	04	Piel. kratki	4	
50	170-122A	03	Piel. kratki	4	
49	170-122A	02	Piel. kratki	4	
48	170-122A	01	Piel. kratki	4	
47	170-121A	01	Kratka wlotu	1	
46	170-112	01	Wspornik turb.	4	
45	170-111	01	Turbulator	2	
44	170-099	01	Kosytki	8	
43	170-098	01	Podpora walczaka	2	
42	170-097	01	Uszczelnika	2	
41	170-096	01	Lapa osiowy	2	
40	170-095	01	Oblona demnicy	1	
39	170-094	01	Pokrywa przedia	2	
38	170-093A	01	Krzywa wlotowa	1	
37	170-092	01	Rura wlotowa	1	
36	170-091A	01	Podpora wymiennika	2	
35	170-089	01	Podpora	2	
34	170-088	01	Rura wylotowa	1	
33	170-087	01	Rura wielka	1	
32	170-086A	01	Rura mniejsza	2	
31	170-085	02	El. dolny A/B	1	
30	170-085	01	El. dolny A/B	1	
29	170-084	02	El. gorny A/B	1	
28	170-084	01	El. gorny A/B	1	
27	170-083A	01	Demnica tylna	1	
26	170-082A	01	Demnica przedia	1	
25	170-081A	01	Plaszcz walczaka	1	
24	170-081A	01	Oblona boczna	2	
23	170-081A	01	Wielki	2	
22	170-081A	02	Scienna przedia/tylna	1	
21	170-081A	01	Scienna przedia/tylna	1	
20	170-082A	01	Usztwa usztwin.	2	
19	170-082A	01	Podstawa	1	
18	170-016	01	Uszczelnienie palnika	2	
17	170-015	01	Pakrywa gorna	1	
16	170-012	01	Ekran gorny	1	
15	170-011A	01	Ekran boczn.	2	
14	170-011A	01	Ekran boczn.	2	
13	140-092	01	Komora	1	
12	140-091	01	Zaklonka	1	
11	140-017	01	Fajetka	1	
10	140-016	01	Wspornik kaptal.	1	
9	Stacownik 140/710	01	Stacownik	1	
8	PN.M.82144	M8	Nikretka szesiolatna	28	
7	PN.M.82144	M6	Nikretka szesiolatna	30	
6	PN.EN ISO 7091	6,4	Podkladka okr.	7	
5	PN.EN 24017	A-10681/2	Sluzba z listem szes.	6	
4	PN.EN 24017	A-10681/2	Sluzba z listem szes. Klocki czepawy	16	
3	Kolek CHF	M6x12	Gwinutowany	16	
2	ISO 7045	M6x12-H	Wkr. z listem walcowym	1	
1	DIN 557	M 8	Nikretka kwadratowa	8	
ELEMENTU				WYK.	ILOSC
NUMER C.45C1				WYK.	ILOSC

PART NO	DESCRIPTION	PART NO	DESCRIPTION
1	Screw cup	29	Upper part A/B
2	Cheese head screw	30	Bottom part A/B
3	Stud-bolt	31	Bottom part A/B
4	Hexagonal head screw	32	Smaller flue
5	Hexagonal head screw	33	Bigger flue
6	Round washer	34	Outlet pipe
7	Hex cap screw	35	Support
8	Hex cap screw	36	Exchanger support
9	T40/T70	37	Inlet pipe
10	Support	38	Inlet flange
11	Lid	39	Front cover
12	End cap	40	Crown cover
13	Clamp	41	Cover flap
14	Side screen	42	Insulating gasket
15	Cover screen	43	Combustion chamber support
16	Bottom screen	44	Basket
17	Cover	45	Turbulator
18	Insulating plate	46	Turbulator support
19	Footing	47	Protective grille
20	Cleat	48	Protective grille
21	Front/rear panel	49	Protective grille
22	Front/rear panel	50	Protective grille
23	Air outlet point	51	Protective grille
24	Side panel	52	Protective grille
25	Combustion chamber	53	Handle pull
26	Front crown	54	Handle end cap
27	Rear crown	55	Fan
28	Upper part A/B		

Thank you for choosing PROTON blower heater which will provide heat almost instantaneously. Low price of heating oil used for this device makes it even more economical.

Our observations and experiences gained during production and sales of the blower heaters show that if exploited according to this instruction manual, the device causes no problems to their user and is almost failure-free.

**We therefore strongly recommend strict adherence to this instruction manual and we guarantee your satisfaction with this heater.**

### **1. General information**

Before installing the blower heater you should make sure there are no damages caused during transportation and that the blower is complete with all parts.

### **2. Use**

T range blower heaters should be used for heating all types of production premises, warehouses, shops, residential buildings, chicken farms and others.

### **3. Fuel**

The following fuel should be used: light EL heating oil (according to DIN 51603) or EKOTERM heating oil with the following parameters:

- density at 15°C < 0,86 kg/cm<sup>3</sup>
- kinematic viscosity at 20°C mm<sup>2</sup>/s < 6
- sulphur content < 0,3%
- ignition temperature 85°C
- calorific value > 42000 kJ/kg

This oil meets requirements of European quality and ecological norms.

In case of problems with purchasing fuel oil, diesel oil can also be used. If diesel oil is used in place of the heating oil, the settings must be changed accordingly (soot can start to deposit in combustion chamber and the heat exchanger during burning).

Manufacturer's settings are set for the light heating oil.

### **4. Technical and exploitation parameters of the heater and burner**

**Blower heater range includes**

	<b>Measurement unit</b>	<b>T-40</b>	<b>T-40W</b>	<b>T-70</b>
<b>Installed Power</b>		<b>36-45</b>	<b>36-45</b>	<b>75</b>

		T-40	T-40W	T-70
Burner's nozzle		0.85/60°	0.85/60°	0.85/60°
Fuel pump pressure	bar	12	12	12
Burner power supply	V/Hz	230/50	230/50	230/50
Fan output	m3/h	2600	4200	5000
Max. Air temperature	°C	85	85	85
Fan power supply	V/Hz	230/50	230/50	230/50
Blower hole diameter	mm	280	2 x 200	440
Fule diameter	mm	180	180	180
Dimensions	Length	mm	1360	1346
	Width	mm	590	1265
	Height	mm	1190	1062
Weight	kg	95	116	125
Tank capacity	l	55	N/A	N/A
Average fuel consumption	l/h	2	2	4

T range heaters are portable devices. Each T-40 is equipped with a fuel tank (external tanks of any capacity may be used). T-70 heaters are not equipped with fuel tanks and can be fuelled from any plastic or metal tank meeting technical requirements. Blower heater is used for producing air heated up to max temperature of 85<sup>0</sup>C. Basic component parts of the heater include cylindrical combustion chamber made of acid-proof sheet and heat exchanger fitted with turbulators. Heat of burned oil is absorbed by air which is ventilated by fan and passes through heat exchanger and combustion chamber. Some of the heat is transported outside through the flue in form of combustion fumes. Excellent capacity of the heaters compensates for the heat losses and minimizes them. Maximum air temperature at the outlet is 85<sup>0</sup> C. The temperature is controlled by means of a thermostat with the range of 65<sup>0</sup>C ÷ 85<sup>0</sup>C. The device is additionally equipped with safety thermostat set at 110<sup>0</sup>C. Both inlet and outlet points are secured with protective screens. Outlet and inlet points should never be obstructed. T range heaters require disposal of combustion fumes. Flue connection should be made of insulated tin pipes and the flue should be in **vertical** position 1m above the rooftop of the heated building. Chimney flue diameter cannot be inferior to the diameter of the heaters' flue. Horizontal connection between the heater and flue should be slightly inclined and not longer than 2 meters. Flue can be fitted by means of elastic SPIRO pipes provided that the above requirements are met.

T range heaters are powered by voltage rating 220 V (in case of heaters

equipped with centrifugal fan the voltage is 380 V).

Chimney diameter cannot be inferior to the flue diameter.

Units are equipped with two-way fuel filters with shut off valves on the feed line and return valve on fuel disposal (one-way filters are also in use).

For T range heaters connections between tank, filter and burner are made by the manufacturer. T-70 heater does not have a tank and the feed line connection between the filter and the tank should be installed by an authorized person according to regulations regarding storage of light heating oil and depending on the capacity of burner pump. All T range heaters are fitted with oil burners with pumps.

### **Assembly**

T-40 heaters are fitted with oil tanks and do not require assembly. Heaters should be placed in appropriate location with respect to regulations regarding flue and chimney connection. It also applies to T-70 units. When placing them, regulations concerning connection of oil tank and storage of light heating oil should be adhered to. **Air outlet/inlet points should never be obstructed.** If heaters operate in conditions where contaminations occur or may occur (such as dust, chemicals) or exhaust fans are in use (which may interfere by creating negative pressure) air supply from a different source or from the outside should be provided.

Fire regulations are also to be met.

### **Operation and maintenance manual**

Prior to switching on the device, check the assembly and, if necessary, fill up the oil tank. Heater cannot be switched on immediately after filling up the oil tank. Allow the oil in the tank to settle for 15 minutes (if the device is switched on too early, there is a risk of air getting into the oil feed line). Check if the chimney is unobstructed and if there is **sufficient air draught**.

**In 95 % of cases lack of air draught is the cause of failures of the device** (failure of flame sensor, electrodes, fuel nozzle, burner gasket, heat exchanger gaskets).

Heater should be connected to the power outlet according to the following rule: plug's phase connects with the socket phase. Heater is fitted with two switches (red switch activates heating and the blue switch triggers cooling) and a thermostat.

### **Switching on**

If you want to activate the heating mode, press the red button, the blue button should be switched off.

If the blue button is switched on, the fan will work continuously without 3.5



min cycles after the burner has been switched off.

The blue button should be switched on if you want to ventilate the device - the red button should be switched off during this time.

- Set the thermostat at a desired value.

Press the red button (the fan and burner will switch on simultaneously).

- If the heater does not start, control diode on its casing will light up. After one minute, control button should be pressed again, which will start the burner.
- If air gets into the oil feed line, for example when oil feed line is long, it is necessary to repeat this operation 2-3 times (at 2 minute intervals).
- If the burner still does not ignite, it is necessary to call an authorized service to fix the failure.

Once the burner is activated, oil starts to burn automatically. Ignition spark stops after a dozen or so seconds. Once the desired temperature has been reached, the burner turns off and the fan continues to work (for about 3.5 minutes) cooling down the heat exchanger and combustion chamber and, at the same time, absorbing their heat if the temperature of the heat exchanger located near temperature sensors goes down to the value higher than or equal to the one of the thermostat.

If during cooling down, the temperature goes down below the value set on the thermostat the burner will start again with the fan still working.

It is possible to mount external thermostat, which will regulate the temperature keeping it at a desired level.

Red button is used for turning the heater off. Safety feature of the control panel does not allow turning the fan off while the burner is still working.

## **NOTE**

- The maintenance of the device should be carried out by an authorized person.
- Do not use the heater close to combustible materials their fumes or explosives.
- Do not use the heater if the air contaminations occur or may occur (dust, chemicals) or if there are fans that can create negative pressure.
- Do not allow the tank to be completely empty as this may cause the air to get in.
- Reset the burner if the supplier or type of fuel is changed. This should be done by an authorized person.
- Observe the fuel in filter (if the filter is clean and if there is no water in fuel).

Fuel mixed with water looks like water with sugar on the filter; **working even for a few hours under such circumstances may cause damage to the fuel pump.**

- Heater should operate in building/s with efficient air ventilation with the inside temperature not lower than  $+5^{\circ}\text{C}$ .
- Air inlet and outlet should never be obstructed.
- Do not spill oil when filling up or cleaning the filter.
- Supervise tightness of fuel installation and the quality of combustion fumes (there should be no visible smoke coming out).
- There should be no smell of oil.
- Fire extinguisher should be placed close to the heater.

### **Maintenance**

- The device and the surrounding area should be kept clean.
- Oil spill should be cleaned immediately.
- Oil filter should be replaced regularly (transparent filter cover allows to see contaminations).
- Burner photocell should be cleaned regularly.
- Oil tank should be cleaned every other season.
- At least once a year, after the season and more often if necessary, clean the combustion chamber and exchanger along with tubulators and chimney flue. Soot deposited in the flue isolates and decreases efficiency of the heater and hinders its normal functioning.
- In case of malfunctioning, i.e. visible dark fumes, it is necessary to turn the heater off, clean it, set the burner and check fumes composition.
- These are not covered by the warranty and are to be carried out by authorized personnel.
- Protect the heater against humidity.

### **Failures and their remedies**

- Turn the burner and power supply off.
- Shut the fuel feed valves.
- Use appropriate fire extinguisher.

### **Heating oil storage conditions**

- Oil should not be stored in temperature below  $-5^{\circ}\text{C}$  because this may cause paraffin precipitation and block the filter.
- Capacity of single tank without casing should not exceed 2000 l.
- Tanks should not be placed closer than 1.5 m from the source of heat and where oil is heated up to temperature higher by  $15^{\circ}\text{C}$  than the room

temperature where it is located.

- Tanks should have minimum 32 mm diameter vent holes.
- Mark the tank and place appropriate fire extinguisher next to it.

### **Possible remedies**

#### ***Burner will not start***

- Damaged safety device of the network or the burner.
- Faulty plug connection.
- Loose connections (joints).
- Thermostat damaged or set below room temperature.
- Light from the outside reaches photocell.
- Damaged control panel.
- Blocked safety thermostat.
- Damaged engine.
- Blocked burner pump.
- No fuel.

#### ***Burner starts but switches off after a while***

- No fuel supply - open fuel valves.
- No ignition spark - too low fuel injection pressure.
- Damaged pump or pump clutch.
- Blocked fuel filter, pump filter or nozzle.
- Damaged fuel line - not air-tight.
- Damaged electro valve.
- Damaged photocell.

#### ***No flame with proper fuel feeding***

- Worn-out nozzle.
- Too big air valve opening - sparkle extinguishes.
- Oiling up of the electrodes.
- Damaged transformer.
- Too big spaces between electrodes.

#### ***No flame with proper fuel feeding and proper ignition***

- Too low fuel injection pressure.
- Wrong placement of the electrodes.
- Spark bounces up to the casing.
- Dirty nozzle.

- Water in fuel.
- Air-locked fuel line.
- No supply.

### ***There is a flame but keeps on extinguishing***

- Leaking electromagnetic valve.
- Damaged contacts of the control panel.
- Improper angle of fuel nozzle injection.
- Improper fitting of the disk.
- Partly covered nozzle.
- Dirty flame sensor.
- Air-locked fuel line.
- Disturbances during operation.
- Improper ratio between air and fuel.
- Too big fuel nozzle.
- Unregulated fuel pressure.
- Too high temperature of combustion fumes.
- Too strong/weak chimney draught.
- Combustion chamber and exchanger with soot.
- Leaking fuel line.

### ***Control panel***

- Bottom row of diodes signals the fuel level in the tank.
- When the fuel tank is almost empty, intermittent sound is activated. This means that the tank needs to be filled up.
- When the fuel tank is empty, the red diode goes off (no fuel left) and continuous sound is triggered. The device stops working. Once filled up, the heater continues to work.

### ***Each heater can be fitted with any temperature thermostat.***

Fitting the thermostat:

- In the bottom part of the control panel there is a short black wire next to two white wires.
- Remove wire sleeve at its end and cut the wire.
- Join two wires obtained after cutting with wires of the external control panel.

- Set the heater knob at the maximum value.
- Set the external thermostat to desired temperature.

**NOTE: for thermostats powered by 220 V transmitters should be mounted.**

**NOTE**

**Failure to comply with the above instruction manual may cause damage to the heater, which will result in the warranty to become void.**

**All repairs made under void warranty are subject to charges.**



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**DEKLARACJA ZGODNOŚCI WE**  
**EC DEKLARATION OF CONFORMITY**  
**EU KONFORMITÄTBESCHEINIGUNG**

**Producent:** TARET Sp. z o.o. Spółka Komandytowa  
*Manufacturer/Hersteller:*

**Adres:** 05-822 Milanówek, ul. Kościuszki 112, Polska  
*Adress / Adresse:*

**Produkt:** Marka: **PROTON**  
*Product / Produkt:* **Model: T-40, T-40W and T-70**

Niniejszym deklarujemy z całą odpowiedzialnością, że wymienione produkty spełniają  
**Wymagania bezpieczeństwa Dyrektyw Europejskich.**  
*We hereby declare in sole responsibility that the designated product fulfills the safety  
Requirements of the European Directives*  
*Hiermit erklären wir mit voller Verantwortung, dass die vorgenannten Produkte die  
Sicherheitsbedingungen der Europäischen Richtlinien erfüllen*

**Dyrektywy:** 2006/95/WE **DYREKTYWA NISKONAPIĘCIOWA (LVD)**  
*Directives / Richtlinien:* 89/106/WE **DYREKTYWA WYROBY BUDOWLANE**

**Zastosowane normy:** PN-EN 13842:2007, PN-EN 60335-1:2004, A1:2005+A2:2008+A12:2008+  
*Standards applied:* Ap1:2005+Ap2:2006, PN-EN 60335-2-102:2006  
*Angewandte Normen:*

**Oznaczenie CE zostało nadane w** 2010 r  
*CE marking was made in / CE Zeichen wurde erteilt in :*

**Deklaracja wydana przez** TARET Sp. z o.o. Spółka Komandytowa  
*Declaration issued by:*  
*Konformitätsbescheinigung erstellt von:*

**Miejscowość, data** Milanówek, 01.07.2010  
*Place, date / Ort, Datum*

**Podpis osoby upoważnionej**  
*Signature of authorized person*  
*Unterschrift der ermächtigten Person*