

# *TURBO HP*










## *TURBO-JET modular*





- MANUALE ISTRUZIONI
- OPERATOR'S HANDBOOK
- MANUEL D'UTILISATION
- GEBRAUCHSANWEISUNG
- MANUAL DE INSTRUCCIONES










**CATTANI S.p.A**

## General 50 Hz running data Dental aspirator

| Model  | TURBO-JET 1 modular   | Turbo HP due  | Turbo HP tre  | Turbo HP tre  | Turbo HP tre 2V   | Turbo HP tre 2V  | Turbo HP quattro  | Turbo HP quattro  | Turbo HP quattro 2V   |
|--|---|---|---|---|---|--|---|---|---|
|  |   | TURBO-JET 2 modular   |   |   |   |  |   |   |   |
| Rated voltage                                    | 230 V ~   | 230 V ~   | 230 V ~   | 400 V 3 ~   | 230 V ~   | 400 V 3 ~  | 230 V ~   | 400 V 3 ~   | 400 V 3 ~   |
| Rated frequency                                  | 50 Hz   | 50 Hz   | 50 Hz   | 50 Hz   | 50 Hz   | 50 Hz  | 50 Hz   | 50 Hz   | 50 Hz   |
| Rated current                                    | 4 A   | 7,6 A<br>6,1 A  | 8,3 A   | 6,2/4,75 A  | 11 A  | 10,6/7,3 A   | 12,3 A  | 9,7/6,8 A   | 11,8/8 A  |
| Insulation class                                 | I   | I   | I   | I   | I   | I  | I   | I   | I   |
| Type of appliance                                | B   | B   | B   | B   | B   | B  | B   | B   | B   |
| Use  | S1  | S1  | S1  | S1  | S1  | S1   | S1  | S1  | S1  |
| Protection against ingress of liquids            | ordinary  | ordinary  | ordinary  | ordinary  | ordinary  | ordinary   | ordinary  | ordinary  | ordinary  |
| Degree of protection against electric shock Type | B  | B  | B  | B  | B  | B  | B  | B  | B  |
| Output power                                     | 0,42 kW   | 0,9 kW<br>0,8 kW  | 0,95 kW   | 0,95 kW   | 1,5 kW  | 1,7 kW   | 1,7 kW  | 1,7 kW  | 2,4 kW  |
| Maximum flow                                     | 650 l/min   | 1000 l/min<br>650 l/min   | 1400 l/min  | 1400 l/min  | 1500 l/min  | 1500 l/min   | 1900 l/min  | 1900 l/min  | 2150 l/min  |
| Max. head for continuous service                 | 1300 mm H <sub>2</sub> O  | 2600 mm H <sub>2</sub> O  | 1700 mm H <sub>2</sub> O  | 1700 mm H <sub>2</sub> O  | 2600 mm H <sub>2</sub> O  | 2600 mm H <sub>2</sub> O   | 2000 mm H <sub>2</sub> O  | 2000 mm H <sub>2</sub> O  | 2350 mm H <sub>2</sub> O  |
| Sound pressure w/o box**                         | 61 dB (A)   | 64,8 dB (A)<br>65 dB (A)  | 69,4 dB (A)   | 69,4 dB (A)   | 69,6 dB (A)   | 69,6 dB (A)  | 69,8 dB (A)   | 69,8 dB (A)   | 72,6 dB (A)   |
| Sound pressure with box**                        | 58 dB (A)   | 62,8 dB (A)<br>61 dB (A)  | 62,7 dB (A)   | 62,7 dB (A)   | 62,4 dB (A)   | 62,4 dB (A)  | 65,5 dB (A)   | 65,5 dB (A)   | 65,5 dB (A)   |
| Sound pressure with sound-proof box**            | 52 dB (A)   | -<br>56 dB (A)  | 61,6 dB (A)   | 61,6 dB (A)   | 61,3 dB (A)   | 61,3 dB (A)  | 62 dB (A)   | 62 dB (A)   | 61,6 dB (A)   |

|   |   |              |
|---|---|--------------|
|  | Alternating current                               | IEC 417-5032 |
|  | Earthing  | IEC 417-5019 |
|  | Open (disconnected from the main electric supply) | IEC 417-5008 |
|  | Closed (connected to the main electric supply)    | IEC 417-5007 |

## General 60 Hz running data Dental aspirator

| Model  | TURBO-JET 1 modular   | Turbo HP due  | Turbo HP tre  | Turbo HP tre  | Turbo HP tre 2V  | Turbo HP quattro  | Turbo HP quattro 2V   |
|--|---|---|---|---|--|---|---|
|  |   | TURBO-JET 2 modular   |   |   |  |   |   |
| Rated voltage                                    | 230 V ~   | 230 V ~   | 230 V ~   | 220/380 V 3 ~   | 220/380 V 3 ~  | 220/380 V 3 ~   | 265/460 V 3 ~   |
| Rated frequency                                  | 60 Hz   | 60 Hz   | 60 Hz   | 60 Hz   | 60 Hz  | 60 Hz   | 60 Hz   |
| Rated current                                    | 4,6 A   | 7,1 A   | 11,7 A  | 7,4/4,3 A   | 9,9/5,7 A  | 10,4/6 A  | 11,2/6,5 A  |
| Insulation class                                 | I   | I   | I   | I   | I  | I   | I   |
| Type of appliance                                | B   | B   | B   | B   | B  | B   | B   |
| Use  | S1  | S1  | S1  | S1  | S1   | S1  | S1  |
| Protection against ingress of liquids            | ordinary  | ordinary  | ordinary  | ordinary  | ordinary   | ordinary  | ordinary  |
| Degree of protection against electric shock Type | B  | B  | B  | B  | B  | B  | B  |
| Output power                                     | 0,52 kW   | 0,92 kW   | 1,35 kW   | 1,35 kW   | 1,75 kW  | 2 kW  | 2,85 kW   |
| Maximum flow                                     | 750 l/min   | 900 l/min   | 1600 l/min  | 1600 l/min  | 1600 l/min   | 2350 l/min  | 2600 l/min  |
| Max. head for continuous service                 | 1500 mm H <sub>2</sub> O  | 2600 mm H <sub>2</sub> O  | 2000 mm H <sub>2</sub> O  | 2000 mm H <sub>2</sub> O  | 2800 mm H <sub>2</sub> O   | 2100 mm H <sub>2</sub> O  | 2600 mm H <sub>2</sub> O  |
| Sound pressure w/o box**                         | 66,7 dB (A)   | 70 dB (A)   | 69 dB (A)   | 69,2 dB (A)   | 72,4 dB (A)  | 68,5 dB (A)   | 74,1 dB (A)   |
| Sound pressure with box**                        | 60,7 dB (A)   | 64,6 dB (A)   | 66,2 dB (A)   | 65,6 dB (A)   | 71,6 dB (A)  | 70 dB (A)   | 72,5 dB (A)   |
| Sound pressure with sound-proof box**            | 57,3 dB (A)   | 62,6 dB (A)   | 62 dB (A)   | 59 dB (A)   | 69,6 dB (A)  | 69 dB (A)   | 70,8 dB (A)   |

**This appliance cannot work in the presence of an anaesthetic mixture flammable with air, oxygen or nitrous oxide.**

**\*\* Sound pressure level tested according to the standard ISO 3746-1979 (E).  
Parameters: r or d=1 - Background noise: 34 dB (A) - Instrument: Brüel & Kjær Type 2232.**

**Manufactured by CATTANI S.P.A. - PARMA - ITALY**

## Introduction

This booklet is intended to illustrate the installation and starting of the appliance. It also informs of possible dangers and about the precautions to be taken for accident prevention.

This manual should be always available for consultation during unpacking, use, installation and starting of Turbo HP or Turbo-Jet modular.

Our **updated** manuals are available on the web site [www.cattani.it](http://www.cattani.it). We recommend their consultation especially for updates about **safety**.

## Signals and warnings

- **Electrical shock risk: also 230 V ~ can be lethal.**



- **Biological danger, risk of infections from epidemic diseases.**



- **General danger sign.**



- **Personal protections for heavy works.**



- **Personal protections against biological danger.**



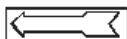
- **High temperature.**



- **Keep the room free from flammable, corrosive or explosive material.**



- **Compulsory direction of flow or of rotation.**



**Warning signs cannot always fully express danger warnings, therefore it is necessary that the user reads the warnings and keeps them in due consideration.**

**Failure to observe a danger sign or warning may harm operators or patients.**

**Safety devices must not be removed. Appliances or their functioning must never be modified.**

Despite all our efforts, it is still possible that danger warnings are not exhaustive: we apologise to the users and kindly request them to care for all danger sources that might have passed unnoticed and to inform us accordingly.

## Installation and starting

### Recommended precautions

Before unpacking the appliance, check the warning shockwatch on the carton. In case of it being red or the carton being damaged, accept the material reserving the right to examine the machine.

Unpack the appliance following the instructions shown on the package. The carton is recyclable. Dispose of it in compliance with regulations in force.

The machine installation must be carried out by a specialist equipped with the necessary tools. Install the appliance in a clean location, far from heat sources, humidity and dust. The aspirator can be installed outdoors (on a balcony, in veranda or gardens), provided that it is sheltered from rain, splashing, humidity, frost and direct sunshine.

In the plant room temperature can range from a minimum of + 5 °C to + 35 °C max.

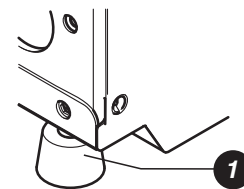
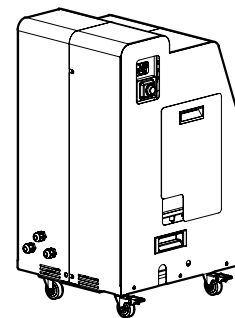
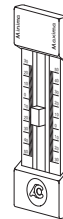
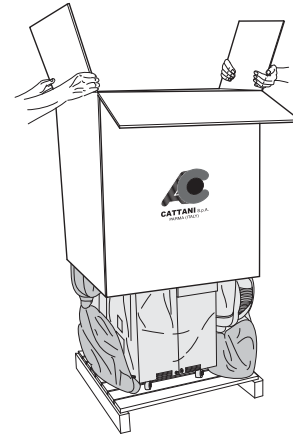
Machines fitted with box, for indoors our outdoors installation, can be supplied with antifreeze device.

In case the plant room must be ventilated or air-conditioned, we suggest to contact a thermo-technician for a personalized project. The plant room must be closed to patients and extra-neous people. If such a room is not available, machines must be protected by a suitable cover, which must not be easy to remove. Use protections and danger warning boards to prevent accidental risk from electrical shocks or the possibility (unlikely but not excludible) of fire, explosion and contaminating air or liquid leakage. Use indoors and outdoors boxes designed and produced by the manufacturer of the machines only.

Keep the plant room free from flammable material. Make sure that there is no possibility for gas leakages.

Do not connect damaged appliances to the mains. Do not use extension leads, multiple plugs or sockets. Before connecting the machine to the mains, ascertain that the feeding line is complying with the regulations C.E.I. 64-8 and that a thermal switch and a residual current operated circuit-breaker (class A or B) **(16A)** according to the regulations EN 61008-1 are present.

Light coloured, wooden, linoleum, rubber or marble floors can change colour or get marked if they are kept in contact with rubber vibration-proof devices **(1)**. Therefore, it is necessary to use a rubber sheet or some other suitable material to isolate vibration-proof devices from the floor.



ENGLISH

## Installation

Before connecting the aspirator to the piping of the centralized system, ascertain that aspiration piping is clean as heavy debris could damage the appliances.

Connect the PVC light grey aspiration tube (2b) (supplied with the machine) to the 50 mm Ø tube-holder (2) ("aspirated fluid inlet"). The other end of the same tube must be connected to the aspiration piping (3) coming from the surgeries (page 18).

The black heat resistant exhaust air pipe (4b), fitted with a metal spiral, must be connected to the 50 mm Ø tube-holder (4) ("exhaust air outlet"). Connect the other end of the pipe to the antibacterial filter (5), passing preferably through a silencer (5a) supplied with the aspirator. The hot air coming from the antibacterial filter must be conveyed outside.

Connect the 18 mm Ø tube-holder (6) to the liquid drain pipe. In the version fitted with Hydrocyclone the aspirator is draining liquids by gravity, therefore these can never be drained towards the top.

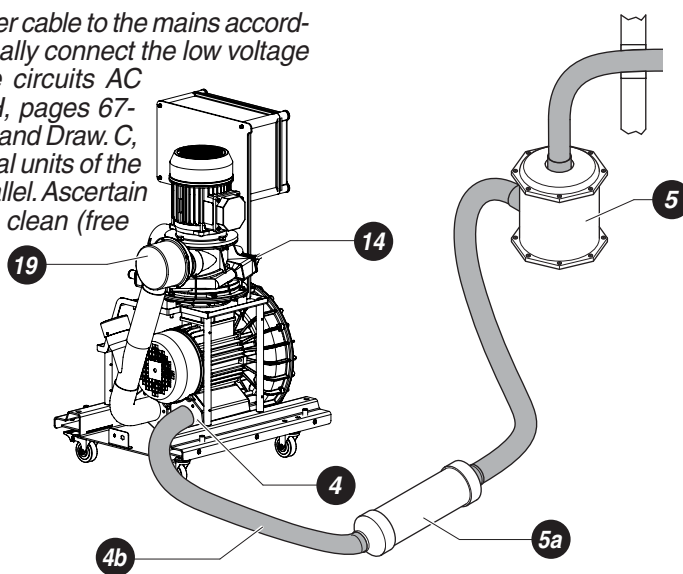
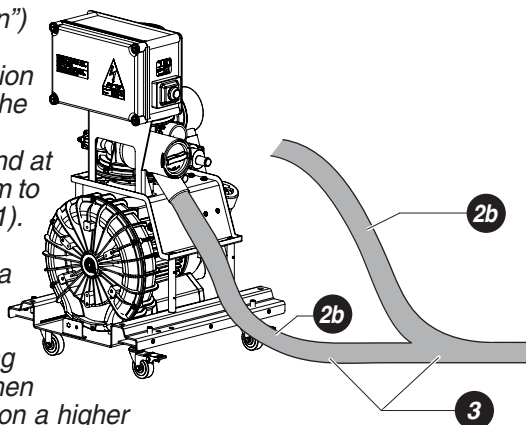
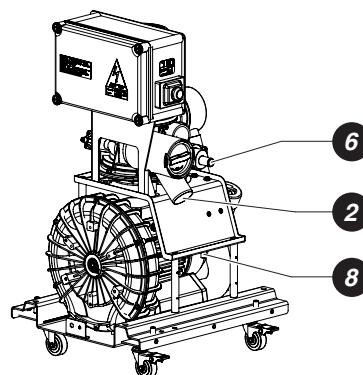
The 10 mm Ø tube-holder (8) ("emergency drain") must be connected to the liquid drain pipe.

The piping connecting the machine to the aspiration and draining system should be flexible to dampen the small vibrations produced by the aspirator.

The aspiration piping should be run in the floor and at a point near the aspirator it should rise about 30 cm to reach the tube-holder (2) (Draw. A and B, page 61).

If Turbo HP or Turbo-Jet modular is installed on a lower floor than the dental units, the aspiration piping must not enter the centrifugal separator perpendicularly. Rather, place a few metres of piping horizontally on the same level of the machine and then install it at the centrifugal separator inlet which is on a higher level (use a flexible pipe) (Draw. B, page 61). The aspirated fluid is reaspirated by the machine.

After the installation, connect the power cable to the mains according to the regulation EN 61008-1. Finally connect the low voltage users line: the clamps 1-2-3 of the circuits AC 48B/AC58B and AC58 (Draw. F-G-H, pages 67-68-69) to the users line (12) (page 19 and Draw. C, page 62) which is feeding all the dental units of the same system with connections in parallel. Ascertain that the contact on the dental unit is clean (free contact without voltage).



**Installation in parallel**

It is advisable to install in parallel only machines with the same flow and head values.

With the installation of 2 or 3 aspirators in parallel (Draw. 1) the total flow is doubled or tripled, provided that the diameter of the main piping is increased of 10 mm for each additional aspirator unit. In the same way the diameter of the exhaust air pipe must be increased.

The Turbo HP models are always supplied complete with silencer with one-way valve (det. 19, page 18), whereas for the Turbo-Jet 2 models the silencer with one-way valve is supplied apart.

For the groups of Turbo-Jet modular and Turbo HP installed in parallel it is necessary to install a starter in the plant room and a two-ways PB unit on each dental unit.

After connecting the aspirators in parallel to the same main piping, connect in parallel the users wires (AC 48B scheme, Draw. F, page 67) coming from the different dental units.

With multiple aspirators in parallel it can occur that one unit stops and that the operators do not notice it. In order to bring this to the clinic staff's attention, 2 connections in each control panel (clean contact) allow a remote alarm signal to be connected in a room under frequent control.

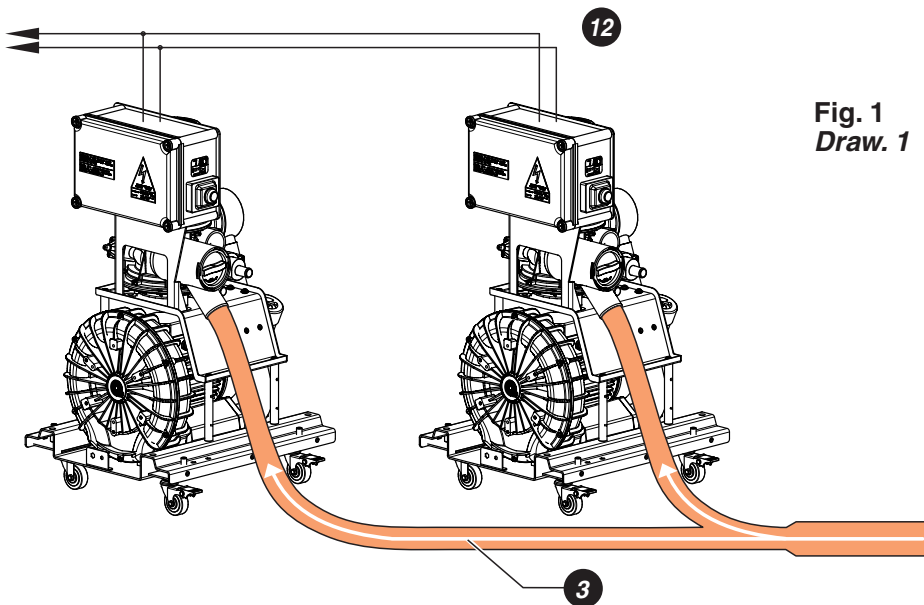


Fig. 1  
Draw. 1

## Routine maintenance

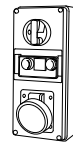
Routine maintenance must be entrusted to specially instructed surgery staff.

- We recommend to pay special attention to all danger signals and to use goggles, gloves and disposable overalls for personal protection.



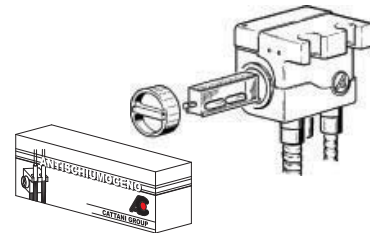
### Every evening

- at the end of every working day aspirate a solution of Puli-Jet plus disinfectant using Pulse Cleaner;
- disconnect the machine from the mains before any intervention.



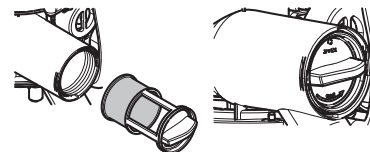
### Daily

- place the Antifoam Tablets on the dental unit filters.



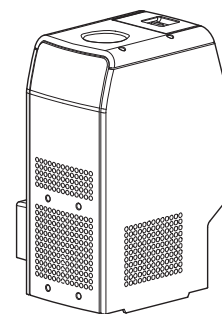
### Periodically

- keep the aspirator filter clean.



### Occasionally

- make sure that the aspirator ventilation is not obstructed;
- keep the plant room free from anything not related to the machines, especially from flammable material. Make sure that there is no possibility for the formation of corrosive, flammable and explosive mixtures.



BOX FOR TURBO HP due



## Extraordinary maintenance

Extraordinary maintenance must be entrusted to a trained technician in possession of original spare parts:

- pay special attention to danger signals. Use goggles, gloves and disposable overalls for personal protection;
- check that routine maintenance has been duly carried out and make sure that Magnolia products are used;
- before any intervention carry out a series of washes with Puli-Jet plus disinfectant, then wait 60 minutes for a complete disinfectant action. For more safety, it is advisable to disinfect the evening before the intervention;
- every 6/9 months check the condensers efficiency.



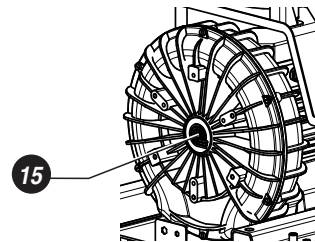
- Recommended every 12 months:

- check the aspirator noise level according to the regulation 3047 (E) (see the "General running data" at pages 14-15);
- remove dust from the circuit AC 80 inside electronic components using a blast of dry air not exceeding 2 bar pressure. By means of a 6 bar blast of air clean also the small holes on the frontal cover of the aspirating unit (15);
- check the conditions of plastic hoses, in particular the hoses under pressure connecting the centrifugal separator (11) and the Hydrocyclone ISO. We suggest to replace these hoses every 12-18 months.



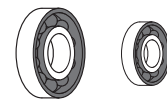
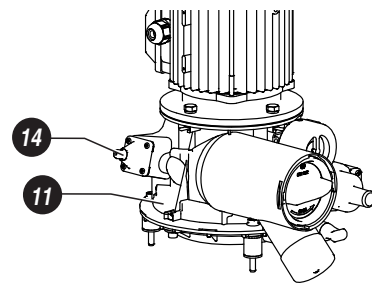
- Recommended every 18-24 months:

- check the working conditions of the centrifugal separator (11) and re-circulation valve (14).



- Recommended every 10.000 working hours:

- every time a component containing a rubber part ("O" ring, gasket or seal) is disassembled, replace the rubber part;
- replace the motors bearings;
- where routine maintenance is not carried out properly or unsuitable products are used, train the staff and inform the person in charge.



## **Important notices**

- Appliances are guaranteed for one year from the date of sale, provided that the warranty slip is returned to the manufacturer with date of sale, retailer's and customer's name.
- Warranty and manufacturer's liability cease in case appliances are treated with products which are unsuitable or different from those recommended by the manufacturer and also in case appliances are improperly used or tampered with operations of any kind carried out by people who are not authorized by the manufacturer.
- The manufacturer, concessionaires, agents and authorized technicians are at customers' disposal for advice and assistance and to supply literature, spare parts and anything useful.
- The manufacturer reserves the right to modify the products for improvements, for technical, normative and functional reasons or for problems due to the availability of products or semi-finished products, without prior notice.
- Our **updated** manuals are available on the web site [www.cattani.it](http://www.cattani.it). We recommend they are consulted especially for updates about **safety**.

## **Transport and storage**

- Packed appliances can be transported and stored at a temperature ranging from - 10 °C to + 60 °C.
- Packages must be kept away from water and splashing and cannot tolerate humidity >70%.
- Packages with the same weight can be stored in piles of three only.

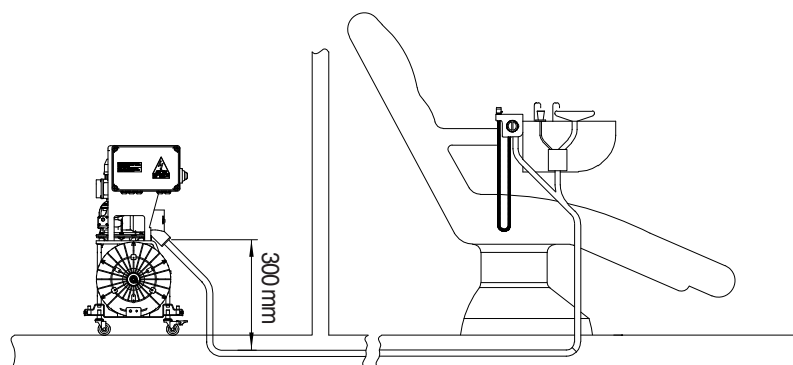
## **Transport of second-hand appliances**

- Before packing, cleanse and disinfect with Puli-Jet plus (refer to the paragraphs "Routine maintenance" and "Extraordinary maintenance").
- Close with polyethylene plugs all machine inlets and outlets.
- Place the machine into a polyethylene bag, seal and pack it in 3-layer corrugated board.

## SCHEMA DI MONTAGGIO TURBO HP INSTALLATION LAYOUT

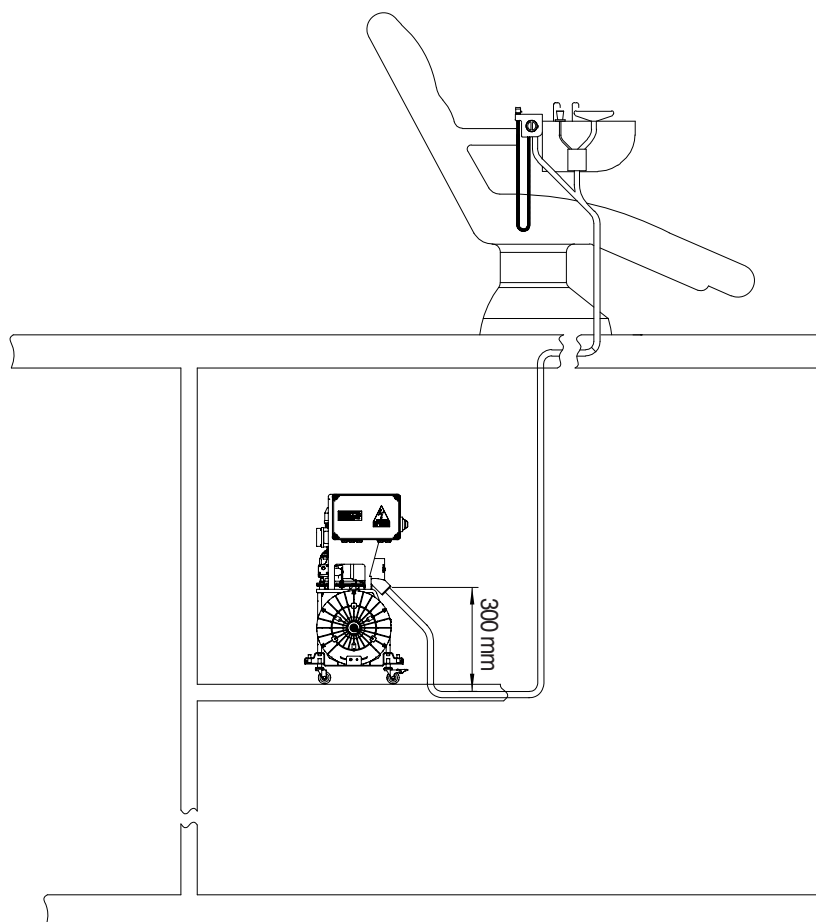
MONTAGGIO AL PIANO  
INSTALLATION ON THE SAME FLOOR OF THE DENTAL UNITS

Fig. A  
Draw. A

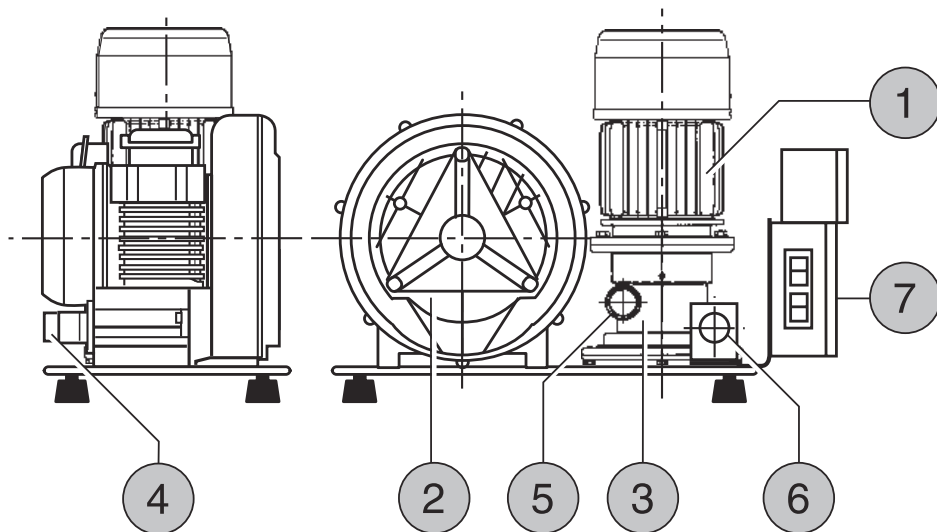


MONTAGGIO SOTTOSTANTE  
INSTALLATION ON A LOWER FLOOR THAN THE DENTAL UNITS

Fig. B  
Draw. B

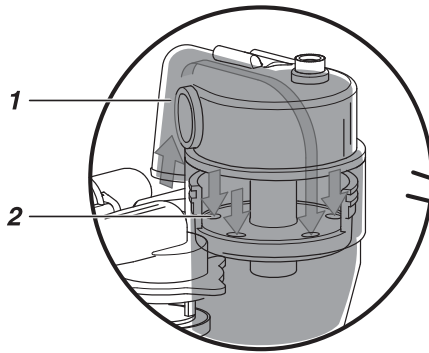


**TURBO-JET 1-2 modular SCARENATO**  
**TURBO-JET 1-2 modular WITHOUT BOX**



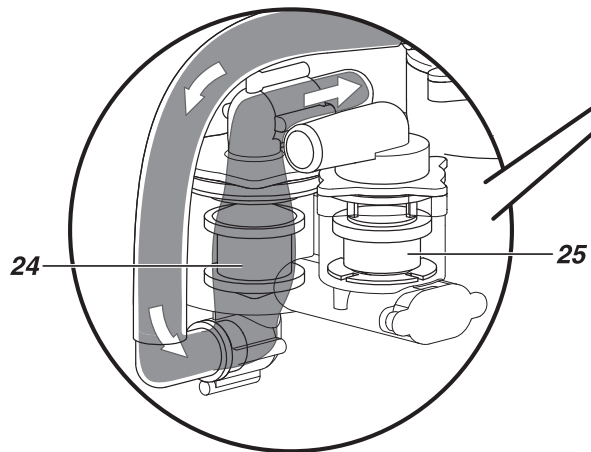
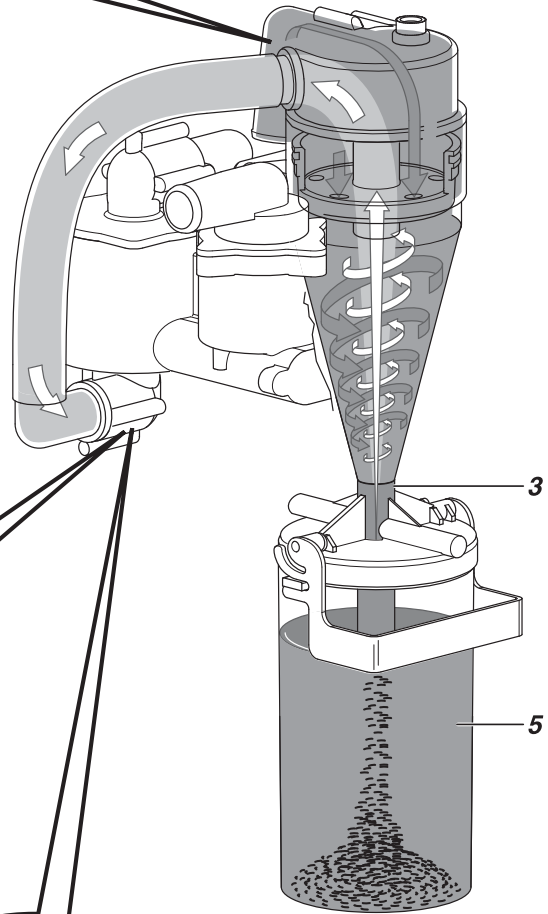
- 1 = MOTORE / MOTOR
- 2 = GIRANTE / TURBINE
- 3 = SEPARATORE CENTRIFUGO / CENTRIFUGAL SEPARATOR
- 4 = USCITA ARIA ESPULSA / EXHAUSTED AIR OUTLET
- 5 = ENTRATA SECRETI / DEBRIS INLET
- 6 = USCITA SECRETI / DEBRIS OUTLET
- 7 = CENTRALINO ELETTRICO / CONTROL PANEL

**Fig. D**  
**Draw. D**

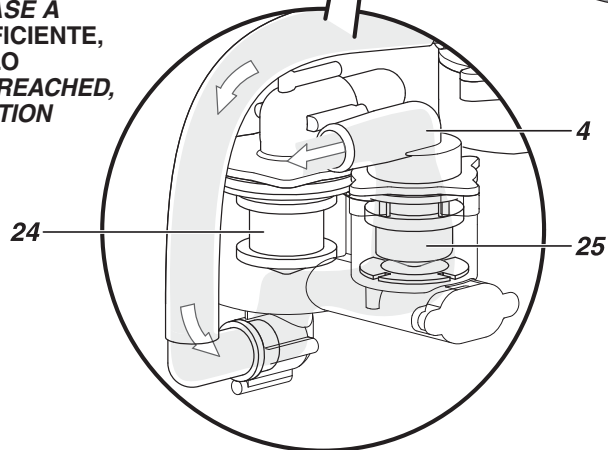


**INGRESSO ACQUA+AMALGAMA  
WATER+AMALGAM INLET**

- 1 = INGRESSO / INLET
- 2 = FORI DI DIFFUSIONE / EVENLY SPACED HOLES
- 3 = ESTREMITA' DEL CONO / BOTTOM OF THE CONE
- 4 = USCITA LIQUIDO / LIQUIDS OUTLET
- 5 = CONTENITORE AMALGAMA / AMALGAM CONTAINER
- 24 = VALVOLA RICIRCOLO / RE-CIRCULATION VALVE
- 25 = VALVOLA DRENAGGIO / DRAINING VALVE



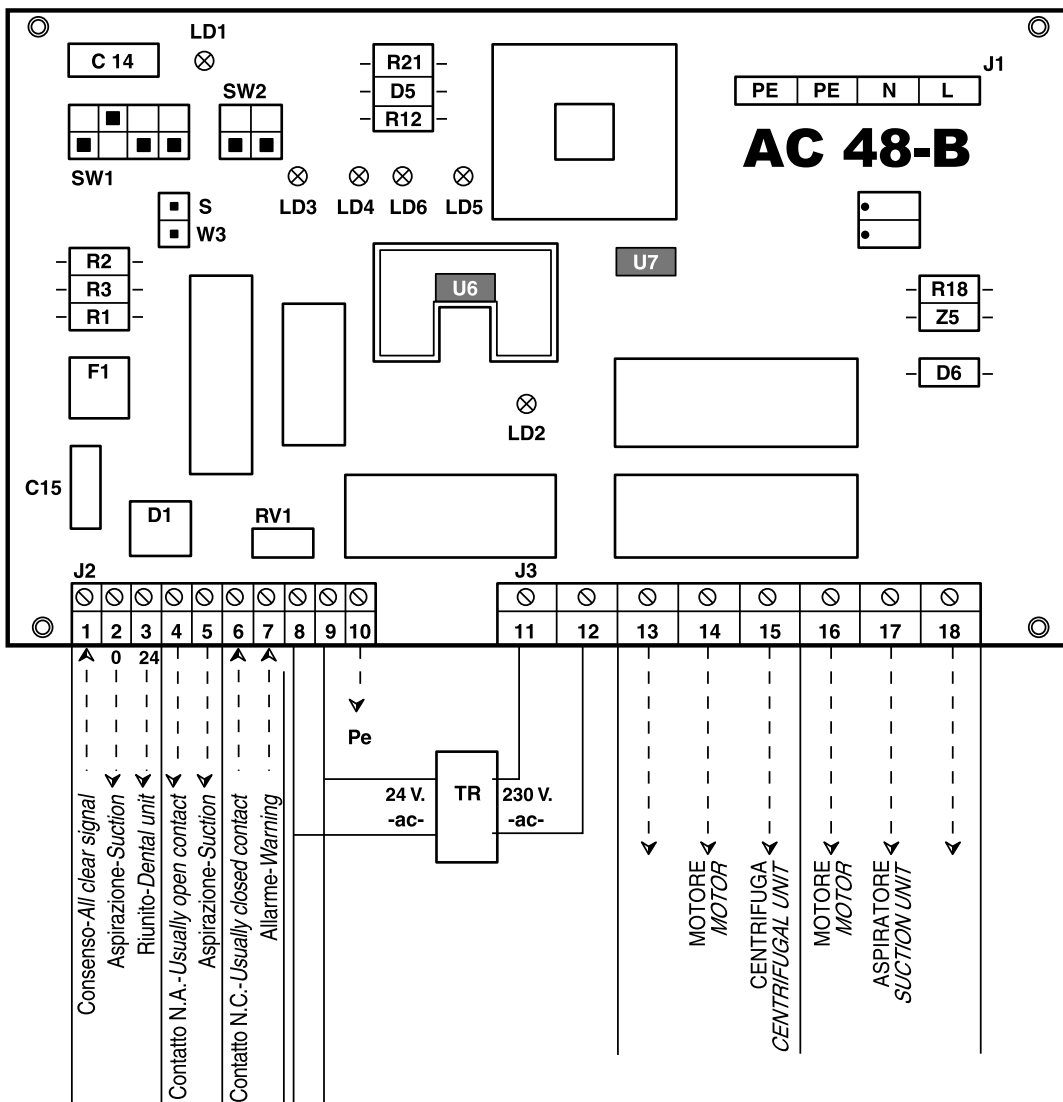
**FASE A / PHASE A  
PORTATA INSUFFICIENTE,  
RICIRCOLO  
FIXED FLOW NOT REACHED,  
RE-CIRCULATION**



**FASE B / PHASE B  
PORTATA ADEGUATA, SCARICO  
SUITABLE FLOW REACHED, DRAINING**

**Fig. E  
Draw. E**

**SCHEMA ELETTRICO AC 48-B Turbo-Jet monofase**  
**ELECTRIC DIAGRAM of AC 48-B for Turbo-Jet single-phase**



| DESCRIZIONE FUNZIONI LED DI SEGNALEZIONE<br>DECEIPTION OF THE LED SIGNALS FUNCTIONS |  |
|---|--|
| LD1   | Presenza linea 24 V. AC<br>24 V.AC feeding line ON                               |
| LD2   | Ingresso contatto tavoletta<br>Tip support contact inlet                         |
| LD3   | Lampeggio veloce funzionamento regolare<br>Quick blinking = normal running       |
|   | Lampeggio lento blocco basso assorbimento<br>Slow blinking = low absorption stop |
|   | Segnalazione fissa blocco sovrassorbimento<br>Steady light = overabsorption stop |
| LD4   | Relè consenso attivato<br>All-clear signal relay ON                              |
| LD5   | Relè motore centrifuga attivato<br>Centrifugal motor relay ON                    |
| LD6   | Relè motore aspiratore attivato<br>Suction motor relay ON                        |

| SETTAGGIO TEMPORIZZATORE DIP SWITCH SW2<br>DIP SWITCH SW2 TIMER SETTING |                                     |     |          |
|---|-------------------------------------|-----|----------|
| 1   | <input checked="" type="checkbox"/> | OFF | 10 Sec.  |
| 2   | <input checked="" type="checkbox"/> | OFF |          |
| 1   | <input checked="" type="checkbox"/> | OFF | 30 Sec.  |
| 2   | <input checked="" type="checkbox"/> | ON  |          |
| 1   | <input checked="" type="checkbox"/> | ON  | 60 Sec.  |
| 2   | <input checked="" type="checkbox"/> | OFF |          |
| 1   | <input checked="" type="checkbox"/> | ON  | 120 Sec. |
| 2   | <input checked="" type="checkbox"/> | ON  |          |

**Fig. F**  
**Draw. F**



# SCHEMA ELETTRICO AC 58 PER GRUPPI ASPIRANTI TURBO HP E TURBO-JET modular TRIFASE ELECTRIC DIAGRAM OF AC 58 FOR TURBO HP AND TURBO-JET modular three-phase

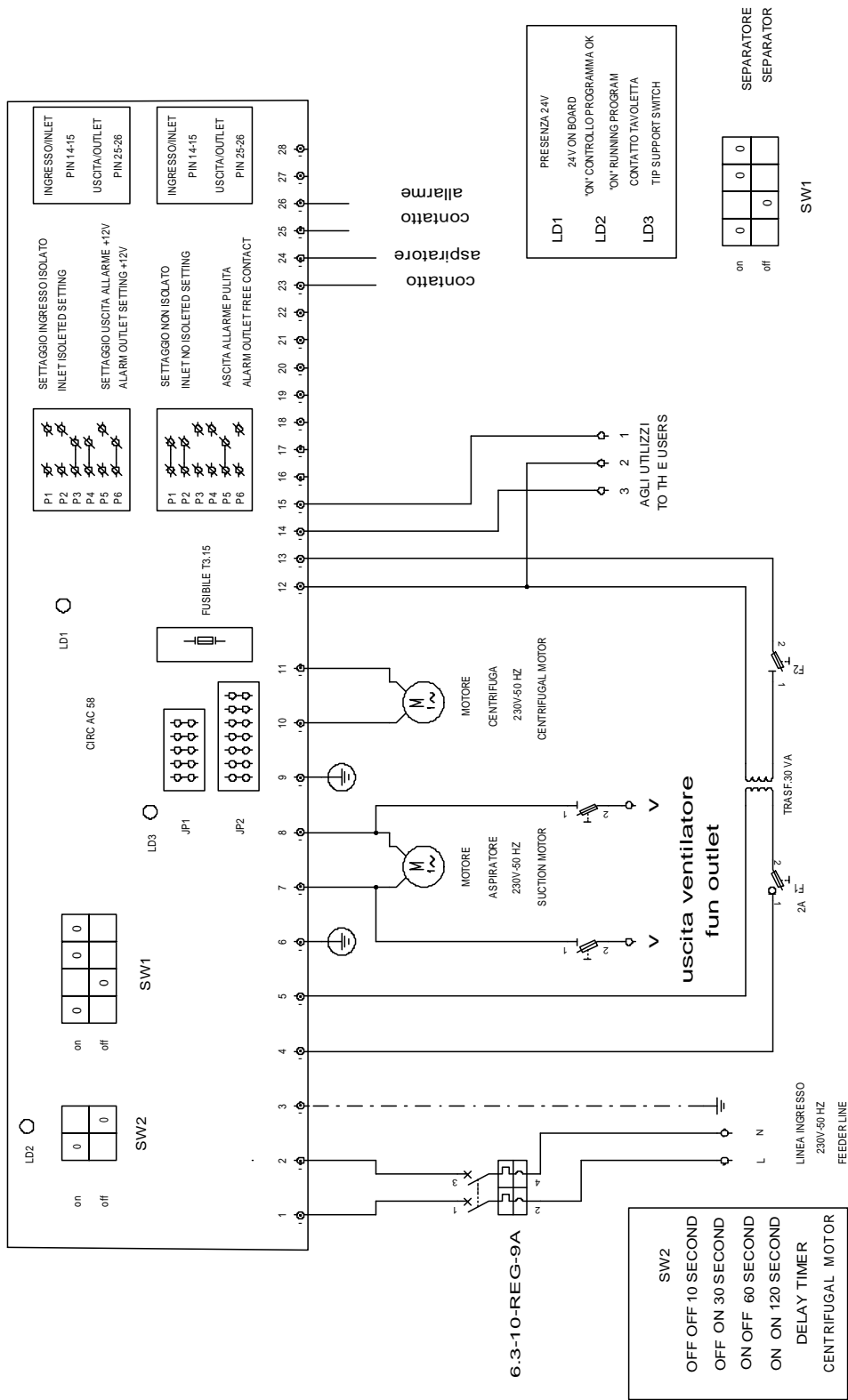


Fig. H  
Draw. H



**IMPIANTI CENTRALIZZATI CON GRUPPI ASPIRANTI TURBO-JET MODULAR**  
**CENTRALIZED SYSTEMS WITH TURBO-JET MODULAR ASPIRATION GROUPS**

| STUDI IN FUNZIONE<br>CONTEMPORANEA<br>CONSIGLIATI<br><i>RECOMMENDED<br/>NUMBER OF DENTAL<br/>UNITS WORKING<br/>SIMULTANEOUSLY</i> | GRUPPO ASPIRANTE<br><i>ASPIRATION<br/>GROUPS</i> | CANALIZZAZIONE<br>PRINCIPALE<br><i>MAIN PIPE<br/>(A)</i> |  | DERIVAZIONI<br><i>BRANCHES<br/>(B)</i>  |  |
|---|--|--|--|---|--|
|   |  | Sezione<br>mm<br><i>Diameter<br/>mm</i>                  | Distanza<br>max. m.<br><i>Max.<br/>distance m.</i> | Sezione<br>mm<br><i>Diameter<br/>mm</i> | Distanza<br>max. m.<br><i>Max.<br/>distance m.</i> |
| 1   | Turbo-Jet 1                                      | 30   | 2  | 30                                      | /  |
| 2*  | Turbo HP due<br>Turbo-Jet 2                      | 30   | 6  | 30                                      | 2  |
| 3   | Turbo HP tre                                     | 40   | 10   | 30                                      | 3  |
| 4   | Turbo HP quattro                                 | 50   | 12   | 30                                      | 3  |
| 4*  | 2 Turbo HP due<br>2 Turbo-Jet 2                  | 40   | 10   | 30                                      | 2  |
| 6   | 2 Turbo HP tre                                   | 50   | 14   | 30                                      | 3  |
| 8   | 2 Turbo HP quattro                               | 60   | 16   | 30                                      | 3  |
| 3   | Turbo HP tre 2V                                  | 40   | 20   | 30                                      | 4  |
| 4   | Turbo HP quattro 2V                              | 50   | 25   | 30                                      | 4  |

\* Si consiglia l'uso di intercettatori di spruzzo n. 22

\* *We recommend to use spray interceptors no. 22*

**Fig. I**  
**Draw. I**