4.2 Schematic representation

Figure 2: overall view

pos.	Designation	Function
1	bell with window	Closing the inductor housing.
2	inductor housing (crucible chamber)	In the inductor housing are: • Induction coil • crucible • insulation
3	vacuum chamber	With water cooling inlet and outlet.
4	flask lift	Enables lifting of flask.
5	lift for vacuum chamber	Enables lifting of vacuum chamber.
6	front panel	Control the process of the system.
7	Switches for valves	Control the valves and parts of vacuum- and protective gas supply.
8	Mains switch with emergency stop function	Switch on and off the vacuum pressure casting machine. Immediate interrupt of power in emergency.

4.3 Backside connections

Figure 3: backside of the vacuum pressure casting machine

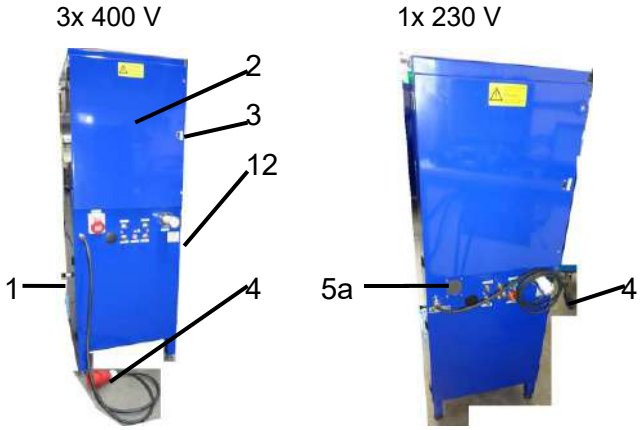
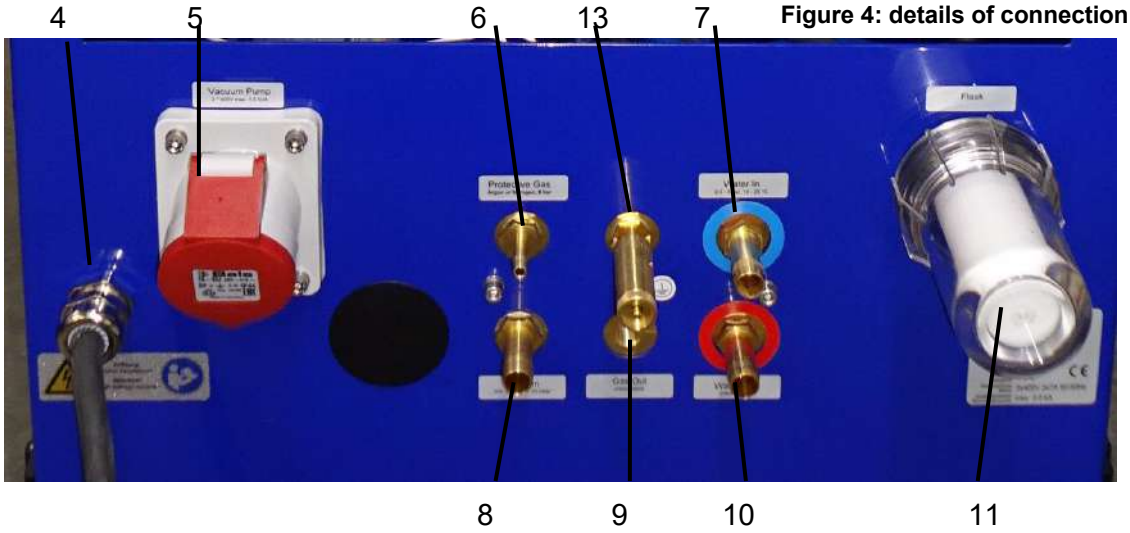


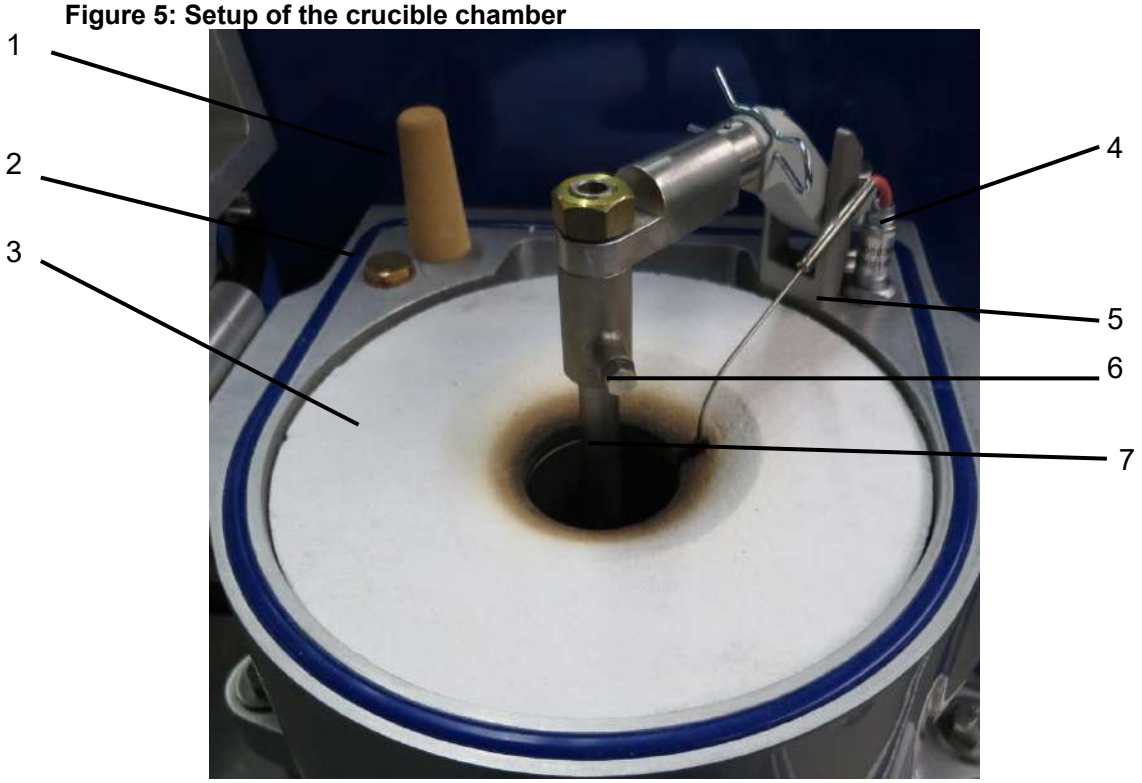
Figure 4: details of connection



position	designation	Function
1	Side door	Storage area for manual.
2	Back door	Service access (only for experts to open with Allen key)
3	Serial Interface/RS232	Connection for PC over Indutherm-RS232-cable (socket actual attached to internal modem).
4	Power supply	Power supply of the vacuum pressure casting machine.
5	Vacuum pump	Socket for plug from vacuum pump. No socket at 1x 230 V machine (5a).
6	Protective gas	Protective gas supply input.
7	Water Input	Cooling water supply input.
8	Vacuum	For the hose from the external vacuum pump.
9	Gas out	Depressurization.
10	Water Output	Cooling water outlet.
11	Filter flask	Filter for vacuum in the flask chamber.
12	Identification plate	Important information about machine.
13	safety valve	Safety pressure relief valve for the vacuumchamber.

4.4 Setup of the crucible chamber

Figure 5: Setup of the crucible chamber

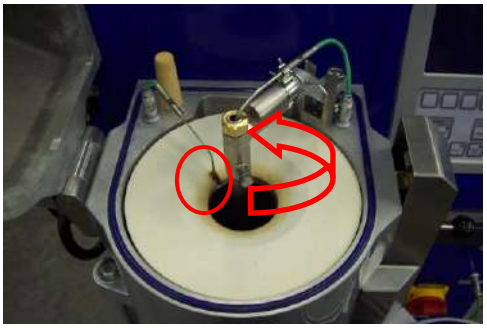


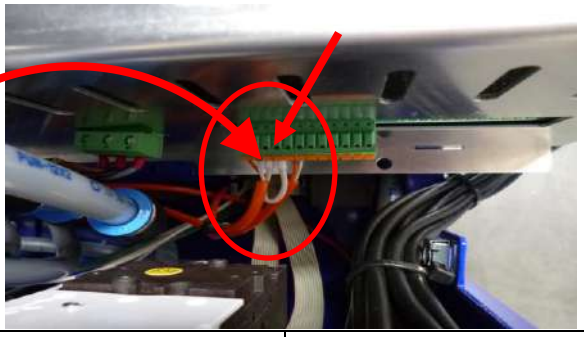
position	designation	Function
1	metal filter C038	Brass filter for cleaning atmosphere in inductor chamber.
2	thermocouple socket (option)	Thermocouple connector for wall measurement if you work with centre measurement additional (Option).
3	filling cone	Top insulation and help for filling crucible.
4	thermocouple wall	Thermocouple for the crucible wall measurement.
5	Guiding	Guiding for the sealing rod holder and secures it against moving sideways.
6	Lockable screw	Place for put on the socket wrench, if you twist in the sealing rod in the crucible hole for good closing.
7	sealing rod	For closing the crucible bottom hole.

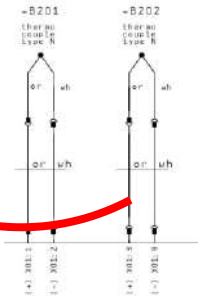
4.5 Special options

4.5.1 Centre- and wall measurement (Dual measurement)

Figure 6: option – dual measurement (on the basis of an VC480V/650V)

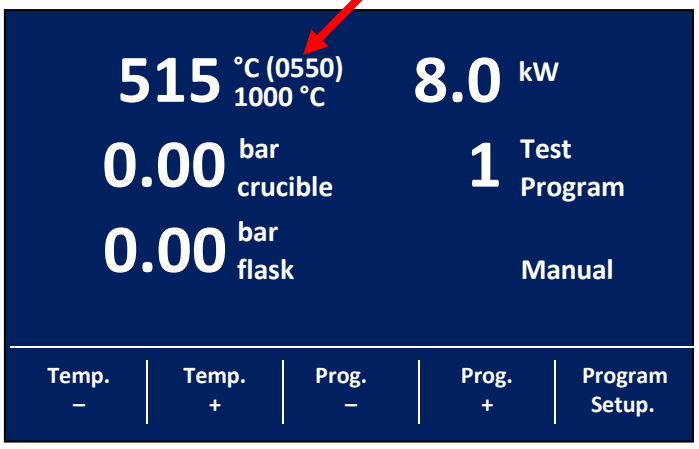






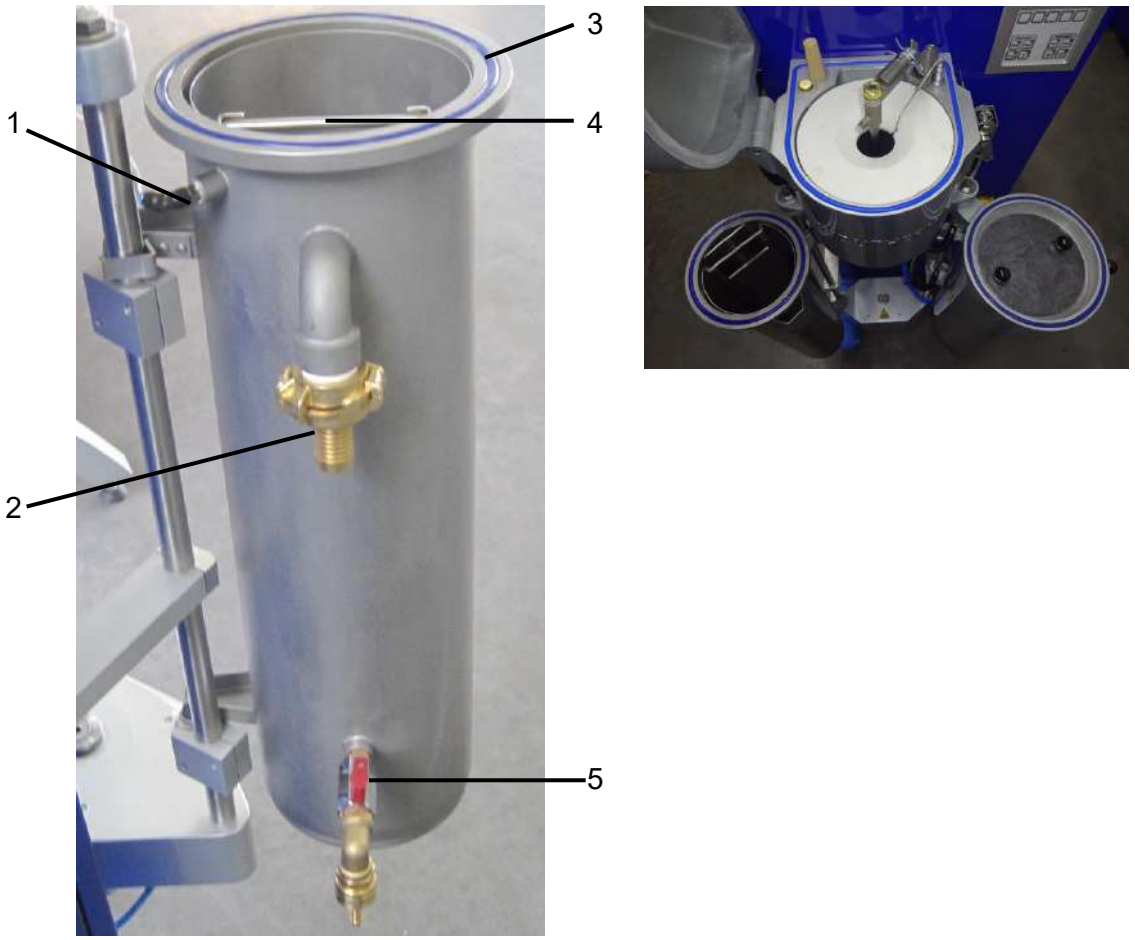
With a software level higher than 8000.0082, the slave temperature is displayed in brackets from a value above 100 °C(212°F).

Pa-ra-me-ter	Remark	VC480V
		8.0kW
		Gen.F 8k Hz 3x 400V 3x 230V
		15 ltr
		TC Dual Crucible 68 (Option)
000	Temp. sensor 0 type	1/2/4
001	Temp. sensor 0 correction	100
003	Temp. sensor 1 type	9
004	Temp. sensor 1 correction	100
006	TS Cru.WallDeltaMaxT K	50
007	TS Cru. WallDynamic	300
010	TS0 Cru.BasePower	25
011	TS0 Cru.BasePowerCorrection	0
012	TS0 Crucible P	8
013	TS0 Crucible I	150
014	TS0 Crucible D	100
015	TS0 Cru. I Suppress	100



4.5.2 Granulation tank

Figure 7: granulation tank



position	designation	function
1	protective gas entry	Here you can supply additional protective gas.
2	water outlet	Usual water outlet with diameter 19 mm.
3	O-Ring	For sealing of the barrel without a gap.
4	Inside barrel with lever	Removable inside barrel with fast emptying function.
5	fresh water input	Control the fresh water input. Here you connect a hose with an inside diameter of 6 mm for tap water or second cooling system.

Figure 8: example of second cooling system

Second cooling system or fresh water input with Ø 6 mm input, Ø 19 mm outlet.

2-5 % content of Ethanol is recommended if risk analysis about your metal composition don't contradicts.

4.5.3 Flask height with 260 mm (10‘‘) with ‘special-pin’ 71114321

Figure 9: standard 240 mm

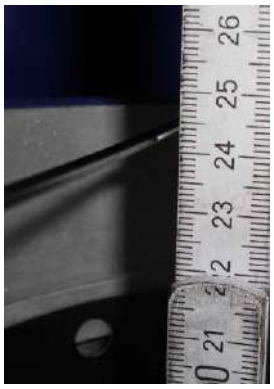


Figure 10: Remove original bolt

Figure 11: Pin-option 71114321

Figure 12: possible height 260 mm

4.5.4 Internal modem

The machine is equipped with a modem on mobile phone base. This can read from the induction generator, which may be for debugging and fine-tuning your machine useful of Indutherm service to your desired machine data. The free use is valid for 10 years with occasional use.

Figure 13: Modem-Set

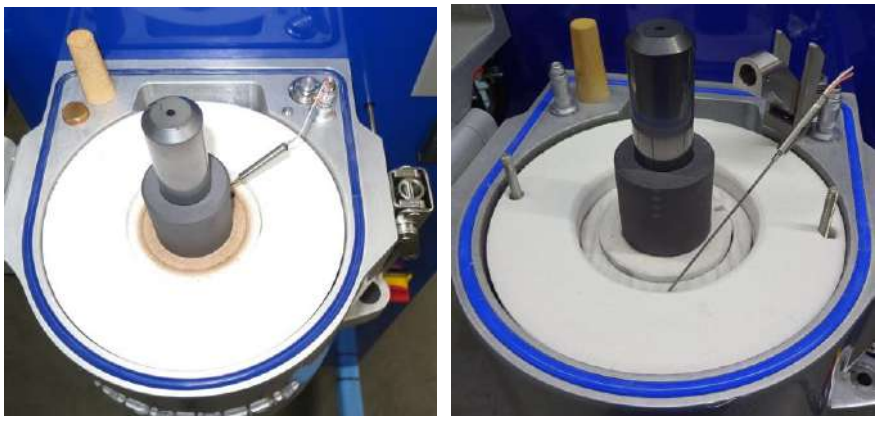
71000320 / 76000129

Figure 14: Built-in modem

4.5.5 Sintering

Before starting check crucible and crucible shield for dirt, residues or possible damage. It is recommended to use a **vacuum cleaner** for the entire inductor housing.

Figure 15: installation example



Program selection:

Machine contains 2 pre-defined programs at place 10 and 18. Program 18 is from from INDUTHERM for system check without heating power.

A suggestion for a general sinter process:

1. Open cooling water and protective gas supply.
2. Switch on sinter machine and vacuum pump, for optimum performance always keep the vacuum pump running for at least 30 min to heat up (The vacuum pump attached to the sinter machine switch on by itself in program with selected washing).
3. Adjust or select the wished program.

Then follow the next pages:

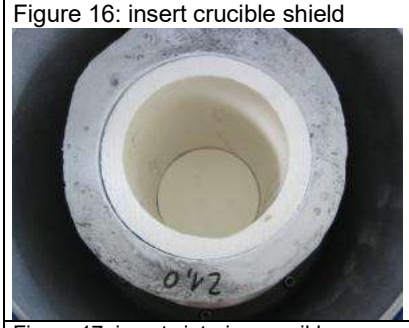
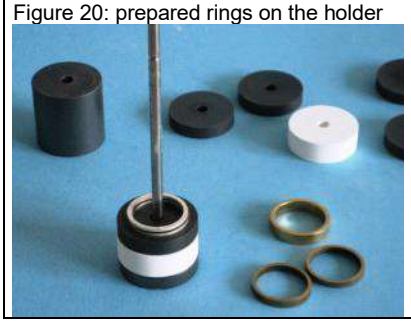
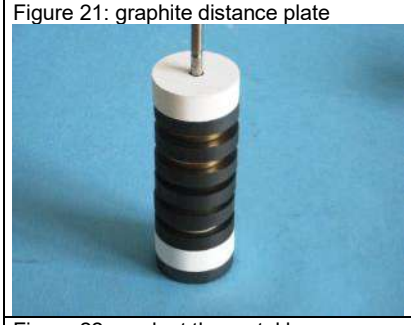
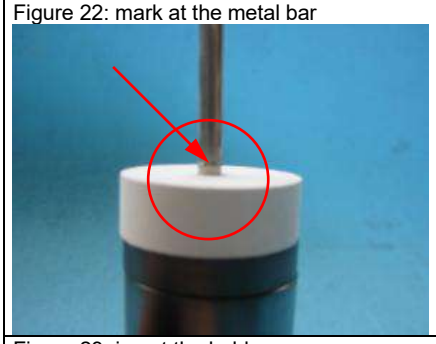
Figure 16: insert crucible shield 	Insert the crucible shield. The bottom insulation disk must be in the centre.
Figure 17: insert sintering crucible 	Insert sintering crucible.
Figure 18: insulation, insert, thermocouple, preheat 	Insert the top insulation disk. Screw in the graphite guide insert.
Figure 19: top crucible insulation 	Add the crucible chamber covering plate. Insert thermocouple with protection tube. Close the lid of the crucible chamber and preheat the crucible. Depending on the alloys to be sintered, it is between 700-850 °C.
Figure 20: prepared rings on the holder 	Screw the small metal bar into the graphite disk with the thread. Put your prepared rings on the holder as shown.

Figure 21: graphite distance plate



Add a graphite distance plate. Add the next ring and a graphite distance plate and so on.

Figure 22: mark at the metal bar



Fill the holder with rings and distance plates until the mark in the metal bar. The last disk should be the small white ceramic disk.

Figure 23: insert the holder

Insert the holder with the rings into the preheated crucible. Use the lifting tool.

Figure 24: lifting gear

Figure 25: add the big graphite stamp

Add the big graphite stamp. It is now even – free of markings.

Close the bell lid..

Remark: With older graphite stamps the upper edge of the graphite guiding must between the grooves.

Now you're able to start the program by pressing the "Automatic start" button.