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Users Manual

Powder Flame Spray Gun 6PII

206.000 II

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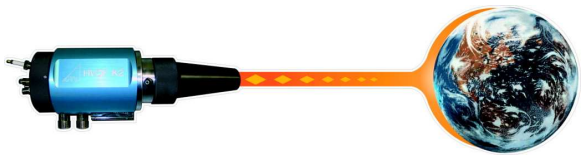

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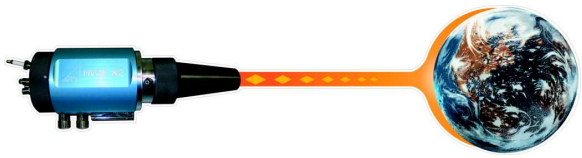

DECLARATION OF INCORPORATION

According to EG- Machine Guideline 2006/42/EG, Annex II B
EG-Guideline Electrical Magnetically Amicability 2004/108/EG

Machine:

PLANT:	Powder Flame Spraying Equipment
TYPE:	6PII
PRODUCTION DATE:	2011
GTV NO.:	206.000 II

IS DEVELOPED AND DESIGNED ACCORDING THE ABOVE MENTIONED NORMS IN FULL RESPONSIBILITY OF

Incorporation:

GTV Impex GmbH,
Vor der Neuwiese, D - 57629 Luckenbach, Germany

FOLLOWING STANDARDS:

- DIN ISO 12100 Safety of equipment, components and machine units
- DIN ISO 14121 Guidance for risk assessment
- DIN ISO 13849 Performance Level
- DIN ISO 60204-1 Electrical setup for equipment and machines
- BGR 500 Gases in machine systems

THIS DECLARATION LOSES VALIDITY, IF CHANGES TO THE EQUIPMENT WILL BE DONE WITHOUT GTV AGREEMENT.

Luckenbach, 14.09.2011

S. Kill, Directory Manager

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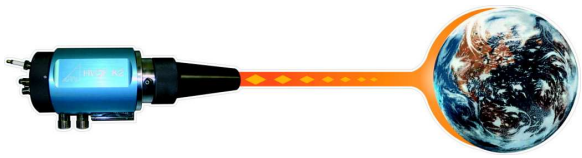


1. Operation

1.1 Safety instructions

Because at flame spraying burnable gases will be used, safety instructions should be regard exactly.

All assemblies, as burnable gas, oxygen- and air lines, compressors, pressure reducers etc., should be checked of leaks and loose connections in regular intervals.

Good maintenance could be avoiding flashbacks.
Check gun and equipment before spraying.

Flashbacks could be result by: leaks on nozzle seat, dirt in the nozzle holes etc.
A flashback occurs only through rough maintenance faults.
Metal dust in the air is explosive, especially aluminium and magnesium dust.
Handle with special carefulness.

To reduce the risk of dust explosions on minimum, in spraying cabins and closed rooms it must be a suitable exhaust. This avoids deposits of dust and smoke.
An appropriate spraying cabin and exhaustion are necessary to conduct dust and smoke.

1.2 Hook up and initial adjustments

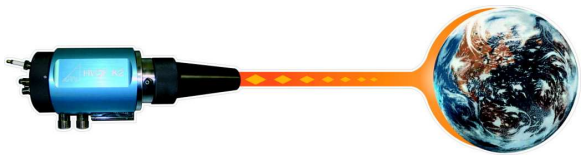
Connect hoses to the air and gas control units. Blow out the hoses and then connect to the gun.
Air and oxygen hose nuts have right hand threads and the fuel gas hose has a left hand thread. The hose nuts must be drawn up tight enough to prevent leakage but should not be over tightened as this may crush the hose stem. Point the gun into the spray booth or towards the job.

Charging the powder feeder with the required powder and adjust the appropriate values for carrier gas pressure and flow.

Adjust the gun cooling air pressure of 1.1 bars (15PSI).

Open the gas head valve by turning the valve handle straight up.

With the gas head valve open, quickly set the oxygen and fuel gas pressures to the figures shown in the Spraying Tables under lighting pressures. Adjust the flow meter with the help of gas regulators to the flow values shown in the table. Then close the gas head valve.



1.3 Lighting

When you are ready to start spraying:

1.Take up the gas lighter and open the gas head valve all the way (straight up).
2.Pause about three seconds.
3.Close the valve halfway (45°) until your feel it click into the lighting stop.
4.Spark the lighter in front of the nozzle.
5.Immediately open the valve all the way as soon as the gun lights.

There is no need for a new operator to hurry the several motions required except that the valve must be opened completely immediately after lighting.

WARNING

Carrier gas must flow before lighting the gun!
Never stop carrier gas flow during the flame is burning!

1.4 Spraying

For realisation of different coating qualities several spraying technologies can be applied. Basically do the following:

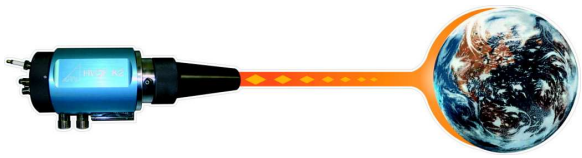
1. Prepare and preheat the work part as the requirements demand.
2. If the gun is lighted, activate the control switch for powder start. Gun begins to spray.
3. Keep the standard values for the spraying distance of the spraying tables.

Find out the best gun change-over speed and rotation speed for every spatter work at cylindrical work parts.

1.5 Shutting down

To shut the gun down, turn off the control switch for powder and the gas head valve.

If the gun will not be used again for several hours shut off the oxygen and fuel gas at the cylinders and shut off the air at the regulator on the air control unit. It is also good practice to back out the pressure regulating screws on the gas pressure regulators and bleed off pressure in the hoses and gun by opening the gas head valve momentarily.



1.6 Working process with air

The air cap (206.004) which is included with the gun, has divergent borings at the one side and parallel borings at the other side.
These function consist a constant cooling air flow through the gun.
Air pressure for the air cap must be 0.7 – 1.1bars (10-15 PSI).
Several special applications demand the use of the cooling unit (206.300).
This unit will fix on the gun in place of the top plate (206.169).

2 Avoiding trouble

2.1 Spraying

Refer to Chapter “Safety instructions” for a summary of commonsense precautions to be observed when flame spraying.

2.2 General gun care

The most important point in the care and lubrication of 6PII Powder Flame Spray Gun is cleanliness. Dirt, grit and metal dust in the mechanism cause quick wear.

Before lubrication or overhaul, wipe the gun thoroughly to remove all loose dust. Use a clean bench for disassembly and be sure the lubricant tube is free of dirt.

There is a chart showing a suggested maintenance schedule at, the end of this chapter. This chart is based on average use and conditions.

Guns receiving hard use should be serviced at shortest intervals. The main factors affecting service frequency are:

1.Speed and load of the gun.

2.Frequency of lighting.

3.Temperature in which the gun operates.

The higher each is, the more often the gun should be serviced.

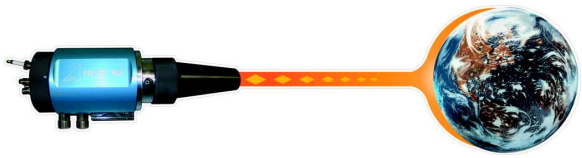
2.3 Hoses

Obstruction in the hoses reduces the flow of oxygen and gas and upset the flame balance.

Do not get oil in the hoses. Oil in the oxygen hose is very dangerous. In any hose, oil will soften the rubber.

In an old, worn hose the lining may come loose and plug the hose.

If hose fittings are over-tightened, the holes in the fittings may collapse. This reduces the flow of gases and causes the same troubles as obstructions in the hoses.



2.4 Difficult lighting

If the gun is hard to light, make sure that the nozzle and siphon pug jets are clean and undamaged. If the trouble persists screw out the regulator handles to shut off the gases and then disconnect the hoses. Inspect hoses and gun fittings for dirt or other obstruction. Blow out the hoses before reconnecting them.

If the gun has been idle for some time or after the valve has just been lubricated, it is advisable, before lighting, to work the valve on an off a few times with gases and air turned on. This will blow out any excess valve lubricant from the small bleeder holes in the valve; plugged bleeder holes will cause lighting trouble.

2.5 Backfire

If the gun backfires, it will appear to go out with a `pop´ and will burn back in the siphon plug. Shut the gun off immediately and wait for about thirty seconds before relighting.

Backfiring may be caused by the following:

1.Leak at the wire nozzle seat (see wire nozzles).

2.Dirt in the nozzle jets.

3.Oversized or ragged nozzle jet holes.

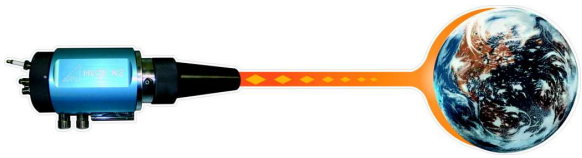
4.Plugged siphon plug bleeder holes (see siphon plug)

5.Use of wrong air cap.

It is possible for a single jet to backfire and the others to burn normally. The flame will suddenly become slightly to prevent overheating the siphon plug and gas head. Replacing the nozzle and cleaning the siphon plug is the best and most economical procedure.

Excessive backfire or permitting the gas to burn back in the siphon plug too long, makes it necessary to clean the jets in the siphon plug and nozzle. It may also cause the nozzle nut to loosen.

The cause of the backfire should be found and corrected. The gun will not backfire unless something is definitely out of adjustment.



2.6 Siphon plug

These parts should be cleaned occasionally. Clean the jets with the proper size wires in the cleaning wire kit. Do not use drills. Do not use oversize wires. Do not rotate the wires.

There are two small air bleeder holes in the siphon plug just back of the nozzle seat. These holes permit air to circulate around the wire. If they plug up, the wire nozzle may overheat, causing backfire or sticking wire.
When servicing the siphon plug, be sure to clean these bleeder holes with the proper size cleaning wire.

Do not wash the o-rings with strong solvent. Inspect them for damage and replace them if necessary. Do not stretch new o-rings more than necessary when putting them on the siphon plug. Lubricate the o-rings with a generous film of Valve lube before reassembling the siphon plug. Wipe and excess Valve lube off the plug to avoid getting it in the jets.

2.7 Nozzles

The nozzle must be tight on the siphon plug. Firm tightening by hand is sufficient.

The tip of the nozzle at the flame end should be kept clean.
To clean the jet holes, remove the nozzle and push the proper size cleaning wire carefully into the jet hole from the back end. **Do not use a drill.** Select a wire that fits the hole. Push the wire straight in and out. Do not rotate it. Wash the nozzle in cleaning solvent before and after cleaning. Blow out the holes from the flame with compressed air.

2.8 Gas head valve

The gas head valve is designed for long service life with minimum maintenance. It has a cylindrical rather than the old- style tapered core and relies upon special elastomeric o-rings for proper sealing. Lapping or other precise fitting is not required. One of the two acetylene holes is stepped, having larger diameter at the periphery of valve.

Do not disassemble the valve for cleaning and relubricate, unless it has become excessively stiff and difficult to turn or a leak has developed.
If the valve develops a leak, examine all o-rings carefully and replace any which are worn or damaged. The ring materials are specially selected for proper service in this valve. Use only authorised replacements.

The metal parts of the valve can be washed with cleaning solvent. Make sure the small bleeder holes in the cylindrical valve core are clean and free of any hard residue. Do not enlarge them.

Never soak the o-ring in solvent.

Lubricate all valve o-rings and sliding metal parts with a thin coat of valve lube. Wipe excess valve lube off the nozzle, to avoid getting it in the jet holes.

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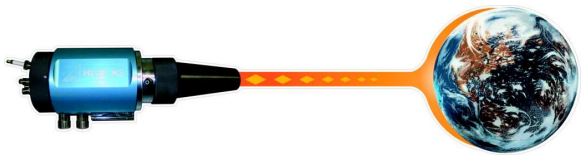

3. Normal lighting flows

Burnable gas	light pressure (PSI)		light flow	
	oxygen	burnable gas	oxygen	burnable gas
acetylene	20	13	3-6	16-20
hydrogen	31	31	3-6	19-23

In the previous table the normal gas flows are denoted, which should be reached when the gas valve is adjudge in lighting position.
Lower values as noted can be a sign of a blocked gas hole in cylinder.
Higher values can be caused by a leaky valve seat.

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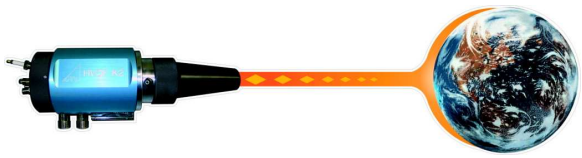
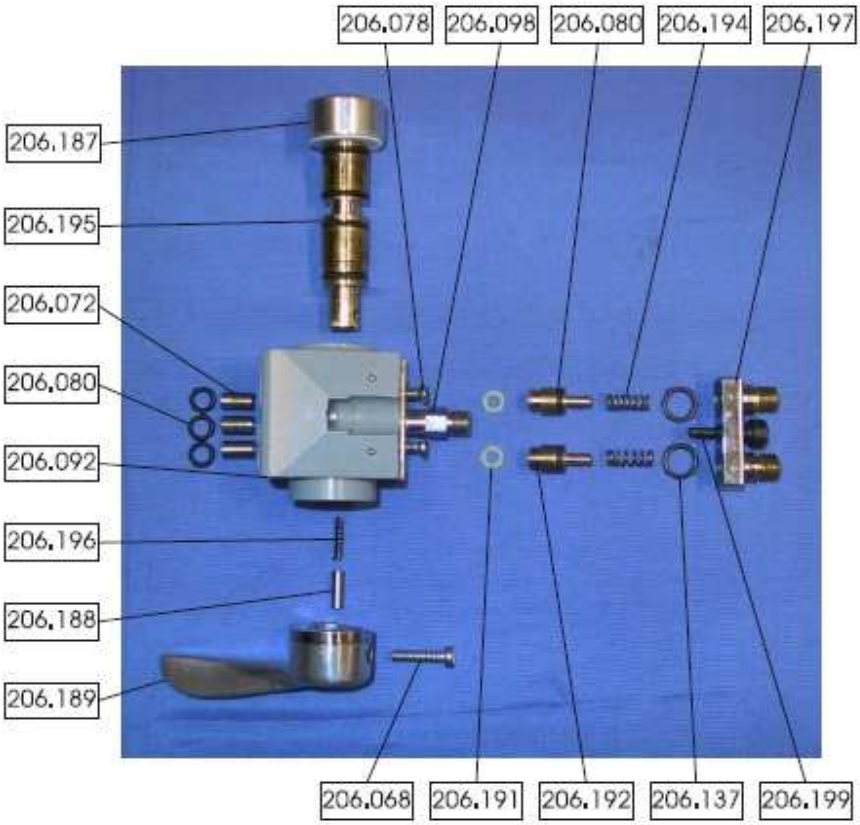


4. Spare parts



GTV-no.	description
206.005	gas valve assembly
206.068	valve handle mounting screw
206.072	gas connection tube
206.077	mounting screw
206.080	plunger and gas connection tube o-ring
206.092	valve block
206.098	air hose connection
206.101	powder feed tube (not shown)
206.137	connection block o-ring
206.187	valve core assembly
206.188	detent pin
206.189	valve core
206.191	plunger seal o-ring
206.192	plunger
206.194	plunger spring
206.195	valve core o-ring
206.196	detent pin spring
206.197	hose connection block
206.199	connection block mounting screw
206.280	gas valve o-ring package includes: **6P080, 6P137, 6P191, 6P195**

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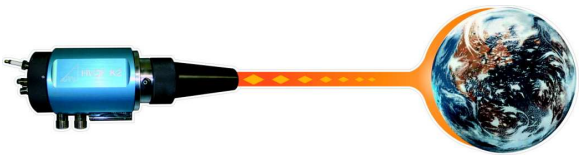

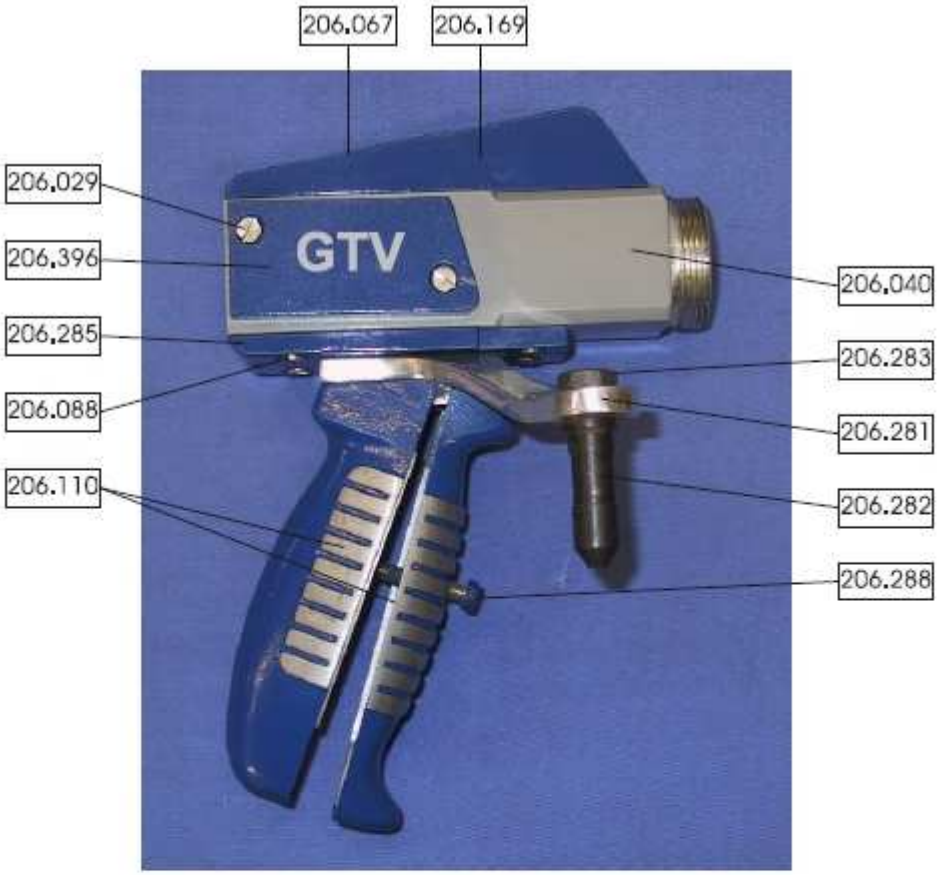

GTV-no.	description
206.024	connection tube o-ring (not shown)
206.029	nameplate mounting screw
206.040	gun body assembly
206.067	top plate mounting screw
206.088	mounting plate screw
206.110	handle
206.169	top plate
206.281	tool post bracket
206.282	mounting stud
206.283	nut
206.285	handle mounting plate
206.287	handle assembly mounting screw (not shown)
206.288	handle assembly screw
206.396	nameplate

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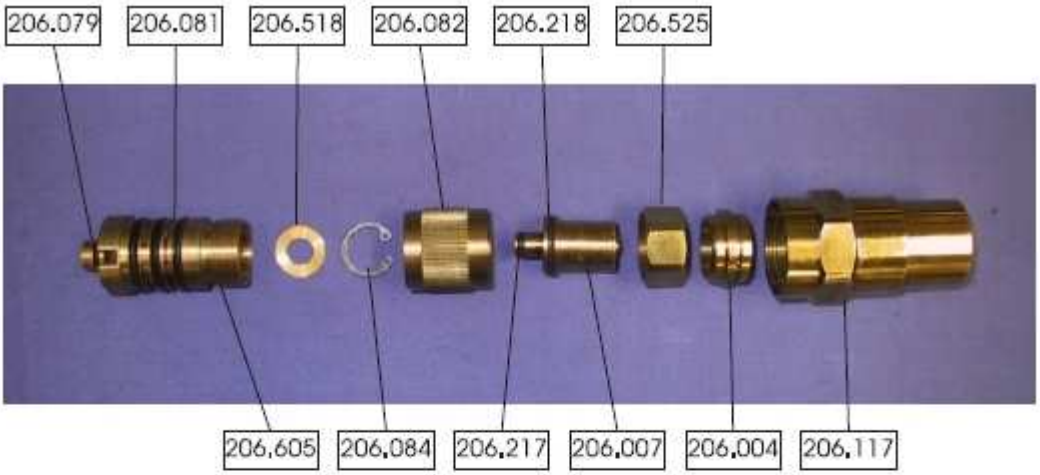

GTV-no.	description
206.003	air cap (pinch-cool) (not shown)
206.004	air cap (gun cooling)
206.007CD	nozzle "CD"
206.007CK	nozzle "CK"
206.007CM	nozzle "CM"
206.007CMH	nozzle "CMH"
206.079	siphon plug o-ring small
206.081	siphon plug o-ring large
206.082	sleeve
206.084	baffle retaining ring
206.117	air cap body
206.217	o-ring nozzle small
206.218	o-ring nozzle large
206.518	baffle
206.525	nozzle nut
206.605	siphon plug
206.655	siphon plug assembly with nozzle "CM"
	(includes: 6P7CM, 6P79, 6P81, 6P82
	6P84, 6P518, 6P525 u. 6P605)
206.675	siphon plug assembly with nozzle "CD"
	(includes: 6P7CD, 6P79, 6P81, 6P82
	6P84, 6P518, 6P525 u. 6P605)
206.690	siphon plug assembly with nozzle "CK"
	(includes: 6P7CK, 6P79, 6P81, 6P82
	6P84, 6P518, 6P525 u. 6P605)
206.855	siphon plug spare parts package
	(includes: 6P79, 6P81, 6P84 u. 6P518)

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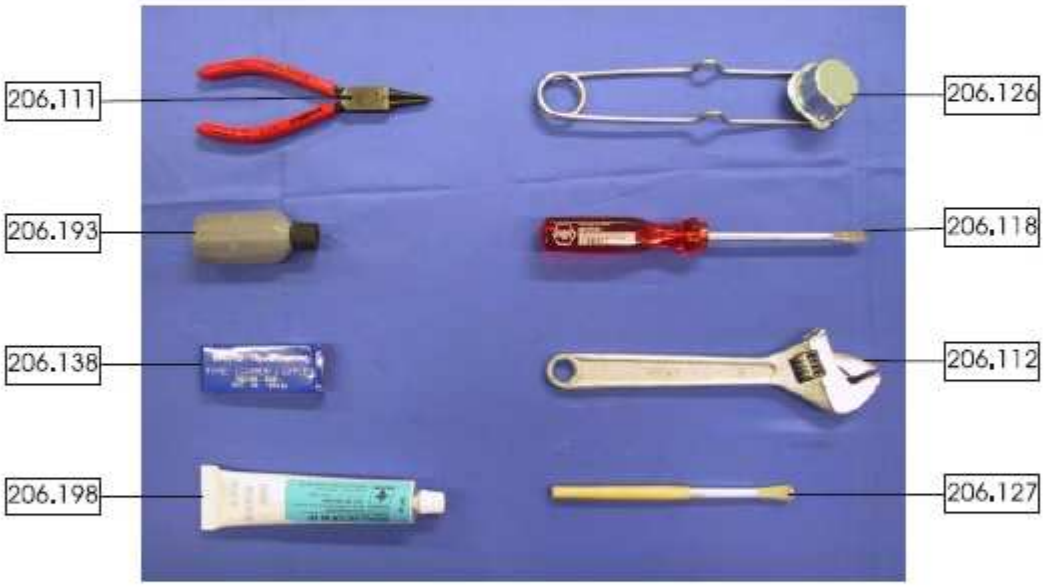

GTV-no.	description
206.111	truarc pliers
206.112	adjustable open-end-wrench
206.118	screwdriver
206.125	tool post fixture assembly
206.126	spark lighter
206.127	cleaning brush
206.138	cleaning wire kit
206.193	powderlube
206.198	valvelube

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5 Spraying table

material	GTV-No.	nozzle	pressure reducer			flow meter 2GF			carrier gas			distance	consumption / min.			
			oxygen bar	acetylene bar	hydrogen bar	oxygen	actylene	hydrogen	pressure bar	flow ltr/min	flow	mm	powder g	oxygen ltr.	actylene ltr.	hydrogen ltr.
12C	10.12.6	C-M	2,2	1,0		45	55		3,8	6,9	37	205	151	42	26	
14E	10.14.6	C-M	2,2	1,0		45	55		3,8	6,9	37	205	151	42	26	
15E	10.15.6	C-M	2,2	1,0		45	55		3,8	6,9	37	205	151	42	26	
15F	10.15.7	C-MH	2,1		1,6	40		60	3,8	7,3	40	180		34		109
16C	10.16.6	C-M	2,2	1,0		45	55		3,8	6,9	37	205	151	42	26	
18C	10.18.6	C-M	2,2	1,0		45	55		3,8	6,9	37	205	151	42	26	
19E		C-M	2,2	1,0		45	55		3,8	6,9	37	205	136	42	26	
31C-NS	10.31.6	C-M	2,2	1,0		45	55		3,8	6,9	37	180	121	42	26	
36C	10.36.6	C-M	2,2	1,0		45	55		3,8	6,9	37	230-255	121	42	26	
41C	30.46.2	C-M	2,2	1,0		45	55		3,8	6,9	37	205	91	42	26	
41F-NS	80.46.1	C-MH	1,7		1,6	35		60	3,8		37	155		28		108
42C	30.42.2	C-M	2,2	1,0		45	55		3,8	6,9	37	205	76	42	26	
43C	20.43.2	C-M	2,2	1,0		45	55		3,8	6,9	37	205	76	42	26	
43F-NS	80.20.1	C-MH	1,9		1,9	35		70	3,8		37	180		29		136
44	30.04.2	C-M	2,2	1,0		45	55		3,8	6,9	37	205	106	42	26	
45C-NS		C-M	1,8	1,0		40	60		3,8	6,9	37	205	76	33	37	
51	30.51.2	C-M	2,2	1,0		45	55		3,8	6,9	37	205	106	42	26	
52C-NS	30.52.2	C-MH	2,8		2,1	43		65	3,8		37	180		37		131
54	30.54.2	C-MH	1,4		1,4	30		60	3,8		40	180		22		106
55	30.55.2	C-MH	2,6		2,4	40		75	3,8		40	115		35		164
56C-NS	30.56.2	C-M	2,2	1,0		45	55		3,8	6,9	37	205	76	42	26	
75F		C-D	2,1	1,0		35	45		3,8	6,9	37	75	76	27	21	
91	30.91.2	C-M	2,2	1,0		45	55		3,8	6,9	37	205	76	42	26	

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material	GTV-No.	nozzle	pressure reducer			flow meter 2GF			carrier gas			distance	consumption / min.			
			oxygen bar	acetylene bar	hydrogen bar	oxygen	actylene	hydrogen	pressure bar	flow ltr/min	flow	mm	powder g	oxygen ltr.	actylene ltr.	hydrogen ltr.
101	40.01.1	C-K	2,1	1,0		42	50		2,8	4	30	75	15	36	21	
101FP		C-K	2,1	1,0		42	50		3,8	6,9	37	75	15	36	21	
101SF	40.01.0	C-D	2,1	1,0		42	50		3,8	6,9	37	75	11	36	21	
102	40.02.1	C-K	2,1	1,0		42	50		3,8	6,9	37	75	15	36	21	
105	40.05.1	C-K	2,1	1,0		42	50		3,8	6,9	37	7,5	15	36	21	
105SFP	40.05.0	C-D	2,1	1,0		42	50		3,8	6,9	37	75	19	36	21	
106	40.06.1	C-K	2,1	1,0		42	50		2,8	4	37	75	15	36	21	
106F	40.06.0	C-K	2,1	1,0		42	50		2,8	4	37	75	15	36	21	
110	40.10.1	C-K	2,1	1,0		42	50		3,8	6,9	37	75	15	36	21	
111		C-K	2,1	1,0		42	50		3,8	6,9	37	75	15	36	21	
130	40.30.1	C-K	2,1	1,0		42	50		3,8	6,9	37	75	15	36	21	
130SF	40.30.0	C-K	2,1	1,0		42	50		3,8	6,9	37	75	15	36	21	
131VF	40.31.3	C-D	2,1	1,0		42	50		3,8	6,9	37	75	15	36	21	
136F	40.36.1	C-D	2,1	1,0		42	50		3,8	6,9	37	65	15	36	21	
201		C-D	2,1	1,0		42	50		3,8	6,9	37	75	15	36	21	
210	40.20.1	C-K	2,1	1,0		42	50		3,8	6,9	40	75	15	36	21	
211		C-K	2,1	1,0		42	50		3,8	6,9	37	100	15	36	21	
212F-NS	40.21.1	C-D	2,2	1,0		42	50		3,8	7,3	37	150	30	36	21	
350		C-M	2,2	1,0		45	55		3,8	6,9	40	125	60	42	26	
351		C-M	2,2	1,0		45	55		3,8	6,9	40	180	60	42	26	
438NS-1		C-D	1,7	1,0		40	55		3,8	7,3	37	90	53	32	25	
439NS-2	30.39.2	C-D	1,7	1,0		40	55		3,8	7,3	37	90	45	32	25	

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material	GTV-No.	nozzle	pressure reducer			flow meter 2GF			carrier gas			distance	consumption / min.			
			oxygen bar	acetylene bar	hydrogen bar	oxygen	actylene	hydrogen	pressure bar	flow ltr/min	flow	mm	powder g	oxygen ltr.	actylene ltr.	hydrogen ltr.
442	20.42.2	C-D	1,7	1,0		42	50		3,8	6,9	37	255	38	36	21	
443	20.43.2	C-M	2,2	1,0		45	55		3,8	6,9	37	180	45	42	26	
444	20.44.2	C-D	1,7	1,0		42	50		3,8	6,9	37	230	38	36	21	
445	20.45.2	C-M	2,2	1,0		45	55		3,8	6,9	37	105-175	38	42	26	
447	20.47.2	C-M	2,2	1,0		45	55		3,8	6,9	37	105-175	34	42	26	
448	20.48.2	C-D	1,7	1,0		42	50		3,8	6,9	37	230	38	36	21	
449	20.49.2	C-D	1,7	1,0		42	50		3,8	6,9	37	230	38	36	21	
450	20.50.2	C-M	2,2	1,0		45	55		3,8	6,9	37	180	45	42	26	
451		C-M	2,2	1,0		45	55		3,8	6,9	37	205	91	42	23	
501		C-M	2,2	1,0		45	55		3,8	6,9	37	90	30	42	26	