# **Pipe Profiling Machine**

# **Operators Manual**



Original manual for the Pipe Profiling Machine

# SPC 500-1200

MAINTENANCE CALIBRATION MESSAGES RESTORE QUALITY TERMINOLOGY



## Appendices

Appendix A	Maintenance and Grease Schedule				
	Periodic and preventive maintenance. Lubrication points and frequencies.				
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	Calibration and alignment of the machine. Instructions for programming, cutting and evaluating test pieces.				
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	A list of terms and words as used in this document with a short explanation.				





# Introduction

### Intended use of the machine

This machine is a thermal profiling machine and should be used for profiling steel pipes with an oxygas cutting process (oxyfuel) or plasma cutting process. For the explanation of these two processes, see the 'Terminology' appendix. The machine should be used for industrial applications only. The machine is suitable for cutting the pipe range as described in the technical specifications or the nameplate. An overview of the pipe ranges is shown in the table below.

A nameplate like the one shown in Figure 1 is located on the side of the main drive unit. A nameplate like the one shown in Figure 2 is located on the front side of each pipe trolley. You should always keep these nameplates clean and legible.





Figure 1: Nameplate pipe profiling machine

### *Pipe range SPC 500 - 1200*

Profile	Machine	Minimum and maximum outer diameter		Maximum weight	Minimum length	Maximum length
CHS (Circular Hollow Section)	SPC 500	48 mm	510 mm	4000 kg	300 mm	6000 mm
	SPC 600	48 mm	610 mm	4000 kg	300 mm	6000 mm
	SPC 800	60 mm	815 mm	6000 kg	300 mm	6000 mm
	SPC 1000	75 mm	1020 mm	8000 kg	300 mm	8000 mm
	SPC 1200	75 mm	1225 mm	8000 kg	300 mm	12000 mm
	SPC 1200	75 mm	1225 mm	12000 kg	300 mm	12000 mm
Cutting process	Minimum wall thickness		Maximum wall thickness		Cutting angle range	
Oxyfuel	3 mm		150 mm		-70° tot 70 °	
Plasma	3 mm		38 mm (30 mm quality cut)		-45° to 45°	





### Noise emissions

There are no harmful noise emissions when profiling using the oxyfuel cutting process, the noise emissions are less than 70 dB(A). The plasma cutting process causes higher noise emissions which increase slightly with higher currents. Please refer to the plasma instruction manual for details. The tables below gives a general indication of the expected noise emissions for commonly used plasma units. Ear protection must be worn when using the plasma cutting process.

#### Smart Focus

Cutting	Material	Maximum noise	Cutting			
current	thickness	1 meter	3 meters	6 meters	pressure	
90 Amps	6 mm	96 dB(A)	86 dB(A)	83 dB(A)	9.9 bar	
130 Amps	6 mm	100 dB(A)	91 dB(A)	86 dB(A)	9.9 bar	
160 Amps	25 mm	105 dB(A)	93 dB(A)	91 dB(A)	9.9 bar	
280 Amps	20 mm	104 dB(A)	98 dB(A)	93 dB(A)	5.5 bar	
360 Amps	25 mm	104 dB(A)	95 dB(A)	91 dB(A)	7.0 bar	
400 Amps	40 mm	112 dB(A)	99 dB(A)	96 dB(A)	7.0 bar	

#### High Focus 440i

Cutting current	Material thickness	Maximum noise	Cutting		
		1 meter	3 meters	6 meters	pressure
90 Amps	6 mm	96 dB(A)	86 dB(A)	83 dB(A)	9.9 bar
130 Amps	6 mm	100 dB(A)	91 dB(A)	86 dB(A)	9.9 bar
280 Amps	20 mm	104 dB(A)	98 dB(A)	93 dB(A)	5.5 bar
400 Amps	40 mm	112 dB(A)	99 dB(A)	96 dB(A)	7.0 bar

Source: Kjellberg-Finsterwalde Plasma Instruction Manuals.

#### Hypertherm HPR400XD

Cutting current	Material thickness	Distance from source	Distance above arc	MaxP*	Lav5**
130 Amps	25.4 mm			111.0	97.7
260 Amps	38.1 mm	3000 mm	340 mm	118.4	103.8
400 Amps	50.8 mm			123.4	107.8

Source: Hypertherm HPR 400XD Acoustic Noise Level Measurements (16-12-2004).

\* MaxP = peak C-weighted instantaneous sound pressure (LpCpeak in dB).

\*\* Lav5 = A-weighted sound pressure (LpA in dB).



#### WARNING!

The plasma cutting process generates noise emissions above 70 dB (A), ear protection must be worn at all times.







### Gas supplies

- The cylinders must always be placed upright and in a secured position.
- Do not use damaged cylinders, pressure reducers or armatures.
- Use pressure reducers only for the gas for which they are intended.
  - Do not lubricate pressure reducers with grease or oil.
  - All parts coming into contact with oxygen must be protected from grease and oil.

#### The following gas supplies must be available where the machine is installed:

#### Oxyfuel

- Compressed air. Non-greased, non-condensed, filtered for particles <5 µm. Pressure 6-8 bar.
- Acetylene. Non-greased, non-condensed, filtered for particles <5 µm. Pressure 1.2-1.5 bar.
- Propane. Non-greased, non-condensed, filtered for particles <5 µm. Pressure 1.5-1.8 bar.
- Oxygen. Non-greased, non-condensed, purity 99.8%, filtered for particles <5 µm. Pressure 8-10 bar.

#### Plasma Kjellberg Smart Focus

- Compressed air. Non-greased, non-condensed, filtered for particles according to ISO 8573-1 Class 1.4.1. Pressure 10 bar.
- Argon. Purity 99.996%. Pressure 10 bar.
- Hydrogen. Purity 99.95%. Pressure 12 bar.
- Nitrogen. Purity 99.9%. Pressure 10 bar.
- Oxygen. Non-condensed, purity 99.5%, filtered for particles <5 µm. Pressure 10 bar.

#### Plasma Kjellberg High Focus

- Compressed air. Non-greased, non-condensed, filtered for particles <40 µm. Pressure 12 bar.
- Argon. Non-greased, non-condensed, filtered for particles <5 µm. Pressure 12 bar.
- Hydrogen. Non-greased, non-condensed, filtered for particles <5 µm. Pressure 12 bar.
- Nitrogen. Non-greased, non-condensed, filtered for particles <5 µm. Pressure 12 bar.
- Oxygen. Non-greased, non-condensed, purity 99.5%, filtered for particles <5 µm. Pressure 12 bar.

#### Plasma Hypertherm

- Compressed air. Non-greased, non-condensed, filtered for particles according to ISO 8573-1 Class 1.4.2. Pressure 8 bar.
- Argon. 99.990% pure. Non-greased, non-condensed. Pressure 8 bar.
- H35 (65% Argon 35% Hydrogen). 99.995% pure.Non-greased, non-condensed. Pressure 8 bar.
- Nitrogen. 99.990% pure. Non-greased, non-condensed. Pressure 8 bar.
- Oxygen. 99.500% pure. Non-greased, non-condensed. Pressure 8 bar.





## Safety Machine safety

The machine is designed to be controlled by a single operator. The location of the control elements ensures that the person controlling the machine is not exposed to hazards generated by machine movements or the cutting process. The touch screen interface is also designed with safety in mind. Many machine actions require operator confirmation in order to continue. This guarantees that the operator is in position at the remote control and ensures that he is aware of what is about to happen. Dangerous situations can arise if more than one person is working on the machine at the same time!



#### WARNING!

The machine is designed to be operated by a single operator. There is a danger of unexpected movement, crushing, wedging or drawing in if more than one person is working on the machine at the same time.



#### The machine can ONLY be operated by instructed operators and mechanics.

#### Risks can especially be caused when the machine:

- is operated, maintained or cleaned by inexperienced or non-instructed personnel.
- is operated, cleaned or maintained insufficiently.
- is used for purposes other than described in chapter 1 'Introduction'.

#### **Operators and mechanics must:**

- read and understand chapter 2 of this manual 'Safety'.
- have sufficient knowledge to carry out the activities on the machine.
- have knowledge of the location and working of the emergency stop mechanism of the machine.
- have knowledge of the presence and working of all other safety facilities of the machine.
- have knowledge of their specific tasks and authorizations.
- avoid all activities that could be dangerous to the health.
- avoid all activities that could cause damage to the machine and the products of the machine.

#### Operators and mechanics have to make sure that:

- the area surrounding the machine is clean and free of persons, tools and other (flammable) objects or liquids.
- the machine is only operated when the machine is in good condition.
- the machine is only operated when the protective covers are correctly installed at the correct locations.



#### CAUTION!

Before operating the machine check that there is no oil leakage from the pipe trolleys or main drive, this may cause a slipping hazard. Remove all materials from the vicinity of the machine that could cause a tripping hazard.





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