FEEDLINE V
Abrasive Metering Device

OPERATING AND SERVICING INSTRUCTIONS

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FEEDLINE V
OPERATION and SERVICE MANUAL

Notice

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1 CORRECT AND PROPER USE

The FEEDLINE V is part of the Abrasive Management System AMS, which has been designed especially for the abrasive cutting process.

The ABRALINE III abrasive vessel conveys the abrasive to one or several FEEDLINE V metering devices.

These in turn supply, with constant abrasive flows of 0–1,000 g/min, the corresponding number of AUTOLINE/IDE abrasive cutter heads.

Modifications and changes to the FEEDLINE V metering device without the manufacturer's approval are prohibited for safety reasons.

The operating, servicing and installation conditions specified in this operating manual must be strictly adhered to.

The EMERGENCY STOP is performed by interrupting the supply voltage on the operator console.

2 SAFETY

The FEEDLINE V is equipped with safety equipment and systems. Incorrect operation and/or misuse can cause dangers for

- the operator's health and safety
- the abrasive metering system and other property of the owner/operator
- the efficient operation of the machine

All persons involved in the installation, commissioning, operation and servicing of the machine must

- be appropriately qualified,
- have read this operating manual carefully.

IT'S YOUR SAFETY THAT'S INVOLVED!

2.1 Approved operators

Only authorized persons may work on this product.

Responsibilities for the various activities to be performed on the machine must be clearly defined and adhered to. Poorly defined responsibilities are a safety risk. The owner must

- make the operating manual accessible to the operator,
- ensure that the operator has read and understood the operating manual.

2.2 Personal protective equipment

Safety goggles for protection against uncontrolled escape of abrasive must be worn by the operator and any and all persons working in the vicinity of the machine during operation, in order to avoid the dangers mentioned above. For cleaning work, the operator must wear safety gloves, in order to prevent the ingress of abrasive particles into any open wounds or cracked skin.

2.3 Protective equipment

The FEEDLINE V is shut down by operating the switch on the operator console.

3 TRANSPORT, ASSEMBLY AND INSTALLATION

3.1 Assembly and Installation

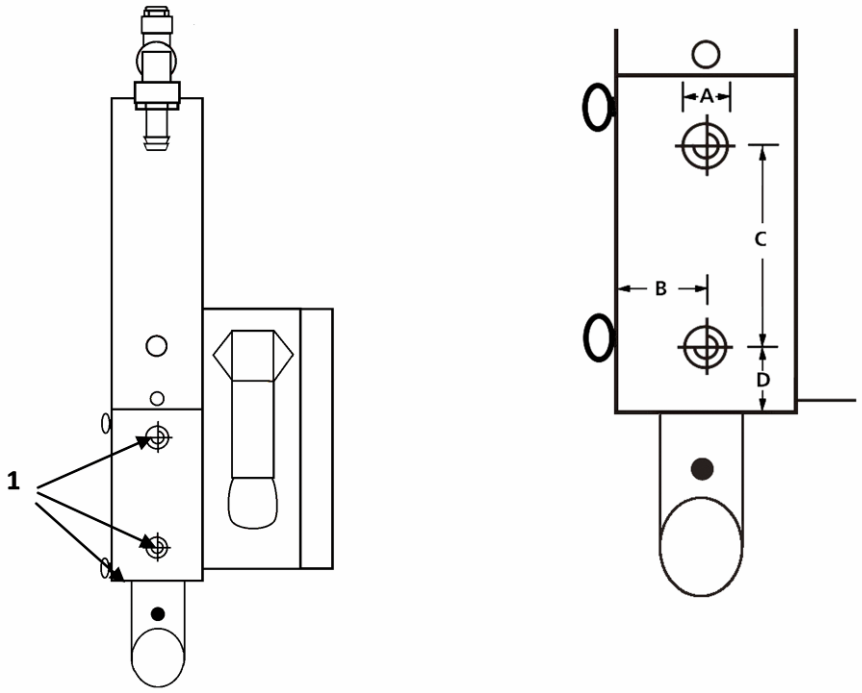
The FEEDLINE V can be fastened on the bottom and back of the travel unit of the cutting plant by using two M8 threaded fastening holes.

The fastening holes on the bottom have the same size

3.2 Transport

It must be ensured for the purpose of loading and transportation that the machine is correctly packed and protected against damage.

Fig. 1 – FEEDLINE V, Installation

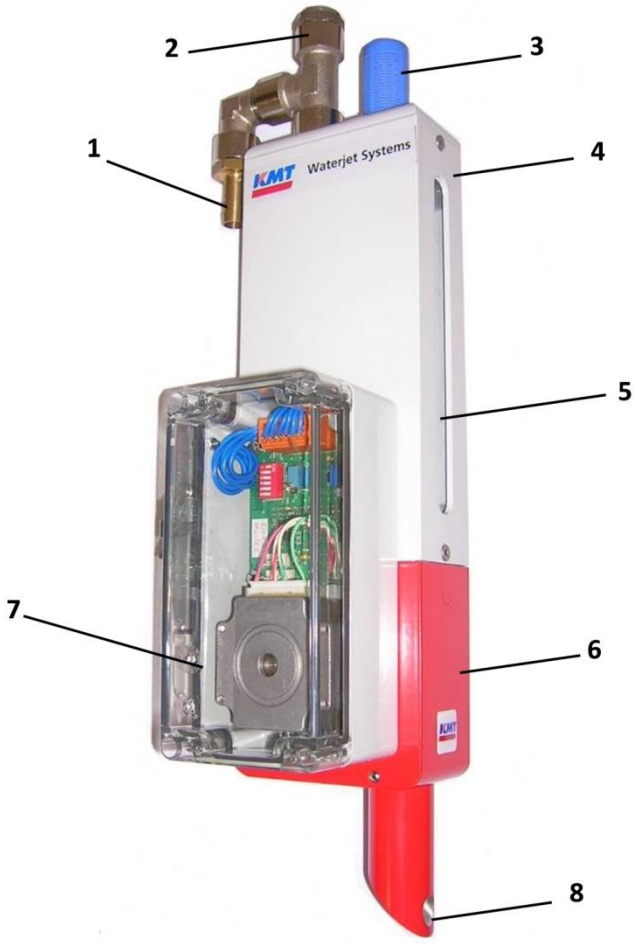


1 M8 threaded fastening holes

Character	Measurement
A	M 8
B	25 mm
C	45 mm
D	25 mm

4 PRODUCT DESCRIPTION

Fig. 2 – Description of function



1. Abrasive inlet
2. Abrasive inlet air filter
3. Abrasive vessel air filter
4. Abrasive vessel
5. Abrasive vessel filling level viewing window
6. Metering wheel housing
7. Metering wheel drive motor
8. Abrasive outlet

The Venturi effect is used in abrasive cutting to draw with the vacuum generated at the outlet of the water nozzle a defined quantity of abrasive sand through the so-called abrasive hose into the mixing chamber of the abrasive cutter head. This mixing chamber would clog up without the metering device, because the vacuum would draw in the entire available amount of abrasive and convey it to the cutter head. Thus, an accurate, best of all arbitrarily controllable metering device like the FEEDLINE V is indispensable.

The abrasive is conveyed by compressed air into a small 0.8 l intermediate vessel, the abrasive vessel (4). The outlet at the lower end of the abrasive vessel conducts the sand onto the metering wheel the speed of which can be adjusted variably. The grain size of the abrasive as well as the distance between the vessel outlet and metering wheel determine together with the set speed the delivery volume of the metering device.

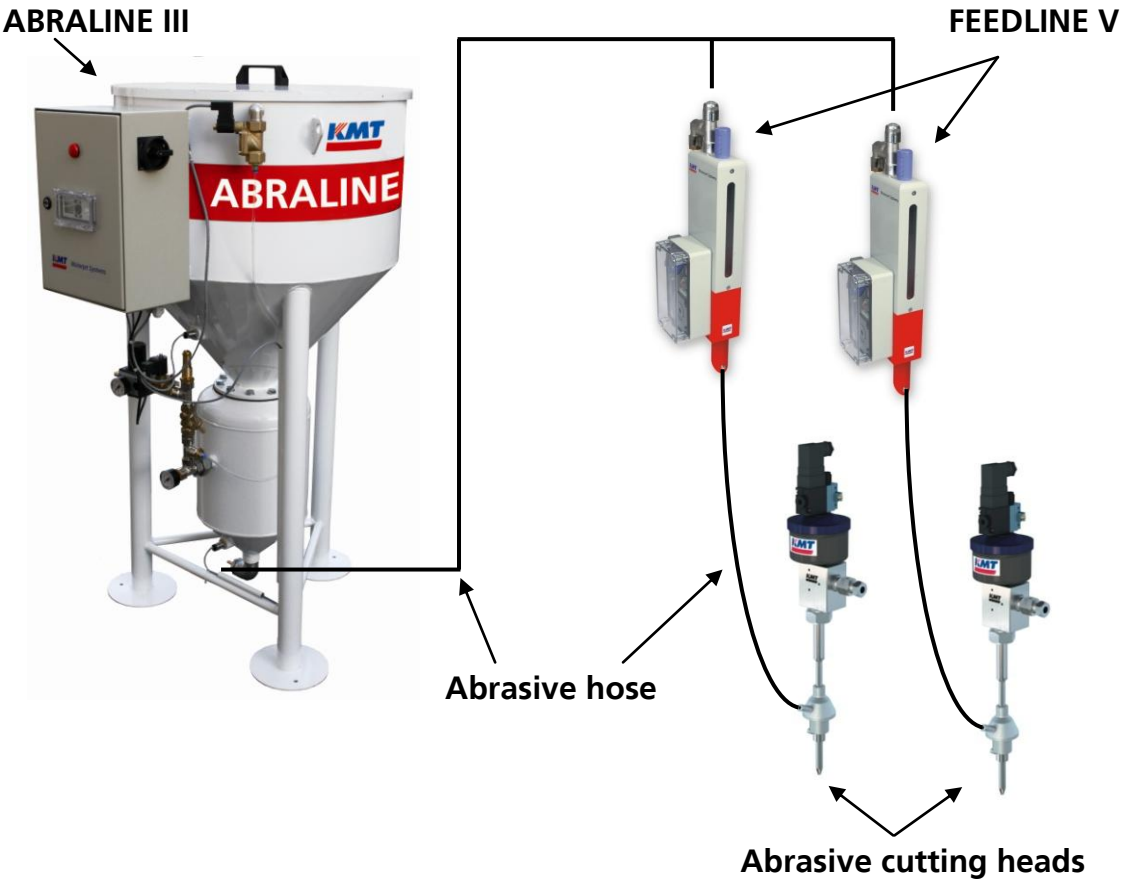
The variable speed control can be adjusted using the generally customary grain size of "80 mesh" along a straight-line characteristic up to a delivery volume of 1,000 g/min. (cf. the diagram on page 4-4)

The variable speed control performs a great service in saving operating costs especially for plant operators who very frequently have to machine different materials in variable thicknesses. Whereas thin materials are cut as a rule with less abrasive, the quantity increases with increasing material thickness. Once these quantity relationships have been filed in the material database of the plant control system, they can be called up automatically and transferred to the electronic control card of the FEEDLINE V. The nominal value can also be set on a potentiometer.

One metering device is assigned in each case to each cutter head.

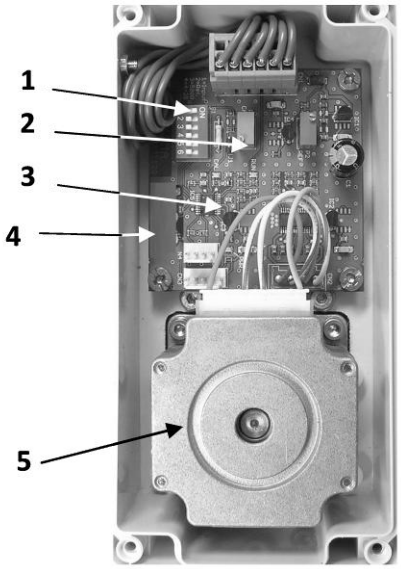
4.1 Function diagram

Fig. 3 – Function diagram



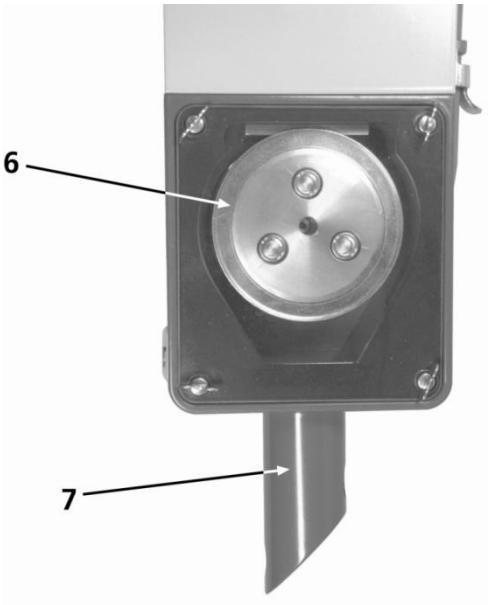
4.2 Interior

Fig. 4 – Motor and PC board



1. Dip switches
2. LED: release signal for the metering wheel when the LED lights up
3. Voltage LED
4. Control card
5. Drive motor

Fig. 5 – Open metering wheel housing

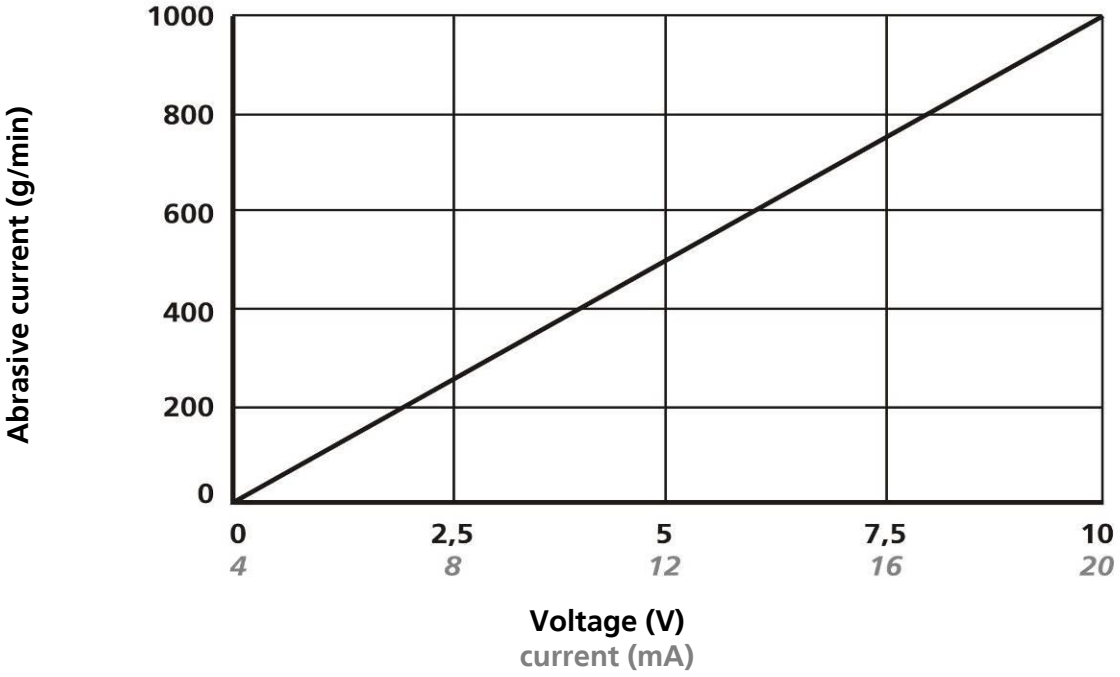


6. Metering wheel
7. Connection abrasive outlet

4.3 Technical Data

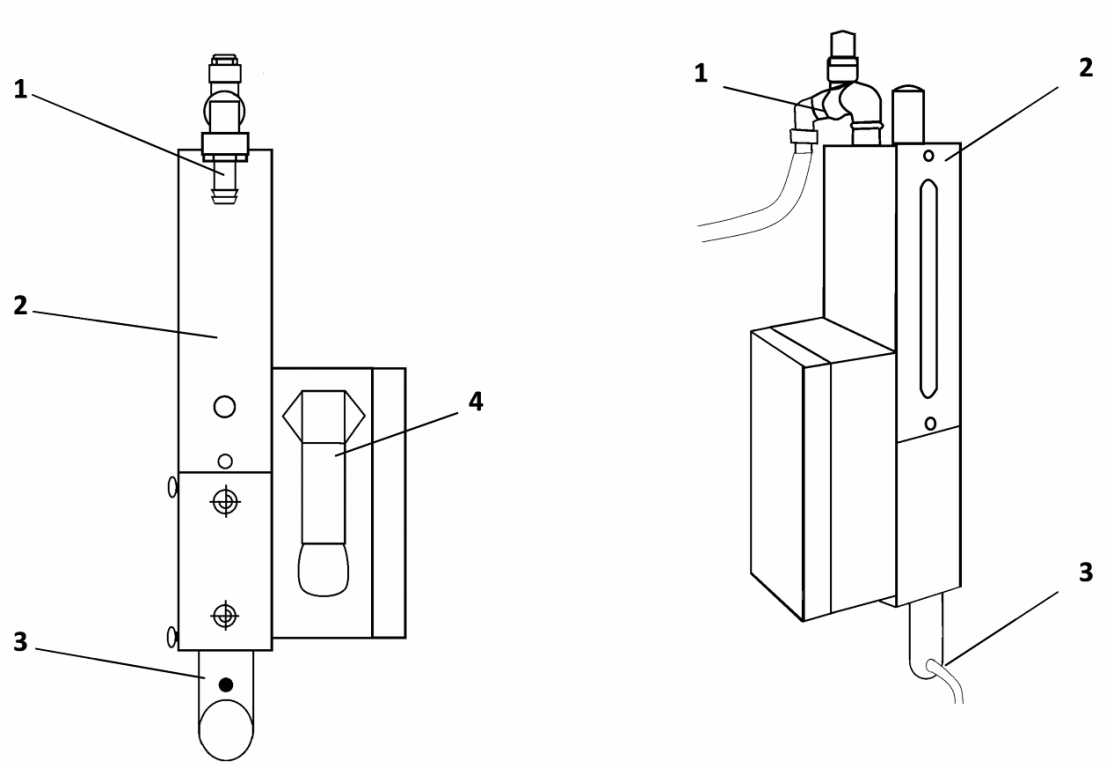
Net weight:	3.1 kg
Length:	100 mm
Width:	130 mm
Height:	500 mm
Max delivery:	0 – 1,000 g/min
Main voltage:	24 V DC, Ripple <5%
Control voltage:	0-10 V / 2-10 V | 4-20mA / 0-20mA

Fig. 6 – Abrasive current characteristic



5 COMMISSIONING

Fig. 7 – Commissioning



1	Abrasive feeding	3	Outlet pipe
2	Intermediate vessel	4	Harting connector

- Before connecting the FEEDLINE V, check it for transport damage which could impair its operating ability.
- The abrasive feed (1) of the FEEDLINE V is located on the upper cap. (1/2" hose connection)
- Connect the Harting plug (4) to your plant supply (24 V direct current). (cf. Chapter 9, Spare Parts/Electrical Circuit Diagram)
- Connect the abrasive hose of the abrasive cutter head to the outlet pipe (3) of the FEEDLINE V.
- Fill the intermediate vessel (2) with abrasive.
- Select the configuration of the dip switches corresponding to your control system. (cf. Chapter 9, Spare Parts/Electrical Circuit Diagram)
- The system is now ready for operation and can be switched on by the release signal of your CNC control.

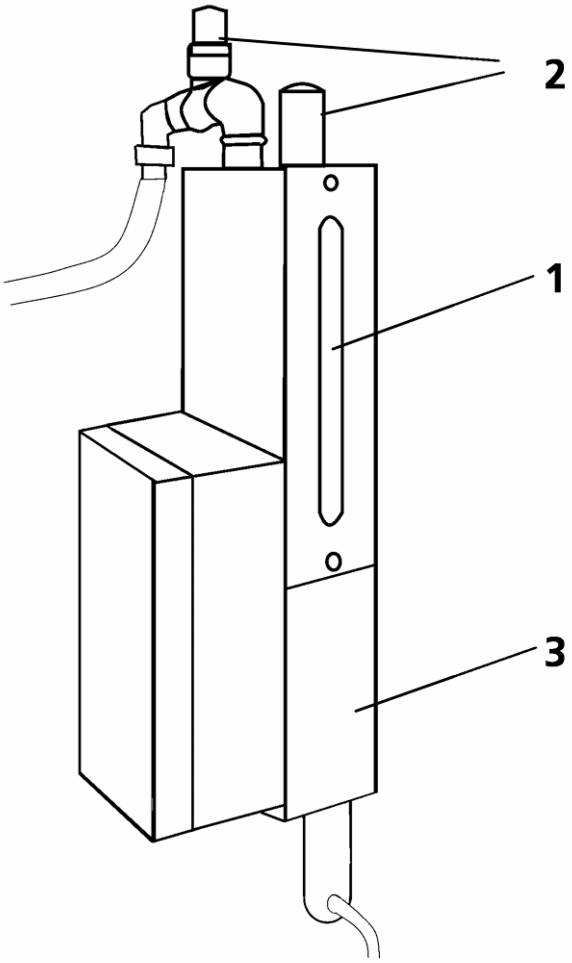
5.1 Shut-down of the system

Deactivate the system by setting the switch to its "Off" position after completion of work or for elimination of any faults which may have occurred.

6 SERVICING

Servicing and maintenance work is restricted essentially to visual checks.

Fig. 8 – Servicing



1 Viewing window

2 Filter

3 Metering wheel housing

- Clean the viewing window (1)
- If necessary clean or replace the filter (2)
- Clean the housing (3) around the delivery wheel and remove any sand

7 TROUBLE-SHOOTING

Problem	Possible cause	Action
Supply vessel runs empty	Too low conveying pressure in the conveying system	Increase air conveying pressure via the control system
	Inlet opening clogged	Clean inlet opening
Metering wheel does not turn	No operating voltage	Check operating voltage 24 V DC
	No release signal present	Check release signal (24 V DC)
	No control signals present	Check control signals (0–10V, 4–20mA, potentiometer etc.)
No or too little sand at the cutter head	Metering wheel turns too slowly or not at all	Check operating voltage 24 V DC Check release signal (24 V DC) Check control signals
	Outlet opening partially or completely clogged	Clean outlet opening

8 CUSTOMER AND SPARE PARTS SERVICE

8.1 Customer Service

Please contact our customer service department for technical questions.

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8.2 Spare Parts Service

KMT Waterjet maintains a spare-parts department with a comprehensive range stocked; the department's staff is also well trained. Immediate delivery is possible in emergencies.

Contact the KMT Waterjet Service department if you need spare parts.

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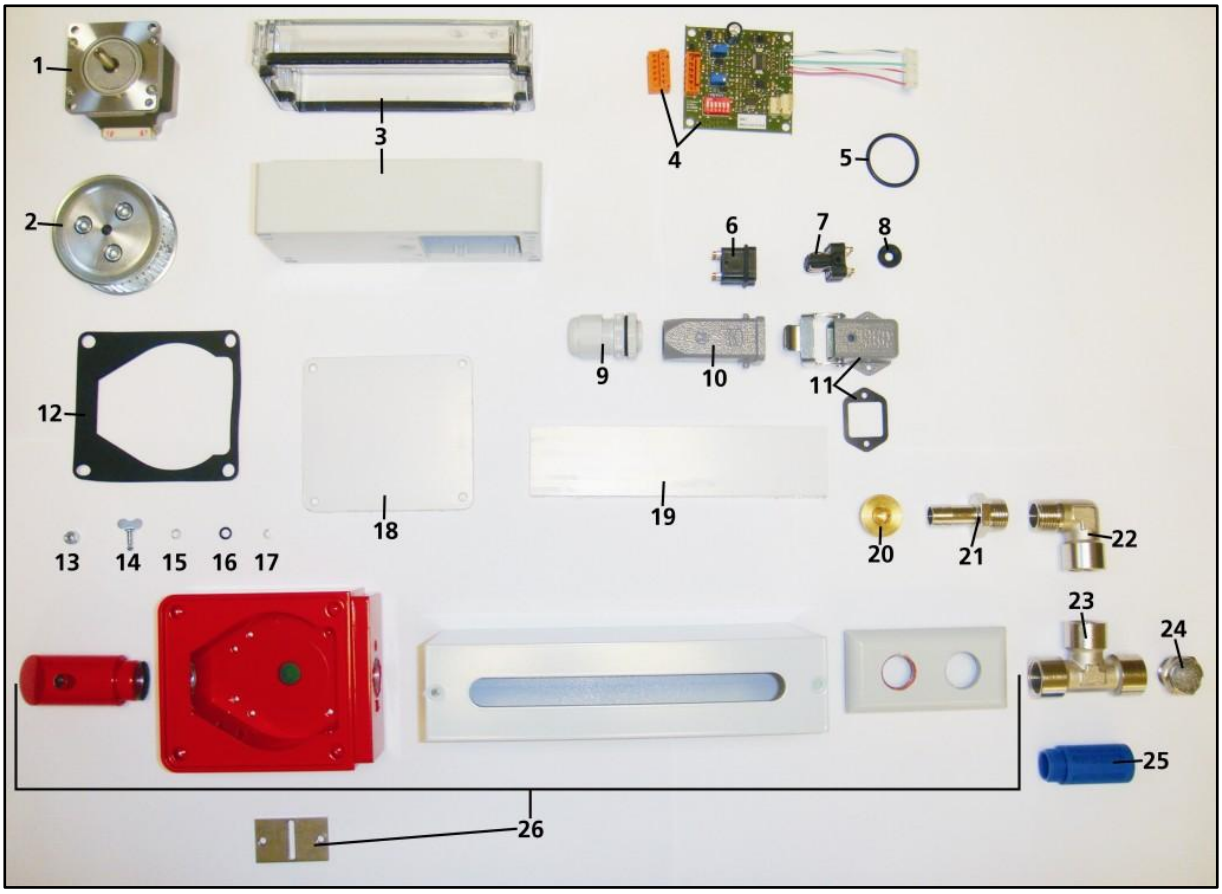
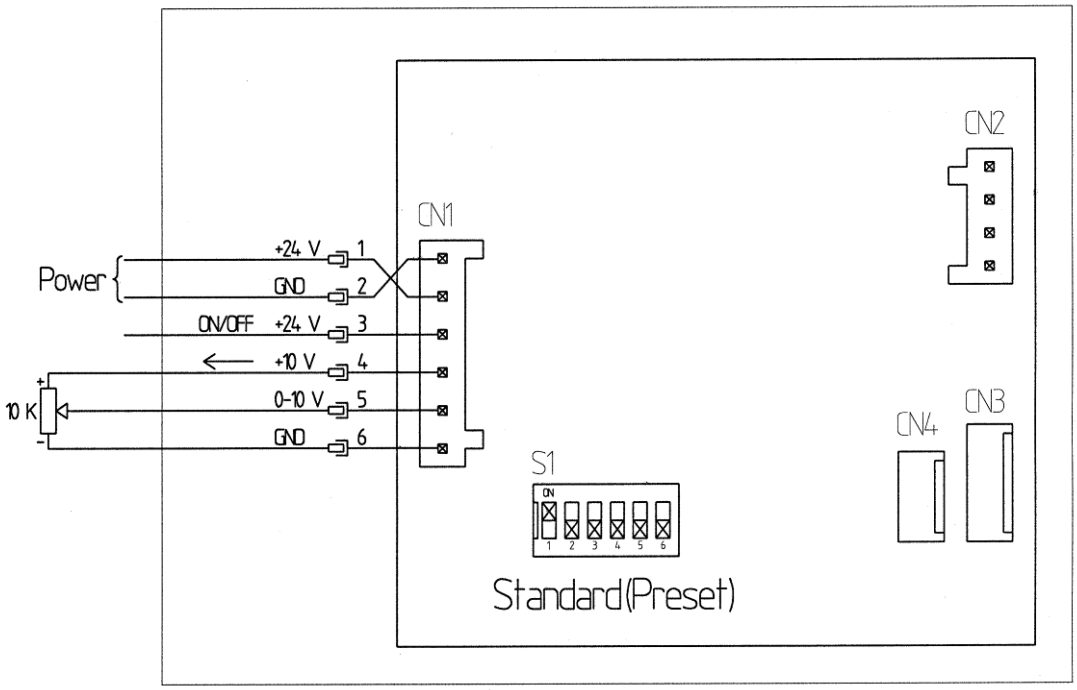
9 SPARE PARTS AND CIRCUIT DIAGRAMS

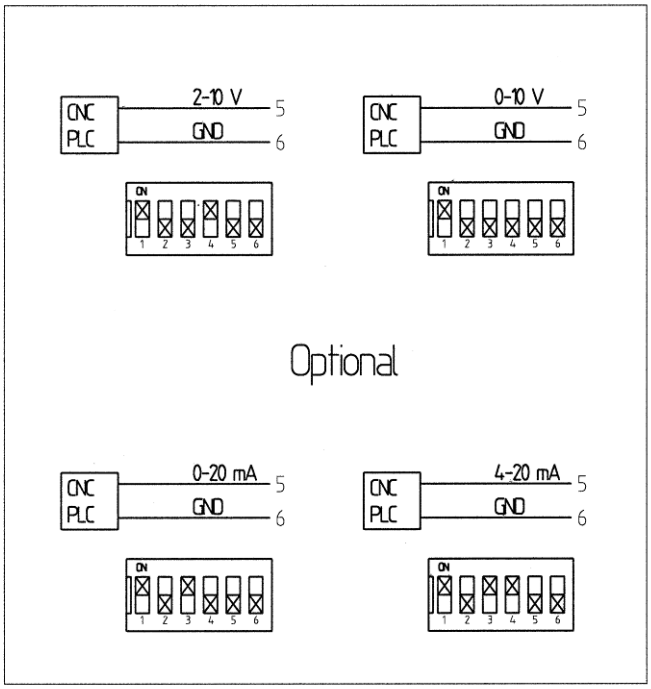
9.1 Spare Parts List



No.	CPN	STÜCK/ QTY.	BESCHREIBUNG	DESCRIPTION
1	80371	1	SCHRITTMOTOR SMA EINHEIT	STEPMOTOR SMA UNIT
2	20426444	1	ROLLE DOSIERUNG	WHEEL DOSE
3	05211898	1	GEHÄUSE SMA EINHEIT	BOX SMA UNIT
4	80373	1	STEUEREINHEIT SMA	CONTROL UNIT SMA
5	10193522	1	O-RING, 1-3/16"x3/8"x3/32"	O-RING, 1-3/16"x3/8"x3/32"
6	20426486	1	EINSATZ STECKER WEIBLICH	INSERT PLUG FEMALE
7	20426468	1	EINSATZ STECKER MÄNNLICH	INSERT PLUG MALE
8	05210561	1	WELLENDICHTRING A 6x15x4NBR	SHAFT SEAL A 6x15x4NBR
9	20426527	1	KABELVERSCHRAUBUNG V-M20	CABLE GLAND V-M20
10	20426494	1	TÜLLENGEHÄUSE	SPOUT HOUSING
11	20426501	1	ANBAUGEHÄUSE	ANNEX HOUSING
12	05215172	1	DICHTUNG SEITENDECKEL	SEAL SIDE COVER
13	05210413	4	EINPRESSGEGENSTÜCK	COUNTERPART PRESSED IN
14	05210405	4	VERSCHLUSSZAPFEN FLÜGELKOPF KLEIN	MOUNTING STUD WING-HEAD SMALL
15	05210429	4	DRUCKFEDER	PRESSURE SPRING
16	05210437	4	UNTERLEGSCHEIBE SCHWARZ	WASHER BLACK
17	05210421	4	SICHERUNGSRING GESCHLITZT	SNAP RING SLOTTED
18	05214487	1	SEITENDECKEL FL-IV VER 4A	SIDE COVER FL-IV VER 4A
19	05210751	1	SICHTFENSTER PLEXIGLAS 180 x 40 x 3,5	INSPECTION WINDOW PERSPEX 180 x 40 x 3,5
20	05210603	1	VERSCHLUSSSTOPFEN VS 12 MS	CLOSING PLUG VS 12 MS
21	05210634	1	GEWINDETÜLLE 1/2" GT 1213	COUPLING HOSE 1/2" GT 1213
22	05210627	1	WINKEL 1/2" WE 12 MSV	ELBOW 1/2" WE 12 MSV
23	05210619	1	T-STÜCK 1/2" T 12 MSV	TEE 1/2" T 12 MSV
24	05210611	1	SCHALLDÄMPFER DRAHTGEWEBE SDD 12 ES	SOUND ABSORBER WIRE-CLOTH SDD 12 ES
25	20426319	1	SCHALLDÄMPFER KUNSTSTOFF 1/2"	SILENCER PLASTIC 1/2"
26	05215229	1	BAUGRUPPE GEHÄUSE FL-V LACKIERT	HOUSING ASSEMBLY FL-V VARNISHED

9.2 Electric circuit diagram





If optional connection is used, GND (6) must be potential-isolated against GND (2)