

Flexible shaft drives are multi-speed machines. They cover a wide rotational speed range and can be steplessly adjusted electronically or via gears to match individual tool requirements. Flexible shaft drives have very high drive outputs. They can also be used with compact handpieces or extensions to work in difficult-to-reach areas.

Areas of application

Flexible shaft drives can be used for almost all jobs. They are used successfully in many industrial sectors for different processes. The rotational speed control allows the use of various tools on one single drive.

The PFERD product range

PFERD offers various types of flexible shaft drives, as well as a comprehensive range of matching flexible shafts, handpieces, angle drives, drum drives and special drives.

PFERD flexible shaft drives and their accessories are extremely robust, technically up to date and incorporate the latest ergonomic findings and requirements. This product range was developed especially for the economic use of grinding, milling, brushing, cut-off and polishing tools and covers a wide rotational speed range (40,000–100 RPM) and power range (6,100–500 watts).

Advantages

- Very compact and ergonomic handpieces.
- Very low weight of the handpieces.
- Drives that are very robust and designed for continuous use (Mammoth drives, Master Grinder).
- Sophisticated.
- Very high performance.
- Highly versatile.
- Simple power supply.
- Low-maintenance.
- Easy to service.
- Economical.

Standards, safety, general guidelines

Electrical safety

PFERD flexible shaft drives comply with the standard "Safety for Hand-Guided Motor-Driven Electric Tools".

1. Earthed electric drives (protection class I)

This design is indicated by the protective earthing  sign:

- Mini-Mammoth Electronic (page 101)
- Mammoth Electronic (page 100, 102)
- Mammoth MD (page 103)
- Maxi-Mammoth Electronic (page 104)
- Master Grinder SD (page 105)

2. Insulated electric grinders (protection class II)

This design is indicated by the insulation sign  and the supplement "SI":

- RUER 5/250 SI (page 98)
- RUER 10/250 SI (page 98)
- RUER 15/150 SI (page 99)
- RUER 15/60 SI (page 99)

- RUER 15/30 SI (page 99)
- RUG 19/120 SI (page 99)
- RUER 8/180 SI (page 101)

3. Safety extra-low voltage/protective separation

When using alternating current voltage in boilers, tanks, pipelines and similar narrow spaces made of electrically conductive materials, a safety extra-low voltage of 42 volts or protective separation must be used.

3.1 Electric grinders for safety extra-low voltage (protection class III)

These drives are operated with no more than 42 volts. The following drives are available in 42-volt designs:

- Mammoth MD (page 103)
- Master Grinder SD (page 105)

3.2 Protective separation

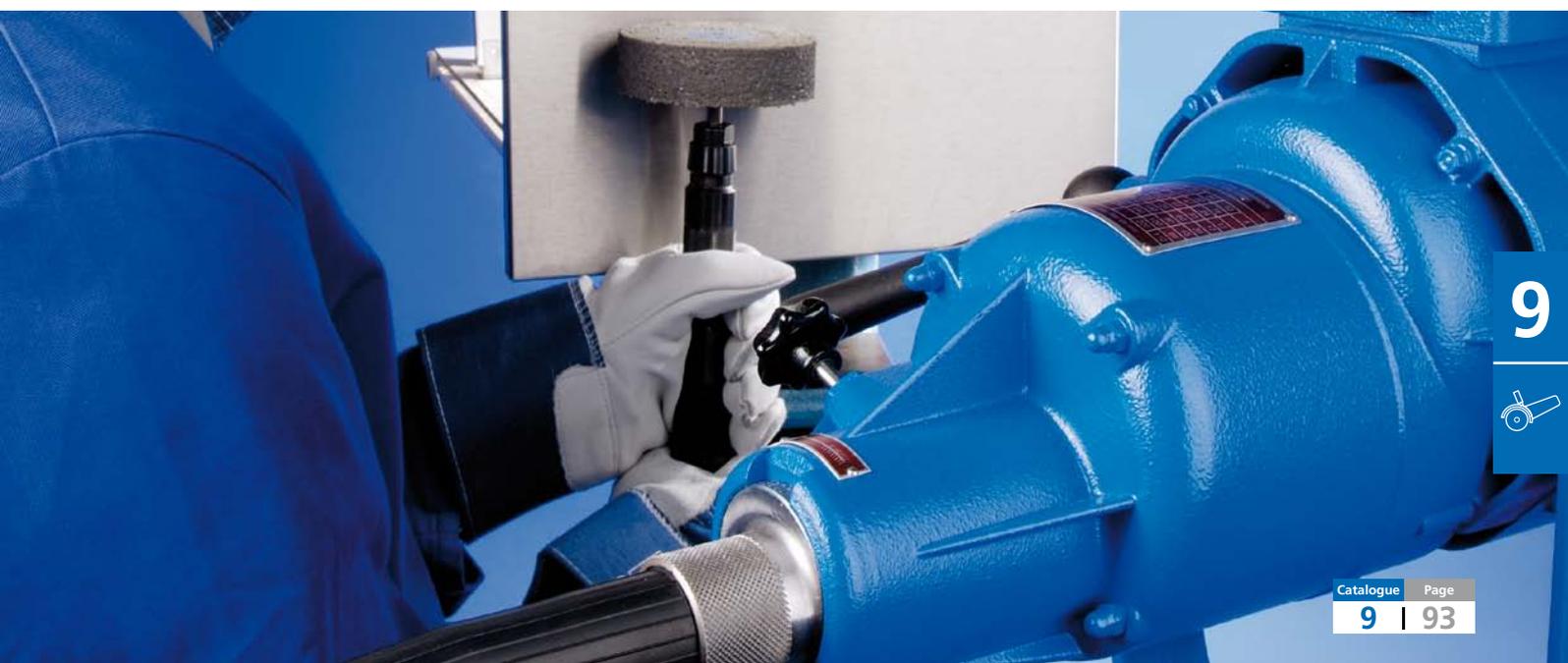
For flexible shaft tool drives, one alternative to a safety extra-low voltage is to isolate the drive motor from the mains voltage using a transformer of the same voltage rating.

PFERD electric grinders comply with:

- EC Machinery Directive
- Low Voltage Directive
- Electromagnetic Compatibility

PFERD electric grinders bear the CE mark. 

Any special regulations (e.g. on the use of safety extra-low voltage) or country-specific regulations must be observed.



Flexible shaft drive

General information



Criteria for selecting the optimum flexible shaft drive

The most important prerequisite for cost-effective work is the selection of the optimum tool. The appropriate tool drive is selected taking the following criteria into consideration:

1. Design, shape and size

Each type of application places specific demands on the shape and size of the tool drive. The different designs can be used for various applications: The ideal tool size should be selected for the task at hand depending on the dimensions, accessibility, type and frequency of the application.

2. Rotational speed

The tool drive should always be selected according to the rotational speed and cutting speed recommendation for the tool. Please refer to catalogue sections 2–8 for this recommendation.

3. Power output

The drive's power output is the decisive factor for maintaining the rotational speed under load. The load is determined by the stock removal properties of the material to be machined, the cutting characteristics of the tool, the tool diameter, the contact surface and the contact pressure.

4. Tool mounting

Depending on the PFERD tool selected, different tool mountings are available, e.g. collets or threaded spindles. Matching collets are allocated to every drive. Please refer to pages 116–120 for an overview of the collets and drive spindle extensions.

If you have any further questions, your personal PFERD sales representative will be happy to help you.

Flexible shafts (BW)

Flexible shafts consist of three components which can be combined in different ways:

Flexible core (SE)

The flexible core consists of 4 to 10 layers of wire, conforming to DIN 2076, and is specially designed for high-speed clockwise rotation. The coupling is securely press-fitted to the core. After approximately 100 operating hours, the core of the flexible shaft must be re-lubricated. The core and casing must be degreased and new special shaft grease must be applied to the core.

Flexible casing (SCH)

The flexible casing consists of oil-resistant rubber; the interior being a flat steel spiral and the outside being solid rubber. The connection couplings are pressed on firmly and encased in a rubber sheath as reinforcement.

Handpiece (HA)

The handpieces are light and easy to handle in relation to their power output transmission, and cover a wide rotational speed range. Because of low noise emission, continuous operation with little fatigue is possible. Replaceable collets or the special shank mounting for Morse cones allow various tools to be mounted. The sliding coupling allows quick handpiece changes.

Repair

It is not possible to repair cores and flexible casings. We recommend replacement with pre-assembled new parts.

Radius of curvature

When using flexible shafts, please ensure that the shafts are not bent beyond the specified radius of curvature. The smallest possible radius of curvature is given for each flexible shaft.



Record Universal Motor RUER 8/180 SI

incl. combi-speed control

Special features:

- Stepless rotational speed control.
- Electronics for constant rotational speed.
- Overload protection.
- Restart protection in case of power failure.
- The combi-speed control KDR 8/180 SI can be used as a table-top or foot control. In table-top operation the rotational speed can be controlled individually using the potentiometer. For foot-controlled operation, the maximum rotational speed is preset using the potentiometer. Control is then achieved using the foot pedal. Only for use with motor RUER 8/180 SI.
- Very low noise generation.

- Particularly suitable for use in tool and mould construction.

Included in delivery:

2.5 m power cable, 2.25 m connection cable, 2 allen keys.

Ordering notes:

- The drive is supplied without flexible shaft, please order separately.

PFERDVALUE:



Description	EAN 4007220	Rotational speed [RPM]	Voltage [volts] 50–60 Hz	Power consumption [watts]	Power output [watts]	Flexible shaft connection [DIN]	Dimensions L x W x H [mm]	Net weight [kg]
RUER 8/180 SI 230 V	807408	18,000–500	230	1,020	600	10	222 x 98 x 98	1.650

Dimensions and the net weight refer to the motor.

Accessories for tool drives RUER

Table stand TS L 1400 with screw clamp for attachment to bench tops up to 65 mm in thickness.

The telescopic system allows individual height adjustment up to maximum 140 cm. Max. 10 kg carrying capacity.

Support TSA L 1400

This support matches the table stand and allows optimum placement of the various handpieces, ready for use.

Ordering notes:

- Please order support separately.



Description	EAN 4007220	Description	Net weight [kg]
TS L 1400	657683	Table stand	2.170
TSA L 1400	657690	Handpiece support	0.450

Mini-Mammoth Electronic MMEW 11/120

Special features:

- Stepless rotational speed control.
- Overload protection.
- Smooth start-up to protect people, tools and the drive.
- Restart protection in case of power failure.
- Very low noise generation.
- Mounted grinding and polishing tools with diameter ≥ 60 mm are not suitable for continuous use with the Mini-Mammoth Electronic.

Ordering notes:

- The drive is supplied without flexible shaft, please order separately. Hanging design, on request. Version with foot switch, on request.

PFERDVALUE:



Included in delivery:

2.5 m power cable, 2 allen keys.

Description	EAN 4007220	Rotational speed [RPM]	Voltage [volts] 50–60 Hz	Power consumption [watts]	Power output [watts]	Flexible shaft connection [DIN]	Dimensions L x W x H [mm]	Net weight [kg]
MMEW 11/120 230 V	657478	12,000-800	230	1,100	800	10	270 x 160 x 180	7.900