Precision Grinding

Purpose

Precision grinding, also known as die grinding, is performed with handheld tools to remove material from small areas, cavities, or other confined spaces. Typical operations include creating cavities in a die and removing excess material from narrow welds. Other precision tasks include deburring cast or cut pieces of any material, such as beveling and grinding grooves.

Tool Types

Die grinders are designed for precision work. These are ungeared, high-speed tools with a collet chuck, often referred to as collet grinders. Die grinders weigh about 1 kg and are relatively small and light compared to tools for rough grinding, with a limited output of up to 800W. They come in straight (short/extended) or angle (angle-head) versions, depending on the location of the area to be ground and the operator's preference.

Settings: Rotational Speeds

Speeds for precision grinding range from 20,000 to 100,000 rpm, depending on the material, shape of the burr, and workpiece. Finer, more precise operations require higher speeds and smaller burrs. The operation determines the size of the abrasive, which in turn determines the rotational speed. Choosing the right power level is crucial, balancing power requirements against increased weight. Handheld die grinders typically have a power rating of up to 800W.

Technique

Each time a "tooth" of the burr or an abrasive grain touches the workpiece, it removes a chip. The size of the chip depends on several factors: the size of the "tooth" or grain, the hardness of the materials, rotational speed, and feed force. The operator should avoid applying excessive force that could cause the bit to jam and the tool to stall. Keeping the surface area of the workpiece in contact with the abrasive as small as possible provides greater control over the tool and increases contact pressure, resulting in a higher material removal rate. Rough treatment can easily damage abrasives, particularly die grinding burrs. High burr consumption will negatively impact grinding economy.

Straight extended die grinders combine powerful performance and ergonomic design to boost productivity, making them ideal for precision grinding in hard-to-reach areas.

Description

Straight extended die grinders offer numerous advantages, making them indispensable tools for precision grinding. Their powerful performance ensures efficient material removal, while the extended reach allows access to hard-to-reach areas, perfect for intricate tasks. The ergonomic design - including scatter dampening - enhances user comfort, reducing fatigue during prolonged use, and boosting overall productivity. Designed to withstand tough jobs under continuous load, they excel in heavy-duty industrial material removal applications such as shipyards, foundries, forges, rail car manufacturing, automotive, heavy industry, and many other types of manufacturing. These features collectively make straight extended die grinders a valuable asset for professionals seeking precision, efficiency, and durability in their work.

Features

- High speed (up to 46000RPM)
- Integrated speed controlled governor
- Compact and robust design
- Lightweight and easy-to-handle design
- Scatter dampening
- Lever equipped with the safety clutch

Benefits

- Optimal process speed for different applications
- High productivity
- Long-lasting performance and reliability
- Reduced risk of vibration related injuries
- Minimum sound levels

Straight Extended Die Grinders

LSF19 Details

LSF29 Details

LSF39 Details

LSF19

Model	Max free speed	Max output	Collet size	Length	Weight	Air consumption at max output	Air consumption at free speed	Rec hose size	Air inlet thread BSP	Scatter damped	Ordering No.
	r/min	kW	mm	mm	kg	l/s	l/s	mm	in		
LSF19 S200E-1	20000	0.5	6	293	0.7	9.6	3.5	10	1/4	Yes	8423 1224 85
LSF19 S300E-1	30000	0.5	6	293	0.7	11.3	6.6	10	1/4	Yes	8423 1224 86
LSF19 S460E-1	46000	0.5	6	293	0.7	11.4	15	10	1/4	Yes	8423 1224 87
LSF19 S300E-1R	30000	0.5	6	293	0.7	11.3	6.6	10	1/4	No	8423 1224 88
LSF19 S460E-1R	46000	0.5	6	293	0.7	11.4	15	10	1/4	No	8423 1224 90

Accessories

	8423 1224 85	8423 1224 86	8423 1224 87	8423 1224 88	8423 1224 90	Ordering No.
Included						
Open-end spanner (A/F 14mm)	✓	✓	✓	✓	✓	4080 0153 00
Hose (Soft type, Ø38, L = 1 m)	✓	✓	✓	✓	✓	4150 1314 02
Collet (Ø6mm)	✓	✓	✓	✓	✓	4150 0075 00
Optional						
Hose kit (Cablair 10; 10 mm, L = 0.7 m)	✓	✓	✓	✓	✓	8202 1180 19
Collet (Ø3mm)	✓	✓	✓	✓	✓	4150 0081 00
Collet (Ø8mm - Ø5/16")	✓	✓	✓	✓	✓	4150 0074 00
Collet (Ø5mm)	✓	✓	✓	✓	✓	4150 0075 01
Collet (Ø1/4")	✓	✓	✓	✓	✓	4150 0076 00
Collet (Ø3/16")	✓	✓	✓	✓	✓	4150 0649 00
Collet (Ø1/8")	✓	✓	✓	✓	✓	4150 0082 00
Collet (Ø5/32")	✓	✓	✓	✓	✓	4150 0648 00
Collet holder	✓	✓	✓	✓	✓	4150 1262 00
Collet nut	✓	✓	✓	✓	✓	4150 0760 00
MULTIFLEX-1/4 cover	✓	✓	✓	✓	✓	8202 1350 41
MULTIFLEX-1/4-NPT (For North America)	✓	✓	✓	✓	✓	8202 1350 26
MULTIFLEX-1/4	✓	✓	✓	✓	✓	8202 1350 20
Productivity kit (MIDI-FRL-1/2-BSP EQ08-C10)	✓	✓	✓	✓	✓	8202 0850 03

LSF29

Model	Max free speed	Max output	Collet size	Length	Weight	Air consumption at max output	Air consumption at free speed	Rec hose size	Air inlet thread BSP	Scatter damped	Ordering No.
	r/min	kW	mm	mm	kg	l/s	l/s	mm	in		
LSF29 S150E	15000	0.8	6	332	1.4	18	4	13	3/8	Yes	8423 0127 04
LSF29 S180E	18000	0.9	6	332	1.4	20	6	13	3/8	Yes	8423 0127 08
LSF29 S250E	25000	1.0	6	332	1.4	22	9	13	3/8	Yes	8423 0127 14
LSF29 S030E	3000	0.8	6	381	1.8	20	6	13	3/8	Yes	8423 0127 19
LSF29 S070E	7000	1.0	6	381	1.8	22	9	13	3/8	Yes	8423 0127 21
LSF29 S120E-HD	12000	0.7	6	332	1.6	17	4	13	3/8	No	8423 0127 22
LSF29 S180E-HD	18000	0.9	6	332	1.6	20	6	13	3/8	No	8423 0127 24
LSF29 S250E-HD	25000	1.0	6	332	1.6	22	9	13	3/8	No	8423 0127 26

Accessories

	8423 0127 04	8423 0127 08	8423 0127 14	8423 0127 19	Ordering No.
Included					
Open-end spanner (A/F 14mm)	✓	✓	✓	✓	4080 0153 00
Hose (Soft type, Ø38, L = 1 m)	✓	✓	✓	✓	4150 1314 02
Collet (Ø1/4") (For North America)	✓	✓	✓	✓	4150 0076 00
Collet (Ø6mm)	✓	✓	✓	✓	4150 0075 00

	8423 0127 21	8423 0127 22	8423 0127 24	8423 0127 26	Ordering No.
Included					
Open-end spanner (A/F 14mm)	✓	✓	✓	✓	4080 0153 00
Hose (Soft type, Ø38, L = 1 m)	✓	-	-	-	4150 1314 02
Collet (Ø1/4") (For North America)	✓	✓	✓	✓	4150 0076 00
Collet (Ø6mm)	✓	✓	✓	✓	4150 0075 00

Continued on the next page (LSF 29)

Accessories

	8423 0127 04	8423 0127 08	8423 0127 14	8423 0127 19	Ordering No.
Optional					
Hose kit (Turbo 13; 13 mm (1/2"), L = 0.9m (L = 3 ft))	✓	✓	✓	✓	4150 1618 81
Exhaust hose	✓	✓	✓	✓	4150 1532 02
Collet compl. (Ø6mm - collet nut included)	✓	✓	✓	✓	4150 0075 90
Collet (Ø3mm)	✓	✓	✓	✓	4150 0081 00
Collet (Ø8mm - Ø5/16")	✓	✓	✓	✓	4150 0074 00
Collet (Ø5mm)	✓	✓	✓	✓	4150 0075 01
Collet (Ø3/16")	✓	✓	✓	✓	4150 0649 00
Collet (Ø1/8")	✓	✓	✓	✓	4150 0082 00
Collet (Ø5/32")	✓	✓	✓	✓	4150 0648 00
Collet holder and collet nut	✓	✓	✓	✓	4110 0844 90
Collet nut	✓	✓	✓	✓	4150 0760 00
Extension (700mm)	✓	✓	✓	-	8423 0127 70
Cone wheel adapter (UNF 3/8)	✓	✓	✓	✓	4150 2326 85
MULTIFLEX-3/8 cover	✓	✓	✓	✓	8202 1350 42
MULTIFLEX-3/8-NPT (For North America)	✓	✓	✓	✓	8202 1350 28
MULTIFLEX-3/8	✓	✓	✓	✓	8202 1350 22
For machining of plastic and fiberglass					
Diamond drum Ø52 mm	✓	✓	✓	✓	3780 5035 00
Diamond cylinder kit Ø 52mm	✓	✓	✓	✓	3780 5035 01

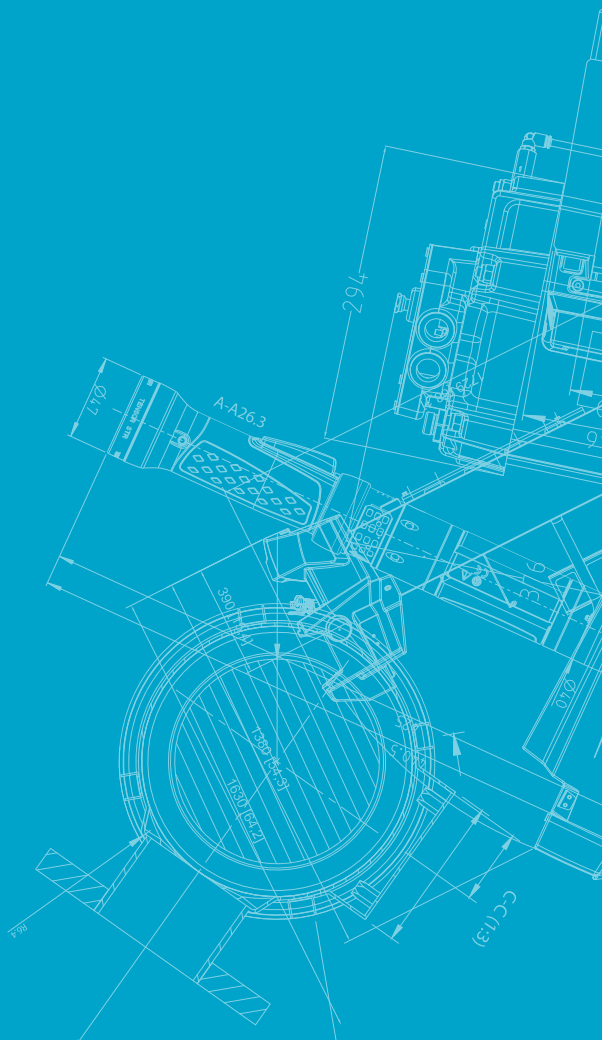
	8423 0127 21	8423 0127 22	8423 0127 24	8423 0127 26	Ordering No.
Optional					
Hose kit (Turbo 13; 13 mm (1/2"), L = 0.9m (L = 3 ft))	✓	✓	✓	✓	4150 1618 81
Exhaust hose	✓	✓	✓	✓	4150 1532 02
Collet compl. (Ø6mm - collet nut included)	✓	✓	✓	✓	4150 0075 90
Collet (Ø3mm)	✓	✓	✓	✓	4150 0081 00
Collet (Ø8mm - Ø5/16")	✓	✓	✓	✓	4150 0074 00
Collet (Ø5mm)	✓	✓	✓	✓	4150 0075 01
Collet (Ø3/16")	✓	✓	✓	✓	4150 0649 00
Collet (Ø1/8")	✓	✓	✓	✓	4150 0082 00
Collet (Ø5/32")	✓	✓	✓	✓	4150 0648 00
Collet holder and collet nut	✓	✓	✓	✓	4110 0844 90
Collet nut	✓	✓	✓	✓	4150 0760 00
Extension (700mm)	-	-	-	-	8423 0127 70
Cone wheel adapter (UNF 3/8)	✓	✓	✓	✓	4150 2326 85
MULTIFLEX-3/8 cover	✓	✓	✓	✓	8202 1350 42
MULTIFLEX-3/8-NPT (For North America)	✓	✓	✓	✓	8202 1350 28
MULTIFLEX-3/8	✓	✓	✓	✓	8202 1350 22
For machining of plastic and fiberglass					
Diamond drum Ø52 mm	✓	✓	✓	✓	3780 5035 00
Diamond cylinder kit Ø 52mm	✓	✓	✓	✓	3780 5035 01

LSF39

Model	Max free speed	Max output	Collet size	Length	Weight	Air consumption at max output	Air consumption at free speed	Rec hose size	Air inlet thread BSP	Scatter damped	Ordering No.
	r/min	kW	mm	mm	kg	l/s	l/s	mm	in		
LSF39 S120E	12000	1.5	6	367	1.6	24.2	9.0	13	3/8	Yes	8423 1233 00
LSF39 S150E	15000	1.7	6	367	1.6	27.6	12.1	13	3/8	Yes	8423 1233 01
LSF39 S180E	18000	1.8	6	367	1.6	30.8	15.2	13	3/8	Yes	8423 1233 02
LSF39 S250E	25000	1.8	6	367	1.6	32.9	33.2	13	3/8	Yes	8423 1233 03

Accessories

	8423 1233 00	8423 1233 01	8423 1233 02	8423 1233 03	Ordering No.
Included					
Collet (Ø1/4") (For North America)	✓	✓	✓	✓	4150 1754 90
Collet (Ø6mm)	✓	✓	✓	✓	4150 1453 00
Optional					
Hose kit (Turbo 13; 13 mm (1/2"), L = 0.9m (L = 3 ft))	✓	✓	✓	✓	4150 1618 81
Exhaust hose	✓	✓	✓	✓	4150 1532 02
Collet (Ø8mm)	✓	✓	✓	✓	4150 0706 00
Collet (Ø9mm)	✓	✓	✓	✓	4150 0765 00
Collet holder	✓	✓	✓	✓	4150 1587 00
Collet nut	✓	✓	✓	✓	4150 0849 00
Rigid ring	✓	✓	✓	✓	4150 2319 00
Cone wheel adapter (UNC/W 5/8)	✓	✓	✓	✓	4150 2292 90
MULTIFLEX-3/8 cover	✓	✓	✓	✓	8202 1350 42
MULTIFLEX-3/8-NPT (For North America)	✓	✓	✓	✓	8202 1350 28
MULTIFLEX-3/8	✓	✓	✓	✓	8202 1350 22
Productivity kit (MIDI-FRL-1/2-BSP EQ10-T13)	✓	✓	✓	✓	8202 0850 17



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