



# Plastic Welding

with hand extruders



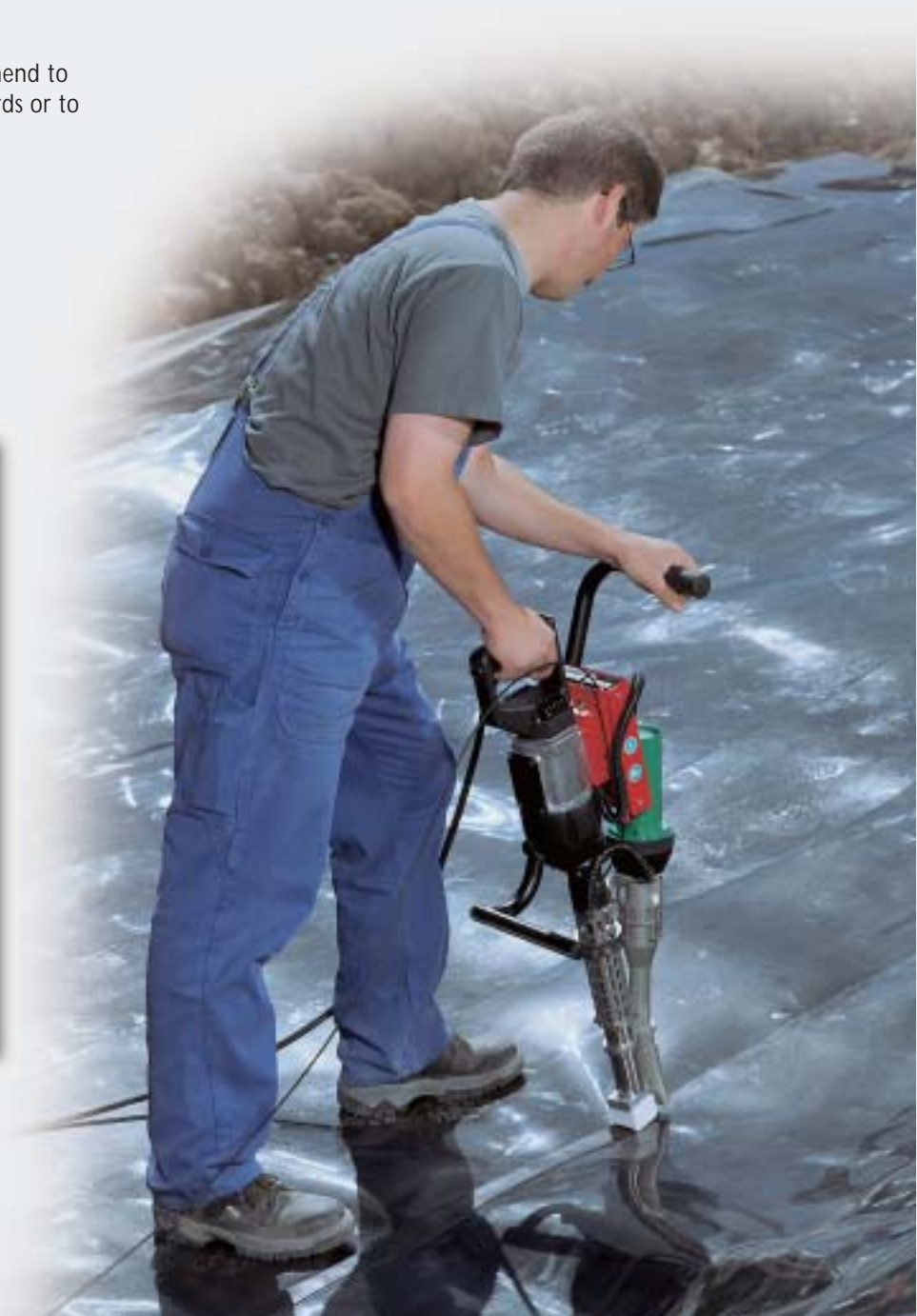
## ■ Hand Extruders for Plastic Welding

Thermoplastics welding has been growing in importance over the past few decades, holding these days a rank similar to that of metal welding in industrial production and fabrication applications. Hot gas extrusion welding is a semi-mechanical process for joining thermoplastic sheeting and films right through to thick-walled fabrications.

Factors governing the quality of the weld seam are not only the craftsmanship and skill of the welder but also the capabilities of the hand extruder employed.

The extrudate output, preheat and extrudate temperatures are set on the hand extruder as a function of the weld thickness and the type of welding material employed. The quality of the weld is then determined by the welder via the welding speed and the welding shoe contact pressure applied to the parts to be joined.

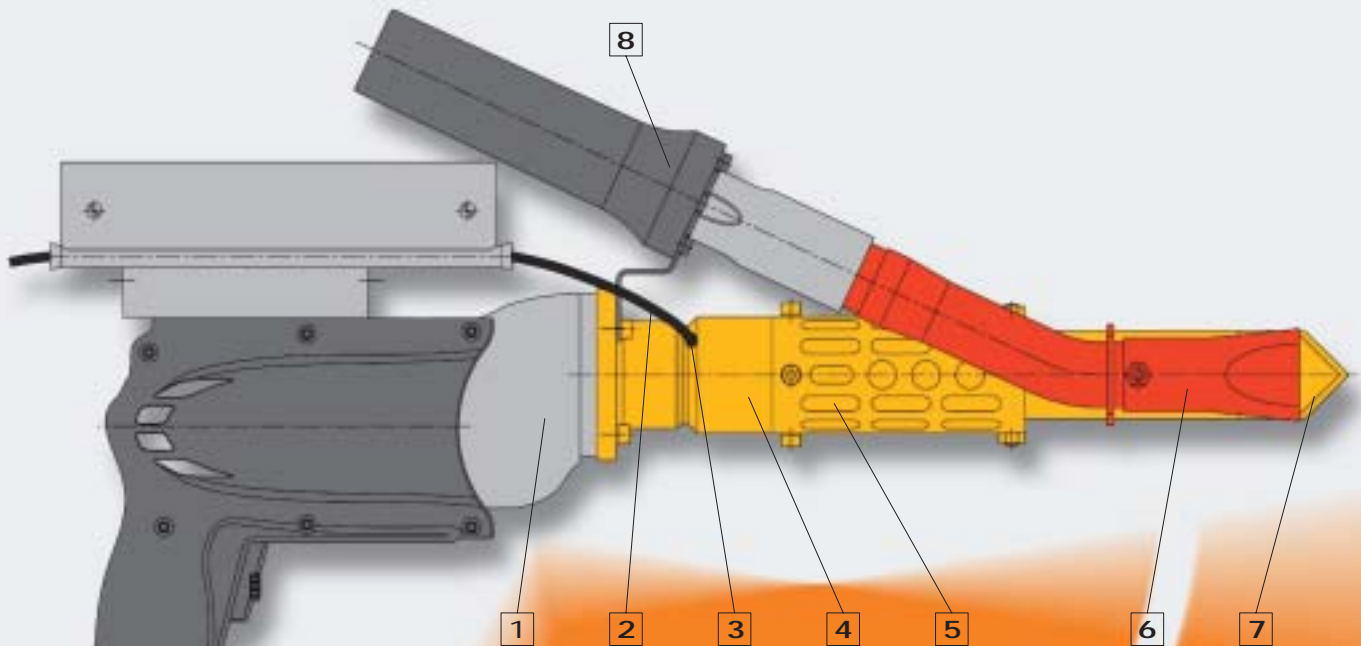
To achieve optimum welding results, we recommend to consult the applicable guidelines of DVS-Standards or to attend a plastic welding course.



## ■ Functional principles of hand extruder

Driven by an electric motor (1), the welding rod (2) is fed to the extruder (4) via the rod feeder. On its passage to the melting chamber (5), the welding rod is granulated by the extruder screw. In the melting chamber, the granulate is molten down to a homogeneous mass before exiting the extruder nozzle.

In parallel with the extrusion process, the parts to be joined are heated to welding temperature by preheat air supplied via preheat nozzle (6). The molten extrudate is deposited on the preheated parts to be joined and formed into a weld seam by the welding shoe (7).



MUNSCH hand extruders are operated with either a separate compressor or an integrated blower for air supply to the preheat air unit (8).

With either, internal or external air supply systems, the preheat air temperature and extrudate temperature are separately set. The setpoint and actual temperatures are simultaneously read out on the hand extruder display.

An interlock ensures that the drive can only be started when the preset start-up temperature has been reached.

Setpoint and actual temperatures are simultaneously displayed.

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# MUNSCH hand extruder

MUNSCH hand extruders have been successfully employed in container engineering and landfill construction for more than 30 years. Featuring welding rates of 0.5 to 6.0 kg/h, they stand for powerful performance in thermoplastic welding applications.

## ■ Autoair supply

Autoair hand extruders with integrated preheat air supply provide maximum flexibility in workshop and field welding applications. Thanks to the on-board preheat air blower, the machine does not depend on an external air source.

## ■ External air supply

Hand extruders supplied from an external air source are preferably used in workshop welding applications. They are smaller and also lighter than their Autoair counterparts.



MUNSCH hand extruder MA-60-B

**NEW**

## MUNSCH hand extruder with brushless drive

- Dramatic increase in service life compared with conventional drill drives
- Constant drive torque ensures uniform extrudate output, irrespective of variations in drive loads
- Greatly reduced noise generation compared with conventional motors
- Flanged connection between brushless MUNSCH drive motor and extruder avoids misalignment between drive shaft and extruder screw; excessive bearing stresses are ruled out
- Lower weight and shorter length than conventional hand extruders with comparable extrudate output
- Motor start interlock ensures that drive only starts when preset start-up temperature is reached
- Temperature sensors for preheat temperature and extrudate are protected against mechanical damage



# Container engineering

- Hand extruder with integrated air supply (Autoair)



	MA-25-S-B	MA-25-B	MA-40-B	MA-60-B	GMA-50-B
Max. welding rate	2.5 kg/h, Ø 4 mm 1.4 kg/h, Ø 3 mm	2.5 kg/h, Ø 4 mm 1.4 kg/h, Ø 3 mm	3.9 kg/h, Ø 5 mm 2.5 kg/h, Ø 4 mm	6 kg/h, Ø 5 mm 3.8 kg/h, Ø 4 mm	2 – 6.2 kg/h dependent on granulate type and size
Welding material	PP / PE	PP / PE / PVDF / PVC <sup>1)</sup>	PP / PE	PP / PE	PP / PE
Kind of material	round rod Ø 3 / 4 mm	round rod Ø 3 / 4 mm	round rod Ø 4 / 5 mm	round rod Ø 4 / 5 mm	granulate
Application range <sup>2)</sup>	wall thicknesses 4 – 15 mm	wall thicknesses 4 – 15 mm	wall thicknesses 8 – 30 mm	wall thicknesses 12 – 40 mm	wall thicknesses 12 – 40 mm
Weight	5 kg	6 kg	8 kg	9.4 kg	12.3 kg
Length	455 mm	470 mm	570 mm	700 mm	760 mm
Electronic speed control	yes	yes	yes	yes	yes
Drive with external electronic	yes	yes	yes	yes <sup>3)</sup>	no
Cartridge heater	-	400 W	650 W	800 W	800 W
Hot air blower	2000 W	2200 W	2200 W	2200 W	2200 W

Voltage:  
230 V and 120 V;  
380 V drive available on request

The extruder comes with the following accessories:  
1 Welding shoe  
1 Set of air nozzles

1) Special design for welding PVC  
2) Film thicknesses from 1 mm  
3) Option: also available with brushgear drive



### ■ Weld trimmer

The weld trimmer removes weld projections without damage to the parent material.

#### Technical data

Trimming width: 35 mm  
Trimming depth: max. 6 mm  
Drive rating: 900 W  
Weight: 3 kg



### Accessories

- Digital thermometer
- Welding rod dispenser
- Transport case

For more details, please see page 14.

# Container engineering

## - Hand extruder with external air supply



ME-25-S-B



ME-40-B



ME-25-B



ME-60-B

	ME-25-S-B	ME-25-B	ME-40-B	ME-60-B	GME-50-B
Max. welding rate	2.5 kg/h, Ø 4 mm 1.4 kg/h, Ø 3 mm	2.5 kg/h, Ø 4 mm 1.4 kg/h, Ø 3 mm	3.9 kg/h, Ø 5 mm 2.5 kg/h, Ø 4 mm	6 kg/h, Ø 5 mm 3.8 kg/h, Ø 4 mm	2 – 6.2 kg/h dependent on granulate type and size
Welding material	PP / PE	PP / PE / PVDF / PVC <sup>1)</sup>	PP / PE	PP / PE	PP / PE
Kind of material	round rod Ø 3 / 4 mm	round rod Ø 3 / 4 mm	round rod Ø 4 / 5 mm	round rod Ø 4 / 5 mm	granulate
Application range <sup>2)</sup>	wall thicknesses 4 – 15 mm	wall thicknesses 4 – 15 mm	wall thicknesses 8 – 30 mm	wall thicknesses 12 – 40 mm	wall thicknesses 12 – 40 mm
Weight	4.7 kg	5 kg	7.9 kg	8.9 kg	11.9 kg
Length	455 mm	470 mm	570 mm	700 mm	760 mm
Electronic speed control	yes	yes	yes	yes	yes
Drive with external electronic	yes	yes	yes	yes <sup>3)</sup>	no
Cartridge heater	-	400 W	650 W	800 W	800 W
Air heater	2000 W	2000 W	2000 W	2000 W	2000 W

Voltage:  
230 V and 120 V;  
380 V drive available on request

The extruder comes with the following accessories:  
1 Welding shoe  
1 Set of air nozzles

1) Special design for welding PVC  
2) Film thicknesses from 1 mm  
3) Option: also available with brushgear drive





■ **Weld trimmer**

Without damage to the parent material, weld projections are removed; for technical data, see page 7.



**Accessories**

- Digital thermometer
- Welding rod dispenser
- Transport case

For more details, please see page 14.

# Landfill construction

- Hand extruder with integrated air supply (Autoair)



	MA-25-S-D	MA-25-D	MA-40-D	MA-60-D	GMA-50-D
Max. welding rate	2.5 kg/h, Ø 4 mm 1.4 kg/h, Ø 3 mm	2.5 kg/h, Ø 4 mm 1.4 kg/h, Ø 3 mm	3.9 kg/h, Ø 5 mm 2.5 kg/h, Ø 4 mm	6 kg/h, Ø 5 mm 3.8 kg/h, Ø 4 mm	2 – 6.2 kg/h dependent on granulate kind and size
Welding material	PP / PE	PP / PE / PVDF / PVC <sup>1)</sup>	PP / PE	PP / PE	PP / PE
Kind of material	round rod Ø 3 / 4 mm	round rod Ø 3 / 4 mm	round rod Ø 4 / 5 mm	round rod Ø 4 / 5 mm	granulate
Application range <sup>2)</sup>	wall thicknesses 4 – 15 mm	wall thicknesses 4 – 15 mm	wall thicknesses 8 – 30 mm	wall thicknesses 12 – 40 mm	wall thicknesses 12 – 40 mm
Weight	5 kg	6 kg	8 kg	10.4 kg	12.3 kg
Length	455 mm	470 mm	570 mm	790 mm	890 mm
Electronic speed control	yes	yes	yes	yes	yes
Drive with external electronic	yes	yes	yes	no <sup>3)</sup>	no
Cartridge heater	-	400 W	650 W	800 W	800 W
Hot air blower	2000 W	2200 W	2200 W	2200 W	2200 W

Voltage:  
230 V and 120 V;  
380 V drive available on request

The extruder comes with the following accessories:  
1 Welding shoe  
1 Set of air nozzles

1) Special design for welding PVC  
2) Film thicknesses from 1 mm  
3) Option: also available with brushless drive



■ **Cutter**

To produce test specimens up to a thickness of 6 mm. The test specimens are dimensioned to DVS 2225, Part 4.



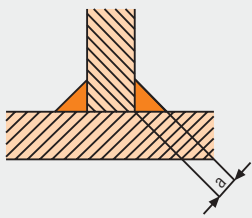
**Accessories**

- Digital thermometer
- Welding rod dispenser
- Transport case

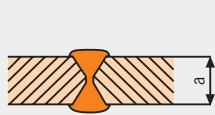
For more details, please see page 14.

# Welding shoes

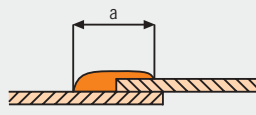
To produce a perfect weld seam, the welding shoe must fit the specific weld geometry. Apart from the welding shoes shown in this brochure (see table), we also supply customized welding shoe designs for special applications and weld geometries.



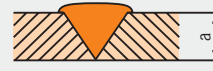
Fillet weld



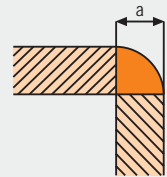
X-weld



Film weld



V-weld



Corner weld

## X-weld, V-weld

Extruder type	a = material thickness	Catalogue No	Welding shoe length
ME-/MA-25-S	5	42.0105 V	40/60 mm
ME-/MA-25	6	42.0106 V	40/60 mm
also for EKR,	8	42.0108 V	40/60 mm
SKR, UKR <sup>1)</sup>	10	42.0110 V	40/60 mm
	12	42.0112 V	40/60 mm
	15	42.0115 V	40/60 mm
ME-/MA-40	8	43.0108 V	40/60/80 mm
ME-/MA-60	10	43.0110 V	40/60/80 mm
GME-/GMA-50	15	43.0115 V	40/60/80 mm
also for U2, U8,	20	43.0120 V	40/60/80 mm
U5R, U7R, E5 <sup>1)</sup>	25	43.0125 V	40/60/80 mm



## Fillet weld

Extruder type	a = fillet depth	Catalogue No	Welding shoe length
ME-/MA-25-S	4	42.0104 K	40/60 mm
ME-/MA-25	6	42.0106 K	40/60 mm
also for EKR,	8	42.0108 K	40/60 mm
SKR, UKR <sup>1)</sup>	11	42.0111 K	40/60 mm
ME-/MA-40	6	43.0106 K	40/60/80 mm
ME-/MA-60	8	43.0108 K	40/60/80 mm
GME-/GMA-50	11	43.0111 K	40/60/80 mm
also for U2, U8,	14	43.0114 K	40/60/80 mm
U5R, U7R, E5 <sup>1)</sup>	18	43.0118 K	40/60/80 mm
	21	43.0121 K	40/60/80 mm



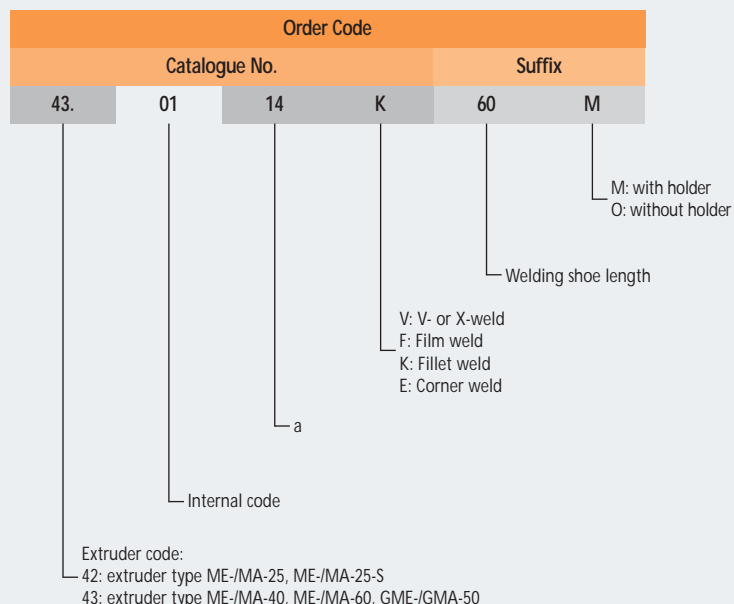
## Order code

Welding shoes can be ordered from our local distributor or from MUNSCH Kunststoff-Schweißtechnik GmbH and also via the internet (for address, please see back cover).

The welding shoe type is unequivocally identified by the order code: i.e. the catalogue no. provides information on the hand extruder type and weld geometry while the suffix defines the welding shoe length and supply option (with or without holder).

The example on the right denotes:

- for hand extruder type ME-/MA-40, ME-/MA-60 or GME-/GMA-50
- a = 14 mm
- for fillet weld
- welding shoe length = 60 mm
- including holder



## Film weld

Extruder type	a = weld width	Catalogue No	Welding shoe length
ME-/MA-25-S	20	42.0120 F	40/60 mm
ME-/MA-25 also for EKR, SKR, UKR <sup>1)</sup>	25	42.0125 F	40/60 mm
ME-/MA-40	20	43.0120 F	40/60/80 mm
ME-/MA-60	25	43.0125 F	40/60/80 mm
GME-/GMA-50	30	43.0130 F	40/60/80 mm
also for U2, U8, U5R, U7R, E5 <sup>1)</sup>	40	43.0140 F	50 mm



## Corner weld

Extruder type	a = material thickness	Catalogue No	Welding shoe length
ME-/MA-25-S	5	42.0105 E	40/60 mm
ME-/MA-25	6	42.0106 E	40/60 mm
also for EKR, SKR, UKR <sup>1)</sup>	8	42.0108 E	40/60 mm
	10	42.0110 E	40/60 mm
	12	42.0112 E	40/60 mm
	15	42.0115 E	40/60 mm
ME-/MA-40	6	43.0106 E	40/60/80 mm
ME-/MA-60	8	43.0108 E	40/60/80 mm
GME-/GMA-50	10	43.0110 E	40/60/80 mm
also for U2, U8, U5R, U7R, E5 <sup>1)</sup>	12	43.0112 E	40/60/80 mm
	15	43.0115 E	40/60/80 mm
	20	43.0120 E	40/60/80 mm



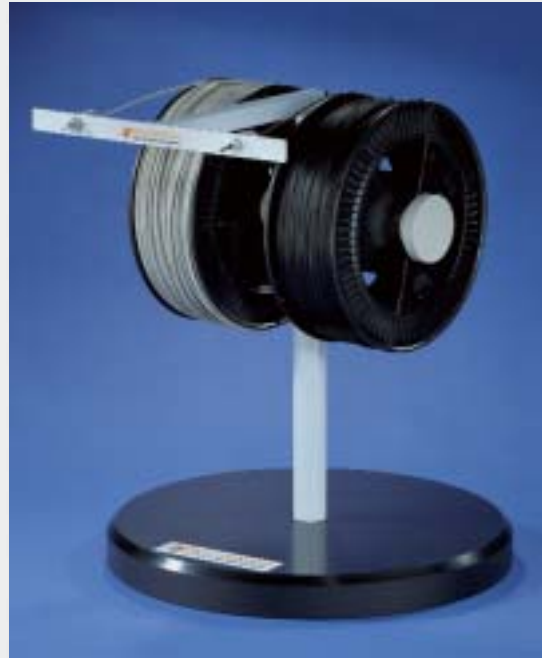
<sup>1)</sup> Previous extruder generation

# Accessories



## Transport case

Suitable MUNSCH transport cases are available for safe storage and transport of the hand extruders.



## Welding rod dispenser

The welding rod dispenser accommodates two welding rod reels with a weight of up to 10 kg each; it can be rotated through 360° and is easy to remove for transport.

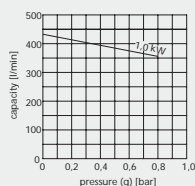


## Compressor

To produce oil-, water- and dust-free compressed air. An integrated vacuum control valve allows connection to low-pressure test bells.

### Technical data

Type: PICO  
 V: 26 m<sup>3</sup>/h  
 230/400 V, 50 Hz, IP 55, 1.0 kW  
 max. low pressure: 0.6 bar



## Digital thermometer

To check the preheat air and extrudate temperatures; required by DVS-Standards 2207-4.

### Technical data

Sensor: NiCr-Ni  
 Temperature range: -50 to +1150°C  
 Display: LCD 13 mm high  
 Temperature sensor: spring-mounted knife-edge probe, 1.5 mm in diameter, 130 mm long, made of V4A, plastic handle, 1000 mm silicon cable. Power supply: 9 V battery (included in scope of supply)

Weight: about 200 g  
 Tolerance: 1°C

## MUNSCH offers worldwide ...

- Competency and experience
- Individual advice
- Local service



Demonstration of extrusion welders at our Ransbach-Baumbach plant



Hand extruder and spare parts available within one day



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