
1 Injection Molding Machine Type KM 1300/24500 MX
including additional, special items and services

Hydraulic-mechanical 2-platen clamping system
with 4 pressure pads and 4 locking devices
on moving platen.

PV-closed loop control for the injection unit

MC6 control based on industrial PC
with real-time Ethernet technology.

Plasticising unit(s)

1 Thermoplast - Standard

Plasticising size	24500
Screw diameter	165 mm
Nozzle radius	19.05 mm
Nozzle bore	12.7 mm

Additional / special items for base machine and injection unit 1: SP24500

Pos. No.	Number	Description
02.50	1	Wedge type anti-vibration pads (make Bilz)
02.5003	1	Shim plates, 1 set, for wedge type pads for machine levelling on uneven foundation
02.505	1	Horizontal stops for fixing the machine in longitudinal axis on the foundation, attached to the machine bed of the clamp unit
03.00	1	Oil drip tray beneath mold area between the machine bed support beams.
07.12	1	Electric screw motor: For independent plasticizing during mold opening and closing. For parallel plasticizing we recommend a shut-off nozzle. Note: Technical data not identical with the standard machine! (Instead of std. hydro-motor) (Not retrofittable) (Not possible with ZE 07.13, ZE 07.15, ZE 07.21 and ZE 07.22)
07.52	1	BluePower - Servo pump drive Servo motor pump drive system for outstanding energy efficient operation of the machine, including a separate oil filter and oil cooling circuit integrated in the machine bed. Note: Technical data not identical with the standard machine! (Not possible with ZE 89.25x)
32.02	1	Cylindrical valve type shut-off nozzle HSVS,

Pos. No.	Number	Description
		hydraulically operated, US design. Original machine equipment with hydraulic/electrical control. Nozzle tip with thread: Thread 1 3/4-8 THD, radius 3/4" orifice 1/2". (Delivery instead of ZE 32.00)
40.511	1	Pneumatic valve 1 on moving platen non-op side for blow function (1 off 5/2 directional valve with 1 solenoid). Selectable control via stroke/time or time/time. Output air volume manually adjustable via 1 throttle valve. Connection via hose plug connector. Output port 1/4" for 10 mm hose outer diameter. (With ZE 40.511 fitted ZE 40.512 is not possible)
40.752	1	Maintenance unit for the treatment of oil free compressed air, consisting of: - shut-off valve (manual) with pressure relief - pressure adjustment valve (manual) incl. pressure gauge and air filter - pressure switch for electric monitoring - shut-off valve (electric) with pressure relief (Prerequisite for ZE 40.5xx, ZE 40.70, ZE 40.71, ZE 40.71xx, ZE 40.77, ZE 42.4x, ZE 49.05 and ZE 72.4xx)
45.65	1	Mold fixing platens according to SPI (fixed and moving platens) up to KM 1600 MX: threads 1"-8 UNC-2B from KM 2000 MX: threads 1 1/4"-7 UNC-2B - Centering ring on fixed platen 5" (127 mm) - Cover on moving platen with central diameter 30 mm
Addition to Pos. No. 45.65	1	Locating ring on Stationary Plate to be 6" = 152.4 mm
45.721	1	Mechanical robot interface according to EUROMAP 18 on fixed platen

Pos. No.	Number	Description
49.04	1	Mechanical preparation for future retrofitting of a mechanical progressive drop-in bar
50.30	1	Hydraulically actuated ejector plate including tapped holes and clearance holes in the moving platen for the ejector bolts (pattern according to SPI) up to KM 1600 MX: threads 1"-8 UNC-2B from KM 2000 MX: threads 1 1/4"-7 UNC-2B (Not retrofittable)
Addition to Pos. No. 50.30	1	Special ejector plate with extra tapped holes in the ejector and the MMP: - Additional tapped holes in ejector platen: 8x 1 1/4"-7 UNC-2B - Additional clearance holes in the moving platen: 8x D=57mm [2.24"] at position: (±2/±8), (±8/±2) [inch] (±50.8/±203.2), (±203.2/±50.8) [mm]
54.35	1	Hydr. operated safety gate on operator's side
59.201	1	Tie bar retraction system for tie bar on operator side, top. Drive cylinders of clamping unit with changed position (fixed on operator side bottom and non-op side top) The tie bar will be retracted in the direction of the injection unit. (Not possible in connection with ZE 59.2xx)
63.65	1	Internal oil filtration in the bypass of the cooling pump. Filter change only when machine is switched off.
64.50	1	Level sensor for oil drip tray monitoring
65.01	1	Increased oil cooler for water intake temperature of max. 36 °C with a min. delta-P = 2.0 bar between water inlet and outlet
65.15	1	NPT- connections for machine cooling water

Pos. No.	Number	Description
65.551	1	Pressure gauge with hydraulic selector switch on operator side, for service purposes, displaying alternatively: - system pressure (pump pressure) - injection pressure / holding pressure - hydro motor pressure
71.01	1	Injection/compression sequence: Coining stroke and speed adjustable via VDU Function: - mold closing up to an adjustable compression stroke position max. 21 mm: KM 850 MX to KM 1000 MX max. 26 mm: KM 1150 MX to KM 1600 MX max. 36 mm: KM 2000 MX to KM 2300 MX max. 41 mm: KM 2700 MX to KM 3200 MX max. 51 mm: KM 4000 MX - injection - closing/compression stroke - holding pressure
72.31	1	Hydr. core pull system 1-fold on moving platen (BWAP), non-op side. Speed and pressure adjustable via VDU. Socket pinout acc. to KM standard (up to core 2 acc. to EUROMAP 13 (HAN 16 A)). 4/3 directional valve with 2 solenoids and blocked center position, fitting sizes (internal thread): 1/2 inch from KM 850 to KM 1150 3/4 inch from KM 1300 to KM 4000 For prop. valve control (pressure and speed) for hydr. core pulls, separate for moving platen (BWAP) and fixed platen (FWAP) ZE 72.56 is required. (Only possible in connection with ZE 72.55 or ZE 72.56)
72.36	1	Hydr. core pull system 1-fold on fixed platen (FWAP), non-op side. Speed and pressure adjustable via VDU. Socket pinout acc. to KM standard (up to core 2 acc. to EUROMAP 13 (HAN 16 A)). 4/3 directional valve with 2 solenoids and blocked center position, fitting sizes (internal thread):

Pos. No.	Number	Description
		1/2 inch from KM 850 to KM 1150 3/4 inch from KM 1300 to KM 4000 For prop. valve control (pressure and speed) for hydr. core pulls, separate for moving platen (BWAP) and fixed platen (FWAP) ZE 72.56 is required. (Only possible in connection with ZE 72.55 or ZE 72.56)
72.55	1	Hydraulic ejector and hydraulic cores on moving platen as well as hydraulic cores on fixed platen are supplied in parallel by one common pump during opening and closing movement of the clamp unit. Core pulls and ejectors can be set into a defined operation state sequentially by pressure and quantity call.
72.61	1	Pressure maintaining function for hydr. core circuits via the hydr. system during opening and closing movements of the mold. Important: if pressure maintaining function is required during plasticizing (hydr. or electric screw drive) ZE 72.60 is required.
89.07	1	Cold slug ejection
89.2001	1	Cooling fan for control cabinet
89.238	1	Grid type of the power supply: TN-C or TN-C-S or TN-S system (3 ph grids with separate neutral or neutral together with ground) (Not possible in connection with ZE 89.2381)
89.2471	1	Nominal Input Voltage 460 V / 60 Hz without neutral. Suitable for nominal voltage 480 V (acc. to ANSI C84.1-2006) For mold hotrunner heaters with 220 V / 230 V a separate transformer or an additional supply is required.
89.260	1	Separate connection for heaters and power circuit (6-pole main switch)
Addition to Pos. No.	1	UVV - protective measure Lockout - Tagout

Pos. No.	Number	Description
89.260		Execution by KM: Master / slave main switch GX/MX Only applicable for machines of the GX and MX series. Prerequisite ZE89.26/260 Own power switch (slave) for clamp drives, lockable with up to 3 padlocks in off position.
89.5310	1	1 additional temperature zone for nozzle heater 110 V, incl. transformer (Only possible with ZE 89.247x) (Not possible in connection with ZE 89.299)
89.5902	1	Signal interface for handling unit acc. to EUROMAP 67 incl. reject signal and power socket 32 A (type Harting HAN 6 HSB or compatible connector). For movements of the handling unit during mold opening ZE 89.5915 is additionally required. (Not possible in connection with ZE 89.5901 or LR integration) (Prerequisite for IR series)
89.59241	1	Electric interface acc. to EUROMAP 78 non-op side Option A between IMM and external safety devices e.g. safety fences. This interface does not cover signals from the IMM to robots or peripheral equipment which are also protected by the external safety device. In case safety signals for these devices are needed, they are the operator's/integrator's responsibility. This applies especially for changes done after the delivery of the IMM. The operator/integrator is responsible for the overall safety of the facility. (Not possible with ZE 89.59245)
89.6702	1	Data logging (logbook) for continuous recording and retrospective display (max. 20,000 events) of: - changes of machine parameters - Alarm messages / acknowledgements - On/off of the machine control incl. date, time and current cycle as well as recording of the password

Pos. No.	Number	Description
		(standard) resp. chip card (prerequisite ZE 89.6712) Analysis of the entries via export function on USB flash drive.
89.6781	1	Stabilized power supply unit (24 V) for machine control incl. buffering module. Holding time approx. 20 ms.
89.70	1	Start-up circuit: switch over from start-up to produc- tion values for plasticizing stroke, injection pressure, holding pressure, back pressure, heating time, etc. depending on cycles.
89.751	1	Quality monitoring package: Process monitoring (actual cycle values and integrals) by setting of tolerances, actual value display and recording. Documentation printable.
89.76	1	Cycle time analysis: Display of the individual times and the total time of the last actual cycle and a selectable reference cycle. Graph display of the sequential and parallel times.
89.765	1	Cycle recording: Recording of actual process values for each cycle on an internal storage device. Export function to printer or data storage device in Excel compatible format.
89.7991	1	Interface for connection of a standard alphanumeric USB-keyboard for free text entry
89.80363	1	TFT color screen (21,5", pivot, glass surface) with multi touch screen functions for setting pages and machine operation. Set point entry and simultaneous operation of machine keys is possible. In addition to the machine keys individual machine movements can be carried out during set-up mode via the operating device SlideX. Haptic touch like 2-finger zoom and swiping is included.

Pos. No.	Number	Description
		Additional functions like extended actual value column, free configurable graphic machine programming via process diagram with system control. Free choice of favorites and extended MC6 system control via intelligent machine operation keyboard. Capacitive touch design. (Limited operation wearing gloves). Improved contrast and less sensitive to scratches and chemicals.
89.8039	1	Graph display of set and actual profiles for injection speed, injection pressure, holding pressure, back pressure and screw rpm.
89.807	1	Maintenance schedule: According to machine strain (working hours and cycle time) automatic calculation of maintenance intervals, signalled on VDU with alarm when due.
89.810	1	PV-closed loop control for injection speed, holding pressure and back pressure as well as switch over to holding pressure by hydraulic pressure.
89.8191	1	Additional language German for VDU (selectable on screen)
89.829	1	First language American - VDU American - operating manual American - machine plates American
89.9688	1	WEB service box, hardware and software package for machine for customer's connection establishment via function key and automatic VPN routing as encrypted internet connection to the service hotline. The service box has an integrated firewall and TCP/IP interface. Note: The teleservice will be defined in a separate teleservice agreement.
89.9693	1	CIMI-Interface 1 for the monitoring

Pos. No.	Number	Description
		of the injection process: Interface for the connection of an external computer system (e.g. KISTLER Dataflow), monitoring only of the injection process via selected process parameters. The external computer and software is not included in our scope of supply as well as the signals for mold cavity pressure, mold cavity wall temperature and melt temperature. These signals are optionally available against surcharge. (Not possible with ZE 89.523, ZE 89.524 and ZE 89.9694)
96.401	1	Machine painting, structural gloss paint - machine 1 color RAL 9002 grey white - clamp bed RAL 7037 grey - cladding RAL 9002 grey white and KM blue - safety doors RAL 9002 grey white
97.040	1	UVV for the USA: Safety standards acc to US regulations ANSI / SPI B151.1 resp. ANSI / SPI B151.29: Differing electrical safety regulations and country specific pressure accumulator acceptance test (Not possible together with ZE 97.00 or ZE 97.050)
100	1	Special Mould cooling: Main connection point (1x IN, 1x OUT) with 4" near fixed platen NOS. Hoses/ Pipes: Supply MP/NOS: 4x 2 inch (2 circuits) Supply MP/OS: 4x 2 inch (2 circuits) Supply FP/NOS: 2x 2 inch (1 circuits) Supply FP/OS: 2x 2inch (1 circuits) Moving plate/ NOS water connection ever circuit with 2 inlets and 2 outlets 1 ½" Moving plate/ OS water connection ever circuit with 2 inlets and 2 outlets 1

Pos. No.	Number	Description
		1/2" Fixed plate/ NOS water connection ever circuit with 2 inlets and 2 outlets 1 1/2" Fixed plate/ OS water connection ever circuit with 2 inlets and 2 outlets 1 1/2" All connection in each circuit (inlet and outlet) with manual ball-type stop valves and towards mold with 1 1/2" NPT male thread Air line connection with ball valves for blow out of water lines. For water temperatures 85°C max. Max. flow rate is 136 l/min (1 1/2 inch piping) assumed the velocity of flow is 2 m/s Max. flow rate is 243 l/min (2 inch piping) assumed the velocity of flow is 2 m/s The customer gets the Water cooling-drawings for confirmation.
-101	1	Modification to the footprint: Modification of the footprint: Change of the standard machine size because of guarding extension on operator and non-operator sides each by 318 mm. This is necessary because of the mold cooling installation.
102	1	like ZE 42.25 Electrical connection for drop out control by means of scales or light barrier (Harting - HAN10E connector) Expansion by 2 to a total of 3 Interfaces for drop out control. Selection function on MC6, which light barrier(s) should be active. Mounting of the interfaces on Injection unit operator side near FFAP
103	1	Clamping dimension min. mold height: 600mm (-100mm) max. mold height: 1400mm (± 0mm)

Pos. No.	Number	Description
		daylight: 2950mm (-100mm) stroke: 2350mm ($\pm$ 0mm)
104	1	Adapted machine bed for part removal below the moving platen including: - Opening under moving platen 1050 mm x 700mm (h x v) - Adapted machine housing - removable metal panel on the opening - removable safety mat. (While operating without safety mat, no manual part removal is possible -> only limited semi-automatic mode) - Operator confirmation system for processing without step-on safety mat. Clearance between projecting edge (machine bed) and ground at least 700 mm Attention! housing metal panel must be adapted and remounted by the customer following the effective regulations.
-105	1	Operation without safety step (delivery without the safety step): For operation without safety step protection (delivery without the safety step): Installation of an acknowledgement system according to ANSI / EN201. Valid only for IMM WITH Euromap 78 or Euromap 73: Button #1 in the clamp area Operating side Button #1.1 in the clamp area Opposite side Button #2 on the control panel Button#2.1 on the non-operator side Cycle start only with the following signal sequence: Button #1 or button#1.1 pressed (clamp area enabled) Button #2 or button #2.1 pressed (safety door is closed) Function of button #2 or button #2.1 can be through already existing control elements (standard acknowledgement or "Close safety door")

Pos. No.	Number	Description
		can be taken over.
		Buttons #1.1 and #2.1 are only available when Euromap 78 or Euromap 73 in function. (IMM safety door must be closed). The mounting and evaluation of button #1.2, #2.2 is the responsibility of the automation manufacturer. Visibility into the clamp area must be ensured! The safety signal "Safety area closed, locked and acknowledged" via the EM interface to the IMM.
		Button "Close Mold" (cycle start)
		Principle sketch is stored in Adocs
-106	1	Eject control by 3 parallel infra-red photo cells.
		On screen selectable which photo cells to be used

Additional / special items for plasticising unit 1: SP24500

Pos. No.	Number	Description
21.80	1	Electronic coding of the plasticizer. For automatic identification of the technical data and of the max operating parameters: screw diameter, temperature, inj.-pressure, screw rpm, plasticizing torque.

General Technical Information:

Except when confirmed otherwise, the following supply requirements and environmental conditions do apply to KM molding machines and KM robots. For any variances special equipment must be agreed on.

Documentations

- 1 set of the short version of the instruction manual in a binder
- 1 USB with the full version of the instruction manual and the complete technical documentation (spare parts – packaging lists, drawings, etc.,)

The short version contains all information which is needed for commissioning and which is stipulated. Detailed information for operation of the machine is only included on the USB.

Machine specific documentation/software: (<http://www.kraussmaffei.com/documentation>)
Key: JMNZ.

Electric

Nominal Input Voltage (V)	460 Volt
Frequency (Hz)	60 Hz
Phases	3
Neutral	N
Socket type	A & B - UL 498/NEMA 5-15 R, 110V /15A, CSA C22.2 Nr.:42

Pneumatics

Pneumatic cascades, core pulls, blow and movement valves have at a max. pressure of 7 bar a flow of about 900l/min.

In case safety guards are omitted the machine or facility may only be operated after it has been determined that the machine or facility complies with the local regulations.
The operator is responsible for the correct set-up of the safety guards.

KM Molding Machine:

Cooling water supply for cooling system

Unless stated differently in the quotation, the oil coolers for the injection molding machine are laid out for cooling water supply at the inlet of max. 31°C and pressure at the connection point of 4-6 bar.

For the functional testing of machines and devices with hydraulic drive systems in the factory, hydraulic oil type Shell Tellus S3 M46 will be used in-house at KraussMaffei.

The hydraulic oil is not included in the scope of supply.

Hydraulic accumulators are supplied with a pressureless nitrogen bubble due to hazardous materials regulations.

For operating fluid specifications, please refer to the respective operating instructions.

Environmental conditions for hydraulic molding machines

min. / max. temperature +5°C to +40°C

min. / max. humidity 0% to 80% r.F.

max. absolute humidity 23,5 g/kg (in dry)

Environmental conditions for electric molding machines:

min. / max. temperature +15°C to +40°C

min. / max. humidity 0% to 80% r.F.

max. absolute humidity 23,5 g/kg (in dry)