

---

**1 Injection Molding Machine Type KM 2700/55000 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	55000
Screw diameter	220 mm
Nozzle radius	19.05 mm
Nozzle bore	12.7 mm

## Additional / special items for base machine and injection unit 1: SP55000

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)
32.02	1	Cylindrical valve type shut-off nozzle HSVS, 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

Pos. No.	Number	Description
		<p>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)</p>
40.711	1	<p>Pneumatic cascade control, 4-fold for hotrunner (coldrunner) needle valves (4 off 5/2 directional valves with 2 solenoids each).            Connection via hose plug connector on fixed platen, non-op side.            (Prerequisite ZE 40.902 up to ZE 40.9xx)</p>
40.752	1	<p>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)</p>
40.911	1	<p>Electric interface 4-fold on fixed platen (FWAP) for cascade control, selectable on screen for pneumatic or hydraulic valves.</p> <p>Function:            The activation of needle valve open or close may be either stroke-dependent or time-dependent.            The needle valves can be opened and closed twice each during injection as well as during holding pressure.            Open valves can be closed time delayed after end of holding pressure.            Monitoring function for at least one opened needle nozzle.            During set-up mode the nozzles may be operated manually.</p>
45.65	1	<p>Mold fixing platens according to SPI (fixed and moving platens)</p>

Pos. No.	Number	Description
		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 45.721	1	Centering ring to be 6" = 152.4 mm
	1	Mechanical robot interface according to EUROMAP 18 on fixed platen
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 54.35	1	Add 8 ejector holes in positions (+/-2"; +/-8").
	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

Pos. No.	Number	Description
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
65.551	1	Pressure gauge with hydraulic selector switch on operator side, for service purposes, displaying alternatively: <ul style="list-style-type: none"> <li>- system pressure (pump pressure)</li> <li>- injection pressure / holding pressure</li> <li>- hydro motor pressure</li> </ul>
71.01	1	Injection/compression sequence: Coining stroke and speed adjustable via VDU Function: <ul style="list-style-type: none"> <li>- mold closing up to an adjustable compression stroke position</li> <li>max. 21 mm:               <ul style="list-style-type: none"> <li>KM 850 MX to KM 1000 MX</li> </ul> </li> <li>max. 26 mm:               <ul style="list-style-type: none"> <li>KM 1150 MX to KM 1600 MX</li> </ul> </li> <li>max. 36 mm:               <ul style="list-style-type: none"> <li>KM 2000 MX to KM 2300 MX</li> </ul> </li> <li>max. 41 mm:               <ul style="list-style-type: none"> <li>KM 2700 MX to KM 3200 MX</li> </ul> </li> <li>max. 51 mm: KM 4000 MX</li> <li>- injection</li> <li>- closing/compression stroke</li> <li>- holding pressure</li> </ul>
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): <ul style="list-style-type: none"> <li>1/2 inch from KM 850 to KM 1150</li> <li>3/4 inch from KM 1300 to KM 4000</li> </ul> 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.

Pos. No.	Number	Description
		<p>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)</p>
72.55	1	<p>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.</p>
72.61	1	<p>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.</p>
89.07	1	Cold slug ejection
89.2001	1	Cooling fan for control cabinet
89.238	1	<p>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)</p>
89.2471	1	<p>Nominal Input Voltage 460 V / 60 Hz            without neutral.            Suitable for nominal voltage 480 V            (acc. to ANSI C84.1-2006)</p> <p>For mold hotrunner heaters with            220 V / 230 V a separate transformer</p>

Pos. No.	Number	Description
		or an additional supply is required.
89.260	1	Separate connection for heaters and power circuit (6-pole main switch)
Addition to Pos. No. 89.260	1	<p>UVV - protective measure                      Lockout - Tagout                      Execution by KM: Master / slave main switch CX                      Only applicable for machines of the CX series.                      Prerequisite ZE89.26/260                      Own power switch (slave) for clamp drives, lockable with up to 3 padlocks in off position.</p> <p>Feasibility depending on scope of equipment.                      Consultation with the electric department required.</p> <p>Not possible for PX series</p>
89.5310	1	<p>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)</p>
89.5902	1	<p>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)</p>
89.59241	1	<p>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</p>

---

Pos. No.	Number	Description
		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 (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 production 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

---

Pos. No.	Number	Description
		free text entry
89.80363	1	<p>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.</p> <p>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.</p>
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	<p>Maintenance schedule: According to machine strain (working hours and cycle time) automatic calculation of maintenance intervals, signalled on VDU with alarm when due.</p>
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	<p>First language American</p> <ul style="list-style-type: none"> <li>- VDU American</li> <li>- operating manual American</li> <li>- machine plates American</li> </ul>

Pos. No.	Number	Description
89.9688	1	<p>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.</p> <p>Note: The teleservice will be defined in a separate teleservice agreement.</p>
89.9693	1	<p>CIMI-Interface 1 for the monitoring 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)</p>
96.401	1	<p>Machine painting, structural gloss paint</p> <ul style="list-style-type: none"><li>- machine 1 color RAL 9002 grey white</li><li>- clamp bed RAL 7037 grey</li><li>- cladding RAL 9002 grey white and KM blue</li><li>- safety doors RAL 9002 grey white</li></ul>
97.040	1	<p>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)</p>
100	1	<p>BluePower - Servo pump drive Servo motor pump drive system for</p>

---

Pos. No.	Number	Description
----------	--------	-------------

outstanding energy efficient operation of the machine, including a separate oil filter and oil cooling circuit integrated in the machine base.

Requirement  
 - Sp 55000 MX  
 - ZE 07.12

Not possible with:  
 - PPS01.10 to PPS01.80

Note:  
 Technical data not identical with the standard machine!

102	1	<p>Special Mould cooling</p> <ul style="list-style-type: none"> <li>* Main connection point (1x IN, 1x OUT)</li> <li>* with 4" near fixed platen NOS.</li> <li>* Hoses/ Pipes:</li> <li>* Supply MP/NOS: 4x 2 inch (2 circuits)</li> <li>* Supply MP/OS: 4x 2 inch (2 circuits)</li> <li>* Supply FP/NOS: 2x 2 inch (1 circuits)</li> <li>* Supply FP/OS: 2x 2 inch (1 circuits)</li> <li>*</li> <li>* Moving plate/ NOS water connection* ever circuit with 2 inlets and 2 outlets 1 1/2"</li> <li>* Moving plate/ OS water connection ever circuit with 2 inlets and 2 outlets 1 1/2"</li> <li>* Fixed plate/ NOS water connection ever circuit with 2 inlets and 2 outlets 1 1/2"</li> <li>* Fixed plate/ OS water connection ever circuit with 2 inlets and 2 outlets 1 1/2"</li> <li>*</li> <li>* All connection in each circuit (inlet and outlet) with manual ball-type stop valves and towards mold with 1 1/2" NPT malethread</li> <li>* Air line connection with ball valves for blow out of water lines.</li> <li>*</li> <li>* For water temperatures 85°C max.</li> <li>*</li> </ul>
-----	---	--

Pos. No.	Number	Description
		<ul style="list-style-type: none"> <li>* Max. flow rate is 136 l/min (1½ inch piping) assumed the velocity of flow is 2 m/s</li> <li>* Max. flow rate is 243 l/min (2 inch piping) assumed the velocity of flow is 2 m/s</li> <li>* The customer gets the Water cooling-drawings for confirmation</li> </ul>
103	1	<p>like ZE 42.25 Electrical connection for drop out control by means of scales or light barrier (Harting - HAN10E connector)</p> <p>Expansion by 2 to a total of 3 Interfaces for drop out control. Selection function on MC6, which light barrier(s) should be active.</p> <p>Mounting of the interfaces on Injection unit operator side near FFAP</p>
104	1	<p>Eject control by 3 parallel infra-red photo cells.</p> <p>On screen selectable which photo cells to be used</p>
105	1	<p>Clamping dimension min. mold height: 600mm (-300mm) max. mold height: 2000mm (± 0mm) daylight: 3600mm (-300mm) stroke: 3000mm (± 0mm)</p> <p>Reduced mold weight on moving platen. Must be calculated in case of order</p>
106	1	<p>Cutout for conveyor belt in the shortend of the machine guarding increased machine middle by +200mm to 2400mm (without machine leveling). Conveyor belt inside the oil drip tray of the clamp unit. Distance between conveyor belt and lower edge of the oil drip tray to be at least 50mm. Conveyor belt must be additionally increased between the machine bed and the guarding due to the cutout of the cross beam. The cutout in the guarding is</p>

Pos. No.	Number	Description
-107	1	<p>designed to create a free area in the machine bed of at least 1650mm x 500mm (h x v). The step on safety grids are removable and a double acknowledge system for operation without safety grid is required (see sub item) Removable safety panels at the cutout of the guarding shall be provided. Attention! Safety panels must be adapted by the customer to the applicable rules and must be remounted.</p> <p>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") can be taken over.</p> <p>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!</p>

---

Pos. No.	Number	Description
		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
-108	1	Modification of the footprint: The machine is 200mm higher (due to the cutout and the removal of the parts below moving plate

### **Additional / special items for plasticising unit 1: SP55000**

---

Pos. No.	Number	Description
21.10	1	Technically executed just like a HPS-B plasticising unit
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: DF8XY.

### **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)