

# A Series A/EE & A/EA Series Injection Moulding Machines

100 – 3500 KN  
10 – 1915 gram



## SPECIFICATIONS - "A/EE & A/EA SERIES" INJECTION MOULDING MACHINES

MODEL	A-10	A-25	A-50	A-80	A-110	A-150	A-180	A-230	A-280	A-350
<b>EUROMAP SIZE RATING</b>	100H-27	250H-125	500H-230	800H-335	1100H-495	1500H-650	1800H-910	2300H-1155	2800H-1940	3500H-2760
<b>LOCKING UNIT</b>	Mould locking force 100 Mould unlocking force 17.3 Mould open traverse force 6.9 Mould open stroke 200 Minimum mould height 100 Maximum mould height 300 Space between tie bars 297 Diagonal 335 x 335 Platen size 50 Ejector stroke 8.6	250 33 15.7 300 150 N/A 450 388 Diagonal 400 x 400 80 21.5	500 54.5 28 425 200 N/A 625 370 x 370 570 x 570 150 33.6	800 67.3 31 525 250 N/A 775 420 x 420 665 x 665 150 33.6	1100 81.5 39.7 625 250 N/A 875 470 x 470 720 x 720 150 33.6	1500 97 49.8 675 300 N/A 975 500 x 500 780 x 780 200 86	1800 113.8 61.3 725 300 N/A 1025 560 x 560 850 x 850 200 86	2300 132 76.8 825 300 N/A 1125 600 x 600 870 x 870 200 86	2800 151.6 88.2 925 300 N/A 1225 635 x 635 950 x 950 200 86	3500 218 117 1025 350 N/A 1375 710 x 710 1100 x 1100 250 86

INJECTION UNIT	16	19	22	25	28	30	35	30	35	40	35	40	45	40	45	50	45	50	55	50	55	60	60	65	75	65	75	85	
Screw diameter	16	19	22	25	28	30	35	30	35	40	35	40	45	40	45	50	45	50	55	50	55	60	60	65	75	65	75	85	
Swept volume	12	17	47	61	76	92	106	144	123	168	219	192	251	318	282	357	441	397	490	593	540	653	777	918	1078	1435	1244	1656	2127
Shot weight	10	15	42	55	69	83	95	129	111	151	197	173	226	286	254	322	397	357	441	534	485	588	700	827	970	1292	1119	1491	1915
Max. Injection pressure, direct	2250	1595	2603	2016	1607	2500	2177	1600	2712	1992	1525	2571	1988	1555	2296	1814	1470	2281	1848	1527	2138	1767	1485	2110	1797	1350	2218	1666	1297
Max. Injection pressure, regenerative	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1509	1192	966	1659	1344	1110	1547	1278	1074	1487	1267	952	1619	1216	947
Max. Injection rate, direct, standard	21	30	44	57	72	68	79	107	82	112	147	116	152	193	152	192	238	189	233	282	272	330	392	345	405	540	407	542	697
Max. Injection rate, regenerative, standard	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	231	293	362	260	321	388	377	456	542	490	575	765	558	743	954
Screw L/D ratio	22.5	18.9	22.7	20	17.85	21.4	20	20	23.3	20	20	22.8	20	20	22.5	20	20	22.2	20	20	22	20	22	20	21.6	20	20	23	20
Screw stroke	60	125	150	150	150	150	175	200	200	225	250	250	275	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325
Screw speed, hydraulic drive, standard	10-280	10-380	10-380	10-380	10-380	10-380	10-380	10-380	10-380	10-380	10-340	10-340	10-290	10-290	10-290	10-290	10-290	10-290	10-290	10-290	10-290	10-290	10-290	10-290	10-290	10-290	10-290	10-290	10-260
Nozzle sealing force	51	57	57	57	57	57	57	57	57	57	57	57	57	57	89	89	89	89	89	89	89	89	89	89	89	89	89	89	108
Nozzle retract stroke	150	225	225	225	225	225	300	300	300	300	300	300	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350
Barrel heating capacity	2.2	2.2	4.5	4.5	5	6.05	6.05	7.1	8.6	8.6	9.8	9.5	9.5	11	11	11	12.5	12.6	12.6	14.1	15	15	16.8	20.7	20.7	23.7	29	29	32.5
Number of heating zones	3+N	3+N	3+N	3+N	3+N	3+N	3+N	3+N	3+N	3+N	3+N	3+N	3+N	3+N	3+N	3+N	4+N	4+N	4+N	4+N	4+N	4+N	4+N	4+N	4+N	4+N	4+N	4+N	4+N

GENERAL	3	7.5	12	17.05	18.1 <th>23.6</th> <th>23.6</th> <th>24.8</th> <th>27.5</th> <th>27.5</th> <th>29</th> <th>33</th> <th>33</th> <th>34.5</th> <th>42.6</th> <th>42.6</th> <th>44.1</th> <th>52</th> <th>52</th> <th>53.8</th> <th>65.7</th> <th>65.7</th> <th>84</th> <th>84</th> <th>84</th> <th>84</th> <th>87.5</th>	23.6	23.6	24.8	27.5	27.5	29	33	33	34.5	42.6	42.6	44.1	52	52	53.8	65.7	65.7	84	84	84	84	87.5
Pump drive motor	3	7.5	12	17.05	18.1	23.6	23.6	24.8	27.5	27.5	29	33	33	34.5	42.6	42.6	44.1	52	52	53.8	65.7	65.7	84	84	84	84	87.5
Total installed power	5.2	12.1	12.1	17.05	18.1	23.6	23.6	24.8	27.5	27.5	29	33	33	34.5	42.6	42.6	44.1	52	52	53.8	65.7	65.7	84	84	84	84	87.5
Hydraulic system pressure	180	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175
Oil filling	45	100	100	140	140	175	175	280	280	300	300	300	300	300	370	370	370	500	500	500	625	625	625	625	625	625	625
Machine weight, dry	0.55	1.4	1.4	2.9	2.9	3.5	3.5	5.25	5.25	7.2	7.2	8.7	8.7	10	10	10	14	14	14	14	14	14	14	14	14	16	
Machine dimensions L x W x H	1.7 x 0.82 x 1.48	2.5 x 1.02 x 1.52	3.3 x 1.29 x 1.75	3.75 x 1.35 x 1.8	4.07 x 1.48 x 1.98	4.53 x 1.56 x 2	4.8 x 1.67 x 2	5.3 x 1.88 x 2.13	6 x 1.96 x 2.31	6.8 x 2.23 x 2.2																	

**NOTE - Due to our continuous development programme we reserve the right to amend any of the above data without prior notice.**

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Note – The 'A/EE' and 'A/EA' versions are basically the same with the exception that the 'A/EE' version complies with 'CE' requirements for the European Community.

# MACHINE FEATURES

## LOCKING UNIT

Two platen design with direct hydraulic clamping on each tie bar giving guaranteed even locking force distribution and resulting in a very compact machine, yet with very generous open stroke and daylight. The open area below the mould space enables moulded products to be transported away from the machine in any direction and also provides a useful area for placing ancillary equipment.

## EJECTOR SYSTEM

The two platen design gives completely free access to the ejector system and enable a large area ejector plate to be incorporated for use with moulds requiring multiple ejection points. If required a quick connect/disconnect coupling can be provided for the central ejection point. For clean room operations the hydraulic ejector can be replaced by an servo motor driven system.

## INJECTION UNIT

The injection unit is provided with a high L:D screw together with generous screw torque and speed to ensure a high plasticising capacity. The balance double carriage cylinders guarantee a deflection free connection between the locking and injection units. The standard machine is designed for processing normal thermoplastic materials, but also can be supplied for processing UPVC, thermosets, LSR, or elastomers.

## CONTROL SYSTEM

The powerful, PC based control system ensures all parameters are closely monitored and, if necessary corrected, within close limits to give a very high order of cycle to cycle repeat accuracy. Established process data can easily be stored/retrieved either internally, or externally and if necessary transferred from one machine to another. A printer port is provided as standard and if required the system can be set up for networking as an optional feature.

## ELECTRICAL EQUIPMENT

All electrical systems are mounted in a substantial sheet metal enclosure with full area opening doors for ease of service access. All electrical components have been selected from only internationally known suppliers of good repute. Space is provided within the cabinet for retro fitting of all possible optional features.

## HYDRAULIC SYSTEM

The total hydraulic system is contained within the closed footprint of the machine so eliminating externally mounted flogging hoses. The hydraulic components are of European/Japanese origin and the system employs a regulated variable displacement pump for maximum energy conservation. The use of an electrically monitored fine filter minimises service attention.

## SAFETY

To ensure the maximum degree of safety when the machine is in use both the locking and injection unit are fully guarded at the front, rear and ends. Sliding guards protecting the mould space are furnished with electrical interlocks and an electrically operated isolating valve for the hydraulic system. Sliding guards protecting the nozzle area electrically interlocked to prevent any movement of the injection unit.

## OPTIONAL EQUIPMENT

The machines are fully prepared for retro fitting of all optional equipment and control system is loaded with the support software for all optional features as standard.

## LOCKING UNIT

- Two platen design with direct hydraulic clamping on each tie bar giving guaranteed even locking force distribution, plus small foot print.
- Platens & ejection system prepared to EUROMAP 2, JIS & SPI available as alternatives.
- Moving platen supported & guided by precision profile rail guides.
- Open base below mould space enabling product removal from three directions and providing space for ancillary equipment.
- Hydraulic ejector, all models, but with multi-point ejector plate for A50 and above.
- Lubrication free operation.
- Mechanical mounting interface for robot in upper edge of fixed platen as per EUROMAP 18.
- Freely programmable three stage mould open & close movements.
- Low pressure mould protection system with alarm.
- Freely programmable single, multiple & pulsed ejection strokes, plus ejector inter cycle park position.
- Programme for low pressure, low speed, open/close for mould loading & unloading.
- Indicating mould cooling manifold with flow meters and thermometers in each channel, 4 channels A10 & A25, others 6 channels.
- Platen and ejector stroke monitored by LVDT's, 0.01 mm resolution.
- Single, or double core pulsing systems with hydraulic & electrical connections on fixed &/or moving platen, 4 cores maximum. Electrical interface as per EUROMAP 13.
- 'In mould' ejector retracted interlock. Interface as per EUROMAP 13.
- Single, or double, air blast systems, freely programmable.
- Electrical interface for robot as per EUROMAP 12.
- Power operated operator's front sliding locking unit guard with safety edge. A180 & above.
- Additional channels in indicating mould cooling manifold, maximum number of channels, 12.
- Temperature control system for mould/hot runner, 8 or 16 zones, PID, 16A, EUROMAP 14 interface, incorporated in control upgrade.
- Quick connect/disconnect coupling for central ejection point in lieu of standard EUROMAP coupling.
- Ejector operated by servo motor in lieu of standard hydraulic type.

## INJECTION UNIT

- Customer's choice of any one of three screw diameters.
- Open nozzle, spherical seating.
- Nitrided barrel & screw assembly.
- Balanced double carriage cylinders for deflection free connection between the injection and locking units.
- Screw drive by low speed, high torque hydraulic motor.
- Screw & carriage strokes monitored by LVDT's, 0.01 mm resolution. A10 & A25 uses time based carriage retract stroke.
- Screw speed monitor.
- PID temperature control for plasticising unit with over/under temperature alarms and graphical display.
- Cold start prevention for the plasticising screw.
- Sprue break facility with programmable fast/slow carriage movements. A10 & A25 single speed carriage movements only.
- Programme for cold slug removal.
- Programme for intrusion before injection.
- Programme for injection/stamping.
- Freely programmable injection fill, 6 stages, position dependent.
- Freely programmable injection hold, 4 stages, time dependent.
- Change over from injection fill to hold by time &/or position.
- Change over from injection fill to hold by time, position &/or hydraulic injection pressure, incorporated in control upgrade.
- Change over from injection fill to hold by barrel melt pressure transducer, incorporated in control upgrade.
- Change over from injection fill to hold by mould cavity pressure transducer incorporated in control upgrade.
- Automatic melt cushion control with selectable alarms for 'out of cushion' signals.
- Melt decompression selectable before &/or after plasticising.

- Freely programmable plasticising, 3 stages, screw speed and screw back pressure, position dependent.
- Automatic barrel purge programme.
- Pre-heating calendar for plasticising unit, Sunday – Saturday, 24 hour.
- Lubrication free operation.
- Closed loop control of injection fill, injection hold & screw back pressure by servo valve.
- Accumulator assisted injection.
- Extended open nozzle with heater band and discrete zone of temperature control.
- Spring loaded, needle type, shut-off nozzle.
- Hydraulically operated needle type shut-off nozzle.
- Barrier screws for intensive mixing and increased plasticising capacity.
- Bi-metallic plasticising unit in lieu of standard nitrided type.
- Ceramic heater bands in lieu of standard type.
- Temperature controlled hopper feed throat incorporated in machine control.
- Screw drive motor of increased torque & reduced speed for 'engineering thermoplastics', or UPVC, in lieu of standard motor.
- Machine prepared for processing UPVC, with special screw and barrel heat/cool system on front two heating zones.
- Machine prepared for processing thermosets with special plasticising unit & provision for mould heating.
- Machine prepared for processing LSR with special plasticising unit, 2 component feed unit & mixer & provision for mould heating.
- Machine prepared for processing elastomers with special plasticising unit & provision for mould heating.

## HYDRAULIC SYSTEM

- Regulated variable displacement, energy saving, pump(s), open loop.
- Regulated variable displacement, energy saving pump(s), closed loop in lieu of standard open loop version.
- Hydraulic components of European and Japanese manufacture.
- Sealed hydraulic reservoir with air breather, level gauge and 'Oil level low' alarm.
- On line micronic filtration with 'Filter blocked' alarm.
- Hydraulic oil temperature monitor and alarm.
- Pre-heating of hydraulic oil.
- Temperature control system for hydraulic oil.
- Off line, 3 micron filtration system, continuous operation.

## CONTROL SYSTEM & ELECTRICAL EQUIPMENT

- All electrical equipment mounted in a sheet metal cabinet integrated into the machine base.
- One machine mounted circuit breaker for isolation of all electrical systems within the machine.
- Heating circuits with MCB protection and SSR switching.
- PC based control system.
- Coloured TFT monitor, 10.4 inch.
- Membrane keyboard with LED acknowledgement of selection/function.
- Internal mould data storage & retrieval facility, 200 sets of mould data.
- External mould data storage & retrieval facility by 3.5 inch floppy disc, FDD included.
- Real time clock incorporated.
- All machine setting parameters optimised by software.
- All proportional valves linearised by software.
- Continuous on line display of all speeds, pressures, positions, time & temperatures.
- Alarm messages, plus acoustic & visual general alarm signals.
- Mimic diagram.
- Programme for quantity control.
- Display of I/O status.
- Interface for host computer.
- Interface for printer.
- Two resident languages for screen text, instantly selectable.
- Single & three phase IEC socket outlets mounted in customer specified positions, on/off with main machine circuit breaker.