

# D1-N 550T-4400T

D1-N SERIES TWO-PLATEN  
INJECTION MOLDING MACHINE

Innovative Practice of  
Large-tonnage Two-platen Machine



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THINK TECH FORWARD

# PRODUCT DETAILS

Based on importation and absorption of advanced German technology and years of experience in product application, we continue to move on and undertake the historic project of large-tonnage two-platen injection molding machine, striving to become a pioneer to fulfill such an innovative mission.

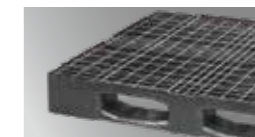
# D1-N PRODUCT DETAILS



Deep-cavity parts



Household appliances



Logistics materials



Auto parts



Auto bumper



Auto sunroof



Auto interior decoration



Auto lamp

## Core Value Propositions

### Fast

Synchronized lock nut mechanism, precision movable platen supports, quick hydraulic cylinders, differential fast mold opening, low-resistance hydraulic circuit design and high-response servo system enable the machine to operate more efficiently and response faster.

### Stable

High-rigidity clamping unit, uniform stress distribution on tie bar threads, high-response dual proportional valve, high-speed closed-loop control, precision filter and efficient cooling system enable the machine to be more stable for injection molding.

### Smaller footprint

D1-N series machine occupies less floor space than a three-platen machine, improving factory utilization and reducing costs of production facilities.

### More reliable low-pressure mold protection

Mold protection is so sensitive that it can sense three pieces of A4 paper, which is more effective.

### Higher stability of mold-open position

Variation up to  $\pm 0.2\text{mm}$ , meeting higher requirements on automated part removal and inserting.

### New-generation servo system driven by fully oil-cooled two-headed motor

Fast response, strong power and low energy consumption.

### Professional control system

Short scan time, fast response and high movement repeatability.

# $\leq 3\%$

#### Smaller variation of force on tie bar

Variation  $\leq 3\%$ , high mold-close accuracy, hardly any flash, higher stability of injection molding.

# 55%

#### Shorter dry cycle

Compared with a three-platen machine of the same clamp tonnage, mold opening and closing during dry cycle is about 55% faster.

# $\leq 3\text{‰}$

#### Outstanding injection stability

Repeatability of part weight  $\leq 3\text{‰}$ , excellent quality, saving materials and costs.



# Clamping Unit

## Short dry cycle, reliable and stable

D1-N series two-platen injection molding machine, based on high-rigidity clamping unit, precision guide device, synchronized lock nut mechanism, quick hydraulic cylinders, fast control system and controlled by high-response dual proportional valve, delivers higher movement efficiency and control stability.



### Impact-proof synchronized lock nut mechanism

Impact-cushioning synchronized lock nut closing is fast and more reliable.



### Independent high-pressure cylinder (optional)

Mold opening under low speed and high pressure, as well as mold change through tie bar pulling in a factory with excessively low ceiling are available.



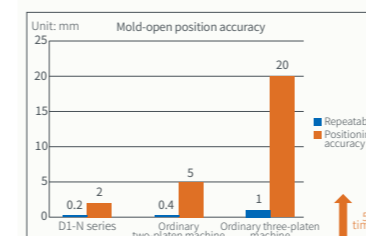
### Highly-rigid accurate guide device

High-rigidity L-shape guide rails on machine frame, with guiding precision up to 0.05mm, facilitate fast and steady motion of platens.



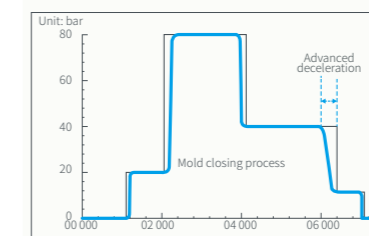
### Wear & corrosion resistant tie bars with uniform stress distribution

With special technical treatment, tie bars are highly-rigid and resistant to wear and corrosion. Uniformity of stress distributed on tie bar threads is over 99% without unbalanced force, bringing durability.



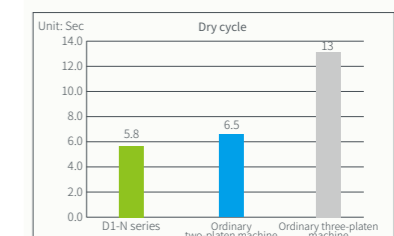
### High repeatability of mold-open end position

Repeatability of mold-open position is up to ± 0.2mm, five times higher than that of a three-platen machine. (proven by in-house 1300T machine test result)



### Sensitive mold protection

With the use of smart prior deceleration control, even three pieces of A4 paper can be sensed. Mold protection is more reliable and sensitive.



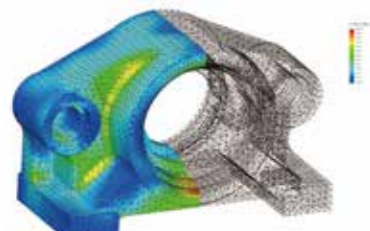
### Short dry cycle

Efficient mold opening and closing and short dry cycle directly improve manufacturing efficiency and capacity. (proven by in-house 1300T machine test result)

# Injection Unit

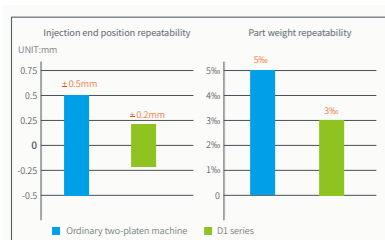
## Stable injection end position and high repeatability of part weight

Linear guide rails, with the benefits of low resistance and quick acceleration, are a standard feature of D1-N series two-platen injection molding machine. Incorporating other features, such as high-rigidity injection unit and ultrasonic displacement sensor for monitoring, D1-N series has achieved accurate position control and high repeatability of part weight.



### High-rigidity injection unit

Casts of injection unit are made from ductile cast iron. The platens are highly rigid with little deformation. Injection is more stable.



### Excellent injection performance

Repeatability of injection end position up to  $\pm 0.2\text{mm}$  and repeatability of part weight  $\leq 3\%$  meet the needs of increasing efficiency and lowering costs.



### Ultrasonic displacement sensor

D1-N series is equipped with an ultrasonic digital displacement sensor, characterized by little signal interference and high position control accuracy.



### Integral linear guide rails for injection

Linear guide rails are a standard feature of D1-N series, bringing benefits of low resistance, quick acceleration and accurate injection.



### Adaptive PID temperature control

With the use of durable ceramic heater bands and adaptive PID control performed by the Austrian controller, temperature control accuracy is up to  $\pm 0.5\text{C}$ .

# Hydraulic System

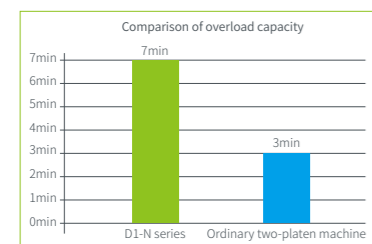


## Precise filtration, efficient cooling, higher stability

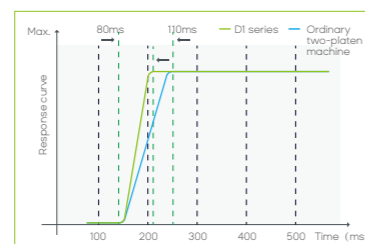
D1-N series is based on a hydraulic system with stability and fast response at the core, which enables hydraulic circuit to be in optimal operating conditions. The hydraulic system is characterized by fast response, strong overload capacity and low energy consumption that is superior to China energy efficiency grade 1.

### Servo system driven by fully oil-cooled two-headed motor

The fully oil-cooled two-headed motor-driven servo system is the quintessence of highly-integrated servo pump system. It eliminates the influence of instability in machine operation due to the work environment and further reduces energy consumption of hydraulic circuit. Synchronized drive technology makes hydraulic circuit response faster and movements more efficient.



Strong overload capacity



Rapid acceleration



Durable and reliable

### Precise filtration and independent cooling system

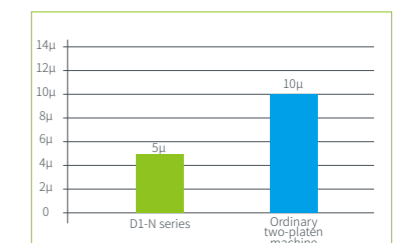
Filter fineness is up to 5µm and cooling effect is 2-3 times better than ordinary two-platen injection molding machines, which ensure long service life of seals. Machine becomes more stable.



Good cooling effect



High filter fineness



Comparison of filter fineness

### Motor protected with L-shape plates

L-shape plates are easy to install and they can be opened directly so that there is open space for more efficient maintenance of the drive system.



## Control System

### Accurate control, humanized design, reliable and stable

D1-N series adopts Austria's KEBA control system dedicated to two-platen injection molding machine. This powerful system can accurately control the position, pressure, speed, temperature and other parameters. The whole control system is engineered based on reliability, stability, safety and user-friendly operation for better user experience.



### Stable, fast and accurate control

- D1-N series two-platen injection molding machine adopts Austria's KEBA control system, with double CPUs, 1ms of scan cycle and high reliability.
- Fast mold opening and closing and high repeatability thanks to the high-response dual proportional valve control technology.
- Fully-closed-loop control of injection speed, pressure and back pressure, with fast response and high accuracy.
- Self-tuning of temperature parameters of barrel and hot runner makes temperature control more accurate.

### Data and safety

- Storage of process data without limit
- Memory of alarm and process parameter change
- Record of process parameter change curve
- Production process data control (PDP) and statistic process control (SPC)
- Multi-level user access to protect data
- Multiple protections of equipment and people through software and hardware

### Easy to operate

- Real-time remote control (optional)
- Online conversion of languages and units
- Quick input by means of graph and virtual keyboard
- Quick settings page for easy and convenient process parameter setting



### IP54 electrical enclosure

The electrical enclosure is designed with IP54 rating, resistance to water and dust and good cooling effect, so that the electrical system is more stable in operation.



### Separate connector module for auxiliary equipment

External separate power control without opening the electrical cabinet makes operation safer and more convenient.



### Euromap-based robot interface

Euromap 12 robot interface is a standard feature, meeting customer's need for safer connection.

































# UN1200WD1 Specifications

INJECTION UNIT																	
Model	UNIT	IU4800				IU6800				IU9000				IU10900			
Screw diameter	mm	84	92	100	108	92	100	108	116	100	108	116	125	108	116	125	135
	in	3.31	3.62	3.94	4.25	3.62	3.94	4.25	4.57	3.94	4.25	4.57	4.92	4.25	4.57	4.92	5.32
Theoretical shot volume	cm <sup>3</sup>	2217	2659	3142	3664	3191	3770	4397	5073	4320	5038	5813	6748	5222	6024	6995	8159
	cu in	135.28	162.28	191.75	223.63	194.73	230.07	268.34	309.59	263.62	307.46	354.75	411.81	318.67	367.63	426.89	497.92
Shot weight	g	2039	2446	2890	3371	2936	3468	4045	4667	3974	4636	5348	6208	4804	5542	6435	7506
	oz	71.9	86.3	101.9	118.9	103.5	122.3	142.7	164.6	140.2	163.5	188.6	219	169.5	195.5	227	264.8
Injection pressure	Mpa	218	181	154	134	213	180	154	134	209	179	155	134	210	182	157	135
	psi	31560	26310	22336	19435	30864	26136	22336	19435	30298	25976	22481	19435	30458	26397	22771	19580
Screw L:D ratio		21.9	20	21.6	20	21.7	22	21.5	20	21.6	20	21.6	20	22	22	21.6	20
	cm <sup>3</sup> /s	520	624	737	860	615	726	847	980	766	894	1031	1197	815	940	1092	1273
Injection rate	cu in/s	31.73	38.08	44.98	52.48	37.53	44.31	51.69	59.81	46.75	54.56	62.92	73.05	49.74	57.37	66.64	77.69
	mm/s	93.9				92.5				97.6				89			
Max. injection speed	in/s	3.70				3.64				3.84				3.50			
	mm	400				480				550				570			
Screw stroke	in	15.75				18.90				21.65				22.44			
	r/min	154				145				128				112			
Barrel heating zone number	PCS	6				7				7				8			

CLAMPING UNIT																
Clamping force	KN	11000														
	US tons	1237														
Opening force	KN	760														
	US tons	85														
Platen size	mm	2000×1875														
	in	78.74×73.82														
Space between tie-bars	mm	1570×1310														
	in	61.81×51.57														
Max. mold thickness	mm	1300														
	in	51.18														
Min. mold thickness	mm	700														
	in	27.56														
Opening stroke	mm	2350/1750														
	in	92.52/68.9														
Max.daylight	mm	3050														
	in	120.08														
Ejector force	KN	274														
	US tons	31														
Ejector stroke	mm	360														
	in	14.17														
Ejector number	PCS	25														

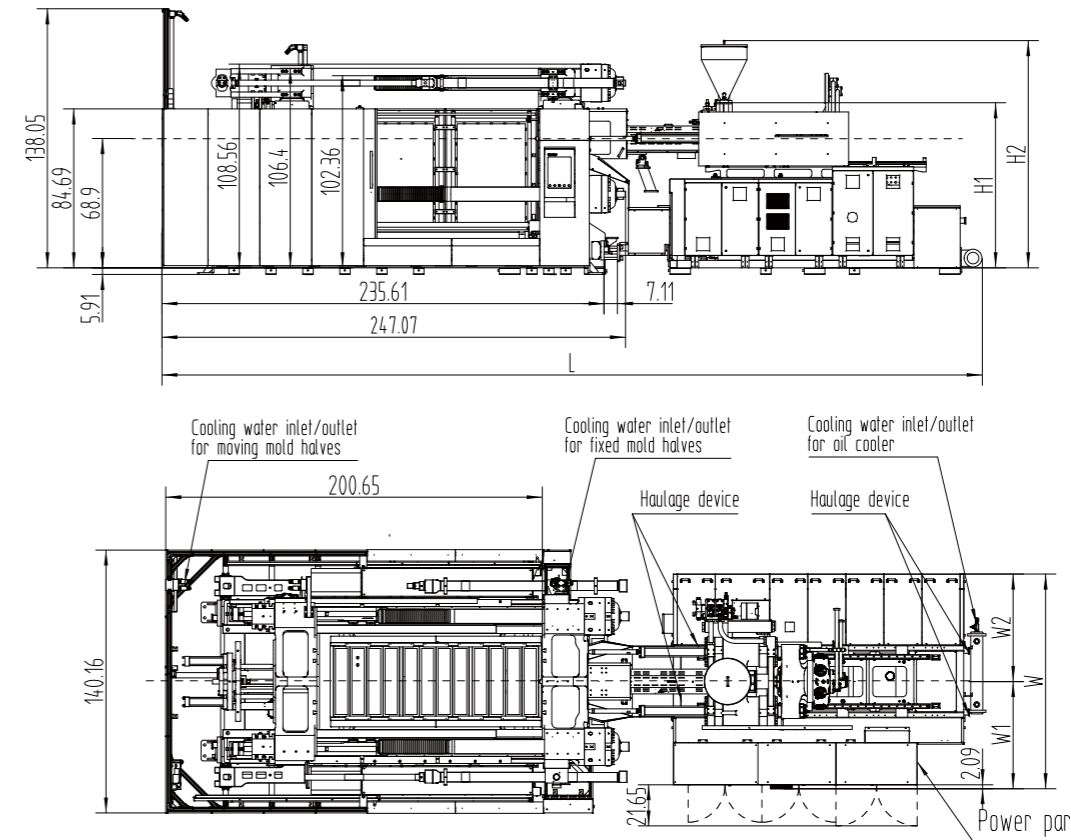
POWER UNIT																	
System pressure	Mpa	17.5/30				17.5/30				17.5/30				17.5/30			
	psi	2538/4351				2538/4351				2538/4351				2538/4351			
Motor	kW	66+5.5				89+7.5				110+7.5				89+37+7.5			
	hp	88.51+7.38				119.35+10.06				147.51+10.06				119.35+49.62+10.06			
Total power	kW	108.6	108.6	118.5	118.5	143.5	143.5	153.1	153.1	169.3	169.3	178.4	178.4	199.9	199.9	204.1	204.1
	hp	145.63	145.63	158.91	158.91	192.43	192.43	205.31	205.31	227.03	227.03	239.23	239.23	268.07	268.07	273.7	273.7
Heating capacity	kW	37.14	37.14	47	47	47	47	56.6	56.6	51.76	51.76	60.9	60.9	66.37	66.37	70.63	70.63
	hp	49.8	49.8	63.03	63.03	63.03	63.03	75.9	75.9	69.41	69.41	81.67	81.67	89	89	94.71	94.71

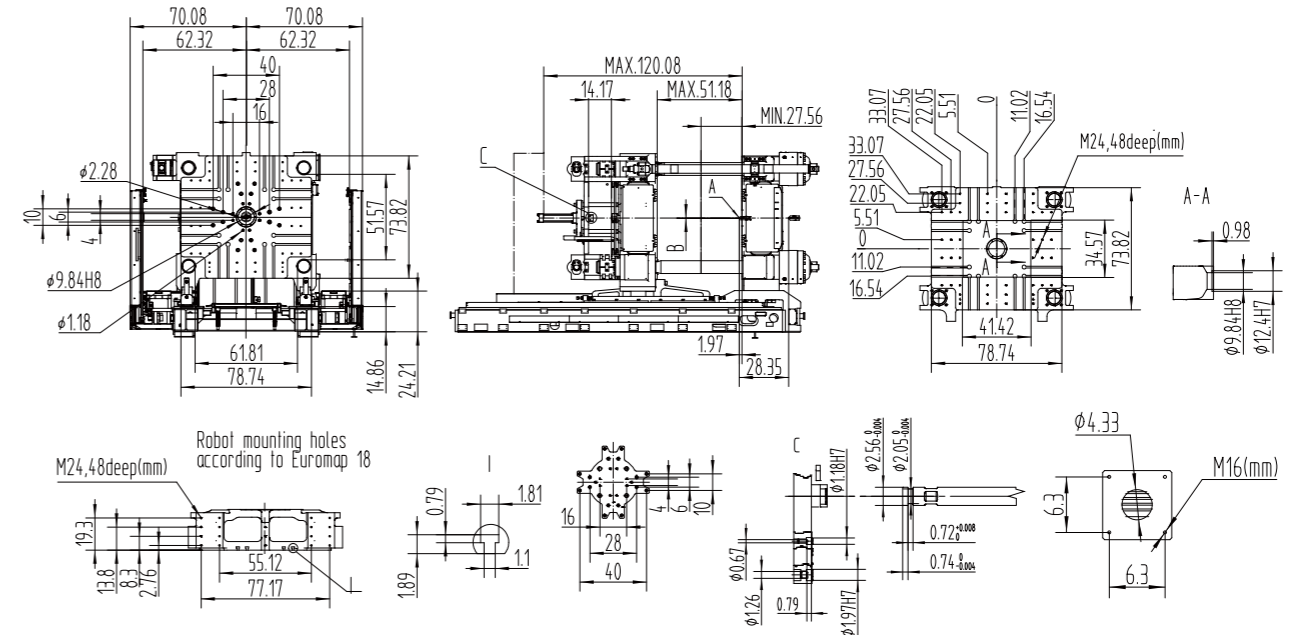
GENERAL																	
Oil tank capacity	L	1000				1150				1400				1600			
	gal	264				303.6				369.6				422.4			
Machine dimensions	m	11×3.6×3.5				11×3.6×3.5				11.2×3.6×3.5				11.6×3.6×3.5			
	in	433.07×141.73×137.8				433.07×141.73×137.8				440.94×141.73×137.8				456.69×141.73×137.8			
Max.mold weight	T	30				30				30				30			

- Opening force refers to mold opening force generated during high-pressure mold open.
- In terms of the mold opening stroke, data before the slash refer to mold opening stroke with the minimum mold height; data after the slash refer to opening stroke with the maximum mold height.
- Mold-bearing capacity of the movable platen is 2/3 of total mold weight.
- The shot weight is calculated with GPPS and it is 0.92 times of the theoretical shot volume.
- Three types of screw diameters are available for each model and the medium one is standard on the machine.
- The injection unit data are in international units and calculated as follows: theoretical shot volume [cm<sup>3</sup>] × injection pressure (MPa)/100.
- The highlighted figures are standard specifications of clamping unit and injection unit.
- Because of constant technical improvement, specifications are subject to change without prior notice.

# UN1200WD1-N Machine Dimensions



# UN1200WD1-N Platen Dimensions



Model	A	B	L	H1	H2	W	W1	W2	Sectional area of main power cord	Full-load current	Bearing capacity of foundation	Number of cooling water line port	Cooling water flow (mold included)	Cooling water pressure	Compressed air pressure								
	mm	mm	mm	mm	mm	mm	mm	mm	mm <sup>2</sup>	A	t/m <sup>2</sup>	lbm/in <sup>2</sup>	n×L/min	n×gal/min	L/min	gal/min	bar	psi	bar	psi			
UN1200WD1-N-IU4800	SR15	SR0.59	Ø4.5	Ø0.18	432.03	76.18	110.24	91.85	43.82	48.03	70	0.109	215.49										
UN1200WD1-N-IU6800	SR15	SR0.59	Ø4.5	Ø0.18	432.03	76.18	110.24	106.73	53.23	53.50	75	0.116	259.84	8	17600	(8+8)×11	(8+8)×2.9	100	26.4	3~4	43.5-58	5~6	72.5-87
UN1200WD1-N-IU9000	SR15	SR0.59	Ø4.5	Ø0.18	437.15	84.09	117.24	114.41	57.11	57.30	95	0.147	316.71										
UN1200WD1-N-IU10900	SR20	SR0.79	Ø6	Ø0.24	455.65	88.74	121.89	114.41	57.11	57.30	120	0.186	370.88										





INJECTION UNIT																
Model	UNIT	IU9000				IU10900				IU14500			IU18500			
Screw diameter	mm	100	108	116	125	108	116	125	135	125	135	145	135	145	155	165
	in	3.94	4.25	4.57	4.92	4.25	4.57	4.92	5.32	4.92	5.32	5.71	5.32	5.71	6.10	6.50
Theoretical shot volume	cm <sup>3</sup>	4320	5038	5813	6748	5222	6024	6995	8159	7977	9304	10733	10020	11559	13208	14968
	cu in	263.62	307.46	354.75	411.81	318.67	367.63	426.89	497.92	486.8	567.8	655.04	611.48	705.43	806.05	913.45
Shot weight	g	3974	4636	5348	6208	4804	5542	6435	7506	7339	8560	9875	9218	10634	12152	13770
	oz	140.2	163.5	188.6	219	169.5	195.5	227	264.8	258.9	301.9	348.3	325.1	375.1	428.6	485.7
Injection pressure	Mpa	209	179	155	134	210	182	157	135	181	156	135	184	160	140	123
	psi	30298	25976	22481	19435	30458	26397	22771	19580	26252	22626	19580	26730	23177	20305	17840
Screw L:D ratio		21.6	20	21.6	20	22	22	21.6	20	23.6	22	20	23.6	22	21	20
	cm <sup>3</sup> /s	766	894	1031	1197	815	940	1092	1273	1316	1536	1772	1301	1502	1717	1946
Injection rate	cu in/s	46.75	54.56	62.92	73.05	49.74	57.37	66.64	77.69	80.31	93.74	108.14	79.40	91.66	104.78	118.76
	mm/s		97.6				89				107			91		
Max. injection speed	in/s		3.84				3.50				4.21			3.58		
	mm		550				570				650			700		
Screw stroke	in		21.65				22.44				25.59			27.56		
	r/min		128				112				120			120		
Barrel heating zone number	PCS		7				8				8			8		

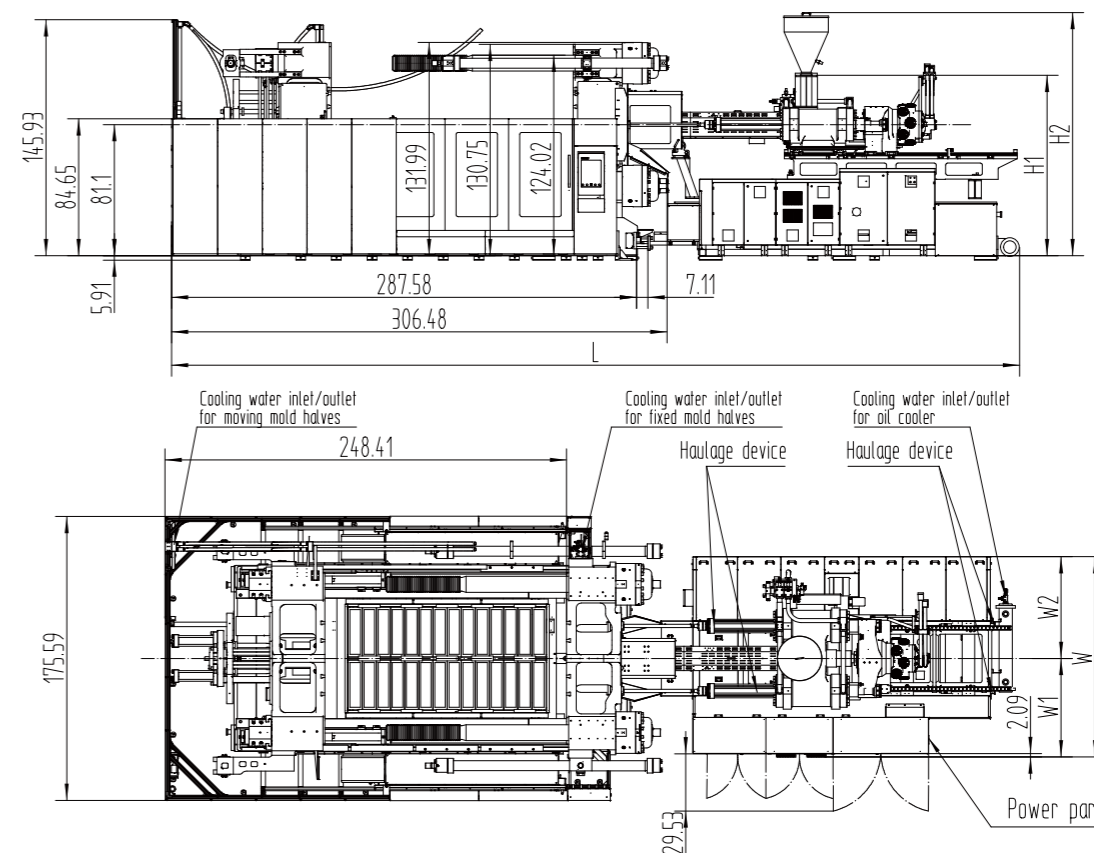
CLAMPING UNIT		
Clamping force	KN US tons	18500 2081
Opening force	KN US tons	1230 138
Platen size	mm	2682×2452
	in	105.59×96.54
Space between tie-bars	mm	2080×1680
	in	81.89×66.14
Max. mold thickness	mm	1600
	in	62.99
Min. mold thickness	mm	800
	in	31.5
Opening stroke	mm	3000/2200
	in	118.11/86.61
Max.daylight	mm	3800
	in	149.61
Ejector force	KN US tons	460 52
Ejector stroke	mm in	430 16.93
Ejector number	PCS	25

POWER UNIT		
System pressure	Mpa	17.5/30
	psi	2538/4351
Motor	kW	110+7.5
	hp	147.51+10.06
Total power	kW	169.3 169.3 178.4 178.4 199.9 199.9 204.1 204.1
	hp	227.03 227.03 239.23 239.23 268.07 268.07 273.7 273.7
Heating capacity	kW	51.76 51.76 60.9 60.9 66.37 66.37 70.63 70.63
	hp	69.41 69.41 81.67 81.67 89 89 94.71 94.71

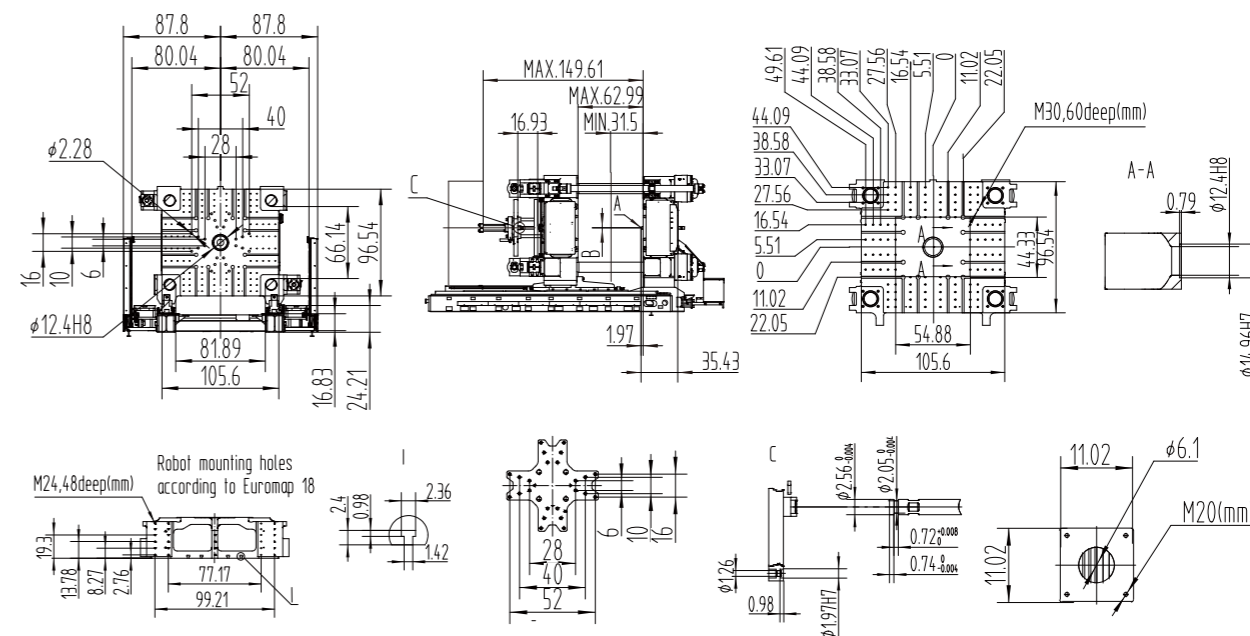
GENERAL		
Oil tank capacity	L gal	1400 369.6
Machine dimensions	m	12.6×4.5×3.7
	in	496.06×177.17×145.67
Max.mold weight	T	62

1. Opening force refers to mold opening force generated during high-pressure mold open.  
 2. In terms of the mold opening stroke, data before the slash refer to mold opening stroke with the minimum mold height; data after the slash refer to opening stroke with the maximum mold height.  
 3. Mold-bearing capacity of the movable platen is 2/3 of total mold weight.  
 4. The shot weight is calculated with GPPS and it is 0.92 times of the theoretical shot volume.  
 5. Three types of screw diameters are available for each model and the medium one is standard on the machine.  
 6. The injection unit data are in international units and calculated as follows: theoretical shot volume [cm<sup>3</sup>] × injection pressure (MPa)/100.  
 7. The highlighted figures are standard specifications of clamping unit and injection unit.  
 8. Because of constant technical improvement, specifications are subject to change without prior notice.

UN2000WD1-N Machine Dimensions



UN2000WD1-N Platen Dimensions



Model	A	B	L	H1	H2	W	W1	W2	Sectional area of main power cord	Full-load current	Bearing capacity of foundation	Number of cooling water line port	Cooling water flow (mold excluded)	Cooling water pressure	Compressed air pressure				
	mm	in	mm	in	in	in	in	in	mm <sup>2</sup>	A	t/m <sup>2</sup>	lbm/in <sup>2</sup>	n×L/min	n×gal/min	L/min gal/min	bar	psi	bar	psi
UN2000WD1-N-IU9000	SR15	SR0.59	∅4.5	∅0.18	492.80	96.30	129.45	114.41	57.11	57.30	95	0.147	316.71						
UN2000WD1-N-IU10900	SR20	SR0.79	∅6	∅0.24	511.56	100.94	134.09	114.41	57.11	57.30	120	0.186	370.88	100	26.4	3~4	43.5-58	5~6	72.5-87
UN2000WD1-N-IU14500	SR20	SR0.79	∅8	∅0.31	524.23	109.57	148.43	123.86	60.94	62.91	150	0.233	470.42						
UN2000WD1-N-IU18500	SR20	SR0.79	∅8	∅0.31	524.23	111.57	150.43	123.86	60.94	62.91	150	0.233	491.15	250	66				

## Standard and Optional Features

● Standard  
○ Optional

CLAMPING UNIT		PDP interface	
Clamping mechanism with tie bars independent of movable platen	●		●
Quantitative volumetric automatic lubrication system	●	Injection monitoring protection	●
High-response proportional control of pressure and flow for mold open & mold close	●	Mold-close monitoring protection	●
Hydraulically-driven ejection device	●	Statistical process control (SPC) interface	●
Low-pressure mold protection	●	Electrical enclosure rated IP54	●
Clamping force adjustment as needed	●	Screw speed detecting device	●
Forced reset function	●	Time/ position/ time + position control modes for switchover to holding phase	●
Ejector return protection	●	Protective plate in mold area	●
Robot mounting hole (Euromap 18)	●	3 sets of 380V 32A socket (2 sets for 550T-990T D1-N)	●
Electric door ( optional for UN550D1-N or UN770D1-N)	●	1 set of 380V 16A socket (2 sets for 550T-990T D1-N)	●
T-slot platen	●	16-level password security	●
Four clamp platens made of high-rigidity ductile iron	●	Reserved robot interfaces based on SPI, EUROMAP 67	●
Hydraulic and electrical safety devices	●	Automatic heat preserving, automatic heating settings	●
Safety foot plate in mold area (optional for UN550D1-N or UN770D1-N)	●	Servo injection	○
High-accuracy magnetostrictive displacement sensor for mold open/close control	●	Electric unscrewing device	○
Mold with reset spring	●	Hot runner interface	○
Safety foot plate in front & rear door areas	○	Auxiliary emergency stop button	○
Synchronous ejection and core pulling	○	Air blast in mold	○
Secondary mold closing	○	Power supply change	○
Quick mold change system platform	○	Central (networked) monitoring system	○
Hydraulic mold clamp	○	Protective light grid of safety gates	○
Magnetic platen	○	Opto-electronic safety switch of front and rear safety gates	○
Increased mold thickness	○	Protective light grid of central safety foot plate	○
Increased ejector stroke	○	INJECTION UNIT	
Mold lifting device	○	Double parallel cylinder injection unit with low-speed high-torque hydraulic motor	●
Heat insulating plate of mold	○	Nitrided alloy steel screw & barrel	●
Special mold mounting hole	○	Heat preservation cover for barrel and purge guard (with electrical protection)	●
Increased mold opening stroke	○	Selectable suck-back before or after plasticizing	●
Larger ejection force	○	10-stage injection speed/ pressure/ position control	●
		10-stage holding speed/ pressure/ position/ time control	●
		5-stage plasticizing speed/ pressure/ position control	●
ELECTRIC CONTROL SYSTEM		Linear guides for injection unit	●
Closed-loop PID barrel temperature control	●	Double-carriage cylinder	●
Manual, semi-auto and fully-auto operating mode	●	Cold start protection	●
Input and output inspection interface	●	Manual central lubrication system of injection unit	●
Automatic display of alarm messages and acousto-optic alarm system	●	Suck back function	●
Built-in software with the oscilloscope function	●	Automatic purging	●
Unlimited technical parameter storage	●	Screw rotation measuring device	●
Automatic mold height adjustment	●	Injection carriage transducer(standard for IU14500 and above model)	○
Chinese and English operating system	●	Mixing screw	○
Safety gate emergency stop function	●	Bi-metallic screw barrel	○
Online cycle monitoring	●	Swivelling injection unit	○
12" TFT color touch screen	●	Extended nozzle (50/100/150/200mm longer)	○
Visualized graphic programming	●		

Special screw components		○
Energy-saving barrel heat retaining device (silicone cover)		○
Spring shut-off nozzle		○
Increased injection stroke		○
HYDRAULIC SYSTEM		
Low-noise energy-saving hydraulic circuit	●	
Proportional back pressure control for plasticizing	●	
Oil pre-heating system	●	
2 sets of core pull (4 sets for UN2300/2600D1-N, 6 sets for UN3100/3700/4400D1-N)	●	
Differential mold-open circuit	●	
Injection and mold-close pressure protection	●	
High-pressure mold opening	●	
Automatic pressure and flow calibration	●	
Oil temperature and oil level alarm	●	
High-performance servo pump system	●	
Multiple sets of sequence (injection) valve interface		○
Variable displacement pump system		○
Closed-loop proportional variable displacement pump system		○
High-response accumulating servo injection system		○
Enlarged oil cooler		○
Multi-capacity larger pump motor		○
Multi-capacity larger plasticizing motor		○
Servo injection (closed-loop control of injection, plasticizing, holding pressure and back pressure)		○
Plasticizing during mold opening		○
Multiple sets of core pull or unscrewing devices with electrical interfaces		○

OTHER	
User manual	●
Adjustable leveling pad	●
8-in 8-out water manifold on platen (with general, quick connectors)	●
Nozzle spanner	●
Mold clamp	●
Hopper (standard for IU6800 and below model)	○
Hydraulic oil (standard for UN1550D1-N/UN1400WD1-N and below model)	○
Loading platform	○
Mold temperature controller	○
Automatic loader	○
Dehumidification dryer	○

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