TOYO
MACHINERY & METAL

USA Version

ET-II VR SERIES

Fully Electric Vertical type Injection Molding Machine

Customer's Value Up

ET-Ⅱ VR SERIES

Fully Electric Rot ary-table type Vertical Injection Molding Machine

Wide varieties of injection and clamping units from 45U.S.ton to 165U.S.ton

New control SYSTEM 700

Simple and yet high performance control system with easier-to-operate 15-inch LCD touch panel and high accuracy mold protecting function

Increased maintainability

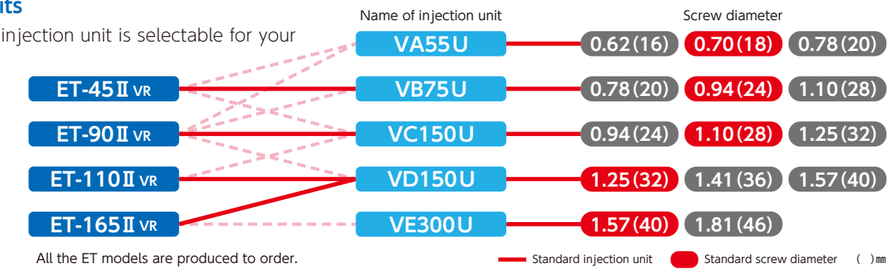
One-touch connectable heaters and thermocouples, light-weight cover with less fixing bolts, and
easier-to-exchange grease cartridge that is located outside the machine

High environmental friendliness

Less electric consumption of equipment, 6-fold decreased grease consumption, and decreased heater power consumption owing to heat-insulated heat barrel protecting cover adopted as standard

Selectable injection units

Like our horizontal models, injection unit is selectable for your specific molding product.



All the ET models are produced to order.

Work-oriented machine height

As with former models, the heights of machine and table are designed for improved maintainability and workability respectively.

ET-Ⅱ VR					
Model		45Ⅱ VR	90Ⅱ VR	110Ⅱ VR	165Ⅱ VR
Table height	in	35.43	37.76	39.17	47.17
Machine maximum height	in	108.82~118.86	116.85~144.49	125.79~145.91	155.48~172.52
Machine daylight size	in	21.65	24.80	25.00	32.09

Wide gate and large table

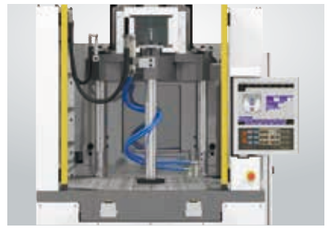
Wide front gate opening for improved operability and workability, and a large rotary table to accommodate multi-cavity larger and heavier mold

ET-Ⅱ VR					
Model		45Ⅱ VR	90Ⅱ VR	110Ⅱ VR	165Ⅱ VR
Front gate opening	in	28.94	34.25	43.11	53.74
Maximum mountable mold size	in	11.81×11.81	16.14×16.14	19.68×19.68	20.04×20.04
Maximum mountable mold weight	lb	397×2 molds	661×2 molds	881×2 molds	1102×2 molds

Note: Figures are for 2-station machine. For three or more stations, the figures may be changed.

Higher speed and improved productivity

High speed movement in mold opening and closing and in injecting
As with former models, machine vibration is reduced owing to triple nozzle-touch ball screws serving also as injecting guide bars and movable plate-supporting guide rail structure.



Improved workability owing to wide front gate opening

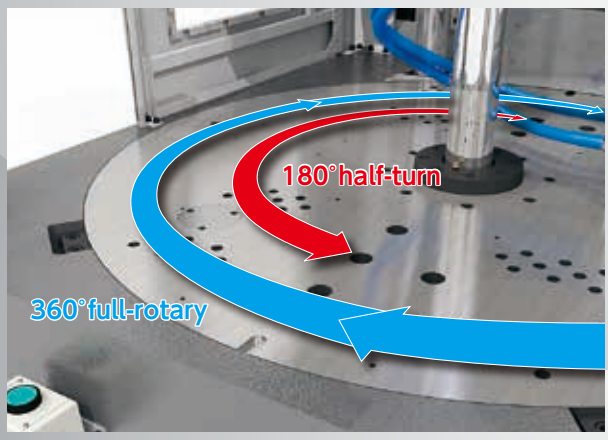
Movable plate-supporting guide rail structure

ET-II VR SERIES

Vertical Rotary Type

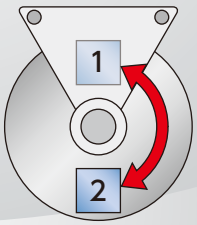
The TOYO-original 360° rotary table delivers high-efficiency production

You can choose either 180° 2-station reversible table motion or 360° one-way full rotation depending on your job.



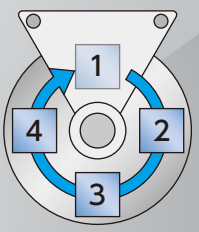
* Any number of stations is available as option.

2-station 180° half-turn



The rotary table turns 180° back and forth.

4-station 360° one-way rotary (full rotary specifications)

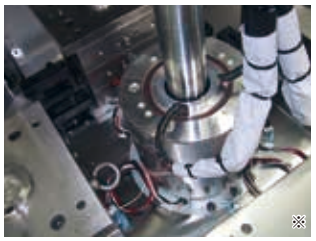


The rotary table continues to rotate 360° in one direction.

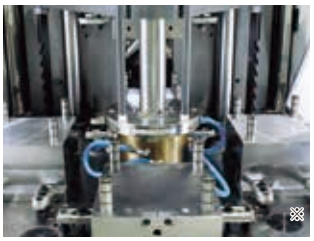
Each molding condition can be set for each mold.

The ET series has added one-way 360° full-rotary type models (optional) in its line-ups. The rotary table stops at infinite numbers of positions according to the setting.
You can set independent molding parameters to each mold.

Technology behind one-way rotation



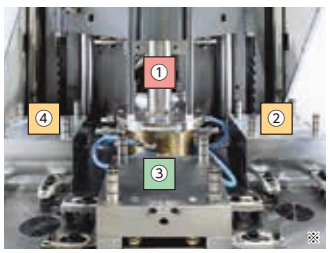
Multi-pole slip ring system (for rod heaters)

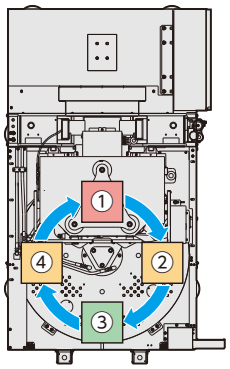


Rotary joint system (for water-cooling)

Molding examples using 360° full rotary system

Full rotary ① 4-station with one upper mold half

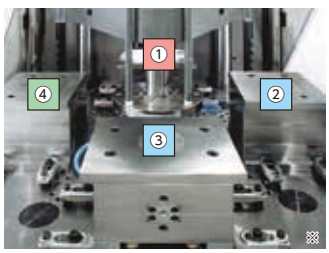


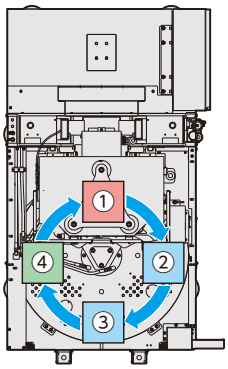


① Injection/Holding pressure
②④ Free-use
③ Taking out

(For example, work insertion is possible at station ④.)
Other processes can be allocated at stations ② and ④.

Full rotary ② 4-station with four upper mold halves





① Injection/Holding pressure
②③ Cooling
④ Taking out (Ejecting)

High speed molding is possible by cooling theproduct at stations ② and ③.
Product quality can be stabilized by decreasing the number of cavities per mold.

※Above four pictures are of ET-80HR4.

ET-Ⅱ VR SERIES

New control SYSTEM 700

Refurbished control system leading to another dimension of high speed and high response machine motion

The ET-ⅡVR series is equipped with latest control SYSTEM 700 boasting an easy-to-see and easy-to-toucn large screen and strengthened support system to prevent the mold from damage.

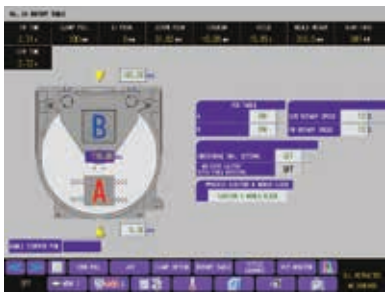
15-inch touch panel

Having the same setting items and screen layout as previous 12.1-inch one, the larger 15-inch gray touch panel has greater visibility and operability.

HSP mold protection system

High response of SYSTEM 700 control and specially set two torque monitoring areas combined, the HSP (High Sensitive Protection) mold protection system shows greater performance in protecting the mold from damage due to product pinching between mold halves.
Mold protection accuracy has been much improved even in high cycle operation, so that cycle time can be shortened without any concern about any damage to the mold.

Easy setting of table and mold core motion



Easy-to see graphic display of the table status facilitates the setting of operating conditions.

Core sequences for the vertical machine is provided as standard, so you can choose one according to your upper and lower molds respectively.

■ PLASTAR ET-45Ⅱ VR2 Specifications

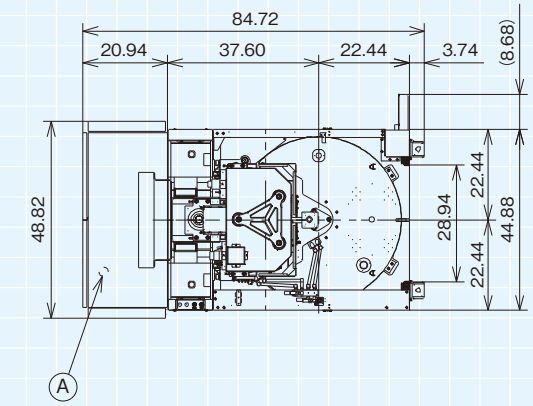
Injection	Injection system	—	In-line screw								
	Injection unit	—	《VA55U》			VB75U			《VC150U》		
	Injection stroke	in	《2.51》	《2.83》	《2.83》	《3.77》	5.11	《4.40》	《4.40》	《5.78》	《5.03》
	Screw diameter	in	《0.62》	《0.70》	《0.78》	《0.78》	0.94	《1.10》	《0.94》	《1.10》	《1.25》
		(mm)	(16)	(18)	(20)	(20)	(24)	(28)	(24)	(28)	(32)
	Theoretical injection capacity	in^3	《0.78》	《1.11》	《1.38》	《1.84》	3.58	《4.20》	《3.09》	《5.52》	《6.28》
	Injection rate	in^3/s	《3.68》	《4.65》	《5.75》	《5.75》	8.28	《11.27》	《8.28》	《11.27》	《14.72》
	Max. injection speed	in/s	《11.81》			11.81			《11.81》		
	Max. injection holding pressure	psi	《36984》	《36984》	《36984》	《36984》	34954	《25671》	《36984》	《34954》	《26831》
	Max. injection holding pressure	psi	《36984》	《36984》	《34228》	《36984》	31473	《23206》	《36984》	《31473》	《24221》
	Recovery rate (PS)	oz/s	《0.10》	《0.14》	《0.17》	《0.17》	0.35	《0.57》	《0.24》	《0.40》	《0.60》
	Screw revolution speed	rpm	《500》			500			《350》		
	Nozzle pressing force	U.S.ton	1.1								
Clamping	Clamping system	—	Toggle								
	Clamping force	U.S.ton	45								
	Clamping stroke	in	9.84								
	Min. mold height	in	5.91								
	Max. mold height	in	11.81								
	Max. die plate size (H×V)	in	11.81×11.81　13.77×10.82								
	Max. lower mold-half weight	lb	379×2								
	Table diameter	in	40.94								
	Ejector force	U.S.ton	2.2								
	Ejector stroke	in	1.96								
Others	Heater capacity	kW	《1.98》	《2.28》	《2.58》	《2.98》	3.45	《5.50》	《4.36》	《5.50》	《5.85》
	Mold height motor output	kW	0.2								
	Nozzle touch motor output	kW	《0.2》			0.2			《0.2》		
	Machine dimension (W×L)	in	48.82 × 84.73								
	Machine dimension (H)	in	《108.82》	《110.79》	《112.41》	《112.33》	112.64	《115.71》	《116.93》	《116.97》	《118.86》
	Power source	—	Three phase AC200V/200, 230V±10%　50Hz/60Hz								
	Main breaker capacity 200V Class【400VClass※1】	A	75【50】						《100》【50】		
	Total electric capacity	kVA	《13》			17			《25》		
	Cable size 200V Class【400VClass※1】	in^2	《0.02》【0.01】			0.03【0.01】			《0.05》【0.02】		
	Air supply plumbing joint	in	Rc3/8								
	Air supply pressure※2	psi	52.21【58.02】								
	Required air content※3	ft^3/min	0.23【0.25】								
	Machine weight	U.S.ton	《4.1》			4.1			《4.3》		

NOTES

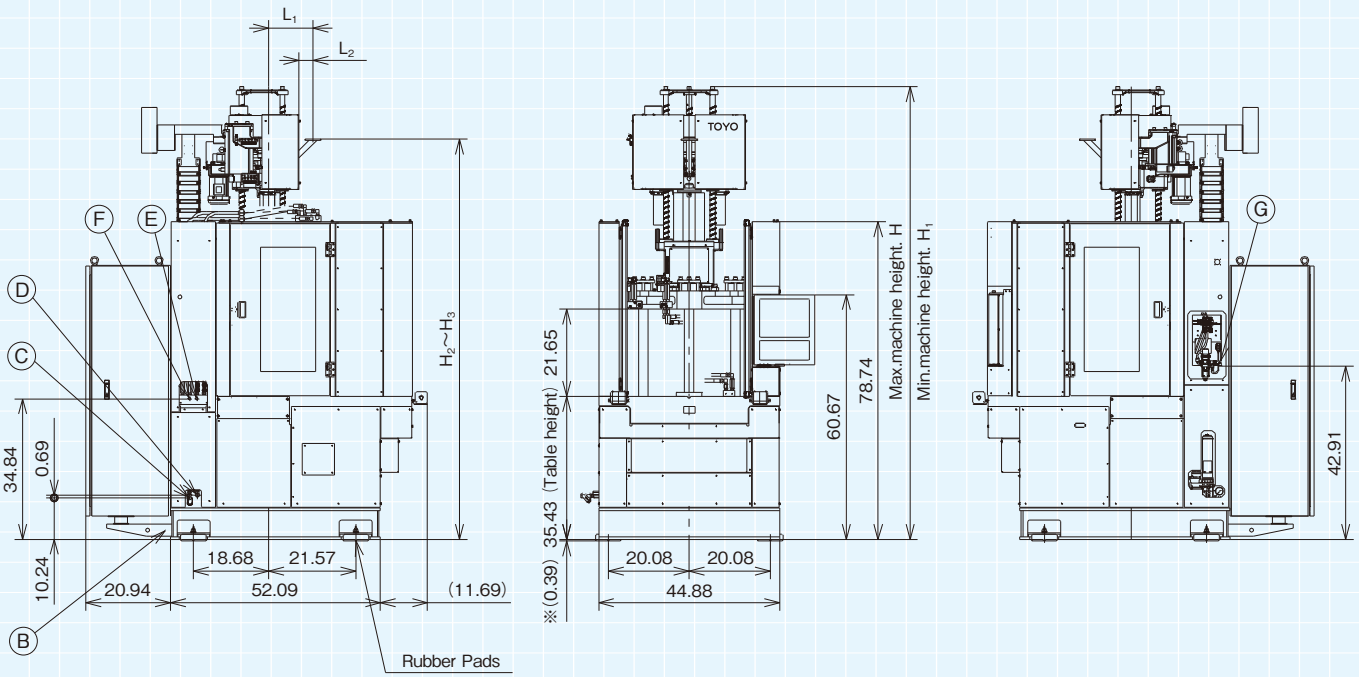
- The figures are subject to change without any legal obligation on the part of the manufacture.
- The maximum injecting pressure and the maximum holding pressure are attainable maximum set values.
- There values may be limited by molding conditions and cycle time.
- The maximum injecting pressure and the maximum holding pressure are values of case equipped with wear-resistant screw.
- These values may be lowered by screw diameter if install the screw of the standard material.
- The injection rate and the maximum injecting speed are calculated values. These values may be limited by set injecting pressures.
- When the machine is attached with an option, the capacity of the breaker may be changed.
- Figures in【 】are optional.
- Figures in《 》are numerical value except the standard ejection unit.

※1　A transformer(option) is necessary on the machine side
※2　It is a necessary air supply pressure level. Please supply it to become than a pressure level.
※3　It is a calculated value at use ambient temperature 68°F degrees Celsius.

■ PLASTAR ET-45II VR2 Dimensions : Machine Overall

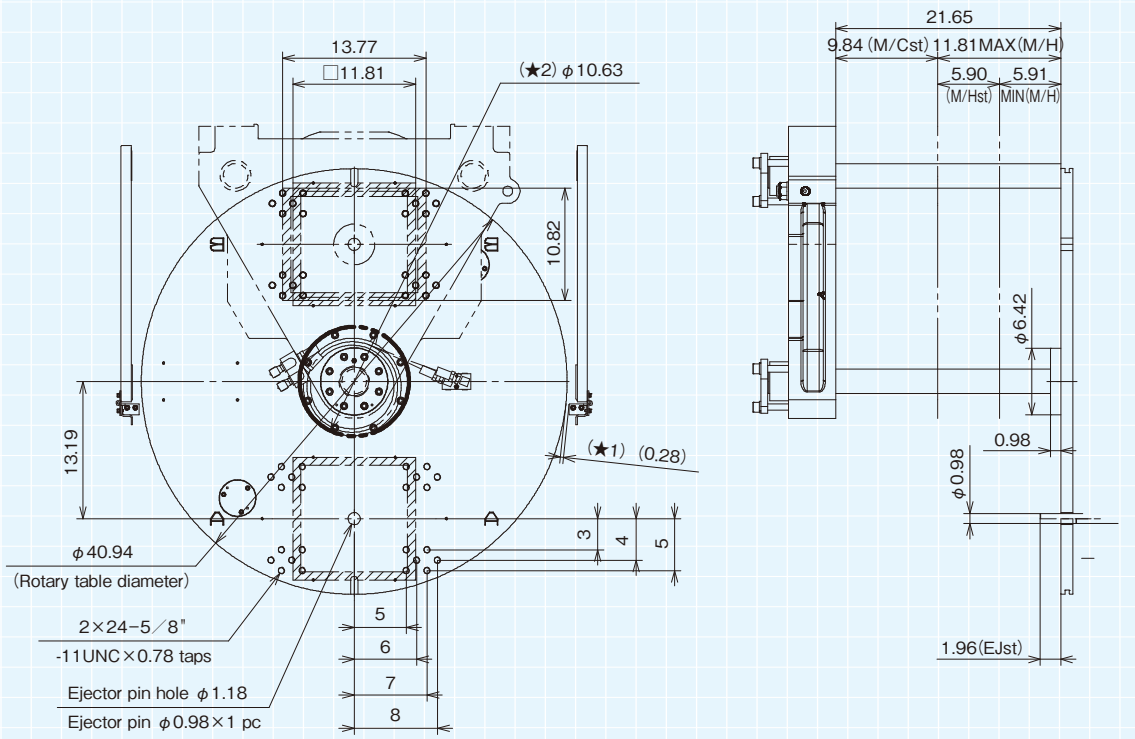


Ⓐ Power Source 200V
Breaker capacity (factory)
When VA55, VB75 mounted 75A
When VC150 mounted 100A
Ⓑ Grounding M8
Ⓒ Water for hopper throat IN:Rc3／8 with Y-type strainer
Ⓓ Water for hopper throat OUT:Rc3／8
Ⓔ Water for mold cooling IN Rc1／2
Ⓕ Water for mold cooling OUT Rc1／2
Ⓖ Air IN Rc3／8
※ Machine height is addind 0.39in when rubber pads attached.

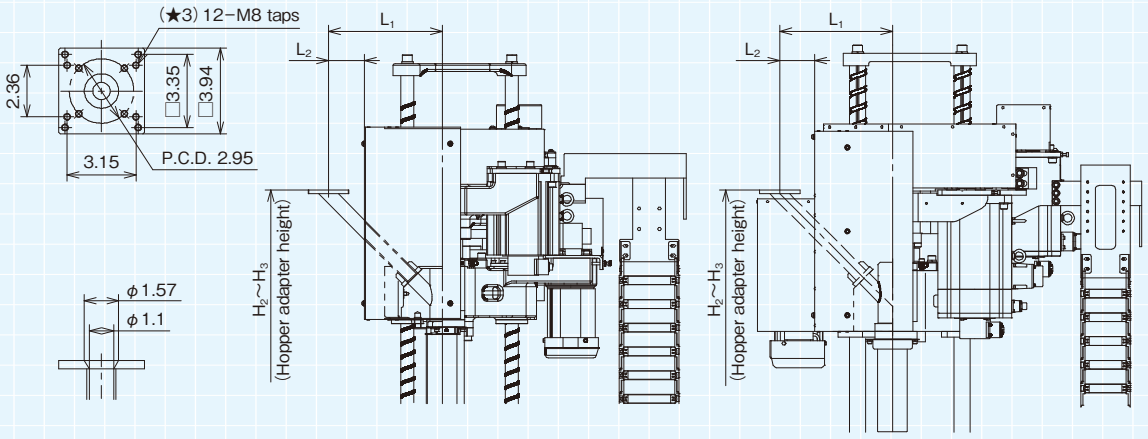


Injection unit	VA55U			VB75U			VC150U		
Screw diameter in(㎜)	ϕ0.62(16)	ϕ0.70(18)	ϕ0.78(20)	ϕ0.78(20)	ϕ0.94(24)	ϕ1.10(28)	ϕ0.94(24)	ϕ1.10(28)	ϕ1.25(32)
H	108.82	110.79	112.41	112.33	112.64	115.71	116.93	116.97	118.86
H_1	89.57	90.16	91.78	96.58	96.58	99.49	101.19	101.19	103.08
H_2	92.72	94.34	95.95	99.34	99.34	103.00	103.00	103.00	105.63
H_3	68.11	69.73	71.34	73.94	73.94	77.60	77.60	77.60	80.24
L_1	10.95	10.95	10.95	10.95	10.95	10.95	10.83	10.83	10.83
L_2	3.47	3.47	3.47	3.47	3.47	3.47	3.35	3.35	3.35

■ PLASTAR ET-45II VR2 Dimensions : Mold Fixing / Hopper Mounting Area



★1) Strictly mount mold which size is not out of end face of rotary table even there is a gap at 0.28in between rotary table and strut for safety door.
★2) Due to cooling water hoses for lower half mold mounted spirally, do not mount any mold parts in this area.



Detail of hopper adapter (VA55U、VB75U、VC150U)

DWG. of VA55U、VB75U

DWG. of VC150U

1) Keep a space for more than 0.6in between hopper loader and injection cover by reference to the above dimensions.
★3) Unit : ㎜

Injection unit	VA55U			VB75U			VC150U		
Screw diameter in(㎜)	φ0.62(16)	φ0.70(18)	φ0.78(20)	φ0.78(20)	φ0.94(24)	φ1.10(28)	φ0.94(24)	φ1.10(28)	φ1.25(32)
H_2	92.72	94.34	95.95	99.34	99.34	103.00	103.00	103.00	105.63
H_3	68.11	69.73	71.34	73.94	73.94	77.60	77.60	77.60	80.24
L_1	10.95	10.95	10.95	10.95	10.95	10.95	10.83	10.83	10.83
L_2	3.47	3.47	3.47	3.47	3.47	3.47	3.35	3.35	3.35

PLASTAR ET-45Ⅱ VR2 Dimensions : Nozzle Area

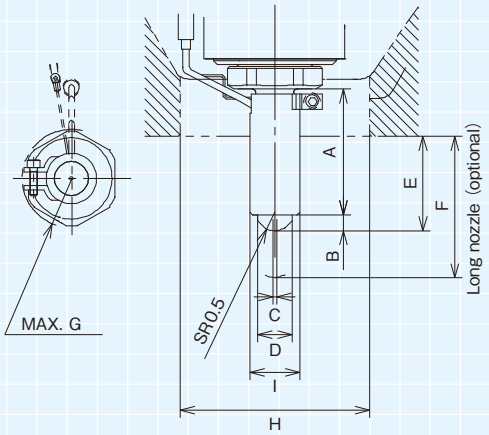


fig.1 Detail size of nozzle
(Screw diameter ϕ0.62～ϕ0.78)

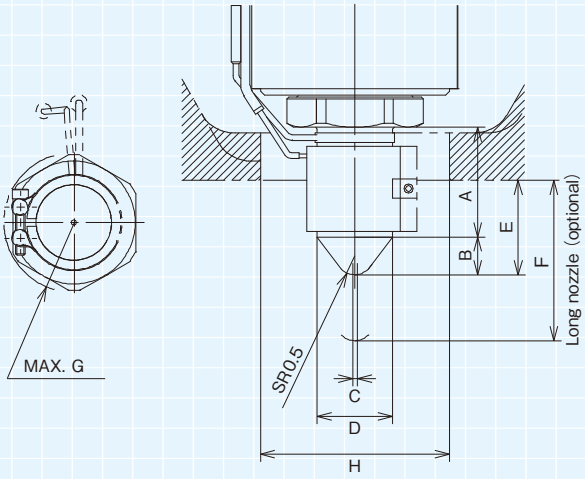


fig.2 Detail size of nozzle
(Screw diameter ϕ0.94～ϕ1.25)

Model name	VA55U			VB75U			VC150U		
Screw diameter in(㎜)	ϕ0.62(16)	ϕ0.70(18)	ϕ0.78(20)	ϕ0.78(20)	ϕ0.94(24)	ϕ1.10(28)	ϕ0.94(24)	ϕ1.10(28)	ϕ1.25(32)
A	2.62【3.61】	2.62【3.61】	2.62【3.61】	2.62【3.61】	2.16【3.34】	2.28【3.26】	2.16【3.34】	2.28【3.26】	2.28【3.26】
B	0.32	0.32	0.32	0.32	0.59【0.78】	0.78【1.18】	0.59【0.78】	0.78【1.18】	0.78【1.18】
C	ϕ0.07	ϕ0.07	ϕ0.07	ϕ0.07	ϕ0.09	ϕ0.09	ϕ0.09	ϕ0.09	ϕ0.11
D	ϕ0.70	ϕ0.70	ϕ0.70	ϕ0.70	ϕ1.18	ϕ1.57	ϕ1.18	ϕ1.57	ϕ1.57
E	1.18	1.18	1.18	1.96	1.96	1.96	1.96	1.96	1.96
F	【2.16】	【2.16】	【2.16】	【2.95】	【3.34】	【3.34】	【3.34】	【3.34】	【3.34】
G	R1.02	R1.02	R1.02	R1.02	R1.45	R1.53	R1.45	R1.53	R1.53
H	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4
I	ϕ1.03	ϕ1.03	ϕ1.03	ϕ1.03	—	—	—	—	—

※Figure in【 】show dimensions with options.

■ PLASTAR ET-90II VR2 Specifications

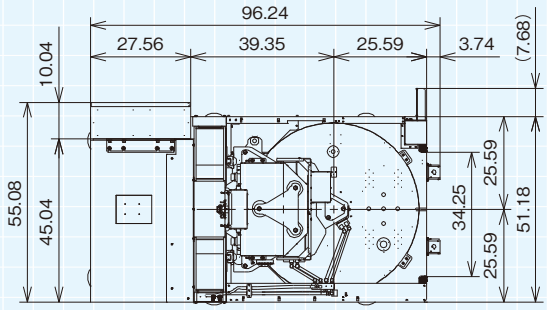
Injection	Injection system	—	In-line screw												
	Injection unit	—	《VA55U》			《VB75U》			VC150U			《VD150U》			
	Injection stroke	in	《2.51》	《2.83》	《2.83》	《3.77》	《5.11》	《4.40》	《4.41》	5.78	《5.03》	《5.03》	《5.66》	《5.66》	
	Screw diameter	in	《0.62》	《0.70》	《0.78》	《0.78》	《0.94》	《1.10》	《0.94》	1.10	《1.25》	《1.25》	《1.41》	《1.57》	
		(mm)	(16)	(18)	(20)	(20)	(24)	(28)	(24)	(28)	(32)	(32)	(36)	(40)	
	Theoretical injection capacity	in^3	《0.78》	《1.11》	《1.38》	《1.84》	《3.58》	《4.20》	《3.09》	5.52	《6.28》	《6.28》	《8.94》	《11.04》	
	Injection rate	in^3/s	《3.68》	《4.65》	《5.75》	《5.75》	《8.28》	《11.27》	《8.28》	11.27	《14.72》	《12.27》	《15.52》	《19.17》	
	Max. injection speed	in/s	《11.81》			《11.81》			11.81			《9.84》			
	Max. injection holding pressure	psi	《36984》	《36984》	《36984》	《36984》	《34954》	《25671》	《36984》	34954	《26831》	《36984》	《33358》	《26831》	
	Max. injection holding pressure	psi	《36984》	《36984》	《34228》	《36984》	《31473》	《23206》	《36984》	31473	《24221》	《36984》	《30022》	《24221》	
	Recovery rate (PS)	oz/s	《0.10》	《0.14》	《0.17》	《0.17》	《0.35》	《0.57》	《0.24》	0.40	《0.60》	《0.60》	《0.87》	《1.10》	
	Screw revolution speed	rpm	《500》			《500》			350			《350》			
	Nozzle pressing force	U.S.ton	1.1												
Clamping	Clamping system	—	Toggle												
	Clamping force	U.S.ton	90												
	Clamping stroke	in	11.02												
	Min. mold height	in	5.91												
	Max. mold height	in	13.77												
	Max. die plate size (H×V)	in	16.14×16.14　18.89×13.77												
	Max. lower mold-half weight	lb	661×2												
	Table diameter	in	47.24												
	Ejector force	U.S.ton	2.9												
	Ejector stroke	in	2.55												
Others	Heater capacity	kW	《1.98》	《2.28》	《2.58》	《2.98》	《3.45》	《5.50》	《4.36》	5.50	《5.85》	《5.85》	《6.50》	《7.95》	
	Mold height motor output	kW	0.4									《0.4》			
	Nozzle touch motor output	kW	《0.2》			《0.2》			0.2			《0.4》			
	Machine dimension (W×L)	in	55.08×96.24												
	Machine dimension (H)	in	《116.85》	《118.82》	《120.44》	《119.77》	《120.28》	《123.35》	《124.41》	124.41	《126.30》	《138.78》	《138.78》	《144.49》	
	Power source	—	Three phase AC200V/200, 230V±10%　50Hz/60Hz												
	Main breaker capacity 200V Class【400VClass※1】	A	《75》【50】						100【50】						
	Total electric capacity	kVA	《18》			《20》			25			《26》			
	Cable size 200V Class【400VClass※1】	in^2	《0.03》【0.01】			《0.03》【0.01】			0.05【0.02】			《0.05》【0.02】			
	Air supply plumbing joint	in	Rc3/8												
	Air supply pressure※2	psi	52.21【58.02】												52.21【72.52】
	Required air content※3	ft^3/min	0.23【0.25】												0.23【0.28】
	Machine weight	U.S.ton	《5.8》			《5.7》			6.0			《6.7》			

NOTES

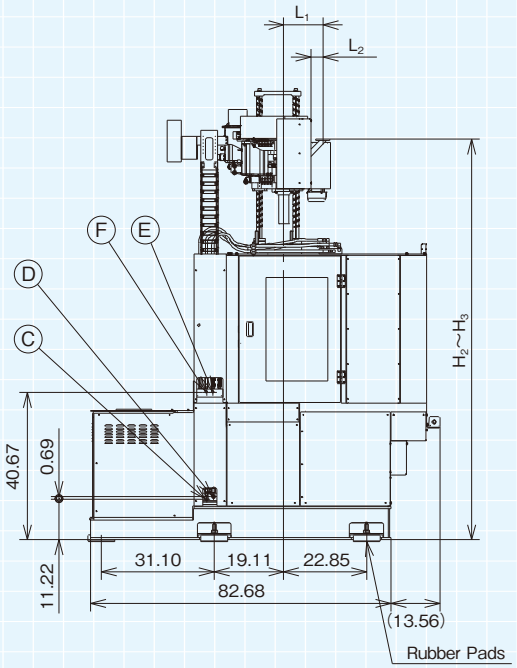
- The figures are subject to change without any legal obligation on the part of the manufacture.
- The maximum injecting pressure and the maximum holding pressure are attainable maximum set values.
- There values may be limited by molding conditions and cycle time.
- The maximum injecting pressure and the maximum holding pressure are values of case equipped with wear-resistant screw.
- These values may be lowered by screw diameter if install the screw of the standard material.
- The injection rate and the maximum injecting speed are calculated values. These values may be limited by set injecting pressures.
- When the machine is attached with an option, the capacity of the breaker may be changed.
- Figures in【 】are optional.
- Figures in《 》are numerical value except the standard ejection unit.

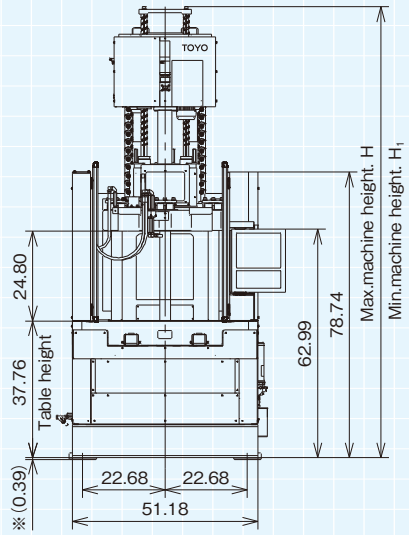
※1　A transformer(option) is necessary on the machine side
※2　It is a necessary air supply pressure level. Please supply it to become than a pressure level.
※3　It is a calculated value at use ambient temperature 68°F degrees Celsius.

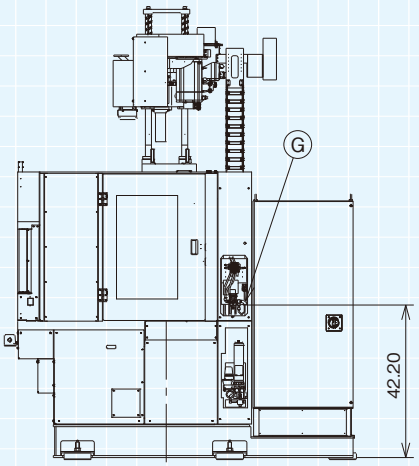
■ PLASTAR ET-90II VR2 Dimensions : Machine Overall

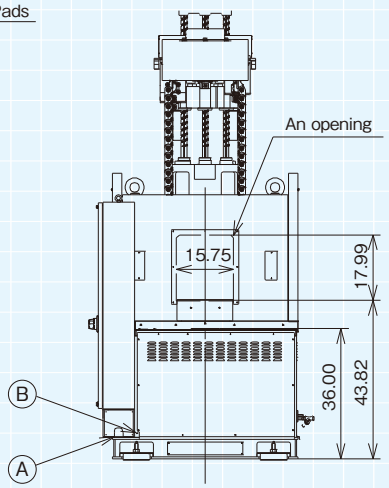


Ⓐ Power Source 200V
Breaker capacity (factory)
When VA55, VB75 mounted 75A
When VC150, VD150 mounted 100A
Ⓑ Grounding M8
Ⓒ Water for hopper throat IN:Rc3／8 with Y-type strainer
Ⓓ Water for hopper throat OUT:Rc3／8
Ⓔ Water for mold cooling IN Rc1／2
Ⓕ Water for mold cooling OUT Rc1／2
Ⓖ Air IN Rc3／8
※ Machine height is addind 0.39in when rubber pads attached.



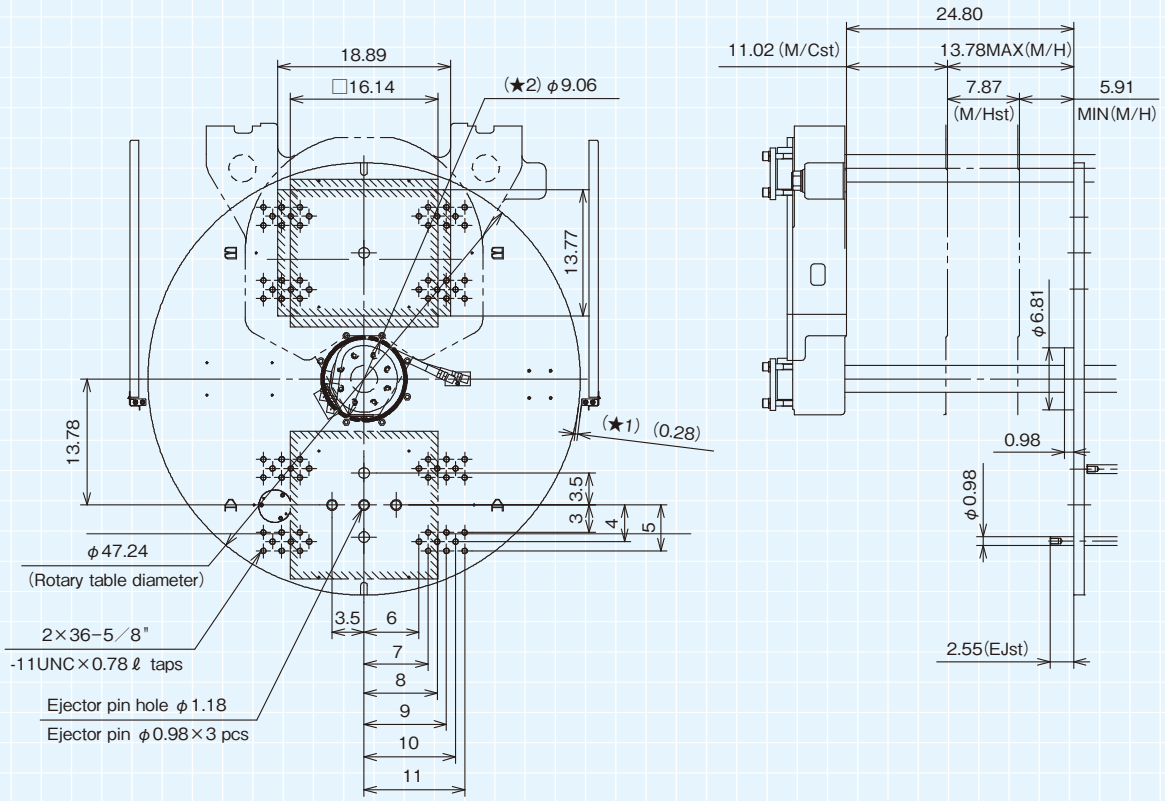




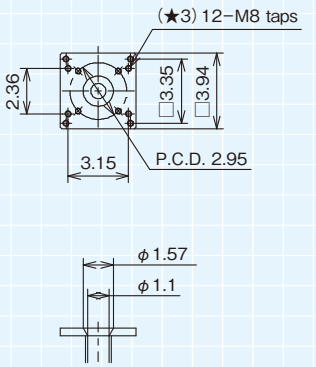


Injection unit	VA55U			VB75U			VC150U			VC150U		
Screw diameter in(㎜)	ϕ0.62(16)	ϕ0.70(18)	ϕ0.78(20)	ϕ0.78(20)	ϕ0.94(24)	ϕ1.10(28)	ϕ0.94(24)	ϕ1.10(28)	ϕ1.25(32)	ϕ1.25(32)	ϕ1.41(36)	ϕ1.57(40)
H	116.85	118.82	120.44	119.77	120.28	123.35	124.41	124.41	126.30	138.78	138.78	144.49
H_1	93.86	94.45	95.07	100.87	100.87	103.78	105.48	105.48	107.37	119.89	119.89	125.60
H_2	100.12	101.78	103.39	106.78	106.78	110.44	110.44	110.44	113.08	123.15	123.15	128.47
H_3	70.44	72.05	73.67	76.26	76.26	79.93	79.93	79.93	82.56	87.33	90.60	94.06
L_1	10.95	10.95	10.95	10.95	10.95	10.95	10.83	10.83	10.83	15.56	15.56	15.56
L_2	3.47	3.47	3.47	3.47	3.47	3.47	3.35	3.35	3.35	5.24	5.24	5.24

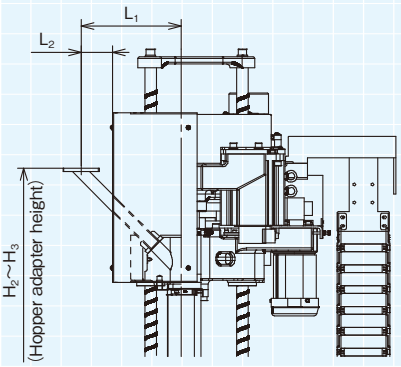
■ PLASTAR ET-90II VR2 Dimensions : Mold Fixing / Hopper Mounting Area



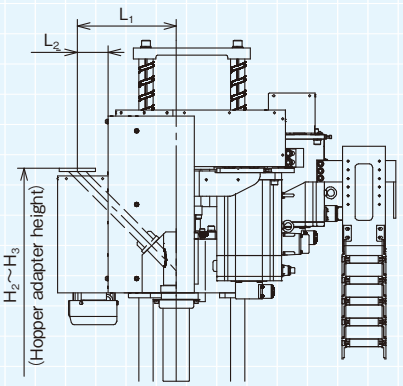
★1) Strictly mount mold which size is not out of end face of rotary table even there is a gap at 0.28in between rotary table and strut for safety door.
★2) Due to cooling water hoses for lower half mold mounted spirally, do not mount any mold parts in this area.



Detail of hopper adapter
(VA55U、VB75U、VC150U)



DWG. of VA55U、VB75U

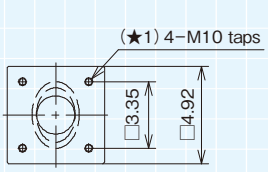


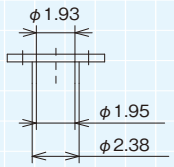
DWG. of VC150U

1) Keep a space for more than 0.6in between hopper loader and injection cover by reference to the above dimensions.
★3) Unit : ㎜

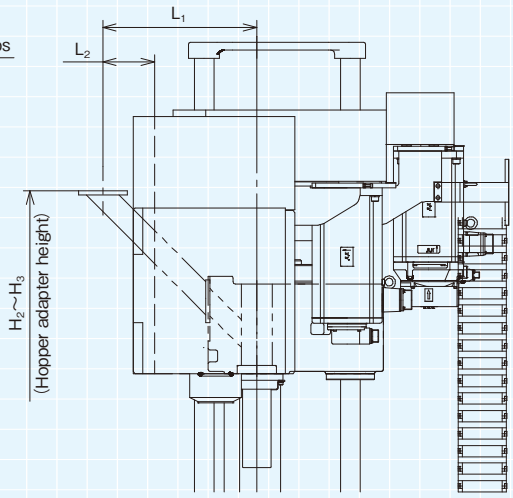
Injection unit	VA55U			VB75U			VC150U		
Screw diameter in(㎜)	φ0.62(16)	φ0.70(18)	φ0.78(20)	φ0.78(20)	φ0.94(24)	φ1.10(28)	φ0.94(24)	φ1.10(28)	φ1.25(32)
H_2	100.12	101.78	103.39	106.78	106.78	110.39	110.44	110.44	113.08
H_3	70.44	72.05	73.67	76.26	76.26	79.93	79.93	79.93	82.56
L_1	10.95	10.95	10.95	10.95	10.95	10.95	10.83	10.83	10.83
L_2	3.47	3.47	3.47	3.47	3.47	3.47	3.35	3.35	3.35

■ PLASTAR ET-90Ⅱ VR2 Dimensions : Nozzle Area





Detail of hopper adapter (VD150U)



DWG. of VD150U

Injection unit	VD150U		
Screw diameter in(㎜)	ϕ1.25(32)	ϕ1.41(36)	ϕ1.57(40)
H_2	123.15	123.15	128.47
H_3	87.33	90.60	94.06
L_1	15.56	15.56	15.56
L_2	5.24	5.24	5.24

1) Keep a space for more than 0.6in between hopper loader and injection cover by reference to the above dimensions.
★1) Unit : ㎜

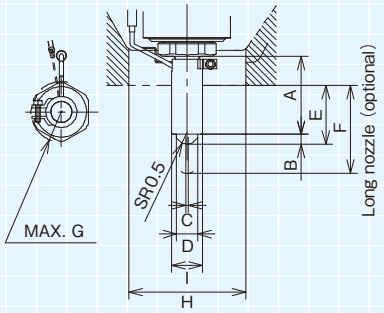


fig.1 Detail size of nozzle
(Screw diameter ϕ0.62~ϕ0.78)

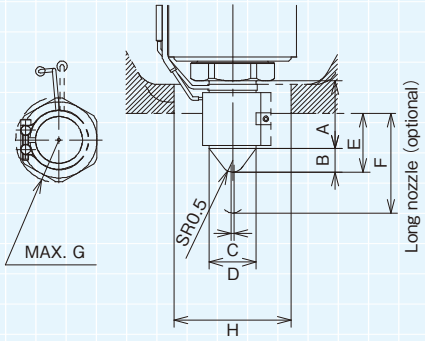


fig.1 Detail size of nozzle
(Screw diameter ϕ0.94~ϕ1.41)

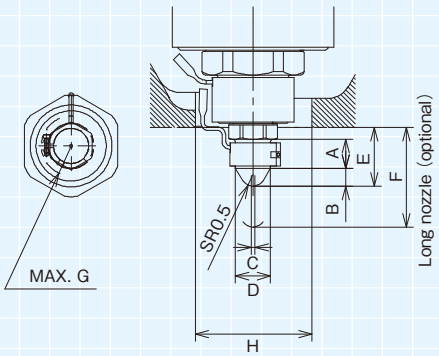


fig.1 Detail size of nozzle
(Screw diameter ϕ1.57)

Model name	VA55U			VB75U		
Screw diameter in(㎜)	ϕ0.62(16)	ϕ0.70(18)	ϕ0.78(20)	ϕ0.78(20)	ϕ0.94(24)	ϕ1.10(28)
A	2.62【3.61】	2.62【3.61】	2.62【3.61】	2.62【3.61】	2.16【3.34】	2.28【3.26】
B	0.32	0.32	0.32	0.32	0.59【0.78】	0.78【1.18】
C	ϕ0.07	ϕ0.07	ϕ0.07	ϕ0.07	ϕ0.09	ϕ0.09
D	ϕ0.70	ϕ0.70	ϕ0.70	ϕ0.70	ϕ1.18	ϕ1.57
E	1.18	1.18	1.18	1.96	1.96	1.96
F	【2.16】	【2.16】	【2.16】	【2.95】	【3.34】	【3.34】
G	R1.02	R1.02	R1.02	R1.02	R1.45	R1.53
H	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4
I	ϕ1.03	ϕ1.03	ϕ1.03	ϕ1.03	—	—

Model name	VC150U			VD150U		
Screw diameter in(㎜)	ϕ0.94(24)	ϕ1.10(28)	ϕ1.25(32)	ϕ1.25(32)	ϕ1.41(36)	ϕ1.57(40)
A	2.16【3.34】	2.28【3.26】	2.28【3.26】	2.28【3.26】	2.28【3.26】	0.98【2.16】
B	0.59【0.78】	0.78【1.18】	0.78【1.18】	0.78【1.18】	0.78【1.18】	0.59【0.78】
C	ϕ0.09	ϕ0.09	ϕ0.11	ϕ0.11	ϕ0.11	ϕ0.11
D	ϕ1.18	ϕ1.57	ϕ1.57	ϕ1.57	ϕ1.57	ϕ1.18
E	1.96	1.96	1.96	1.96	1.96	1.96
F	【3.34】	【3.34】	【3.34】	【3.34】	【3.34】	【3.34】
G	R1.45	R1.53	R1.53	R1.53	R1.53	R1.29
H	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4

※Figure in 【 】show dimensions with options.

■ PLASTAR ET-110Ⅱ$_{VR2}$ Specifications

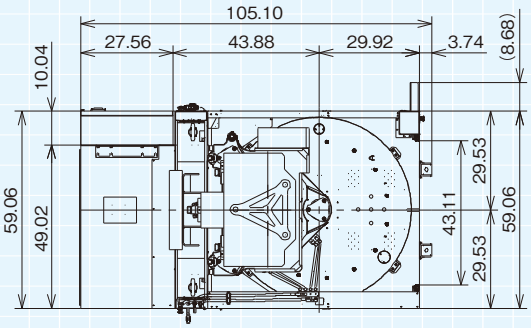
Injection	Injection system	—	In-line screw					
	Injection unit	—	《VC150U》			VD150U		
	Injection stroke	in	《4.41》	《5.78》	《5.03》	5.03	《5.66》	《5.66》
	Screw diameter	in	《0.94》	《1.10》	《1.25》	1.25	《1.41》	《1.57》
		(mm)	(24)	(28)	(32)	(32)	(36)	(40)
	Theoretical injection capacity	in^3	《3.09》	《5.52》	《6.28》	6.28	《8.94》	《11.04》
	Injection rate	in^3/s	《8.28》	《11.27》	《14.72》	12.27	《15.52》	《19.17》
	Max. injection speed	in/s	《11.81》			《9.84》		
	Max. injection holding pressure	psi	《36984》	《34954》	《26831》	36984	《33358》	《26831》
	Max. injection holding pressure	psi	《36984》	《31473》	《24221》	36984	《30022》	《24221》
	Recovery rate (PS)	oz/s	《0.24》	《0.40》	《0.60》	0.60	《0.87》	《1.10》
	Screw revolution speed	rpm	《350》			350		
	Nozzle pressing force	U.S.ton	1.1					
Clamping	Clamping system	—	Toggle					
	Clamping force	U.S.ton	110					
	Clamping stroke	in	11.22					
	Min. mold height	in	7.87					
	Max. mold height	in	13.77					
	Max. die plate size (H×V)	in	19.68×19.68　22.63×17.12					
	Max. lower mold-half weight	lb	881×2					
	Table diameter	in	55.11					
	Ejector force	U.S.ton	2.9					
	Ejector stroke	in	2.55					
Others	Heater capacity	kW	《4.36》	《5.50》	《5.85》	5.85	《6.50》	《7.95》
	Mold height motor output	kW	0.4					
	Nozzle touch motor output	kW	《0.2》			0.4		
	Machine dimension(W×L)	in	59.06 × 105.10					
	Machine dimension(H)	in	《125.79》	《125.83》	《127.72》	140.40	《140.40》	《145.91》
	Power source	—	Three phase AC200V/200, 230V±10%　50Hz/60Hz					
	Main breaker capacity 200V Class【400VClass※1】	A	100【50】					
	Total electric capacity	kVA	《25》			26		
	Cable size 200V Class【400VClass※1】	in^2	0.05【0.02】					
	Air supply plumbing joint	in	Rc3/8					
	Air supply pressure※2	psi	52.21【58.02】					52.21【72.52】
	Required air content※3	ft^3/min	0.230【0.247】					0.23【0.28】
	Machine weight	U.S.ton	《7.5》			8.2		

NOTES

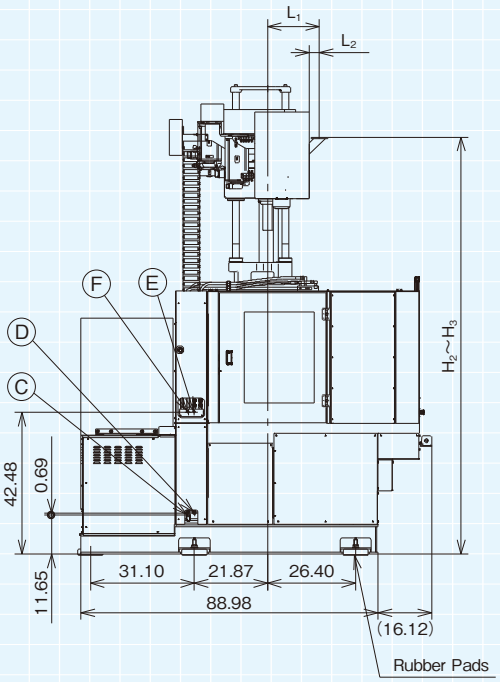
- The figures are subject to change without any legal obligation on the part of the manufacture.
- The maximum injecting pressure and the maximum holding pressure are attainable maximum set values.
- There values may be limited by molding conditions and cycle time.
- The maximum injecting pressure and the maximum holding pressure are values of case equipped with wear-resistant screw.
- These values may be lowered by screw diameter if install the screw of the standard material.
- The injection rate and the maximum injecting speed are calculated values. These values may be limited by set injecting pressures.
- When the machine is attached with an option, the capacity of the breaker may be changed.
- Figures in【 】are optional.
- Figures in《 》are numerical value except the standard ejection unit.

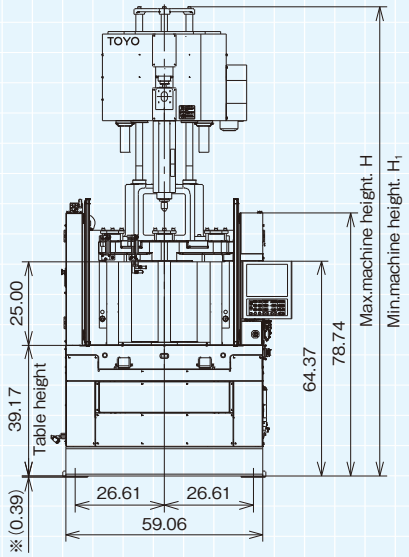
※1　A transformer(option) is necessary on the machine side
※2　It is a necessary air supply pressure level. Please supply it to become than a pressure level.
※3　It is a calculated value at use ambient temperature 68℉ degrees Celsius.

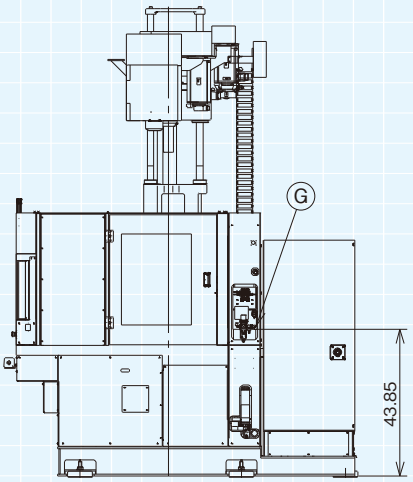
■ PLASTAR ET-110Ⅱ$_{VR2}$ Dimensions : Machine Overall

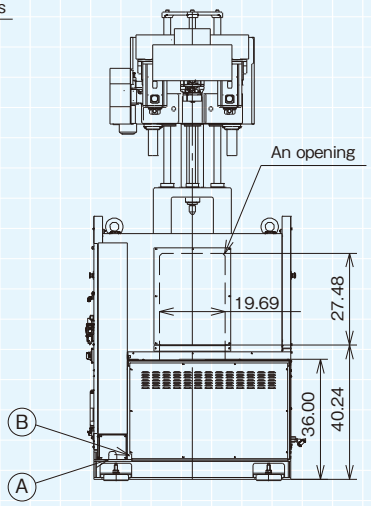


Ⓐ Power Source 200V
Breaker capacity (factory) : 100A
Ⓑ Grounding M8
Ⓒ Water for hopper throat IN:Rc3／8 with Y-type strainer
Ⓓ Water for hopper throat OUT:Rc3／8
Ⓔ Water for mold cooling IN Rc1／2
Ⓕ Water for mold cooling OUT Rc1／2
Ⓖ Air IN Rc3／8
※ Machine height is addind 0.39in when rubber pads attached.



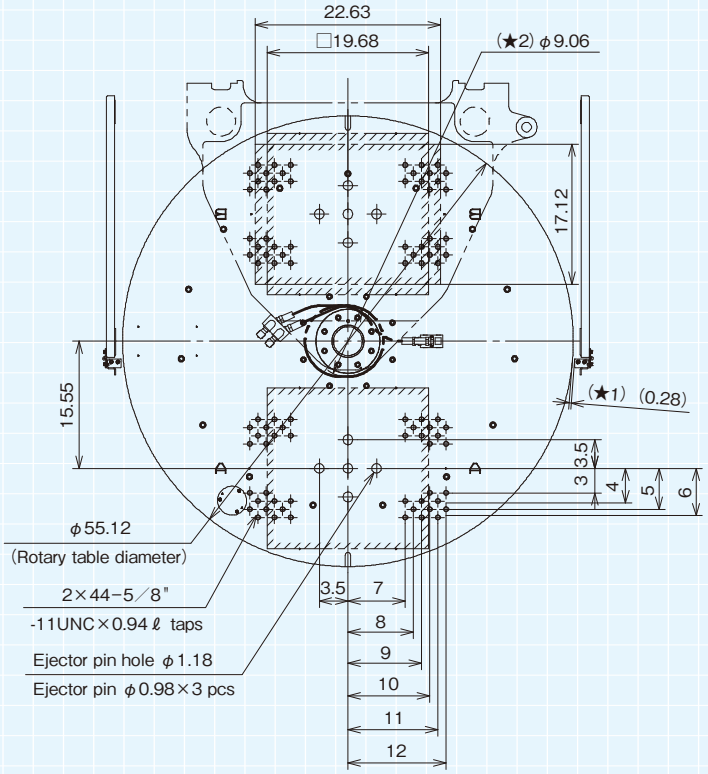


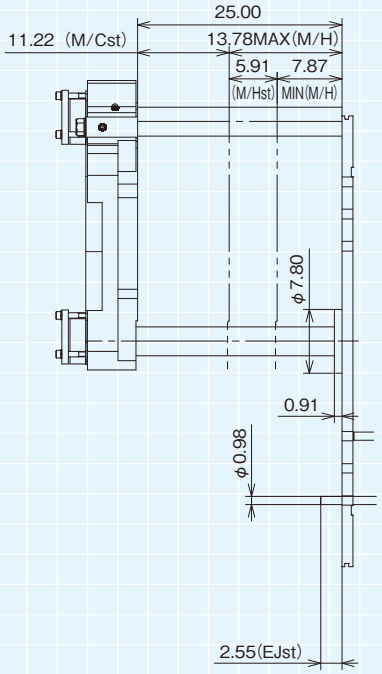




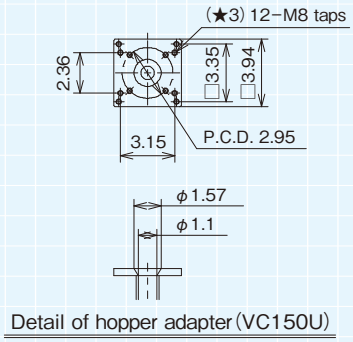
Injection unit	VC150U			VD150U		
Screw diameter in(㎜)	φ0.94(24)	φ1.10(28)	φ1.25(32)	φ1.25(24)	φ1.41(36)	φ1.57(40)
H	125.79	125.83	127.72	140.40	140.40	145.91
H_1	108.67	108.67	110.56	123.27	123.27	128.78
H_2	111.85	111.85	114.49	124.77	124.77	129.89
H_3	83.31	83.31	85.95	90.71	93.98	97.45
L_1	10.83	10.83	10.83	15.56	15.56	15.56
L_2	3.35	3.35	3.35	5.24	5.24	5.24

■ PLASTAR ET-110Ⅱ VR2 Dimensions : Mold Fixing / Hopper Mounting Area

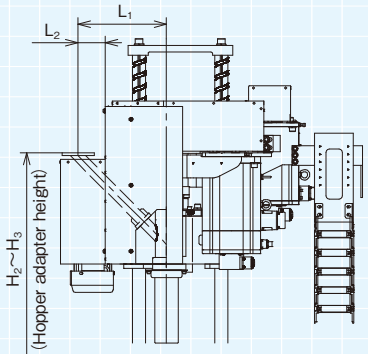




★1) Strictly mount mold which size is not out of end face of rotary table even there is a gap at 0.28in between rotary table and strut for safety door.
★2) Due to cooling water hoses for lower half mold mounted spirally, do not mount any mold parts in this area.



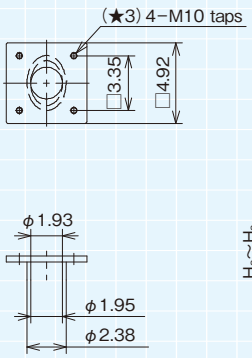
Detail of hopper adapter (VC150U)



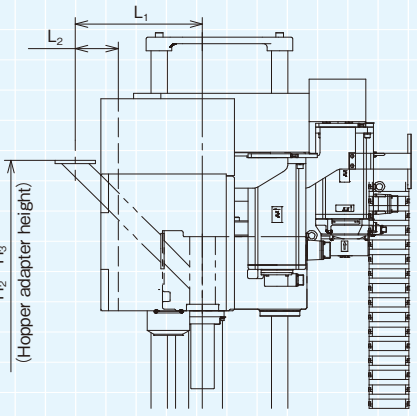
DWG. of VC150U

Injection unit	VC150U		
Screw diameter in(㎜)	φ0.94(24)	φ1.10(28)	φ1.25(32)
H_2	111.85	111.85	114.49
H_3	83.31	83.31	85.95
L_1	10.83	10.83	10.83
L_2	3.35	3.35	3.35

1) Keep a space for more than 0.6in between hopper loader and injection cover by reference to the above dimensions.
★3) Unit : ㎜



Detail of hopper adapter (VD150U)



DWG. of VD150U

Injection unit	VD150U		
Screw diameter in(㎜)	φ1.25(32)	φ1.41(36)	φ1.57(40)
H_2	124.77	124.77	129.89
H_3	90.71	93.98	97.45
L_1	15.56	15.56	15.56
L_2	5.24	5.24	5.24

■ PLASTAR ET-110Ⅱ VR2 Dimensions : Nozzle Area

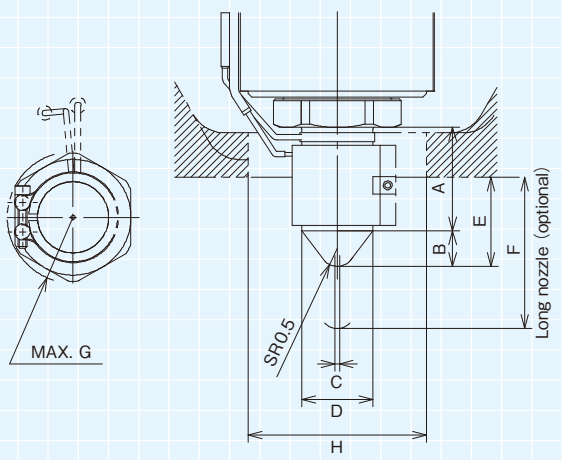


fig.1 Detail size of nozzle
(Screw diameter ϕ0.94～ϕ1.41)

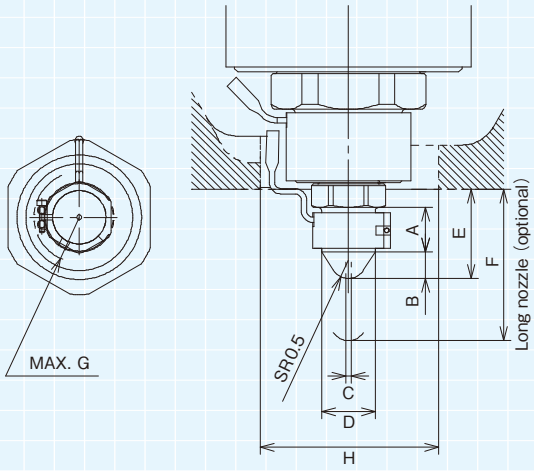


fig.2 Detail size of nozzle
(Screw diameter ϕ1.57)

Model name	VC150U			VD150U		
Screw diameter in(mm)	ϕ0.94(24)	ϕ1.10(28)	ϕ1.25(32)	ϕ1.25(32)	ϕ1.41(36)	ϕ1.57(40)
A	2.16【3.34】	2.28【3.26】	2.28【3.26】	2.28【3.26】	2.28【3.26】	0.98【2.16】
B	0.59【0.78】	0.78【1.18】	0.78【1.18】	0.78【1.18】	0.78【1.18】	0.59【0.78】
C	ϕ0.09	ϕ0.09	ϕ0.11	ϕ0.11	ϕ0.11	ϕ0.11
D	ϕ1.18	ϕ1.57	ϕ1.57	ϕ1.57	ϕ1.57	ϕ1.18
E	1.96	1.96	1.96	1.96	1.96	1.96
F	【3.34】	【3.34】	【3.34】	【3.34】	【3.34】	【3.34】
G	R1.45	R1.53	R1.53	R1.53	R1.53	R1.29
H	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4

※Figure in【 】show dimensions with options.

■ PLASTAR ET-165Ⅱ VR2 Specifications

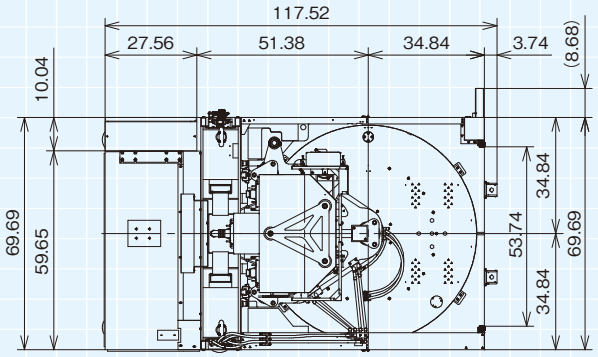
Injection	Injection system	—	In-line screw					
	Injection unit	—	VD150U			《VE300U》		
	Injection stroke	in	5.03	《5.66》	《5.66》	《6.29》	《7.24》	
	Screw diameter	in	1.25	《1.41》	《1.57》	《1.57》	《1.81》	
		(mm)	(32)	(36)	(40)	(40)	(46)	
	Theoretical injection capacity	in^3	6.28	《8.94》	《11.04》	《12.27》	《18.66》	
	Injection rate	in^3/s	12.27	《15.52》	《19.17》	《13.80》	《18.25》	
	Max. injection speed	in/s	9.84			《7.08》		
	Max. injection holding pressure	psi	36984	《33358》	《26831》	《33358》	《29877》	
	Max. injection holding pressure	psi	36984	《30022》	《24221》	《33358》	《29877》	
	Recovery rate (PS)	oz/s	0.60	《0.87》	《1.10》	《0.78》	《1.18》	
	Screw revolution speed	rpm	350			《250》		
	Nozzle pressing force	U.S.ton	1.1			《1.6》		
Clamping	Clamping system	—	Toggle					
	Clamping force	U.S.ton	1650					
	Clamping stroke	in	12					
	Min. mold height	in	11.62					
	Max. mold height	in	20.07					
	Max. die plate size (H×V)	in	22.04 × 22.04　25.59 × 19.09					
	Max. lower mold-half weight	lb	1102 × 2					
	Table diameter	in	64.96					
	Ejector force	U.S.ton	3.8					
	Ejector stroke	in	2.95					
Others	Heater capacity	kW	5.85	《6.50》	《7.95》	《7.95》	《11.20》	
	Mold height motor output	kW	0.74					
	Nozzle touch motor output	kW	0.4			《0.74》		
	Machine dimension (W×L)	in	69.69 × 117.52					
	Machine dimension (H)	in	155.48	《155.48》	《160.99》	《167.13》	《172.52》	
	Power source	—	Three phase AC200V/200, 230V±10%　50Hz/60Hz					
	Main breaker capacity 200V Class【400VClass※1】	A	150【100】					
	Total electric capacity	kVA	32			《43》		
	Cable size 200V Class【400VClass※1】	in^2	0.09【0.03】			《0.15》【0.05】		
	Air supply plumbing joint	in	Rc3/8					
	Air supply pressure※2	psi	55.21【58.02】		55.21【72.52】			
	Required air content※3	ft^3/min	0.23【0.25】		0.23【0.28】			
	Machine weight	U.S.ton	13.3			《13.8》		

NOTES

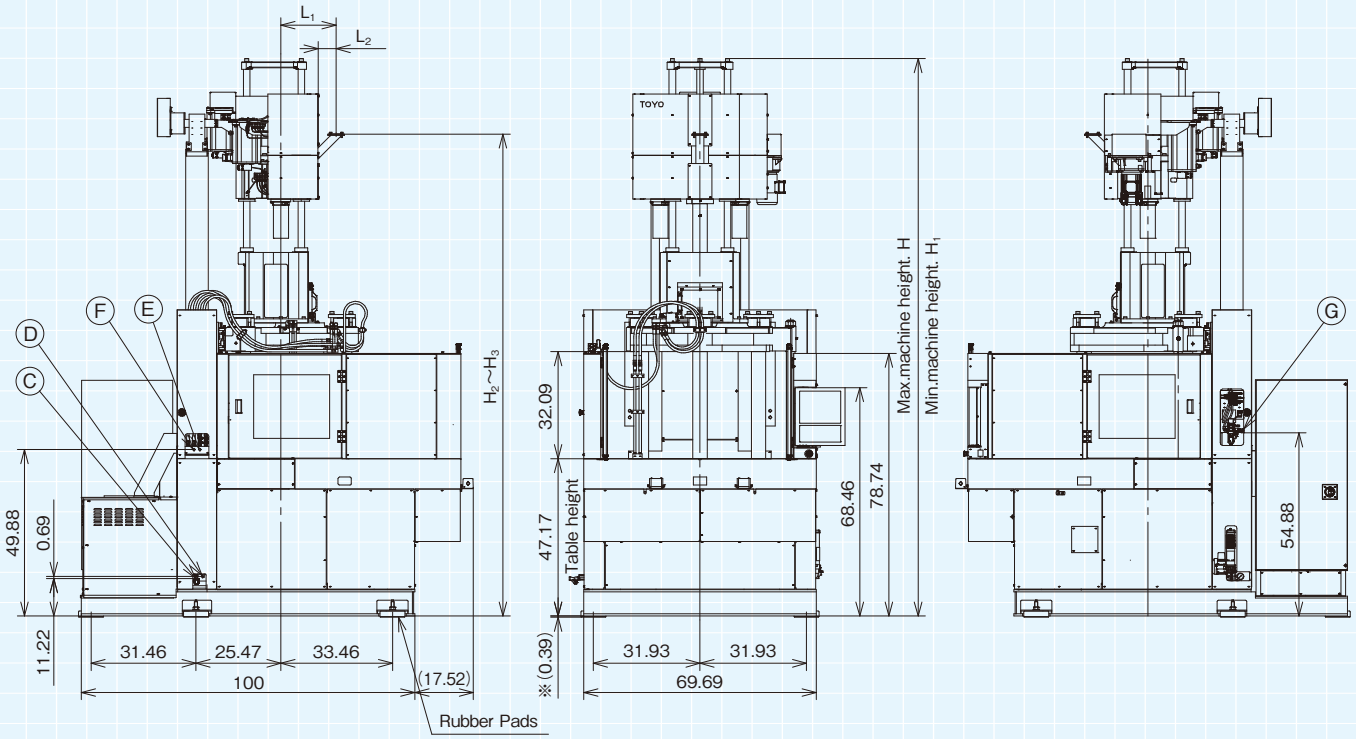
- The figures are subject to change without any legal obligation on the part of the manufacture.
- The maximum injecting pressure and the maximum holding pressure are attainable maximum set values.
- There values may be limited by molding conditions and cycle time.
- The maximum injecting pressure and the maximum holding pressure are values of case equipped with wear-resistant screw.
- These values may be lowered by screw diameter if install the screw of the standard material.
- The injection rate and the maximum injecting speed are calculated values. These values may be limited by set injecting pressures.
- When the machine is attached with an option, the capacity of the breaker may be changed.
- Figures in【 】are optional.
- Figures in《 》are numerical value except the standard ejection unit.

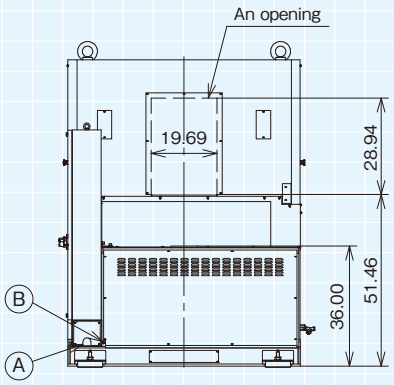
※1　A transformer(option) is necessary on the machine side
※2　It is a necessary air supply pressure level. Please supply it to become than a pressure level.
※3　It is a calculated value at use ambient temperature 68°F degrees Celsius.

PLASTAR ET-165Ⅱ VR2 Dimensions : Machine Overall



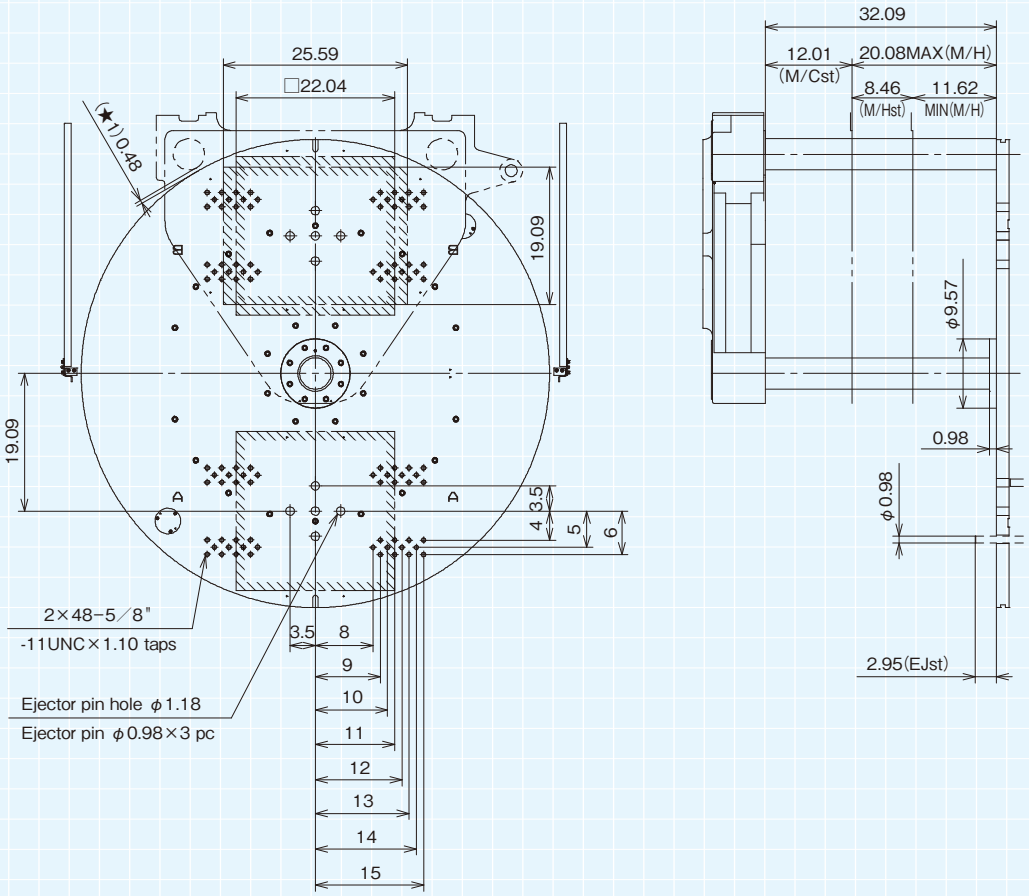
Ⓐ Power Source 200V
Breaker capacity (factory) : 150A
Ⓑ Grounding M8
Ⓒ Water for hopper throat IN:Rc3／8 with Y-type strainer
Ⓓ Water for hopper throat OUT:Rc3／8
Ⓔ Water for mold cooling IN Rc1／2
Ⓕ Water for mold cooling OUT Rc1／2
Ⓖ Air IN Rc3／8
※ Machine height is addind 0.39in when rubber pads attached.



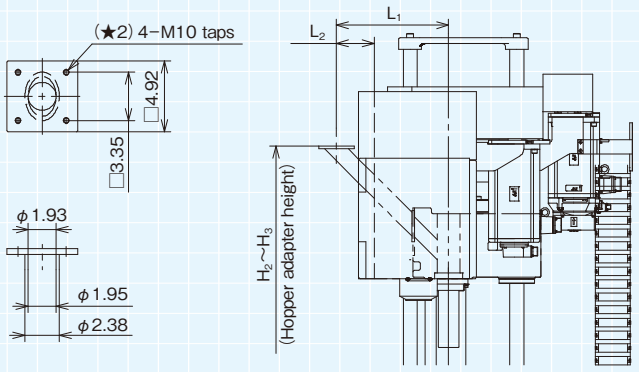


Injection unit	VD150U			VE300U	
Screw diameter in(㎜)	φ1.25(32)	φ1.41(36)	φ1.57(40)	φ1.57(40)	φ1.81(46)
H	155.48	155.48	160.99	167.13	172.52
H_1	135.00	135.00	140.52	146.66	152.05
H_2	139.85	139.85	144.97	144.49	150.67
H_3	102.45	105.71	109.18	110.24	115.63
L_1	15.56	15.56	15.56	16.54	16.54
L_2	5.16	5.16	5.16	5.40	5.40

■ PLASTAR ET-165Ⅱ VR2 Dimensions : Mold Fixing / Hopper Mounting Area



★1) Strictly mount mold which size is not out of end face of rotary table even there is a gap at 0.48in between rotary table and strut for safety door.



Detail of hopper adapter (VD150U、VE300U)

DWG. of VD150U、VE300U

1) Keep a space for more than 0.6in between hopper loader and injection cover by reference to the above dimensions.
★2) Unit : ㎜

Injection unit	VD150U			VE300U	
Screw diameter in(㎜)	φ1.25(32)	φ1.41(36)	φ1.57(40)	φ1.57(40)	φ1.81(46)
H_2	139.85	139.85	144.97	144.49	150.67
H_3	102.45	105.71	109.18	110.24	115.63
L_1	15.56	15.56	15.56	16.54	16.54
L_2	5.16	5.16	5.16	5.40	5.40

PLASTAR ET-165Ⅱ$_{VR2}$ Dimensions : Nozzle Area

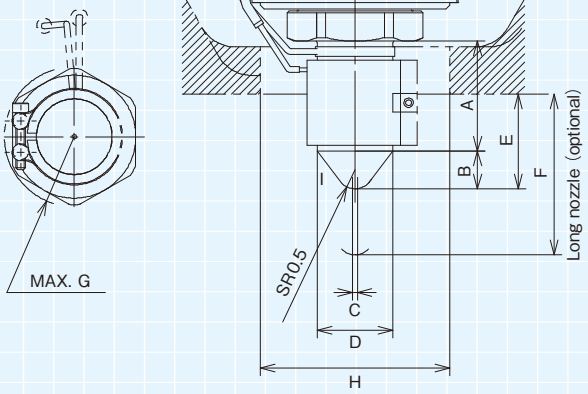


fig.1 Detail size of nozzle
(Screw diameter ϕ0.94~ϕ1.41)

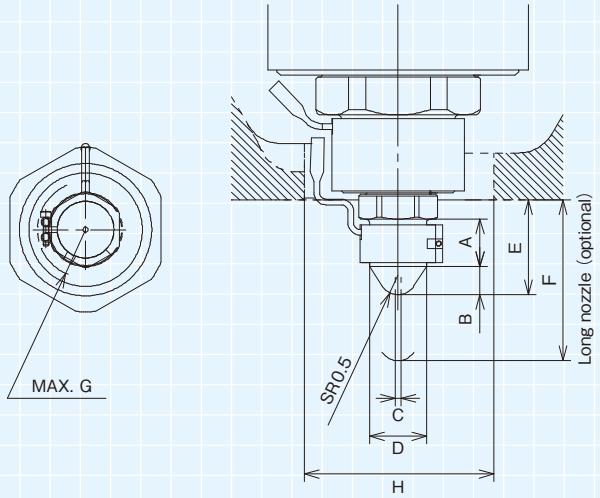


fig.2 Detail size of nozzle
(Screw diameter ϕ1.57~ϕ1.81)

Model name	VD150U			VE300U	
Screw diameter in(㎜)	ϕ1.25(32)	ϕ1.41(36)	ϕ1.57(40)	ϕ1.57(40)	ϕ1.81(46)
A	2.28【3.26】	2.28【3.26】	0.98【2.16】	0.98【2.16】	0.98【2.16】
B	0.78【1.18】	0.78【1.18】	0.59【0.78】	0.59【0.78】	0.59【0.78】
C	ϕ0.11	ϕ0.11	ϕ0.11	ϕ0.11	ϕ0.11
D	ϕ1.57	ϕ1.57	ϕ1.18	ϕ1.18	ϕ1.18
E	1.96	1.96	1.96	1.96	1.96
F	【3.34】	【3.34】	【3.34】	【3.34】	【3.34】
G	R1.53	R1.53	R1.29	R1.29	R1.29
H	ϕ4	ϕ4	ϕ4	ϕ4	ϕ4

※Figure in 【 】show dimensions with options.

Standard / Optional Equipment

Standard and optional features developed based on job shop requirements.

32

Hopper adaptor
(with a resin removal outlet)

101

Indicator light in three colors
(Red,Yellow and Green, with mode selection function)

102

Accessibility indication light

107

Various signal outputs
(4 non-voltage normally-open contacts)

114

Mold cooling water piping
(one line rotary-joint for full-rotary specifcation)

52

Opto-electrical safety equipment

63

Heat insulating board

103･106

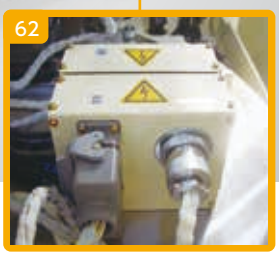
110 V plug socket
(2 ports, power source by customer)
230 V plug socket
(4 ports, 2 lines of 30 A, with breakers)

118

Cooling flow gauge
(for below-hopper cooling)

59

Hydraulic core system
(1 to 3 lines, independent hydraulic unit)

62

Mold temperature contol
(1 to 3 lines, with magnet sensor)

Respective item numbers correspond to those in "Standard/Optional Features" table on pages 22 and 23.

■ET series Standard / Optional Features

	No.	Feature				Standard	Options
Injection・Plasticization control relation	1	Just pack injection control				○	
	2	V mode control (Response-variable function)				○	
	3	Multi-step and slope control of injection speed and pressure				○	
	4	SNF control				○	
	5	SRC-Ⅱmetering system				○	
	6	Pre-charge (Intrusion)				○	
	7	Programmable injection control (2 to 7 steps)				○	
	8	Programmable metering control (1 to 3 steps)				○	
	9	Holding pressure changeover via position, time or pressure				○	
	10	Suck-back control (before or after metering, reverse)				○	
	11	Metering with zero or any back pressure (in manual mode)				○	
	12	Melt run-out detection system				○	
	13	Automatic purging system (standard,TWAP,purge without screw forward,back purge without back pressure control)*				○	
	14	Nozzle reciprocating function				○	
	15	Hopper throat tempearture control (PID control)				○	
	16	Injection during high-pressure clamping				○	
	17	Temperature control for heater		Cylinder;4(3) Nozzle;1		○	
	18	Heater SSR control				○	
	19	Heater temperature holding control				○	
	20	Residual melt monitor control				○	
	21	Screw cold-start prevention system (with countdown time display)				○	
	22	Fine tuned PID temperature control (with slope starting,step control function)				○	
	23	Automatic PID tuning function				○	
	24	One-week automatic heater on-off calendar				○	
	25	2-zone temperature control for the nozzle					○
	26	High temperature use heater band (up to 932℉)	※3				○
	27	SRC-Ⅲ screwcheck triplet					○
Injection・Plasticization unit relation	28	Air-operated check nozzle					○
	29	Purge cover (with interlock)				○	
	30	Heat-insulated heater cover (SUS)				○	
	31	Hopper adaptor					
	32	Hopper adaptor with a resin removal outlet					○
	33	Hopper (with shutter)		5.28gal	ϕ0.62～ϕ1.81		○
	34	Grease lubricating device(Injection area for ball screw)	※8			○	
	35	Servo motor (with brake system) for the injection system				○	
Mold opening and closing・Enjecter・Rotary table system unit related control relation	36	Closed-loop control of speed and position in mold opening and closing				○	
	37	Closed-loop control of ejection speed and position				○	
	38	Closed-loop control of rotary table speed and position				○	
	39	Emergency stop push button (at operating position and other two positions)				○	
	40	Programmable mold opening control (2 to 5 steps)				○	
	41	Programmable mold closing control (3 to 5 steps)				○	
	42	Programmable ejector advancing/retracting control (1 to 3 steps)				○	
	43	Two-step ejector				○	
	44	Selection of motion order of mold closing and ejection				○	
	45	Mold exchanging mode (low pressure. Low speed)				○	
	46	Automatic clamping force setup system	※4			○	
	47	Automatic corretion of mold clamping force					○
	48	Low pressure mold protection system				○	
	49	HSP Mold protection system				○	
	50	Dual safety system (electric and mechanical)				○	
	51	Movalbe die-plate guide support				○	
	52	Opto-electrical safety equipment				○	
	53	Locating ring diameter			ϕ4.0 (inch)	○	
	54	Non-standard diameter locating ring		45Ⅱ、90Ⅱ、110Ⅱ	ϕ2.5/ϕ4.0 (inch)		◎
				165Ⅱ	ϕ4.0/ϕ5.0 (inch)		◎
	55	Full rotary specification (360deg rotation)	※2				◎
	56	Air ejector (1 to 3 lines)	※5				○
	57	3-way valve for air ejector (1 to 3 lines)	※5				○
	58	Air-driven core system (1 to 3 lines)	※5				○
	59	Hydraulic core system (1 to 3 lines, independent hydraulic unit)	※5				○
	60	Mold ejector plate return detector (2 lines, metal contacts･plug socket contacts)	※5				○
	61	Mold temperature display (1 to 3 lines, with magnet sensor)	※5				○
	62	Mold temperature contol (1 to 3 lines, with magnet sensor)	※5				○
	63	Heat insulating board			General or High precision		○
	64	Mold height extension		45Ⅱ、90Ⅱ、110Ⅱ、165Ⅱ	1.96 (inch)		◎
	65	Core-back molding control (3 steps)				○	
	66	Grease lubricating device (Clamping area for ball screw)	※8			○	
	67	Servo motor (with brake system) for the ejection system				○	
	68	Servo motor (with brake system) for the clamping system				○	

	No.	Feature				Standard	Options
Overall・Control system monitor	69	SYSTEM600/700 control sytem (TFT color LCD with full touch panel)				○	
	70	Digital setting of all the setting items				○	
	71	Internal memory for max. 400 mold setups				○	
	72	USB interface (one port) for memory and printer				○	
	73	Graphic display of injection and metering motion (with memory function)				○	
	74	Monitor graph indication				○	
	75	Statistical processing of monitored data				○	
	76	Manned/unmanned mode switching function				○	
	77	Hour meter (operated hours indication)				○	
	78	Multi-counter (Injection,lot, repeating lot, warning bell, initial rejection,continuous failures and operation				○	
	79	Monitoring function (Up to 32 items selectable; including positions, speeds, times and revolutions, etc.) Record 200 data				○	
	80	Alarm function (cycle, up-down tolerance, heater disconnection, safety door, etc.) Record 400 data"				○	
	81	Display of machine conditions such as operation modes, mold clampingcompletion and ejector retraction end				○	
	82	Production control function such as job completion rate, expected job completion time and operation ratio				○	
	83	Maintenance function such as one-cycle graphic, alarm history, greasing timing display and servo-amplifier communication				○	
	84	Local-language display(English,Chiniese (Simplified/Traditional), Thai, Spanish, Korean, Hebrew)				○	
	85	Value setting history (300 cases)				○	
	86	Security function				○	
	87	Toyo-specified USB memory (400 mold setups)	※6			○	
	88	SPI ROBOT I/F OR EUROMAP67 I/F					○
	89	Mold clamp, specialized tool, spare grease				○	
	90	Power consumption display				○	
	91	Motion/No Motion switching function					○
	92	Vacuum device interface					○
	93	Valve gate interface					○
	94	Conveyor starting interface					○
	95	Automatic mold clamping device interface					○
	96	Quality control system (A++)					○
	97	Mold parameter control software					○
	98	Molding machine monitor system (T-Station lite)					○
	99	Remote operasion (T-Remote web)	※7	Smartphone or Tablet operation			○
	100	Indicator light in one color (Red) (Selectable position, front back of the machine)					○
	101	Indicator light in three colors (Red, Yellow and Green, with mode selection function) (Selectable position, front back of the machine)					○
	102	Accessibility indication light					○
	103	110V plug socket (2 ports, power source by customer)					○
	104	110V plug socket (2 ports, with transformer of 10 A each)					○
	105	230V plug socket (4 ports, 2 lines of 30 A)					○
	106	230V plug socket (4 ports, 2 lines of 30 A, with breakers)					○
	107	Various signal outputs (4 non-voltage normally-open contacts)					○
	108	Printer					○
	109	Local language display(Czech, Frebch, Italian, Portuguese)					○
	110	Compatibility with various voltage source (transformer)		with a separate transformer			○
	111	Automatic grease lubricating device for removed partially	※8				◎
	112	Mold cooling water piping (one line 248℉)	※5			○	
	113	Mold cooling water piping (one line 304℉)	※5				○
	114	Mold cooling water piping (one line rotary-joint for full-rotary specifcation)					◎
	115	Mold temperature contol(mult-pole slipling for full-rotary specifcation)	※5				◎
	116	Mold cooling water piping (two lines 248℉)	※5				○
	117	Mold cooling water piping (two lines 304℉)	※5				○
	118	Cooling water flow gauge (for below-hopper cooling)					○
	119	Rubber pads				○	
	120	Hand grease pump, spanner, hex wrench, screwdriver				○	

○ Options which can be fitted after shipment.
◎ Options which should be fitted at TOYO.

※1 Non-standard diemeter screw assembly is produced to order
※2 Contact TOYO separately for specifcation in detail
※3 Use the heaters for high temperature use for application beyond 662℉
※4 Contact TOYO separately when you use special mold
※5 Contact TOYO separately when you need full-rotary specifcation machine
※6 400 mold setups can be stored when only molding conditions are stored
※7 Windows, Android and iOS are applicable as OS
※8 Manual grease lubrication is performed at the points where frequent lubrication is not required

Focusing on systematization and automation

ET SERIES

ET-V series (Vertical Clamping / Vertical Injection / Single station)

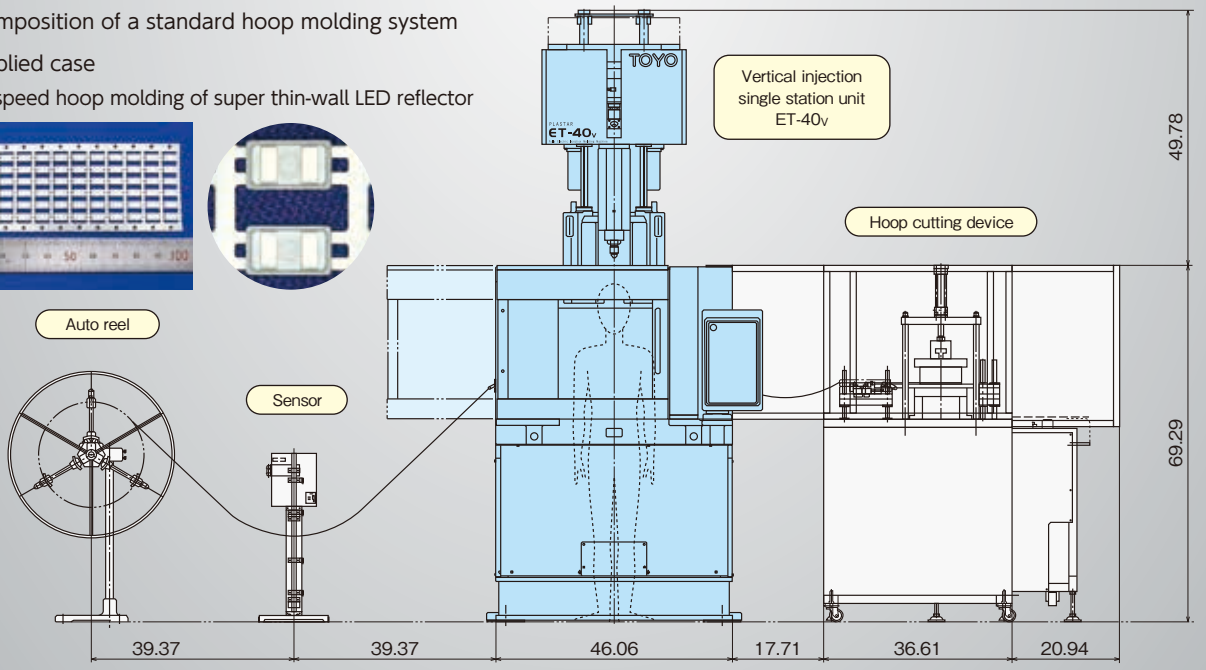
TOYO's ET series facilitates automation and systematization of the molding processes with its mechanical structure that is suited to hoop and insert molding.

The wide and lower die plate secures enough room for the hoop transfer device and lift device.

■Composition of a standard hoop molding system

●Applied case

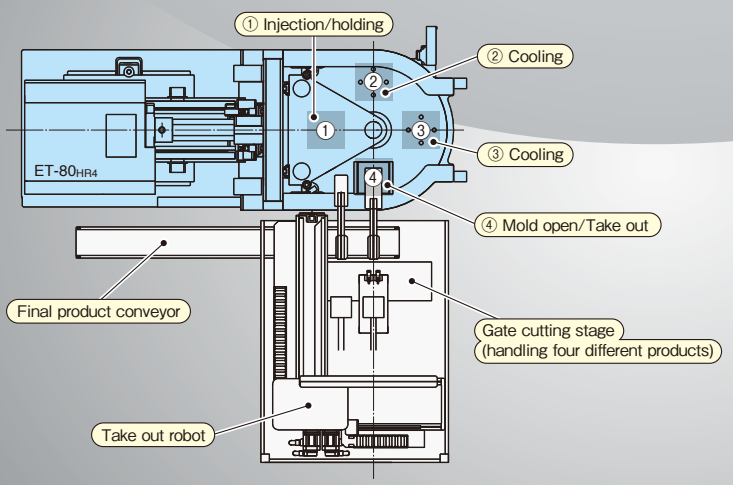
High speed hoop molding of super thin-wall LED reflector



ET-HR series (Vertical Clamping / Horizontal / Rotary table)

A 4-station system (4-station with four upper mold halves) enables 4 different types of product to be molded at one time.

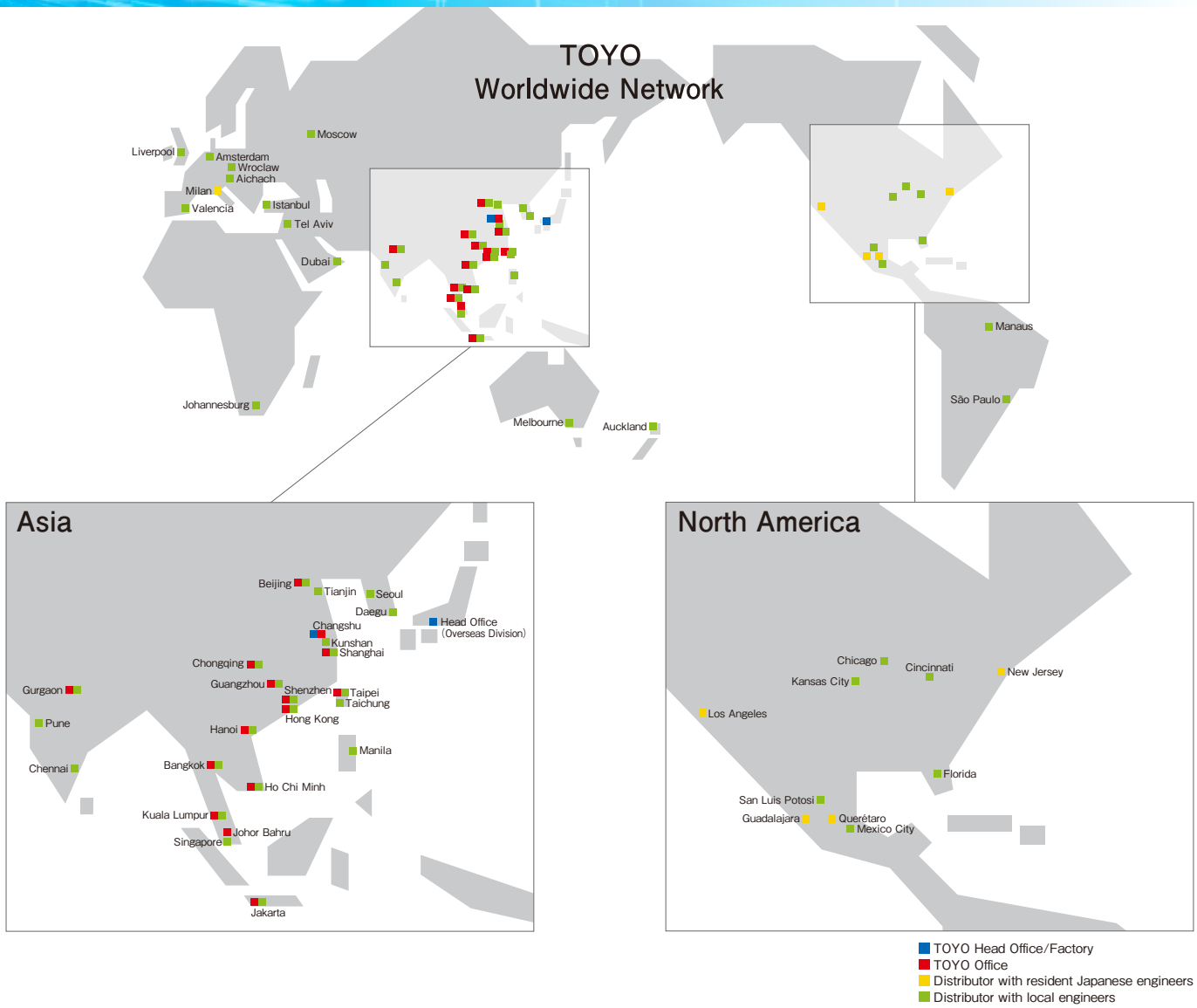
■ Four different products simultaneous molding system



This system allots station ① to injection and holding pressure, stations ② and ③ to product cooling, and station ④ to opening the mold and removing the product.
After the product is processed at the common gate cutting stage, it is moved to the conveyor by robot.

ET-II VR SERIES

TOYO Worldwide Network



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The products are produced at the factory certified with ISO-14001.

Precaution

For safe use of the machine, please read the respective manual carefully, especially sections for operation and maintenance, and follow all the safety precaution instructions specified in the manual.

①Photographs in the catalog include optional devices.
②For the improvement of the product, the appearance and specification are subject to change without notice.
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19.9.11.R0.Ⓜ Printed in Japan