

UBE

UB-iV2 Series

Die Casting Machine

UB1650iV2

UB2250iV2

UB2500iV2

UB3050iV2

UB3550iV2

UB4500iV2

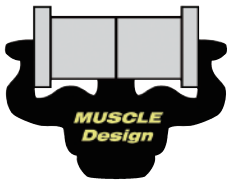
UB6500iV2

UBE MACHINERY CORPORATION, LTD.

Global Standard Die Casting Machine "UB-iV2"

Adoption of technology for UB-iV2 series

Center Press Platen

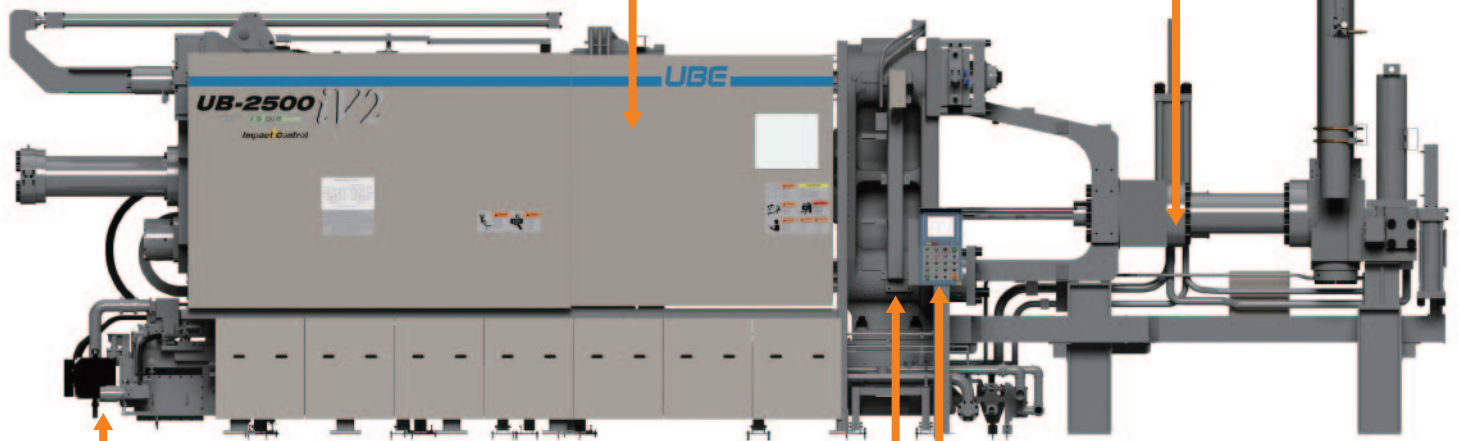


Electric Servo Valve



Flashless Casting Control (Option)

Impact Control



Energy Saving Servo Pump



New

KAJIRI (tip galling)-Scoring (Optional)



New

Sleeve Vacuum System (Optional)

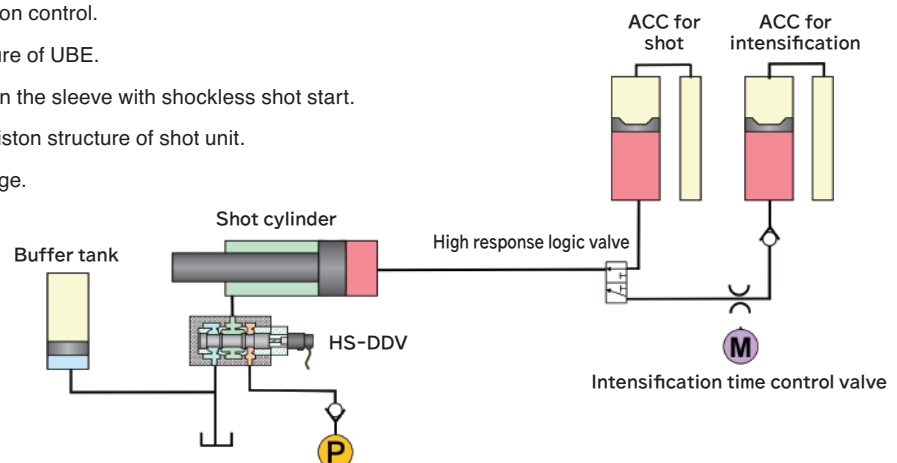


New Human Machine Interface



Shot Circuit

- Independent 2 ACC system for shot velocity & intensification control.
- Meter-Out shot control by HS-DDV which is unique structure of UBE.
- Prevention of gas trapping due to waving of molten metal in the sleeve with shockless shot start.
- High filling force and quick intensification with the single piston structure of shot unit.
- Multiple shot control with 10 points setting in all stroke range.
- Real time feed back control enables to obtain accurate shot-speed repeatability and shot stability.
- High filling force and quick intensification with simple structure of shot cylinder.



Energy Saving Servo Pump I-Stop Servo

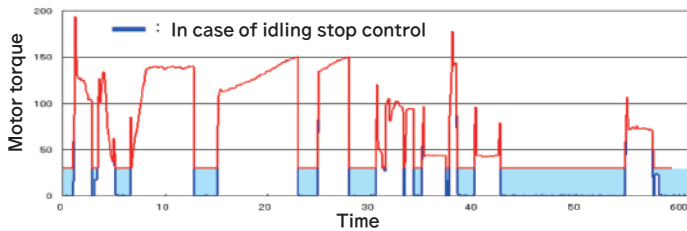


- First in its class! Servo motor for the main pump with “Idling stop” & “Rotational Speed Control” is equipped as standard and it achieves tremendous energy saving!
- Cut unnecessary consumed power by stopping motor during unloading of pump. This feature is more effective for the product which requires longer cycle time by more cooling and spray time.
- Contribute reduction of cycle time by the maximum rotation=2,000rpm.



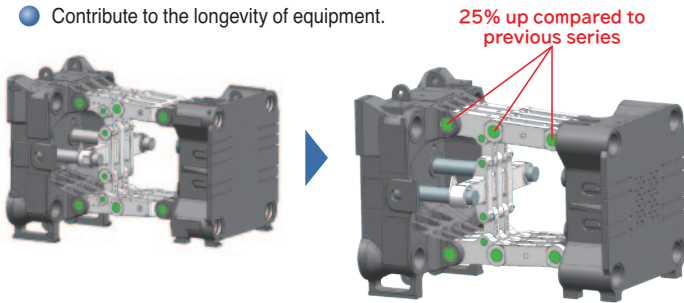
Servo Pump

Idling stop and servo pump control



New Stronger Clamping Structure

- In combination with toggle pin enlarged (25% compared to previous series) and optimal shape platen that makes full use of advanced CAE analysis, the amount of geometric deformation of the toggle mechanism is minimized.
- It is effective in reducing deterioration due to wear of the toggle mechanism.
- Contribute to the longevity of equipment.

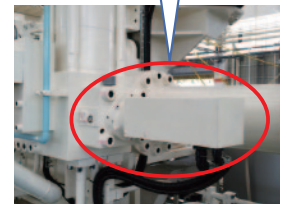
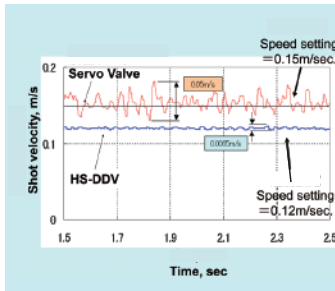


Electric Servo Valve HS-DDV High Speed Direct Drive Valve



- Adoption of Servo motor driven valve which is die casting environment proof. Tremendous improvement of contamination resistance.
- All digitalized new control logic.
- Outstanding stability of low shot speed.
- Achievement of energy saving by elimination of hydraulic pilot line.

Comparison of low speed stability.

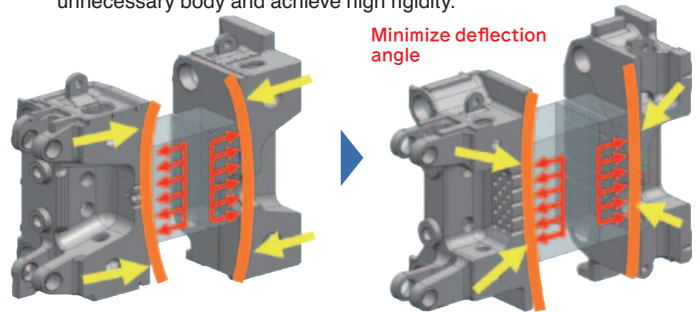


HS-DDV

Center Press Platen



- With center press technology, an equal clamping force is distributed through out the die. It reduces flash, exert an effect on low pressure casting & reducing clamping force.
- High level CAE analysis and optimum shape design reduce the unnecessary body and achieve high rigidity.



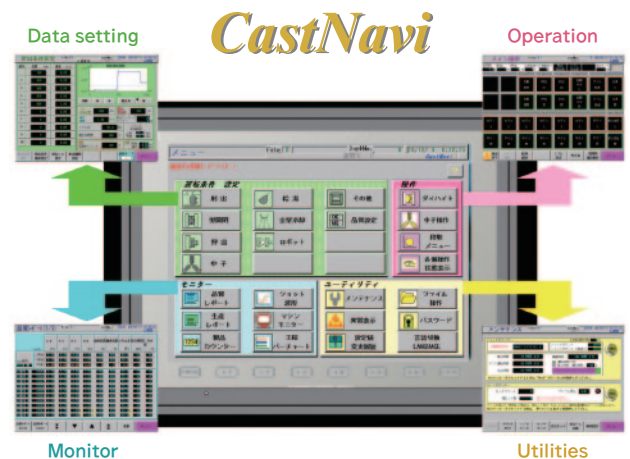
New Human Machine Interface CastNavi



- Adoption of large color touch panel on operation panel of human machine interface.
- Simplified operation panel reducing hard switches which are shifted to screen panel.
- Adopt graphic symbols to achieve universal visibility and operability that does not depend on language.
- Identifiable background color by category.
- Friendly and memorable design of screen.
- Touch panel displays operating condition of each unit on the same layout on the screen as actual valves location. That enable operator to see screen display easy and find machine troubles early.
- Set up in 8 steps ! Easy to set up in the newly developed interactive simple setting mode.



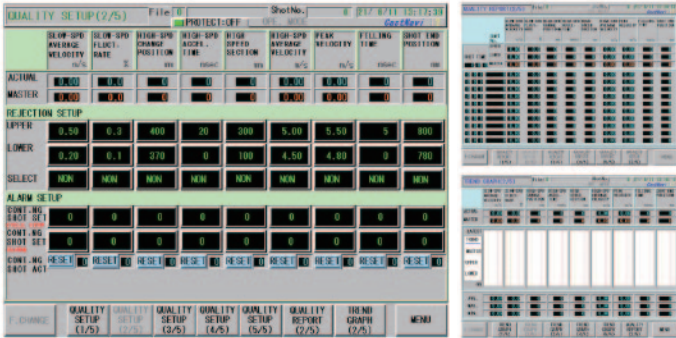
Operation panel



Main Menu Display

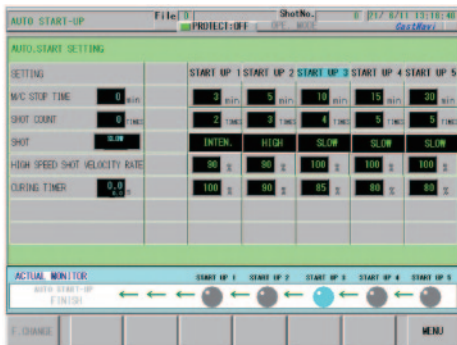
“CastNavi”

Added Quality Control Items



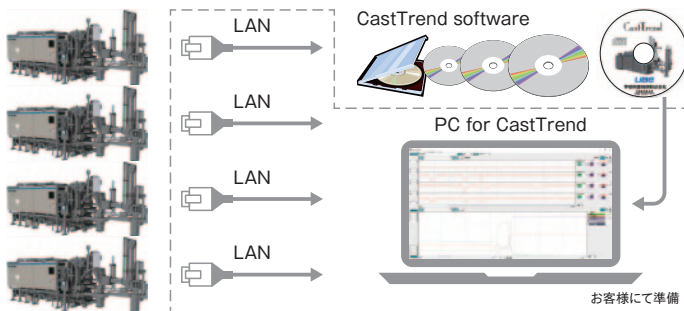
- Added shot measurement items (9 items) to improve the accuracy of automatic good product discrimination and trend monitoring.

Optimal Control of Warm Up Shot (Automatic fast shot start)



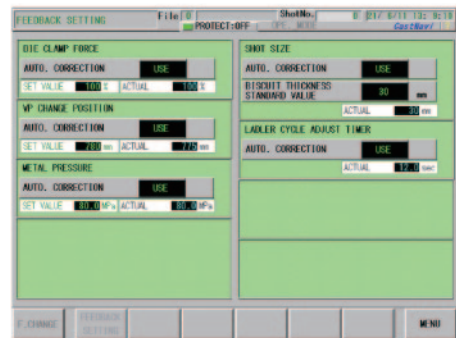
- By adding the automatic fast shot start function, switching warm up shot to fast shot will be done automatically without step by step adjustment.

CastTrend



- Cast Trend software (casting data collection and viewing software) and a dedicated LAN port for connection are included. Casting data collection and management system can be built easily as preparation of PC and LAN cable.
- Monitoring operation on one PC, networking to multiple Die casting machines.
- Enable to manage from any location through customers internal LAN, server.

Enhanced Feedback Control



- Cycle feedback control is included for the clamping force, VP change position, metal pressure, pouring volume*, and ladler cycle adjustment timer* that were required adjustment while checking the actual measurement each time.
- * Pouring volume and ladler cycle adjustment timer correspond only to UBE standard ladler.

Operator Enhancement (Home position return button added)



- DCM home position return button is added. In one operation, die clamping, core, ejection and shot cylinder are returned to the home position (Automatic operation start position).
- The home position return button is also newly installed for the ladler. If it is UBE standard ladler, it returns to the home position (automatic operation start position) in one operation.

Built in Hydraulic Circuit Drawing & Instruction Manual

- Hydraulic drawings for injection, clamping and instruction manual are built in the touch monitor.

Large Casting Data Storage

- Increased casting data memory capacity from 100 shots to 15,000 shots. Saving into USB memory.

Safety Controller

- Signals from safety input devices are consolidated into the safety controller to control the start-up of the equipment. In the event of a failure, the failure is detected by self-diagnosis, and safety is improved by blocking the output.

Peripherals

Automation equipment with many years of field experience.
High reliability supports stable production and high cycle.



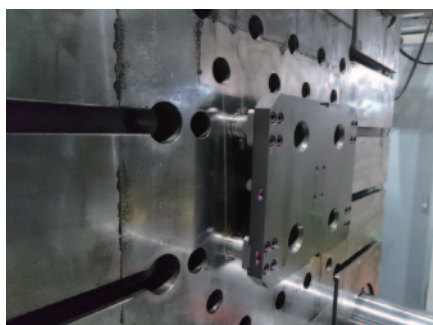
Automatic Ladler

- Adopting inverter control with arm and ladle drive enables smooth movement.

Items	USL-06	USL-07	USL-07L	USL-08L	USL-S09	USL-S10
Applicable die casting machine	~UB2500iV2	UB2500iV2~			UB4500iV2	UB6500iV2
Maximum pouring weight	25	40	50	60	80	100
Applicable ladle cup size	10/15/20/25	←/30/40	←/50	←/60	←/80	←/100
Power drive of arm	AC motor:3.7kW				Servo motor	
Power drive of ladle	AC motor:0.4kW	AC motor:0.75kW			Servo motor	

Other Optional Items

C-Plate Clamp Device



- A device that quickly connects the ejection C-Plate of the mold to the ejection plate of the die casting machine.

Hydraulic Die Clamping Unit



- Significant reduction of die changing time.
- Hydraulic and mechanical self-locking ensure clamping of the die.

Exclusive Accumulator for Hydraulic Core



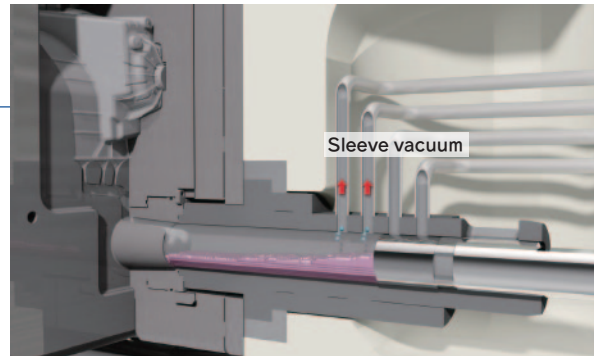
- Independent core-movement is possible by adding this ACC.
- Effective for increased productivity.

UBE's Unique Technology

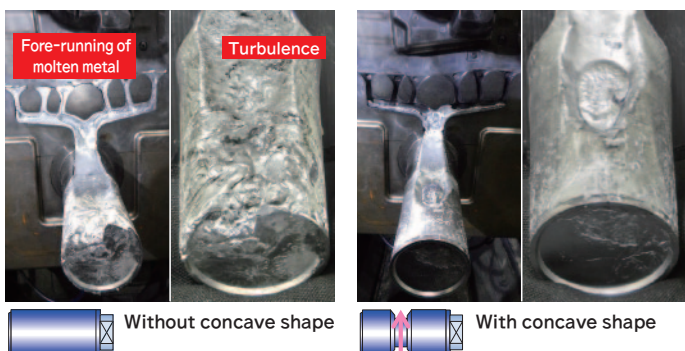
Sleeve Vacuum System (Optional) Sleevevac



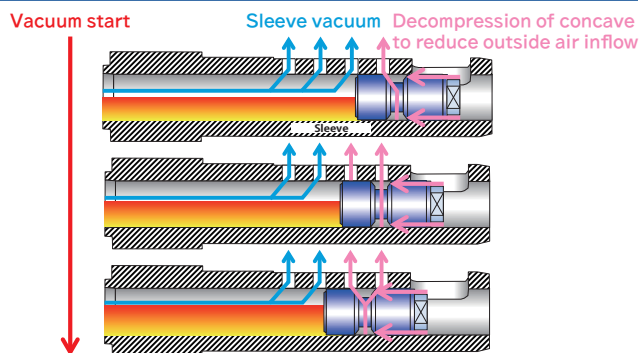
- The vacuum system that decompress sleeve and cavity from the sleeve side.
- Multiple and large diameter vacuum holes are provided on the sleeve, enabling quick degassing in a short time. High vacuum level (-95kPa) is realized within 1sec. by shot sleeve vac. combined with massive vent vac.
- Direct exhaust of lubricant combustion gas in the sleeve, and suppresses the suction of molten metal to the cavity which is a problem in vacuum die casting.
- UBE's proprietary plunger chip greatly reduces vacuum piping clogging.
- Ideal for die casting large thin-walled structural members.



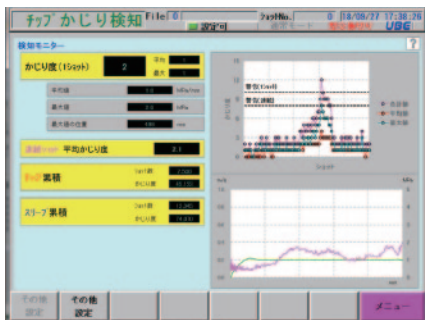
Comparison of molten metal disturbances with and without UBE's proprietary plunger tip



Sleevac operating mechanism (image diagram)

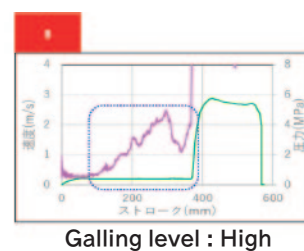
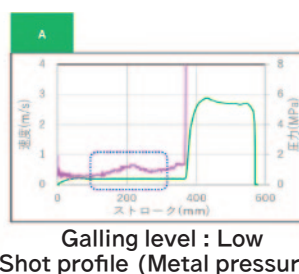


KAJIRI (tip galling) Scoring (Option)



Evaluate "tip galling" as a number

- Score the tip galling of every shot. Visualize the trouble by quantifying it as "Galling level". Plunger parts can be maintained at the appropriate timing with reference to the galling level, and the replacement cycle of plunger parts can be expected to be longer.
- It stores the cumulative value of galling level and the number of shots for each cast part. With a notification function that tells when it approaches the specified plunger replacement timing based on actual values.
- Various information related to galling is aggregated on operating monitor. Real-time evaluation is possible at the production site.
- List of scoring items
 - ▶ Galling level
 - ▶ Avg. Galling level (specified shot number)
 - ▶ Cumulated galling level of plunger tip
 - ▶ Cumulated galling level of plunger sleeve
 - ▶ Trend of galling level
 - ▶ Shot profile within scoring range



Extreme Shot (Option)

- Ideal casting equipment for reducing the weight of automobiles.
- New shot unit for body, chassis and EV components (motor housing, inverter case, battery case, shock tower, etc.).

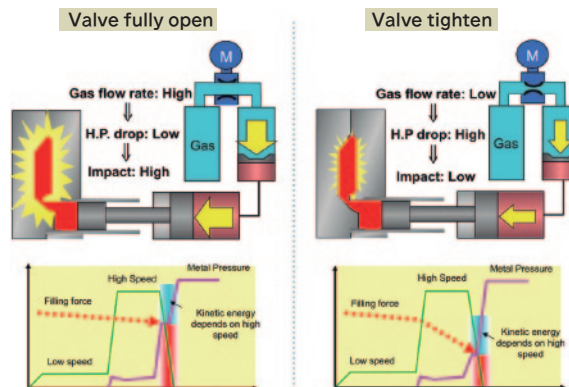
* For details, please contact sales.

Flashless Casting Control (Option) Impact Control

Impact Control

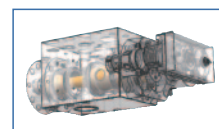
- The first in its class! Flashless casting technology as an option.
- It enables to maintain flashless and good quality by controlling impact pressure without changing speed.
- To achieve further flashless casting incorporated with Center Press Platen.

Mechanism of Impact Control



Same shot profile as without impact control valve

Control to optimum impact



Impact Control Valve



Impact limit: 100%



Impact limit: 70%

Cast Solution Service

Casting Support / School

UBE performs operation training and instructs optimal shot parameter setting towards production. Also, operation of die casting machine and casting technology are deeply learned through the school.



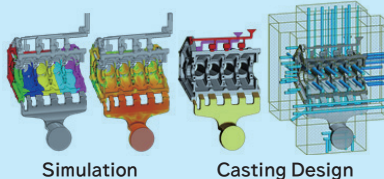
Casting Support



Die casting school

Study of Casting Design and Shot Parameter

UBE proposes optimal gating system, shot parameter utilizing CAE.

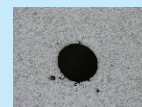


Simulation

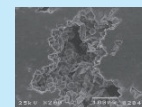
Casting Design

Investigation of Casting defects

Casting solution service specifies the casting defects by various analysis and offers best solution.



Blow hole



Shrinkage



Cold shut



Flow line

Analysis example

- ▶ Appearance
- ▶ X-Ray
- ▶ Density
- ▶ Gas content
- ▶ Composition
- ▶ Micro-Structure
- ▶ SEM
- ▶ Hardness
- ▶ Mechanical

UBE Solution Center

- Possible to casting test with customer's die on various trial machines.
- At moment of planning of new machine, it can check casting condition and quality in advance.
- Welcome to test your product at our solution center to see the results first hand.



Medium size standard machine : UB530iS3



Large size hybrid machine (2 platen) : UH1250



LPDC x HPDC : Hybrid Fill Casting (HFC)

UB-iV2 Series Main Specifications

Items		Units	UB1650iV2	UB2250iV2	UB2500iV2	UB3050iV2	UB3550iV2	UB4500iV2	UB6500iV2	
Clamping	Clamping force	kN	16,500	22,500	25,000	30,500	35,500	45,000	65,000	
	Dimension of die plate (LxW)	mm	2,260×2,060	2,400×2,500	2,515×2,500	2,640×2,590	2,800×2,750	3,200×3,200	3,800×3,800	
	Read between tie bars (LxW)	mm	1,500×1,300	1,500×1,550	1,700×1,600	1,690×1,590	1,750×1,750	2,000×2,000	2,350×2,350	
	Die stroke	mm	1,000	1,180	1,300	1,300	1,500	1,800	2,500	
	Die thickness (min. to max.)	mm	800~1,600	850~1,700	850~1,700	850~1,700	1,000~2,000	1,200 ~ 2,200	1500 ~ 2500	
	Die height adjustment speed	mm/min	50 or 150	50 or 150	50 or 150	50 or 150	50 or 150	50 or 150	50 ~ 150	
Injection	Nominal maximum injection force	S	kN	1,041~467	1,291~579	1,291~579	1,454~653	1,687~757	1,936~869	—
		M		1,291~579	1,454~653	1,454~653	1,687~757	1,936~869	2,487~1,116	3,432 ~ 1,545
		L		1,454~653	1,687~757	1,687~757	1,936~869	2,487~1,116	—	—
	Nominal filling force	S	kN	558	693	693	780	905	1,039	—
		M		693	780	780	905	1,039	1,334	2,387
		L		780	905	905	1,039	1,334	—	—
	Plunger stroke	mm	1,000	1,120	1,120	1,250	1,250	1,400	1,650	
	Tip projection stroke	mm	400	450	450	500	500	550	700	
	Shot position	mm	-350	-350	-350	-350	-400	-500	-500	
	Injection speed	S	m/sec	0.1~10.0	0.1~10.0	0.1~10.0	0.1~10.0	0.1~10.0	0.1~9.0	—
M		0.1~10.0		0.1~10.0	0.1~10.0	0.1~10.0	0.1~9.0	0.1~8.0	0.1 ~ 10.0	
L		0.1~10.0		0.1~10.0	0.1~10.0	0.1~9.0	0.1~8.0	—	—	
Applicable Plunger tip diameter	mm	100~140	110~150	110~150	120~170	120~170	130~200	160 ~ 240		
Ejection	Ejector force	kN	703	801	847	847	1,017	1,100	1,100	
	Ejector stroke	mm	160	180	180	180	200	300	400	
General	Main motor (Servo motor)	kW	75×1	75×1	75×1	75×1	50×2	75×2	75×4	
	Required hydraulic oil volume (Initial)	L	1,600	2,000	2,200	2,800	3,400	4,000	8,400	
	Oil tank capacity	L	1,300	1,600	1,650	2,150	2,700	3,000	6,400	
	Required compressed air (for DCM only)	Nm3/min	0.6	0.6	0.6	0.6	0.6	0.6	1	
	Required floor space (L x W)	mm	11,430×5,600	12,720×5,875	13,170×5,875	14,200×6,000	15,220×6,450	20,000×6,800	23,000×7,300	
	Core number on fixed platen side	pc	1	1	1	1	1	1	1	
	Core hydraulic port on fixed platen side	set	2 sets of hydraulic inlet/outlet port on helper side for each core line							
	Core LS power plug on fixed platen side	set	2 sets of power plug for core limit switch on helper side for each core line							
	Core number on moving platen side	pc	3	3	3	3	3	3	3	
	Core hydraulic port on moving platen side	set	2 sets of hydraulic inlet/outlet port on helper side for each core line							
Core LS power plug on moving platen side	set	2 sets of power plug for core limit switch on helper side for each core line								

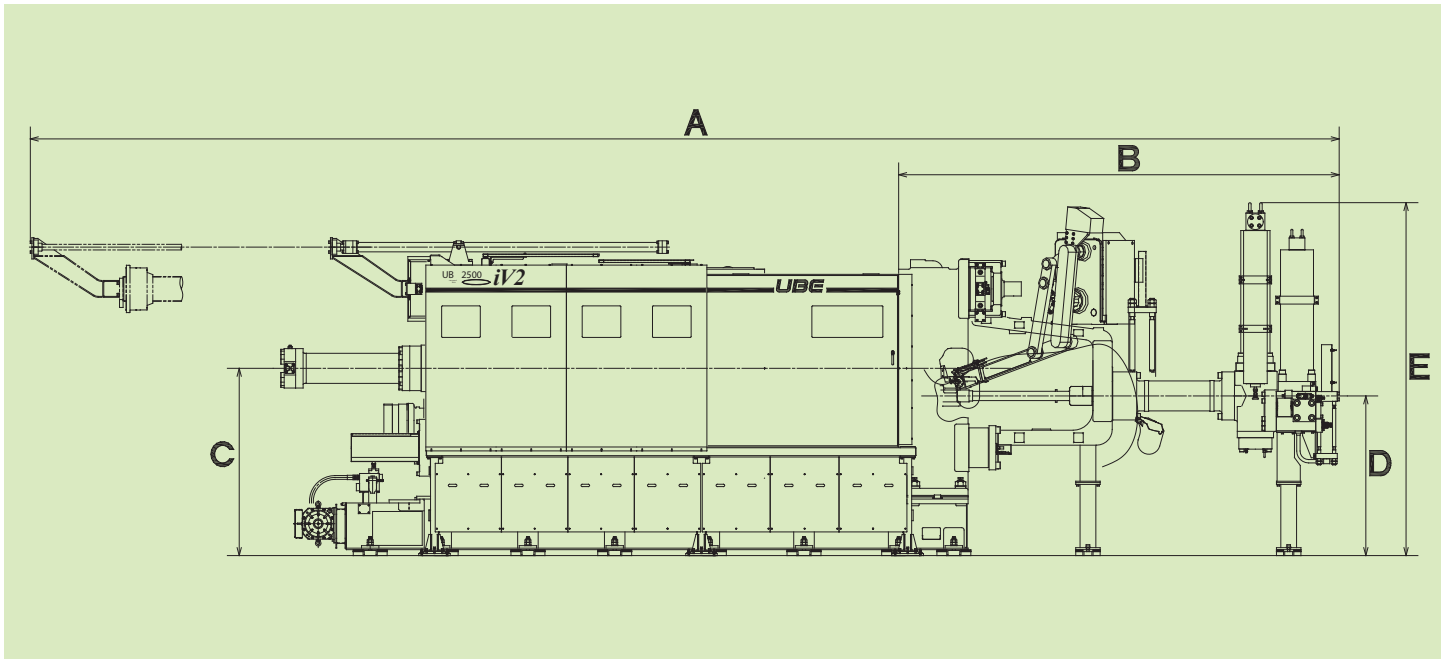
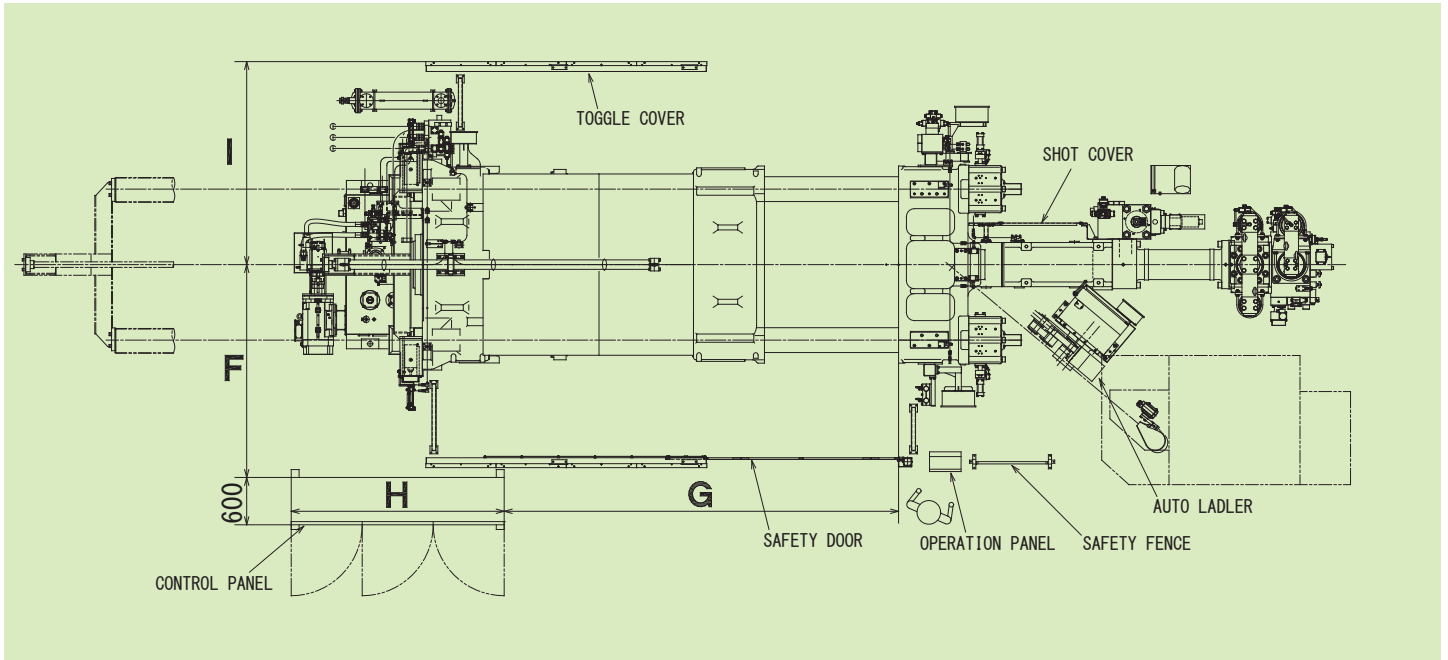
Note: Appearance, Specifications, Numerical Data of die casting machine may change for improvement without notice

UB-iV2 Series Specification (Standard and Optional Items)

Specification item		Std.	Opt.	Specification item		Std.	Opt.	Specification item		Std.	Opt.	
Die clamping	1 Die plate (Fixed, Moving) with T-Slot machining	●		Control	4 Interface for automatic devices of other manufacturers (by CC-Link)		○	Hydraulic cooling	11 Hydraulic hose with wire-blade		○	
	2 Toggle and die height unit automatic lubrication device	●			5 Interface for automatic devices of other manufacturers (connected to dry contact)		○		12 Hydraulic hose with plastic cover		○	
	3 Split nut device automatic lubrication device		○		6 Lighting in control panel		○		13 Analog pressure gauge with glycerin		○	
	4 Platen Ni welding (Die mounting surface)		○		7 Control Panel Cooler	●			14 Oil pan under hydraulic pump		○	
	5 Digital load meter(lower tie bar on helper side)	●			8 Cast Trend software and connecting interface (LAN)	●			15 Oil pan under loading manifold		○	
	6 Additional digital load meter		○		9 Lap top PC for Cast Trend		○		16 Oil cooler capacity up		○	
	7 Tie bar and guide rod chrome plating		○		10 Electric cable protection (FX and MV side, near to pouring gate)	●			17 Additional pump motor for cycle up		○	
	8 Automatic tie bar pull-out device (on top 2 tie bars / synchronize)	●			11 Electric cable protection (excepting above area)		○		18 Die cooling water flow control ball valves (Fixed · Moving side each 10 pcs)	●		
	9 Automatic tie bar pull-out device (on top 2 tie bars / independently)		○		12 Touch panel on operation panel	●			19 Die cooling water drain box (Fixed·Moving side each 1 pc)	●		
	10 Automatic tie bar pull-out device (on lower 1 tie bar)		○		13 PLC programming software		○		20 Plunger tip cooling water piping	●		
	11 Full stroke automatic tie bar pull-out		○		14 CastNavi / Japanese + English or Chinese or Korean-languages (selectable 1 language)	●			Safety	1 Manual safety door on operator side	●	
	12 Slide mechanism oil pan for tie bar		○		15 CastNavi / Japanese + English or Chinese or Korean-languages (multiple selection)		○			2 Automatic safety door on operator side (servo motor driven)		○
	13 Die clamping force automatic adjustment	●			16 Casting quality report (15,000shots memory)	●				3 Toggle cover (operator side, helper side)	●	
	14 Die clamping force automatic compensation control	●			17 Memory utility function USB port on operation panel for data out-put Monitor, Quality · production report, Machine setting with CSV file.	●				4 Upper side toggle cover	●	
	15 Automatic die height adjustment	●			18 Oil flow chart on the screen	●				5 Manual safety door on helper side		○
	16 Die open-close speed digital setting	●			19 Origin return function	●				6 Automatic safety door on helper side (Servo motor driven)		○
Ejection	1 Ejector speed digital setting	●		20 Automatic fast shot start function	●		7 Injection unit cover on helper side	●				
	2 Ejector stroke digital setting	●		21 Study feed back control (VP change, Metal pressure, Biscuit thickness)	●		8 Die open limit safety hook (stopper type)	●				
	3 Ejection force digital setting	●		22 Interlock message	●		9 Latchet-type safety hook			○		
	4 2 steps ejection forward limit setting	●		23 Cycle time chart monitor	●		10 Photoelectric tube safety device			○		
	5 Ejection pressure-reducing circuit		○	24 Die temperature monitor		○	11 Emergency stop button (2 locations)	●				
Injection	1 Injection speed multi speed setting (HS-DDV) Real time feed back control	●		25 Furnace temperature monitor		○	12 Control panel door with interlock	●				
	2 Shot condition digital setting	●		26 PLC I/O monitor	●		13 Control panel handle enable securing of padlock	●				
	3 Intensification time digital setting	●		27 Voltage adapt (Standard : AC400V)		○	14 Safety controller	●				
	4 Shot position elevating function		○	28 Voltage adapt (Standard:200V,220V)		○	Special option	1 Hydraulic die clamping device		○		
	5 Piston type accumulator (for injection speed and intensification control)	●		29 Voltmeter installed		○		2 Hydraulic C-Plate clamping device		○		
	6 Accumulator automatic pressure release circuit	●		30 Ammeter installed		○		3 Die support		○		
	7 Casting parameter load for 100 dies conditions	●		31 Outlet (AC100V) on control panel or operation panel		○		4 Die push-out cylinder		○		
	8 Interface for Sleeve vacuum device		○	Timer / Counter	1 Lot counter	●			5 Movable working deck		○	
	9 Sleeve vacuum device		○		2 Product (shot) counter	●			6 Mist hood		○	
	10 Pressure gauges on Injection unit		○		3 Tip lubrication timer	●			7 Auto die changer		○	
	11 Impact Control Valve		○		4 Cumulative shot counter	●			8 GF (Gass Free) device		○	
	12 Casting support		○		5 Total maintenance counter	●			9 Sleeveac (sleeve vacuum) device		○	
Die core	1 Core sequence-selection circuit	●			6 Maintenance counter by dies	●			Other / Automation	1 Machine color (DCM : AN-50 Gray) Electrical parts : 25-70B right beige	●	
	2 Local squeeze circuit (to be shared with hydraulic core line)	●			1 Mineral type of hydraulic oil applicable	●				2 Customer specified machine color		○
	3 Additional core line (Max. : FX side 3 lines, MV side 3 lines)		○		2 "Nonflammable hydraulic fluid specification (Water Glycol Fluid applicable)"			○		3 H-shape steel embedded in the foundation	●	
	4 Core pressure release circuit		○		3 Micro separator (1 pc/200L)	●				4 Tools (with tool box)		○
	5 Additional core port		○		4 Hydraulic oil temperature (in operation monitor, 3 steps alarm)	●				5 Nitrogen gas filling hose		○
	6 Core pressure reducing circuit		○		5 Oil cooler cooling water ON-OFF circuit		○	6 Automatic ladler			○	
	7 Additional double pilot check valve in core line		○		6 Hydraulic oil preheating circuit		○	7 Tip lubricator/Dripping type			○	
	8 Core speed digital setting	●		7 2 steps hydraulic oil level alarm (alarm, pump stop)	●		8 Tip lubricator/Mixing type			○		
	9 Core pressure digital setting	●		8 Hydraulic oil level sensor (in operation monitor, 3 steps alarm)		○	9 Adjustable tip lubricating volume			○		
	10 Core spray circuit		○	9 Suction filter clogging detection (differential pressure switch)		○	10 Automatic sprayer			○		
	11 Exclusive electric power source for core LS	●		Hydraulic cooling	10 Hydraulic oil filter		○	11 Automatic parts extractor			○	
	12 Additional core LS power plug		○		Control	1 Programmable controller (Mitsubishi iQ-R)	●			12 Automatic Trimming Machine		○
Control	2 i-Stop Servo Pump Drive Source : AC Servo motor"	●		2 Compliance of North America, European, and Chinese standards and requirements			○	13 "IoT applicable (data out-put, net work devices connection, etc.)"			○	
	3 Rotating red light on top of control panel (3 colors : green, yellow, red)	●										

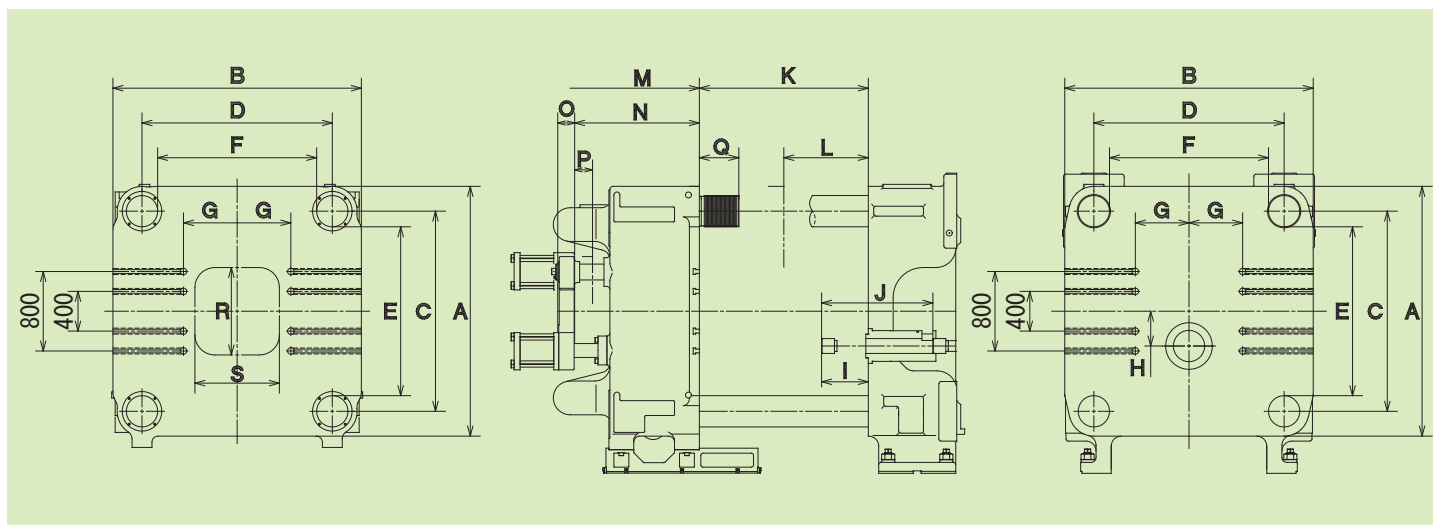
※This specification item for improvement, may be changed without notice

UB-iV2 Series Dimensional Diagram



		UB1650iV2	UB2250iV2	UB2500iV2	UB3050iV2	UB3550iV2	UB4500iV2	UB6500iV2
A	Total length	14,650	16,260	16,590	17,840	19,270	23,000	26,600
B	Fixed platen ~ end of shot unit	5,040	5,535	5,585	6,080	6,330	8,000	8,200
C	Machine center height ¹⁾	2,125	2,245	2,375	2,425	2,725	3,075	3,885
D	Shot center height	1,825	1,895	2,025	2,075	2,325	2,575	3,385
E	Total height	4,060	4,345	4,475	4,760	4,910	6,200	7,900
F	Control panel installation posi.(F)	2,500	2,700	2,700	2,800	3,000	3,200	4,000
G	Control panel installation posi.(G)	3,850	4,650	5,000	5,500	5,400	6,800	6,800
H	Control panel width	2,700	2,700	2,700	2,700	3,600	4,500	6,500
I	Helper side toggle cover dimension	2,500	2,575	2,575	2,650	2,850	3,000	3,750

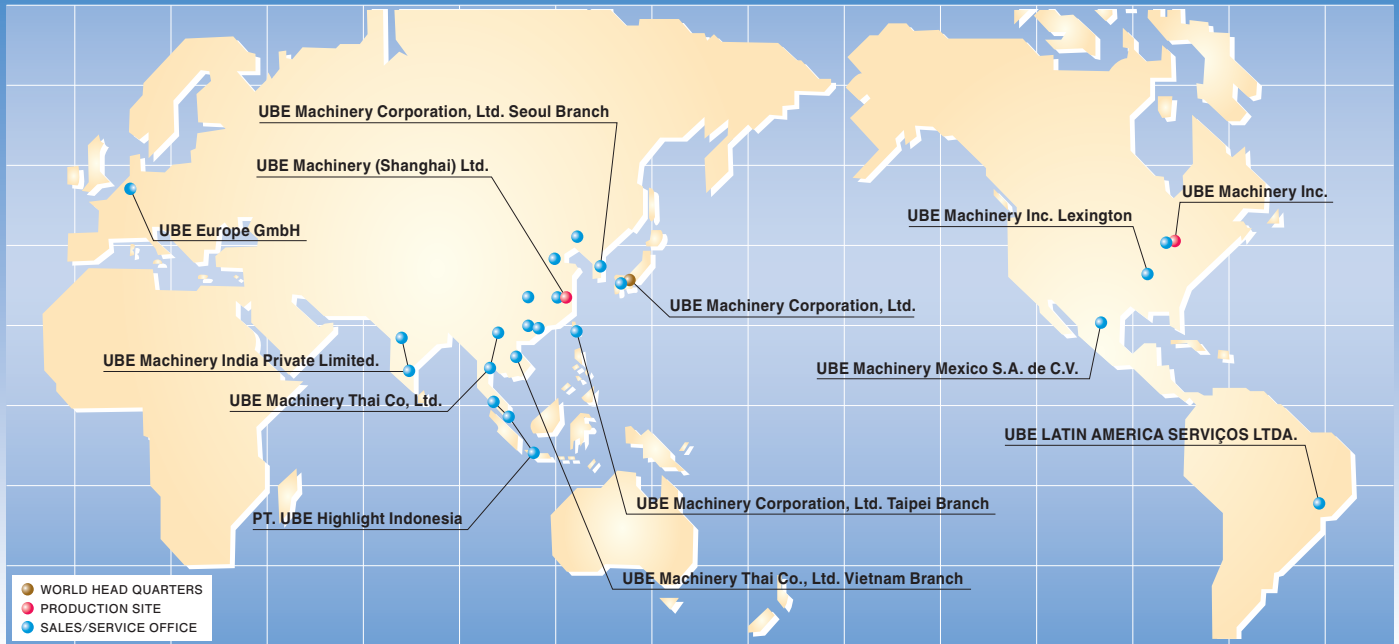
UB-iV2 Series Die Mounting Dimensional Diagram



		UB1650iV2	UB2250iV2	UB2500iV2	UB3050iV2	UB3550iV2	UB4500iV2	UB6500iV2
A	Die plate (V)	2,260	2,400	2,515	2,640	2,800	3,200	3,800
B	Die plate (H)	2,060	2,500	2,500	2,590	2,750	3,200	3,800
C	Tie-bar center dimension (V)	1,750	1,800	2,015	2,035	2,125	2,425	2,895
D	Tie-bar center dimension (H)	1,550	1,850	1,915	1,935	2,125	2,425	2,895
E	Tie-bar spacing (V)	1,500	1,500	1,700	1,690	1,750	2,000	2,350
F	Tie-bar spacing (H)	1,300	1,550	1,600	1,590	1,750	2,000	2,350
G	T-slot dimension from center	400	480	500	500	550	650	800
H	Shot position (below center)	-350	-350	-350	-350	-400	-500	-500
I	Tip projection	400	450	450	500	500	550	700
J	Shot stroke	1,000	1,120	1,120	1,250	1,250	1,400	1,650
K	Max. die thickness	1,600	1,700	1,700	1,700	2,000	2,200	2,500
L	Min. die thickness	800	850	850	850	1,000	1,200	1,800
M	Die stroke	1,000	1,180	1,300	1,300	1,500	1,800	2,500
N	Ejector plate position from mov.die	1,025	1,200	1,255	1,325	1,450	1,650	2,015
O	Ejector plate thickness	160	160	170	170	180	195	185
P	Ejector stroke	160	180	180	180	200	300	400
Q	Tie-bar draw-out dimension	329.4	390	397	415.8	515	600	714
R	Ejector pin hole possible area (V)	760	810	830	870	880	980	1,200
S	Ejector pin hole possible area (H)	730	765	785	820	830	940	1,200

UBE GLOBAL NETWORK

With Japan as our headquarters, we contribute to our customers' globalization with a Four Point system covering Asia, North America and Europe.



UBE Die Casting Machine Lineup



Hydraulic die casting machine : UB-iS3-s/-i Series
(530, 670, 850, 1100, 1300, 1300W)



Two platen hybrid die casting machine : UH Series
(1250, 1650, 2250, 2500)

