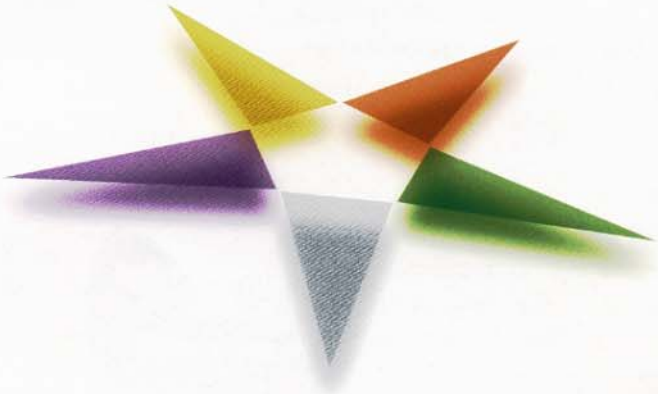
HITACHI
Group
TOYO

V4
SERIES



Die Casting Machine
BD-V4-N

The BD-V4-N shows great versatility covering pressure-tight castings, super thin-wall castings and magnesium castings.

V. Super slow laminar flow die-casting

Strong, pressure-tight products
T6 processing can be made.

◆Shot speed setting range

0.03~0.70 m/s

◆Fine speed increment

Real time speed feedback control

◆Casting condition in laminar flow die-casting

3 to 4-step speed shifting in the speed range between

0.04~0.20 m/s

Features!

V. Super high-speed die-castiing

Strong, pressure-tight products
Thin-wall products

◆Max. dry shot speed

8~10 m/sec

◆Low shot speed
Multi-step speed shifting & Parashot
in the speed range up to

0.7 m/sec

◆Quick accleration ability

5.0 m/sec 0.01 m/sec

◆Super thin-wall casting

0.6~0.7 t

in Aluminum and Magnesium casting

Magnesium product	PC : 0.8~1.3t Cellular phone : 0.7~0.8t

BD-900V4-N (※Options mounted)

Thin-wall aluminum and magnesium products

V. IN-throttled high speed control

◆ With IN-throttled shot circuit, high shot speed is stable and power is constant.
This suits to wide variety of castings such as strength-required products, thick products and durable products.

V. Sharp deceleration before filling completion in high speed shot

(optional)

◆ Deceleration ability

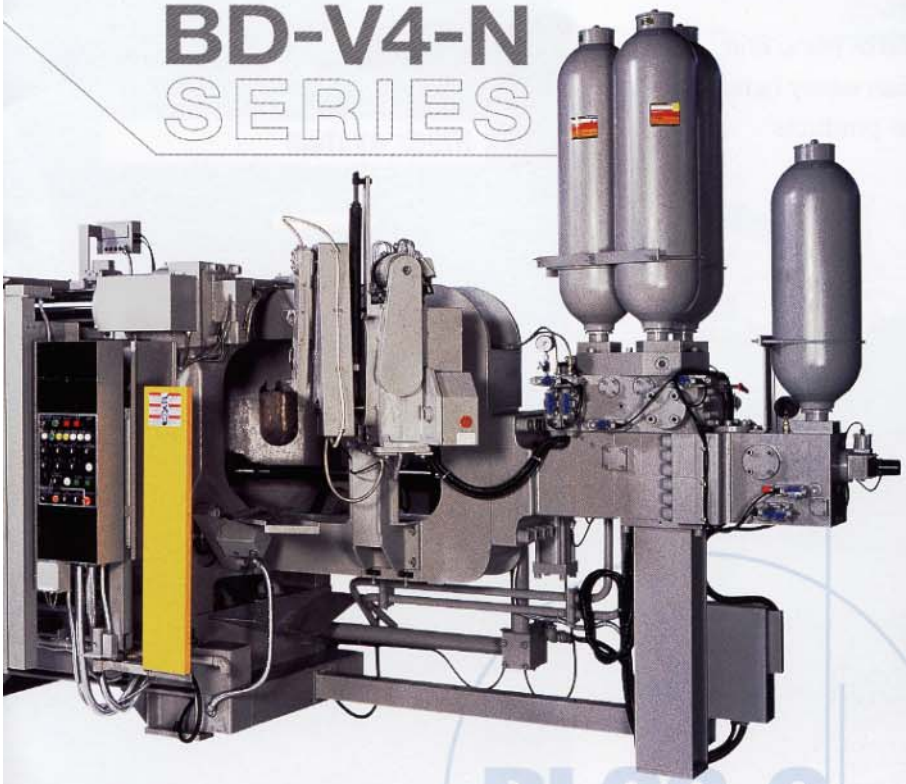
3m/sec / 0.01sec

◆ Post-deceleration speed can be set.

Products for one-size larger machine

Precision casting with no flash, no burr

BD-V4-N SERIES

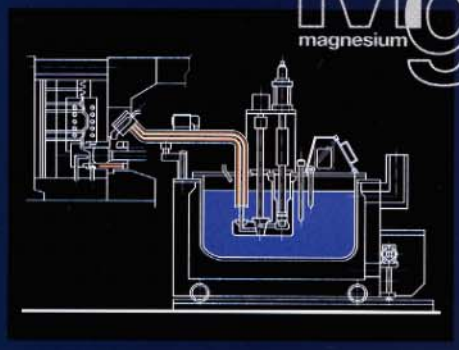


V4

The BD-V4-N Series

pave the way for
Strong,
pressure-tight castings,
Super thin-wall castings,
Magnesium castings.

Mg magnesium



First in the world

Piston pump-equipped TOYO magnesium ladle.
No shot sleeve is necessary on the die-casting machine.

Defect Rates Reduced With Any Mold

MULTI
INJECTION SYSTEM

The Multi Injection System

Each mold has its own character.
The Multi Injection System can cope with any mold with its super slow laminar flow and super high speed die casting capabilities.
This system was developed backed by TOYO's abundant expertise on mold making as well as die casting process.

In-throttled High Speed Shot Control

Unlike systems adopted by other machine makers, the Multi Injection System is provided with a throttle valve on the head side (IN side), so that the melt can be shot into the cavities at intended speeds boosted by power that is necessary to maintain the speeds.
Back pressure is applied only at the time of filling end.
As a result, the Multi Injection System can easily handle wide range of castings such as thin-wall products and pressure-tight products.

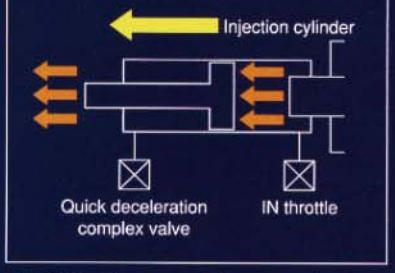
Multi Injection System covers:

Super Slow Shot (SSS) system

Super fast Shot system

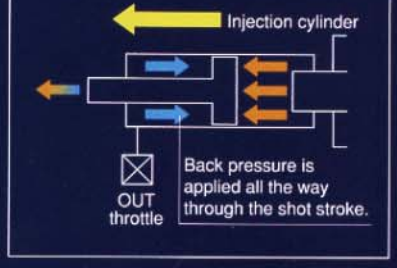
Super accelerating casting system

TOYO system



The injection speed is controlled with a throttle valve provided on the piston head side (IN side) of the injection cylinder.
The melt can be shot into cavities without loosing momentum.

Other system

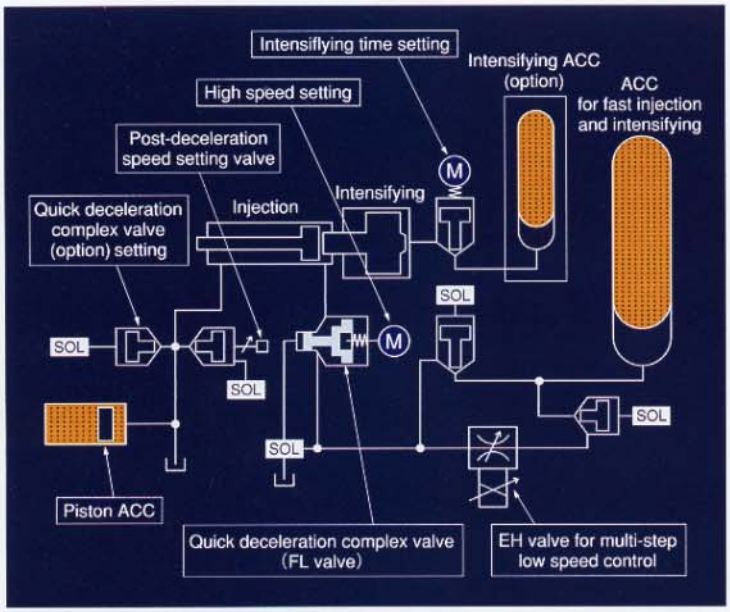


The injection speed is controlled with a throttle valve provided on the piston rod side (OUT side) of the injection cylinder.
With this system, the shot piston is always pressed backward.
This sometimes causes lack of power in the injection process.

Features

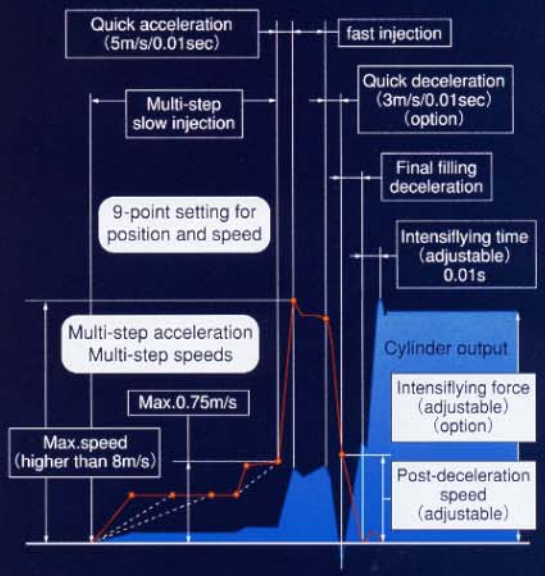
- The Multi Injection System comprises two cylinders; the injection cylinder and injection intensifying cylinder. Unlike conventional two-pressure system where only one cylinder is used, the two-cylinder system can make sophisticated injection pressure control very easily.
- Higher pressure is utilized for quicker acceleration.
- Independent control can be made for low speed injection, high speed injection and injection speed deceleration.

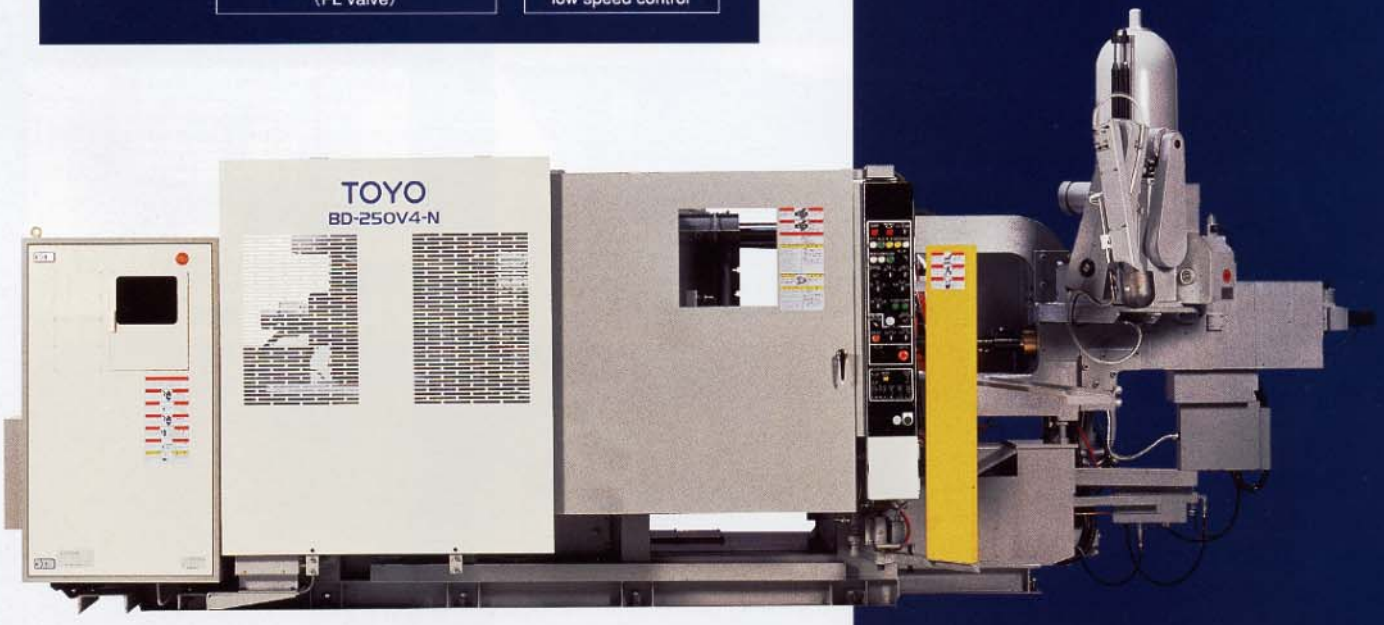
※ Surge pressure is minimized due to the adoption of light weight intensifying cylinder and a bladder accumulator (optional) for injection intendsifying.



Injection graphics

Injection speed changes can be observed in the injection graphics.





BD-250V4-N (※Options mounted)

Machine Design for One-size Larger Mold (650-t, 800-t, 900-t)

Ultimate Performance Through Increased Rigidity

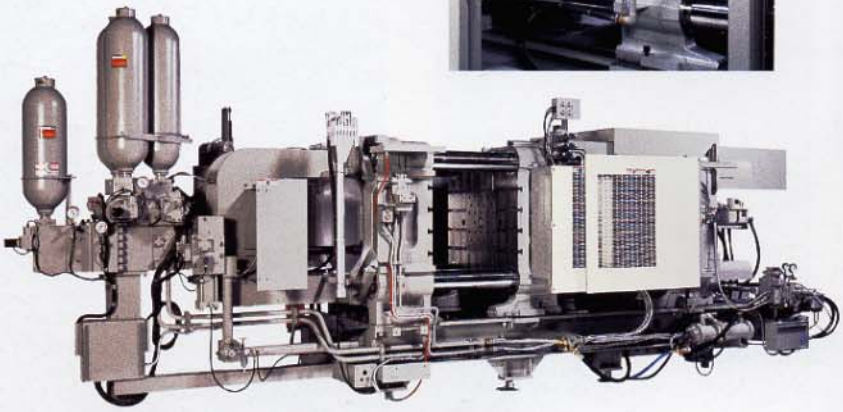
Increased tie-bar clearance

Larger off-center distance for low shot position

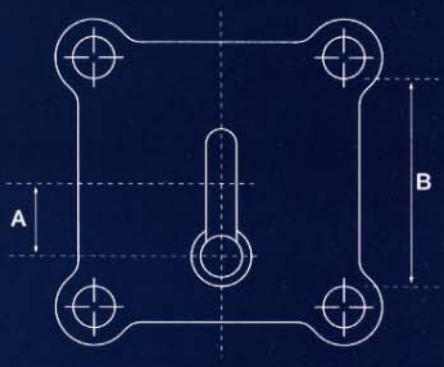
Multi Injection System as standerd

High precision, high rigidity clamping unit

Molds for one-size lager machine can be used.



BD-900V4-N (※Options mounted)

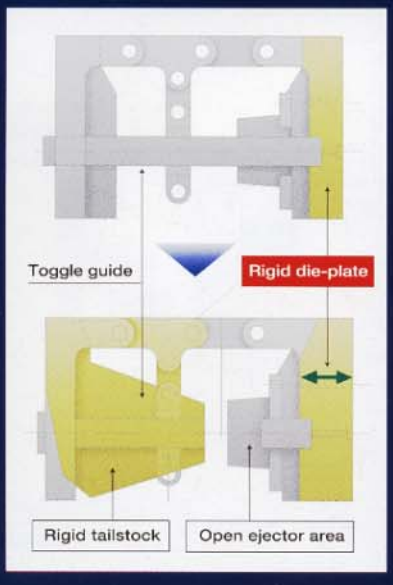


Dimension \ Model		650	800	900
A	Previous	175	250	250
	New	225	275	275
	Special (Option)	175~250	250~300	250~300
B	Previous	750	850	850
	New	850	940	930

TOYO 125~500t					
Model	125	200	250	350	500
A	100	125	125	150	175
B	460	508	584	652	748

High precision, high rigidity clamping

The toggle accuracy and rigidity are improved by eliminating the influence of deflection of guide bars and movable die plate.



Advanced PLCS-9 Control System for Higher Precision and Higher Cycle Casting

Outside memory IC card (for 128 mold setups)

Job name is entered using Chinese characters

Automatic indication of periodical checkup screen

Alarm history screen for 300 alarms

Easy to see

TFT color LCD

Various easy-to-see graphic screens

Pop-up screen in the background screen

▲ Memory card (for 128molds)

Easy to understand

Easy operation

High cycle specification as standard

High processing speed with high speed microcomputer

Strengthened production control function

Data out to PC

Fast

Improved monitor and production control function

Improved casting condition feedback function

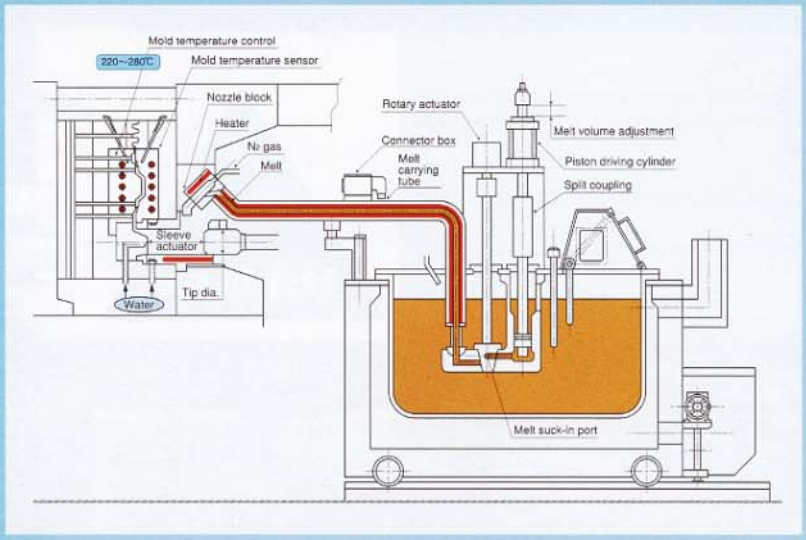
Integrated control covering ancillary equipment

Total engineering with the PLCS-9 control

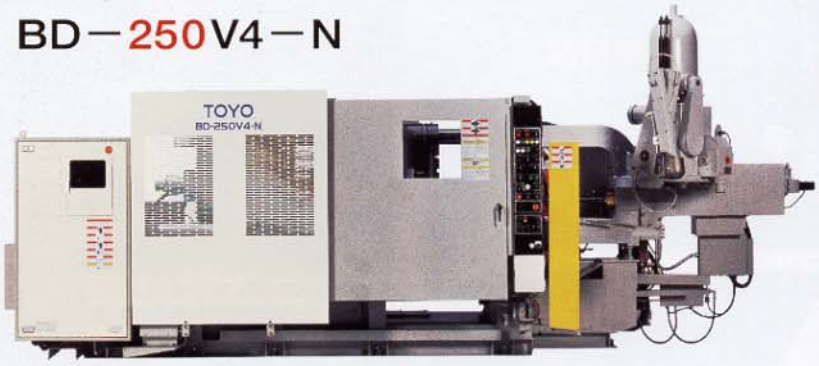
Mg
magnesium

TOYO's high precision magnesium casting System

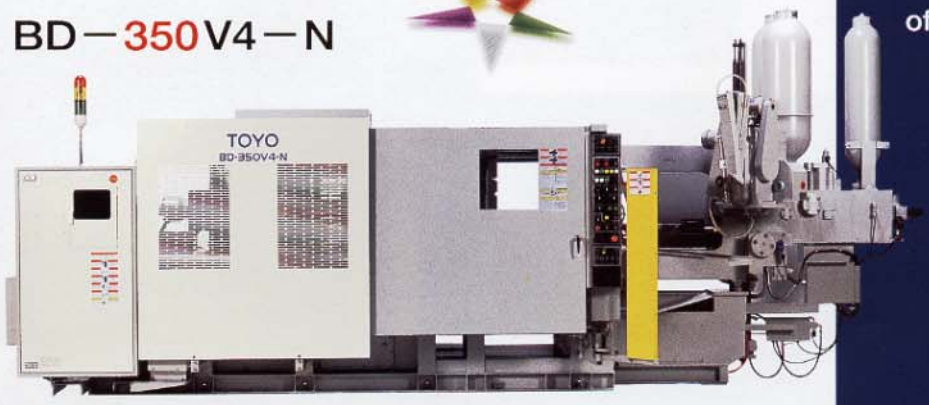
TOYO's unique magnesium casting system features a high accuracy automatic ladle, high mobility injection, high filling rate and highly stable accuracy.



BD—250V4—N



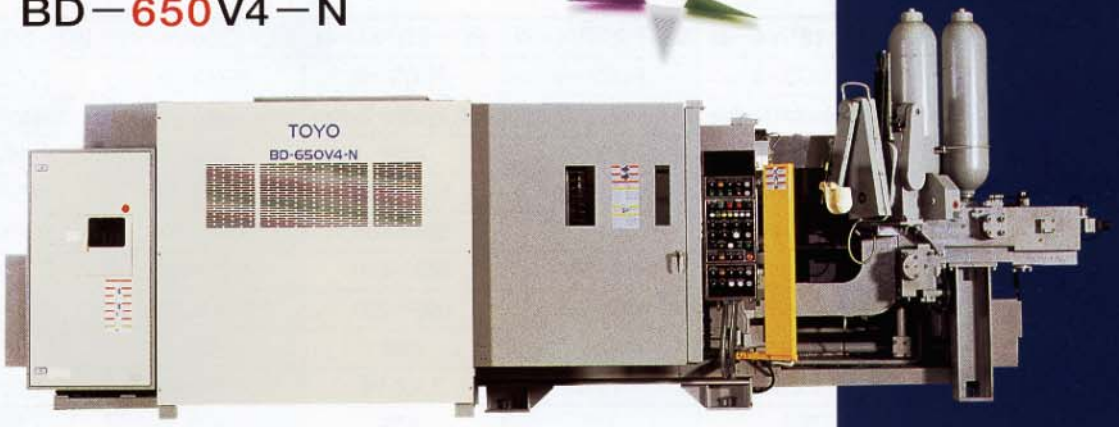
BD—350V4—N



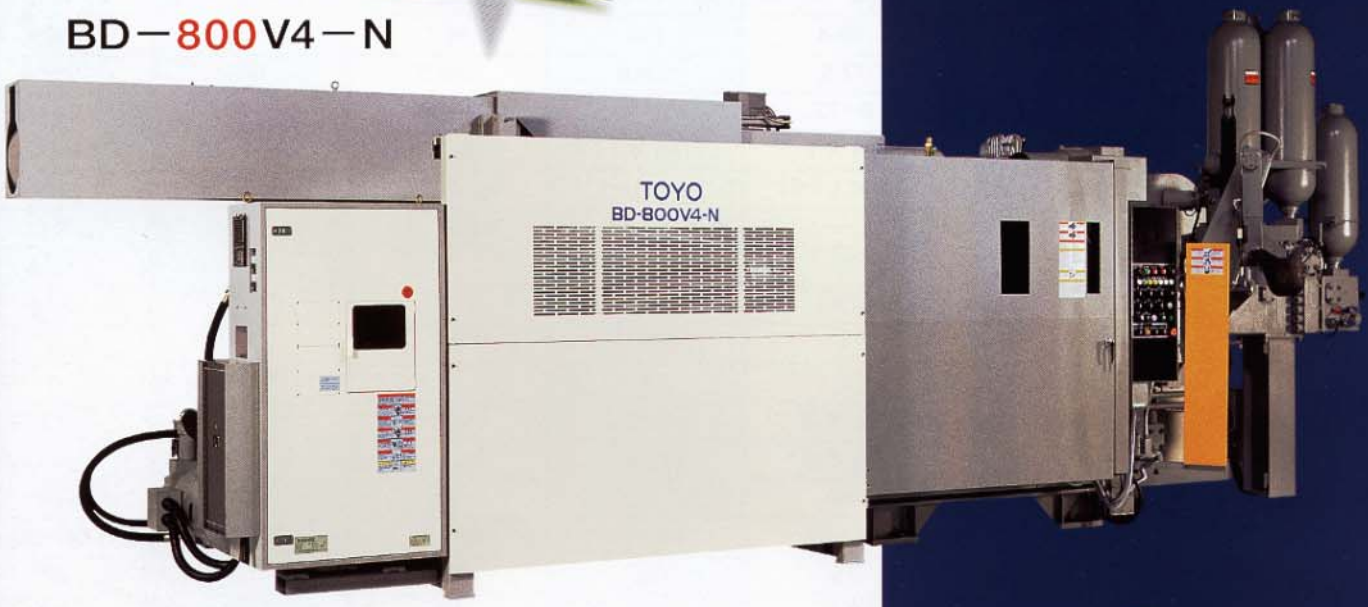
Die Casting Machine BD-V4-N SERIES LINE UP

TOYO provides you with the ultimate die-casting systems backed by our abundant knowledge on the characteristics of aluminum and machine.

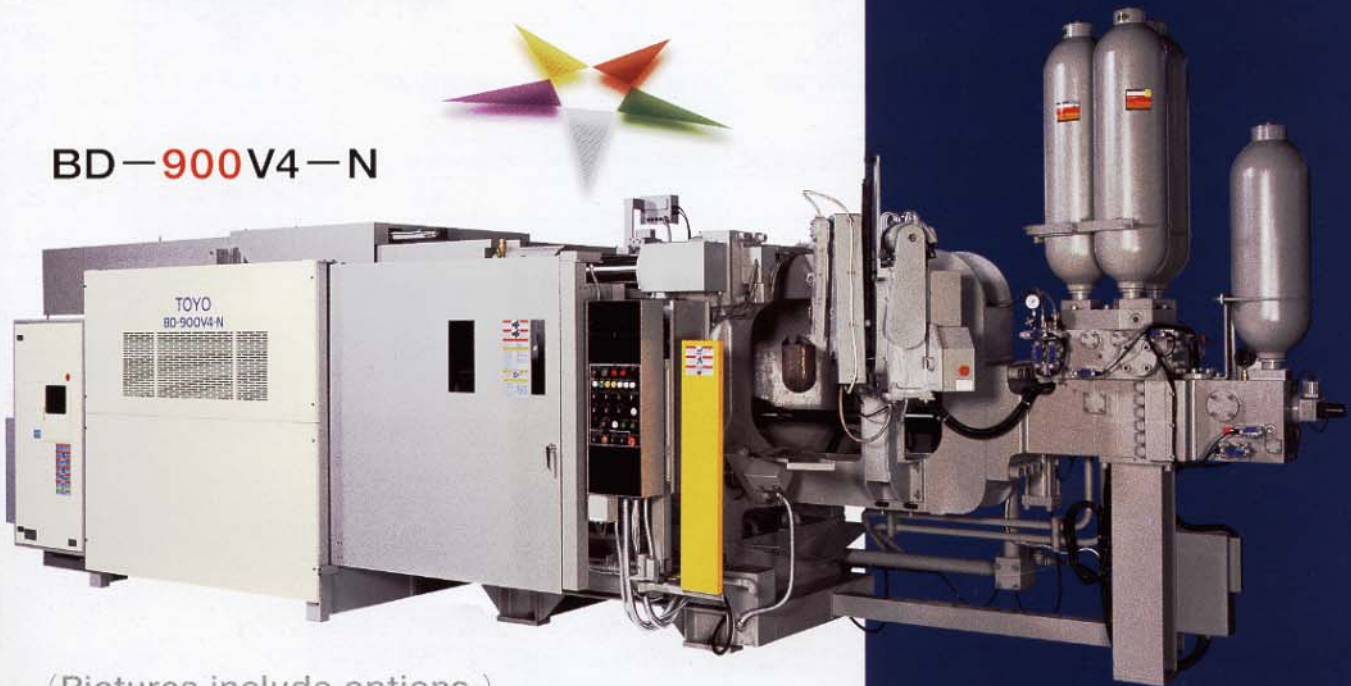
BD−650V4−N



BD−800V4−N



BD−900V4−N



(Pictures include options.)

Main specifications

Model		BD−125V4−N	BD−200V4−N	BD−250V4−N	BD−350V4−N	BD−500V4−N
Control system		PLCS−9	PLCS−9	PLCS−9	PLCS−9	PLCS−9
Injection system		Multi Injection System	Multi Injection System	Multi Injection System	Multi Injection System	Multi Injection System
Clamping unit	Clamping force [kN]	1230	1960	2450	3430	4903
	Die plate (H×W) [mm]	700×700	820×820	850×904	935×1008	1070×1070
	Tie bar distance (H×W) [mm]	460×460	508×530	584×584	652×652	748×748
	Die stroke (max, min) [mm]	350~200	360~250	380~250	420~300	560
	Die thickness (max, min) [mm]	500~250	600~250	600~250	700~300	850~350
Injection	Injection force [kN]	174	220	282	335	486
	Intensify ratio	1 : 2.04	1 : 2.04	1 : 2.16	1 : 2.16	1 : 2.30
	Plunger stroke [mm]	305	370	370	425	580
	Tip jog-out stroke [mm]	125	150	150	165	250
	Injection position [mm]	−100	−125	−125	−150	−175
	Tip diameter [mm] (○:Standard)	45・(50)・55・60	(50)・55・60・65	50・55・(60)・65・70	60・65・(70)・75・80	70・75・(80)・85・90
	Injection pressure [MPa]	88.8	110	99.7	87.2	96.7
Ejection	Ejection force [kN]	77.5	104.9	123.5	190	251.4
	Ejector stroke [mm]	0~75	0~80	0~80	0~100	0~110
Core	Core take-out port (core 1) [Rc]	1/2×1	1/2×1	3/4×2	3/4×2	3/4×2
	Core take-out port (core 2) [Rc]	1/2×1 (※)	1/2×1 (※)	3/4×2 (※)	3/4×2 (※)	3/4×2
	Core take-out port (core 3) [Rc]	——	——	3/4×2 (※)	3/4×2 (※)	3/4×2 (※)
Cooling water	Cooling water inlet pipe dia. [Rc]	1	1	1	1	1.1/4
	Cooling water outlet pipe dia. [Rc]	2 (※)	2 (※)	2 (※)	2 (※)	2.1/2
	Oil cooler inlet pipe size [Rc]	1	1	1	1	1
	Oil cooler outlet pipe size [Rc]	1	1	1	1	1
	Die cooling adj. valve (stat.) [size×pcs.]	3/8 × 5	3/8 × 7	3/8 × 7	3/8 × 7	3/8 × 9
	Die cooling adj. valve (mov.) [size×pcs.]	3/8 × 5	3/8 × 7	3/8 × 7	3/8 × 7	3/8 × 12
	Cooling water (oil cooler) [ℓ/min]	40	40	40	40	80
	Cooling water (die cooling) [ℓ/min]	25~50	25~50	30~70	30~70	50~90
Electricity	Motor (hydraulic pump) [KW]	15	15	22	22	37
	Motor (die height) [KW]	0.2	0.4	0.4	0.75	1.5
	Power source capacity [KVA]	22	23	40	40	60
	Voltage [V]	AC200/220	AC200/220	AC200/220	AC200/220	AC200/220
Air	Air pipe connection port [Rc]	1	1	1	1	1.1/2
Others	Machine size (L×W×H) [mm]	4670×1570×2197	4776×1816×2444	5816×1820×2586	6450×1900×2800	7520×2478×2963
	Machine weight [t]	4.5	6.3	8.8	15	22
	Hydraulic oil tank capacity [ℓ]	310	310	310	400	600

Combination of die casting machine and peripheral equipment

TON	Automatic ladle	Automatic spray	Automatic extractor	Automatic extractor (for trimming)	Trimming device	Automatic Dilutor	Vacuum unit
125	KD1−15M2−N	SD2−15M4−N	TD5L−15M2B−N	TD6L−15M3−N	TR1−5C	AD−35	VCSU−15
200	KD1−35M2−N	SD2−35M4−N	TD5L−35M2B−N	TD6L−35M3−N	TR1−10CM		
250	KD1−35M2−N	SD2−35M4−N	TD5L−35M2B−N	TD6L−35M3−N	TR1−10CM		
350	KD1−35M2−N	SD2−35M4−N	TD5L−35M2B−N	TD6L−35M3−N	TR1−10CM		
500	KD1−65M2−N	SD2−65M4B−N	TD5L−65M2B−N	TD6L−65M3−N	TR1−15RO		
650	KD1−65M2−N	SD2−65M4B−N	TD5L−65M2B−N	TD6L−65M3−N	TR1−15RO		
800	KD1−80M2−N	SD2−80M4−N	TD5L−80M2B−N	TD6L−80M3−N	TR1−20RO		
900	KD1−80M2−N	SD2−80M4−N	TD5L−80M2B−N	TD6L−80M3−N	TR1−20RO		

BD−650V4−N	BD−800V4−N	BD−900V4−N
PLCS−9	PLCS−9	PLCS−9
Multi Injection System	Multi Injection System	Multi Injection System
6370	7840	8826
1230×1230	1400×1400	1400×1400
852×852	941×941	931×931
660	760	760
900~350	950~400	950~400
540	607	688
1 : 2.5	1 : 2.5	1 : 2.5
670	725	725
300	325	325
−225 (◇)	−275 (◇)	−275 (◇)
70・75・(80)・85・90	80・85・(90)・95・100	80・90・(100)・110・120
107.5	95.4	87.6
294.5	342	342
0~125	0~125	0~125
3/4×2	3/4×2	3/4×2
3/4×2	3/4×2	3/4×2
3/4×2 (※)	3/4×2	3/4×2
1.1/4	1.1/4	1.1/4
2.1/2	2.1/2	2.1/2
1	1	1
1	1	1
3/8×11	3/8×11	3/8×11
3/8×15	3/8×15	3/8×15
80	100	100
50~90	70~150	70~150
37	45	45
1.5	2.2	2.2
60	70	70
AC200/220	AC200/220	AC200/220
1.1/2	1.1/2	1.1/2
7560×2562×3003	9618×2813×3433	9618×2813×3433
24	41	42
600	750	750

◇Special injection position is available as option for BD-650V4, BD-800V4, BD-900V4.

※Optional

⚠ Note

Specifications are subject to change without any legal obligation on the part of the manufacturer.

Standard and optional specifications

— not available
● Standard
○ Option

	Model (TON)	125	200	250	350	500	600	800	900
Die clamp	Automatic greasing device	●	●	●	●	●	●	●	●
	Automatic clamp force setup	●	●	●	●	●	●	●	●
	Automatic adjustment of clamp force	●	●	●	●	●	●	●	●
	Clamp force monitor	●	●	●	●	●	●	●	●
	Digital load meter (1 pc.)	●	●	●	●	●	●	●	●
	Tie-bar pull out device (up, operator side)	—	—	○	○	○	○	●	●
	Chrome-plated tie-bar and guide bar	●	●	●	●	●	●	●	●
	Steel plate over die plates	○	○	○	○	○	○	○	○
	Manually activated safety door (front)	●	●	●	●	●	●	●	●
	Fence on rear side	○	○	○	○	○	○	○	○
	Toggle side covers (front and rear)	●	●	●	●	●	●	●	●
Core	Core 1	●	●	●	●	●	●	●	●
	Core 2	○	○	○	○	●	●	●	●
	Core 3 (rear on stationary die plate)	—	—	○	○	○	○	●	●
	Core speed adjustment	●	●	●	●	●	●	●	●
	Core pressure reducing valve	○	○	○	○	○	○	○	○
	Plug socket CE220	●	●	●	●	○	○	○	○
	Metal Plug Socket	○	○	○	○	●	●	●	●
Injection	Standard sleeve length	215	257	257	292	365	405	445	445
	Tip joint system	○	○	○	●	●	●	●	●
	Multi Injection System	●	●	●	●	●	●	●	●
	Injection intensifying accumulator	—	—	○	○	○	○	○	○
	Quick deceleration function	—	—	○	○	○	○	●	●
	Tip lubrication device	●	●	●	●	●	●	●	●
	Tip lubricant mixing system	○	○	○	○	○	○	○	○
	Hot sleeve	○	○	○	○	○	○	○	○
Hydraulic, cooling	Hydraulic oil (mineral) compatible	●	●	●	●	●	●	●	●
	Oil cleaner with alarm	●	●	●	●	●	●	●	●
	Oil temperature alarm	●	●	●	●	●	●	●	●
	Water on/off valve for oil cooler	●	●	●	●	●	●	●	●
	Temperature indication (max 9)	○	○	○	○	○	○	○	○
	On/off valve for die cooling	○	○	○	○	○	○	○	○
Casting	Squeeze pin motion	○	○	○	○	○	○	○	○
	Vacuum casting system (VCS)	○	○	○	○	○	○	○	○
Control	RS232C connection port (1pc.)	●	●	●	●	●	●	●	●
	PC software for quality control	○	○	○	○	○	○	○	○
	Internal memory for 32 die setups	●	●	●	●	●	●	●	●
	Memory card for 128 die setups	●	●	●	●	●	●	●	●
	Production control function	●	●	●	●	●	●	●	●
	Monitor function for 53 items	●	●	●	●	●	●	●	●
	Automatic correction (7 items)	●	●	●	●	●	●	●	●
	Calculation of shot condition	●	●	●	●	●	●	●	●
	"Defect" signal output	○	○	○	○	○	○	○	○
	Spray time-based temperature control	○	○	○	○	○	○	○	○
	Alarm history indication	●	●	●	●	●	●	●	●
	Periodic-checkup indication	●	●	●	●	●	●	●	●
	High cycle specification	●	●	●	●	●	●	●	●
	Initial purging function	●	●	●	●	●	●	●	●
	Interlock with other maker's equipment	○	○	○	○	○	○	○	○