YUSHIN

ZD series
Take-out Robot

CE

For CE supported languages,
Please contact our sales
department.

PAT.
PAT.P

Yushin, through all of our business activities and the application of earth-friendly, ergonomic technologies, promotes a healthy coexistence with the planet.

Contact us

YUSHIN PRECISION EQUIPMENT CO., LTD.

ZD CONCEPT

Exploit advanced technologies of high end FRA series

ZD-H   High grade

ZD-G   Standard

High Cycle
Medical products, packages, 5G parts, ...

MULTI SUPPORT
MULTI SUPPORT

Precision
Lenses, connectors, EV parts, ...

High Weight
Insert molding, multi-cavity molding, ...

HIGH SPEED
3D-Design Optimization
All-axis Optimized Vibration Control
Auto-Tuning

CLEANROOM COMPATIBILITY
Cleanroom Compatibility Suitable
for Production of Medical Products and
Food Packages (Option)

IoT
Product Information
Output Industry4.0

MOLD PROTECTION
Release Side Slow Down

PREVENTION OF ERRONEOUS OPERATION
Torque Monitoring
during Manual Operation

SAFETY
Vacuum Detection Setting Monitor
Error-level-specific
Alert Sound Notification

DOWNTIME REDUCTION
Predictive Maintenance
Long life mode
Operation Log

PRODUCTIVITY IMPROVEMENT SUPPORT
Cycle Monitor
Error Log

ENVIRONMENTALLY FRIENDLY
ECO Vacuum™
ECO Monitor™

ZD-H **YUSHIN**

ZD CONCEPT & FUNCTIONS

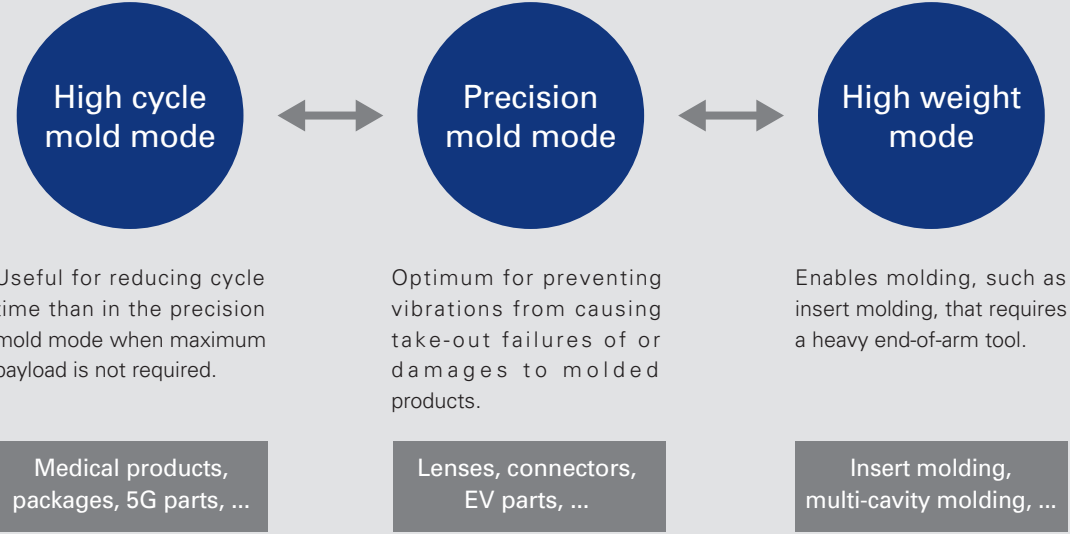## ZD-H-specific functions ZD-H

PAT. ···patented   PAT.P ···patent pending

- ☑ Multi Molding Mode PAT.P
- ☑ Product Information Output
- ☑ Release Side Slow Down
- ☑ Error-level-specific Alert Sound Notification
- ☑ Predictive Maintenance PAT.
- ☑ Cycle Monitor PAT.P

MULTI SUPPORT ZD-H

Multi Molding Mode PAT.P

A single take-out robot can support various molding by switching between three types.

High cycle mold mode ↔ **Precision mold mode** ↔ **High weight mode**

Useful for reducing cycle time than in the precision mold mode when maximum payload is not required.

Optimum for preventing vibrations from causing take-out failures of or damages to molded products.

Enables molding, such as insert molding, that requires a heavy end-of-arm tool.

Medical products, packages, 5G parts, ...

Lenses, connectors, EV parts, ...

Insert molding, multi-cavity molding, ...

HIGH SPEED

3D-Design Optimization

Applied 3D-Design Optimization used in FRA series, the high end models of Yushin, to parts of the take-out robots. This yielded a lightweight, highly-rigid body, which allows higher cycle.
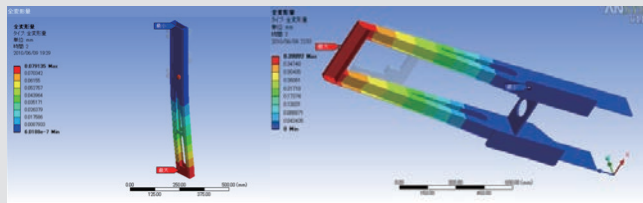
Structural optimization

All-axis Optimized Vibration Control

Sophisticated Vibration Control

Vibration control function is enhanced by adopting the vibration control, which has been used only in the kick axis, also in the traverse axis and the vertical axis as in the FRA series, the flagship models of Yushin. This reduces waiting time (timer) involved in not only take-out motions but also release motions, workpiece receipt, and other various situations, leading to reduction in cycle time. The fine adjustment capability of the robot provides compatibility with a wide variety of end-of-arm tools.

Auto-Tuning

Automatically sets ejector ejection timing and post-product-take-out kick start timing to optimum values.

CLEANROOM COMPATIBILITY

Cleanroom Specification Option Suitable for Production of Medical Products and Food Packages (model-specific option)

This options package equips the robot with cleanroom-ready components to keep dust and debris to minimum levels. The cleanroom-spec ZD achieves an ISO Class6 level cleanliness (as measured in company trials, by ISO 14644-1 standards). This allows the ZD to operate in cleanrooms for the medical and food industries.
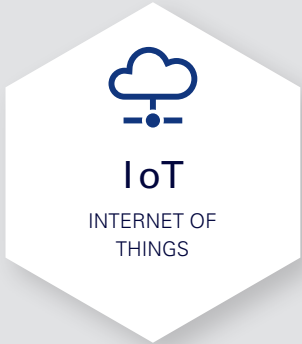
* Periodic maintenance is necessary to maintain cleanroom class compliance.

Cleanroom Classification	
ISO 14644-1	US Federal Standard (former standard)
Class1	
Class2	
Class3	1
Class4	10
Class5	100
Class6	1,000
Class7	10,000
Class8	100,000
Class9	

ZD CONCEPT & FUNCTIONS

IoT
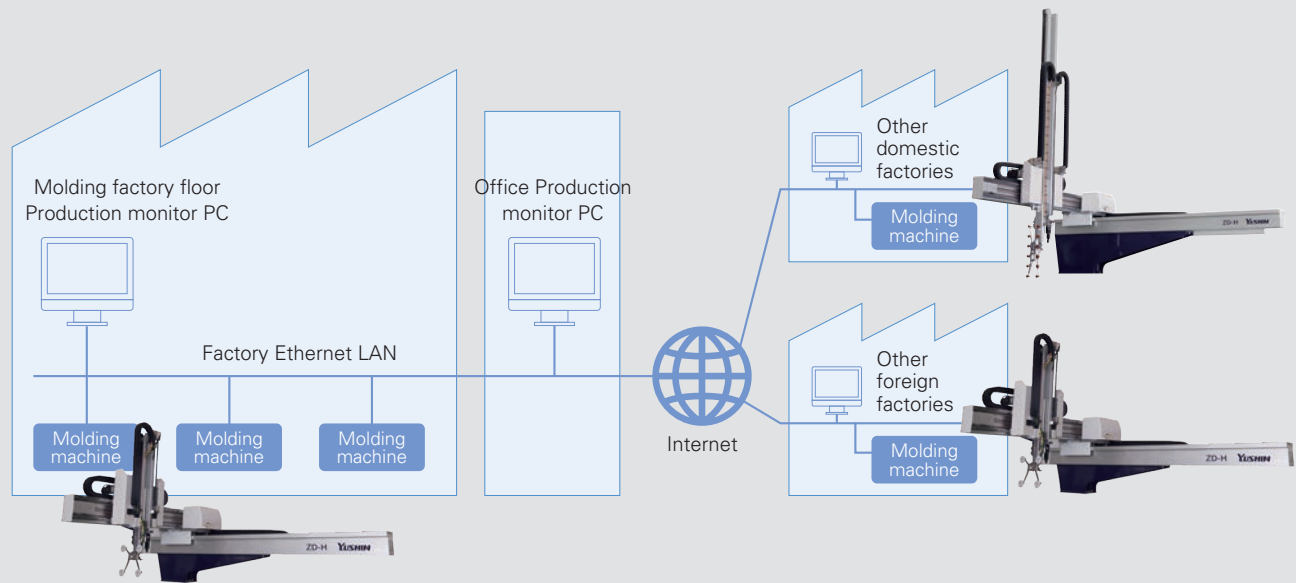### INTERNET OF THINGS

Product Information Output ZD-H

Industry4.0

Product information or an error status displayed on the production monitor can be output to an external device via Ethernet communication. Product information such as a planned production volume, a discharged product count, a released good product count, a take-out failure count, and take-out time is output for each molding cycle. If an error occurs, the date and time when the error occurred, an error number, and description of the error are output.

Other domestic factories

Molding machine

Molding factory floor
Production monitor PC

Office Production
monitor PC

Factory Ethernet LAN

Molding machine
Molding machine
Molding machine

Internet

Other foreign factories

Molding machine

* Users need to provide necessary network equipment such as personal computers and software.

MOLD PROTECTION

Release Side Slow Down ZD-H

Allows the take-out robot to make a smooth descent by setting/limiting the speed of the release motion in three levels (slow/medium/fast). Since this reduces vibrations during product release, damages or deformation of molded products are prevented, which leads to less defective products. Breakage caused by interference with equipment can also be prevented.

PREVENTION OF ERRONEOUS OPERATION

Torque Monitoring during Manual Operation PAT.P

Damage Prevention

A function that prevents damages caused by erroneous operations by monitoring loads applied to the take-out robot during teaching. The detection level is selectable from 3 levels. If the load exceeds the set level, operators are notified of it with a message indicated on a warning screen and a buzzer so that a possible damage of the take-out robot or other equipment is prevented.
(The robot is also equipped with an overload detection feature for auto operation.)

SAFETY
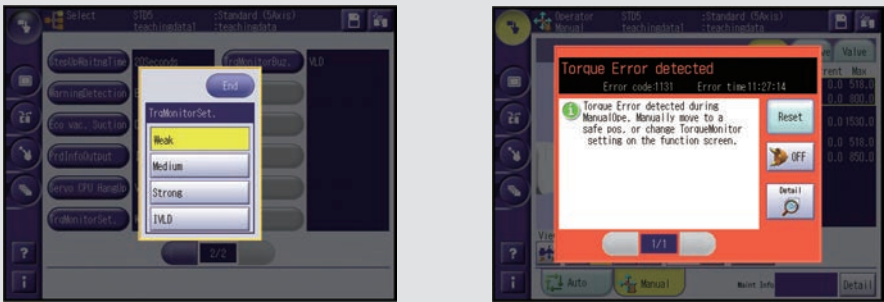
Vacuum Detection Setting Monitor

A feature that allows users to set the vacuum detection pressure from a remote location using the handheld controller. This eliminates the need for climbing the molding machine to adjust the pressure sensor attached to the take-out robot body, and prevents the hazardous situation where a fall accident of an operator from the molding machine can occur.
This also allows fine adjustment from a remote location. By finely adjusting vacuum detection setting for sucking, for example, a molded product having a grained surface, suction error stops can be reduced.

Error-level-specific Alert Sound Notification ZD-H

The alert buzzer sound that varies depending on the emergency level of the error allows operators to judge the importance of recovery from the error at once and reduce error stop time. There are 3 error emergency levels: minor failure, moderate failure, and severe failure.

ZD CONCEPT & FUNCTIONS

DOWNTIME REDUCTION

Predictive Maintenance   ZD-H   PAT.

Continuously monitors the take-out robot during operation and issues a message if a potential failure symptom is detected. Preventive Maintenance has evolved to Predictive Maintenance.

Items to be detected

- Motor overload warning
- Regenerative overload warning
- Battery voltage drop
- Motor temperature rise
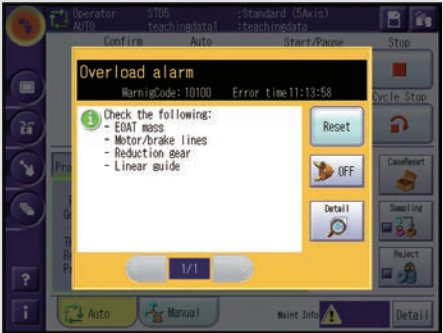
Long life mode

Automatically slows down the traverse speed of the take-out robot to an extent that does not affect the next molding machine cycle so that lifetime of the guide shaft and the timing belt is lengthened. This also reduces power consumption
(by 5% in Yushin measurements).

Operation Log 50,000 logs

Displaying the operation log helps troubleshooting and early recovery when an error occurs. This is a feature effective for both downtime reduction and error recurrence prevention.
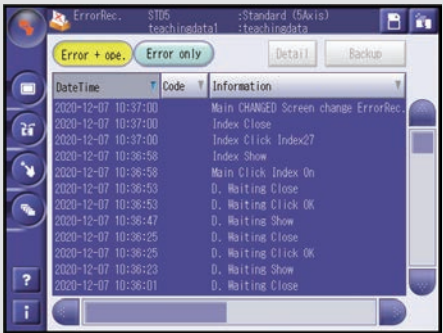
PRODUCTIVITY IMPROVEMENT SUPPORT

Cycle Monitor   ZD-H   PAT.P

Allows users to monitor cycle time against a user-set target cycle time to visually check a drop in productivity. When the target cycle time is exceeded, users can check the cycle time by displaying it in the error log.
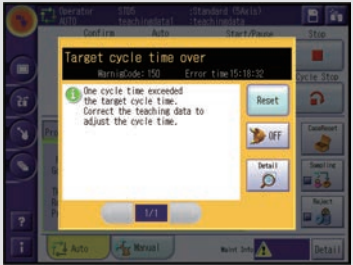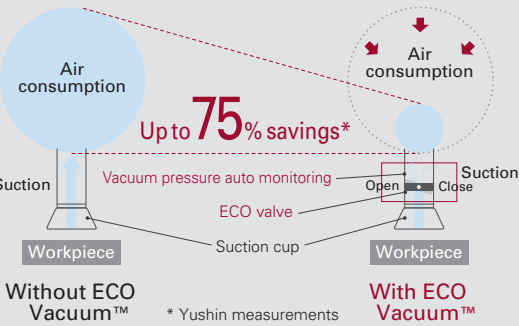
Error Log 1,000 logs

Tracing back error logs and displaying their details help identify the cause of the error stop and take productivity improvement measures.

ENVIRONMENTALLY FRIENDLY

ECO Vacuum™   PAT.

Environmental Load Reduction Tool

ECO Vacuum is the technology unique to Yushin for reducing suction air consumption. It monitors the vacuum suction pressure and stops air suction while suction force is maintained. By reducing air consumption by up to 75%, not only reduction in electricity cost of the air compressor but also reduction in cost of equipment can be achieved.

Air consumption

Up to **75**% savings*

Air consumption

Suction   Suction
Vacuum pressure auto monitoring   Open   Close
ECO valve
Workpiece   Suction cup   Workpiece
Without ECO Vacuum™   * Yushin measurements   With ECO Vacuum™

How ECO Vacuum Works

Shuts off the suction circuit when the vacuum pressure reaches the set value, thereby maintaining the suction force without consuming air. Air consumption can be reduced over a period from suction start to release of the molded product. Without this feature, the robot continuously consumes air over a period from suction start to release of the molded product.

Environmental Load Reduction + Running Cost Reduction

ECO Monitor™   PAT.

Displays power and air consumptions in real time, assisting energy saving of the production site.

EXTENSIBILITY

Highly Advanced Capability

Options highly adaptable to molding systems required to have increasingly advanced capability while achieving high quality are available

Flexible Teaching System (Windows Ver.)

Flexible Teaching is professional-use programming software that allows users to create/make detailed modification (e.g. interlocks and error processing settings) of operation programs for all-axis servo driven take-out robots with ease.

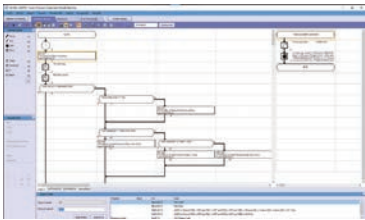| Supported languages |
| --- |
| ·Japanese ·English ·Chinese |

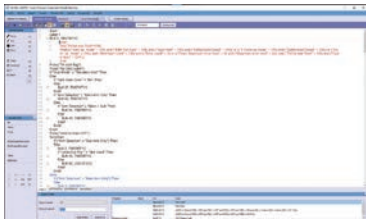### Features of Flexible Teaching System (Windows Ver.)

■ Multi-functional

Not only "motions of auto operation" but also functions such as "interlocks" and "error processing" are programmable. Applicable to a wide variety of systems.

■ Easy programming using flowchart

Programs can be created using only flowcharts. This leads to significant reduction in learning time.
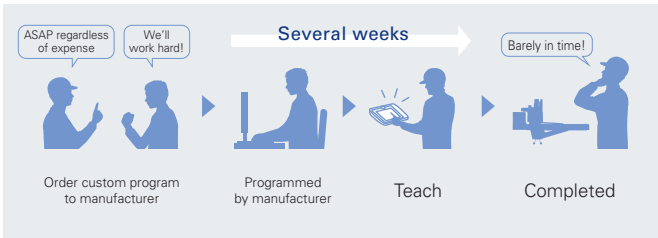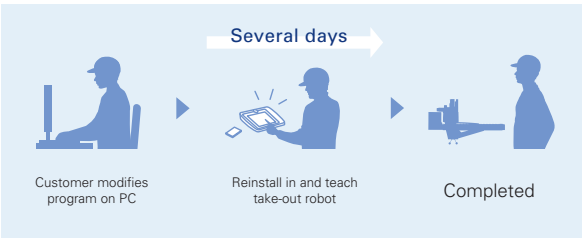
■ Programmable Using Visual-Basic-like Codes

Programs can be edited using codes of the same type as Visual Basic widely known as a programming language.

▲ Take-out robot flowchart screen   ▲ Code input screen

Need to add/modify motions of take-out robot!

Without Flexible Teaching

ASAP regardless of expense   We'll work hard!   Several weeks   Barely in time!

Order custom program to manufacturer | Programmed by manufacturer | Teach | Completed

With Flexible Teaching

Several days

Customer modifies program on PC | Reinstall in and teach take-out robot | Completed

Increased Maximum Payload

Allows the take-out robot to accurately handle even a heavy workpiece or a heavy, intricate end-of-arm tool made up of a large number of parts. Examples of the heavy workpiece include large molded products for automobiles. Examples of the heavy end-of-arm tool include end-of-arm tools for multi-cavity molding or insert molding.
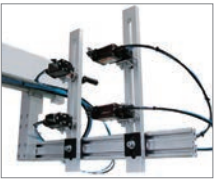
List of Increased Maximum Payload Options

Model	Standard Maximum Payload [kg]	Increased Maximum Payload [kg]	
ZD-H/G-1025/2535	5	7	
ZD2-H/G-1025/2535	5	7	10
ZD-H/G-3550/5080	12	17	
ZD2-H/G-3550/5080	12	17	

* Use of the Increased Maximum Payload option increases take-out time and production cycle time.
* It is recommended to use the Increased Maximum Payload option together with the Increased Wrist Flip Torque option.
* Increased Wrist Flip Torque option Is required when the Increased Maximum Payload option 10kg is used.
* The value varies depending on the option(s) used.

Options

■ External Beam-Mounted Nipper Unit

After removal from the mold, the robot can insert gated products into this beam-mounted nipper unit which separates the gate from the products.

■ Vertical Wrist Rotation Unit

Adding this unit to the wrist-flip mechanism allows the orientation of release products to be changed from 0 to 90 degrees.

■ EOAT Quick-Change Unit

Unit which allows instant attachment/detachment of end-of-arm tool (EOAT). Enables fully automatic (robot-performed) removal or exchange of EOAT.

Abundant Standard Features

ZD-H Multi Molding Mode   P.03
PAT.P

ZD-H Error-level-specific Alert Sound Notification   P.06

3D-Design Optimization   P.04

Torque Monitoring during Manual Operation   P.06
PAT.P

Operation Log   P.07

ECO Monitor™   P.08
PAT.

ZD-H Product Information Output   P.05

ZD-H Predictive Maintenance   P.07
PAT.
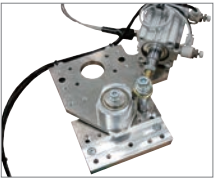
All-axis Optimized Vibration Control   P.04

Vacuum Detection Setting Monitor   P.06

Error Log   P.08

ZD-H Release Side Slow Down   P.05

ZD-H Cycle Monitor   P.08
PAT.P

Auto-Tuning   P.04

Long life mode   P.07

ECO Vacuum™   P.08
PAT.

ZD-H ···Equipped standard only on ZD-H   **PAT.** ...patented   **PAT.P** ...patent pending

Maintenance Management

Allows management of 16 items (history and timing for the next maintenance of each item).

Lead Through Teaching

Operators can add take-out robot motions through one-cycle operations of motion points and timers just like with teaching. This function gives operators the ability to add positions and teach motions to the robot.

Sampling Motion

During auto operation, the robot will release products at a Sample Release position once per every set number of molding cycles.

Wait on Traverse

While the mold is closed, if the robot is unable to wait above the mold (due to obstacles, etc), a second wait position may be designated at another point along the traverse axis.

Product Grip Circuits

Standard equipment: one circuit. Additional circuits are available as options.

Weight Setting

Allows setting a total weight of a molded product(s) and an end-of-arm tool(s), enabling fine vibration control.

Reject Circuit

After receiving a reject signal from the molding machine, robot releases the defective part at a designated position separate from the ordinary parts.

Undercut Motion

Up to 3 additional teaching positions may be programmed in order to take-out products from an under-cut mold.

Stationary Side/Movable Side Selection

Select whether to take-out parts from stationary side or moveable side of mold.

Sprue Grip Circuits

Operator may determine the sprue release position via a mode-select. Standard equipment: one circuit. Additional circuits are available as options.

Production Monitor

Displays logs of production data such as quantity of products handled and cumulative operating hours. It also forecasts time required to produce a target number of products.

Initial Shots Discharge Motion

At the start of auto operation, for a set number of shots, the robot automatically places parts at a designated position separate from the ordinary parts.

Flip on Traverse

Traverse and wrist flip motions are performed simultaneously to shorten the robot's overall cycle time.

Wait for Descent Order

When downstream machinery is not ready, the robot waits for a set interval for the Descent Order signal to turn ON. If it does not receive the Descent Order, the user may mode-select whether the robot immediately error-stops, or if it continues the cycle and releases parts to the reject drop point.

Other Options

* Option not available for all model sizes. Consult a sales agent for more information.

Option Name	Description
Modified vertical stroke	The vertical stroke can be extended.
Additional Vacuum Circuits Add Release Points	Up to 4 additional vacuum circuits (4 additional release positions) may be added to the one standard-equipped circuit.
Additional Product Grip Circuits	1 or 3 optional grip circuits may be added to the single standard-equipped circuit for a total of 2 or 4 product grip circuits.
Pitch Revise Circuit	Allows operator to specify pitch of parts gripped by the end-of-arm tool.
Sprue Cut Circuit	Allows nippers on-board the end-of-arm tool to cut sprues. May not be equipped together with EOAT Gate Cut Circuit option.
EOAT Gate Cut Circuit	Enables cutter within EOAT to approach and cut the gate of a part. May not be equipped together with Sprue Cut Circuit option.
On-Traverse Runner Cut Unit	Cuts runners at an on-traverse position to facilitate placing runners into the granulator.
Soft-Grip Circuit	Adds a pressure reducing valve to soften gripper strength and prevent deformation of molded products.
EOAT Quick Release Fitting	Allows fast and easy manual attachment/detachment of end-of-arm tool (used in a set: robot half and tool half).
Signal Light	Colored lights indicate the status of the robot. Selectable from 2 modes: single tier yellow and single tier red.
Ascent Limit Product Verification	After product take-out, product presence is verified at the ascent limit position by an external limit switch.
Traverse Beam Stanchion*	A support stanchion is installed under extended-length traverse beams, or when extra precision is necessary when releasing parts.
Increased Wrist Flip Torque*	High-power wrist for heavy tools or tools that are mounted with large offsets from center.
Custom Color (customer-specified)	The robot body, control box and operator box are painted with a single color specified by the customer.
Pause for Mold Open	Used for manual ejection of molded parts.
Cleanroom-Grade Grease (customer-specified)	Robot will be lubricated with the customer's choice of cleanroom-approved grease.
Controller Screen Protector Sheet	A cover sheet for protecting the controller touch screen (replacement for the standard-equipped sheet).
Dropped Product Detection	After taking-out products, robot continuously verifies its hold on the products until it finally releases them.
Stop at Ascent Limit after Take-out Failure	If a take-out failure occurs during auto operation, robot ascends to vertical limit and error stops. (Standard robot completes 1 full cycle before stopping.)
Low Air Pressure Detection	Robot displays error and stops immediately if air supply pressure drops below a set value.
SD card	An SD card for data backup.
Communication with Molding Machine	Robot communicates mold numbers and other information with the molding machine to automatically sychronize set-up data.
Bilingual Display	Allows users to select the language displayed on the robot's controller. For more information, please consult your local Yushin sales representative.
Integrated Casing Counter Reset	Interface with stocker unit which, when stocker returns to its home position, instructs robot to reset its casing counter and resume casing from position 1.
8-Pin Stocker Unit Connector	Metal connector which allows robot to interface with Yushin-made stocker unit.
Pre-Gate Cut Wrist Flip	Performs a wrist flip motion before a pre-gate cut motion.

SPECIFICATIONS

Common Specifications

Power supply	Drive method	Control method	Working air pressure	Wrist flip angle
AC200V/220V (50/60Hz) Single Phase	Digital servo motor (3/5 axes)	Microcomputer-controlled	0.49MPa	90°

* Installing some options may affect standard specifications such as stroke length and maximum payload. For more information, please consult your local Yushin sales representative.
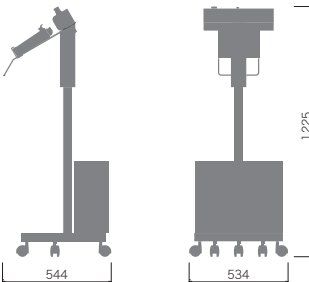
Model ZD2 - H - 2535 D - 17

- Series name
- 2 — Reduced overall height type
- H (High grade) / G (Standard)
- Clamp force of compatible molding machine
  - 0310 (30~100tf)
  - 1025 (100~250tf)
  - 2535 (250~350tf)
  - 3550 (350~500tf)
  - 5080 (500~800tf)
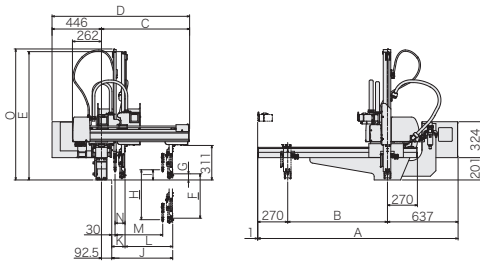- Arm type
  - S Main arm only
  - D Main arm and sub arm
- Traverse stroke Ex) 17: 1700 mm
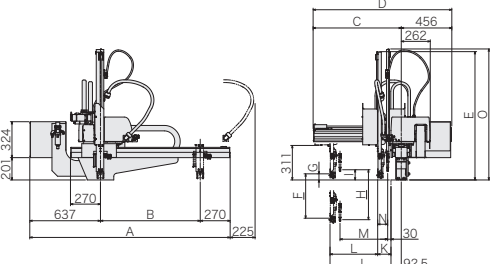
1225 544 534

ZD-H/G-0310S/D

■Non-Operator Side Discharge Direction　　■Operator Side Discharge Direction

Model	Power consumption	Traverse stroke [mm]	Kick stroke [mm] Main arm	Kick stroke [mm] Sub arm	Vertical stroke [mm] Main arm	Vertical stroke [mm] Sub arm	Air consumption [NL/cycle]	Payload [kg]	Clamp force of compatible molding machine [tf]
ZD-H/G-0310S	1.0kVA AC200V×5.0A	900 (1200) (1600)	470	—	(550) 650 (750)	—	1.7 With ECO Vacuum	3	30~100
ZD-H/G-0310D	1.3kVA AC200V×6.5A		430	430	(550) 650 (750)	(600) 700 (800)			

S type: Main arm only　D type: Main arm and sub arm　( ): Modified stroke　Payload includes weight of end-of-arm tool.
Robots with 1201mm or longer traverse stroke require a beam-end support stanchion.

[mm]

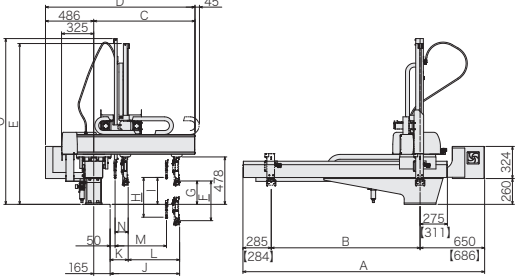| Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
ZD-H/G-0310S	1807 (2107) (2507)	900 (1200) (1600)	795	1251	(1157) 1257 (1357)	(550) 650 (750)	55	—	92	550	80	470	—	—	(1181) 1281 (1381)
ZD-H/G-0310D								(600) 700 (800)			120	430	430	90	

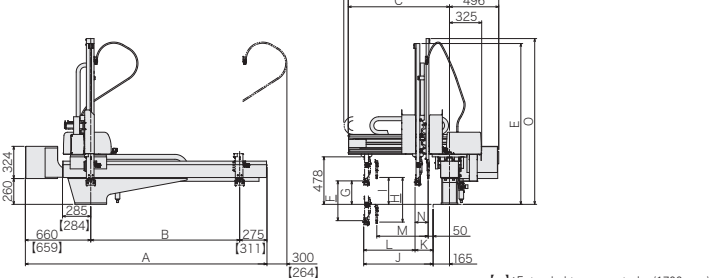| D |
|---|
| 1241* |

*Non-operator side

( ): Modified stroke

ZD-H/G-1025S/D　ZD-H/G-2535S/D

■Non-Operator Side Discharge Direction　　■Operator Side Discharge Direction

【 】: Extended traverse stroke (1700 mm)

Model	Power consumption	Traverse stroke [mm]	Kick stroke [mm] Main arm	Kick stroke [mm] Sub arm	Vertical stroke [mm] Main arm	Vertical stroke [mm] Sub arm	Air consumption [NL/cycle]	Payload [kg]	Clamp force of compatible molding machine [tf]
ZD-H/G-1025S	1.5kVA AC200V×7.5A	1500 (1700) (1900)	578	—	800 (900) (1000) (1200) (1400)	—	2.4 With ECO Vacuum	5 〈7〉	100~250
ZD-H/G-1025D	1.9kVA AC200V×9.5A		518	518		850 (950) (1050) (1250) (1450)			
ZD-H/G-2535S	1.5kVA AC200V×7.5A		728	—	900 (1000) (1200) (1400)	—	2.7 With ECO Vacuum		250~350
ZD-H/G-2535D	1.9kVA AC200V×9.5A		668	668		950 (1050) (1250) (1450)			

S type: Main arm only　D type: Main arm and sub arm　( ): Modified stroke　〈 〉: With increased max. payload option.　Payload includes weight of end-of-arm tool.
Robots with 1701mm or longer traverse stroke require a beam-end support stanchion.

[mm]

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
ZD-H/G-1025S	2435 (2670) (2835)	1500 (1700) (1900)	1021	1517	1620 (1724) (1820) (2060) (2260)	800 (900) (1000) (1200) (1400)	236	—	—	700	122	578	—	—	1670 (1774) (1870) (2070) (2270)
ZD-H/G-1025D								850 (950) (1050) (1250) (1450)	271		182	518	518	132	
ZD-H/G-2535S			1176	1672	1724 (1820) (2060) (2260)	900 (1000) (1200) (1400)		—	—	850	122	728	—	—	1774 (1870) (2070) (2270)
ZD-H/G-2535D								950 (1050) (1250) (1450)	271		182	668	668	132	

D		G		J	K	L	M	N
1507*		〈158〉		〈703〉	〈127〉 187	〈576〉 〈516〉	— 〈516〉	— 〈137〉
1662*				〈853〉	〈127〉 187	〈726〉 〈666〉	〈666〉	〈137〉

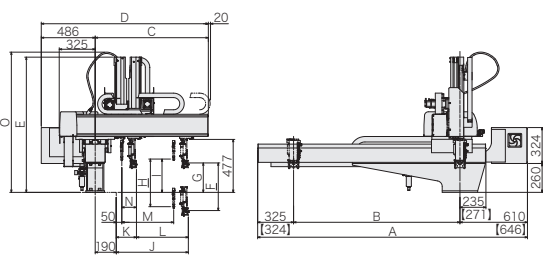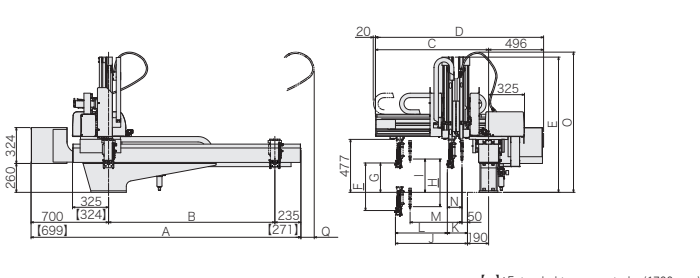*Non-operator side　　( ): Modified stroke　〈 〉: Increased wrist flip torque

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ZD2-H/G-1025S/D　ZD2-H/G-2535S/D

■Non-Operator Side Discharge Direction　　■Operator Side Discharge Direction

【 】: Extended traverse stroke (1700 mm)

Model	Power consumption	Traverse stroke [mm]	Kick stroke [mm] Main arm	Kick stroke [mm] Sub arm	Vertical stroke [mm] Main arm	Vertical stroke [mm] Sub arm	Air consumption [NL/cycle]	Payload [kg]	Clamp force of compatible molding machine [tf]
ZD2-H/G-1025S	1.5kVA AC200V×7.5A	1500 (1700) (1900)	528	—	850 (1100) (1200) (1400)	—	2.5 With ECO Vacuum	5 〈7〉	100~250
ZD2-H/G-1025D	1.9kVA AC200V×9.5A		468	468		850 (950) (1100) (1200) (1400)			
ZD2-H/G-2535S	1.5kVA AC200V×7.5A		678	—	950 (1100) (1200) (1400)	—	2.6 With ECO Vacuum		250~350
ZD2-H/G-2535D	1.9kVA AC200V×9.5A		618	618		950 (1100) (1200) (1400)			

S type: Main arm only　D type: Main arm and sub arm　( ): Modified stroke　〈 〉: With increased max. payload option.　Payload includes weight of end-of-arm tool.
Robots with 1701mm or longer traverse stroke require a beam-end support stanchion.

[mm]

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Q
ZD2-H/G-1025S	2435 (2670) (2835)	1500 (1700) (1900)	1021	1517	1219 (1275) (1347) (1395) (1499)	850 (950) (1100) (1200) (1400)	265	—	—	650	122	528	—	—	1264 (1320) (1392) (1440) (1544)	120[84] 120[84] 120[84] 120[84] 270[234] 270[234]
ZD2-H/G-1025D								850 (950) (1100) (1200) (1400)	300		182	468	468	132		
ZD2-H/G-2535S			1176	1672	1275 (1347) (1395) (1499)	950 (1100) (1200) (1400)		—	—	800	122	678	—	—	1320 (1392) (1440) (1544)	120[84] 120[84] 270[234] 270[234]
ZD2-H/G-2535D								950 (1100) (1200) (1400)	300		182	618	618	132		

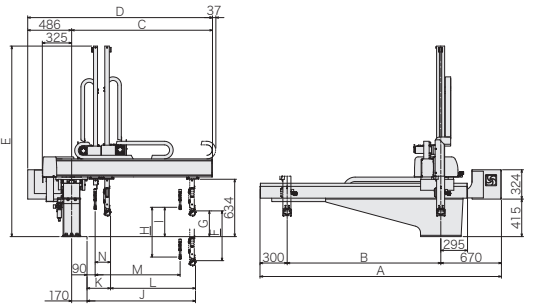| D		G		J	K	L	M	N
1507*		〈158〉		〈650〉	〈136〉 196	〈514〉 〈454〉	— 〈454〉	— 〈146〉
1662*				〈800〉	〈136〉 196	〈664〉 〈604〉	〈604〉	〈146〉

*Non-operator side　　( ): Modified stroke　〈 〉: Increased wrist flip torque　【 】: Extended traverse stroke (1700mm)
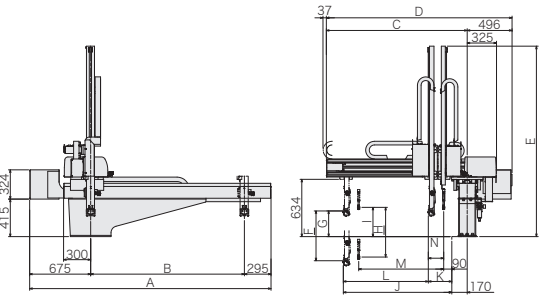
ZD-H/G-3550S/D

■Non-Operator Side Discharge Direction   ■Operator Side Discharge Direction

Model	Power consumption	Traverse stroke [mm]	Kick stroke [mm] Main arm	Kick stroke [mm] Sub arm	Vertical stroke [mm] Main arm	Vertical stroke [mm] Sub arm	Air consumption [NL/cycle]	Payload [kg]	Clamp force of compatible molding machine [tf]
ZD-H/G-3550S	1.9kVA AC200V×9.3A	1700 (1900) (2200)	1100	—	1100 (1300) (1500)	—	4.0 With ECO Vacuum	12 〈17〉	350~500
ZD-H/G-3550D	2.5kVA AC200V×12.3A		940	940		1100 (1300) (1500)			

S type: Main arm only   D type: Main arm and sub arm   ( ): Modified stroke   〈 〉: With increased max. payload option.   Payload includes weight of end-of-arm tool.
Robots with 1901mm or longer traverse stroke require a beam-end support stanchion.

[mm]

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N
ZD-H/G-3550S	2670 (2870) (3170)	1700 (1900) (2200)	1558	2054	2106 (2306) (2506)	1100 (1300) (1500)	284	—	—	1200	100	1100	—	—
ZD-H/G-3550D								1100 (1300) (1500)	324		260	940	940	170

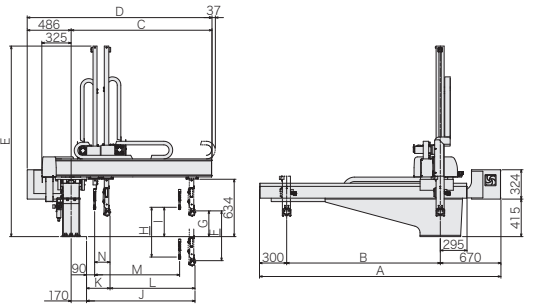| D	G	J	K	L	M	N
2044*	〈225〉	〈1200〉	〈100〉	〈1100〉	—	—
			〈260〉	〈940〉	〈940〉	〈170〉

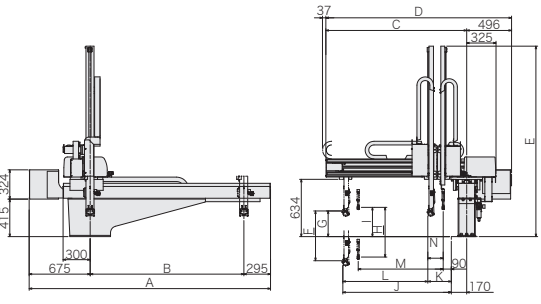*Non-operator side   ( ): Modified stroke 〈 〉: Increased wrist flip torque

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ZD-H/G-5080S/D

■Non-Operator Side Discharge Direction   ■Operator Side Discharge Direction

Model	Power consumption	Traverse stroke [mm]	Kick stroke [mm] Main arm	Kick stroke [mm] Sub arm	Vertical stroke [mm] Main arm	Vertical stroke [mm] Sub arm	Air consumption [NL/cycle]	Payload [kg]	Clamp force of compatible molding machine [tf]
ZD-H/G-5080S	1.9kVA AC200V×9.3A	1700 (1900) (2200) (2500) (3000)	1100	—	1300 (1500) (1700)	—	4.4 With ECO Vacuum	12 〈17〉	500~800
ZD-H/G-5080D	2.5kVA AC200V×12.3A		940	940		1300 (1500) (1700)			

S type: Main arm only   D type: Main arm and sub arm   ( ): Modified stroke   〈 〉: With increased max. payload option.   Payload includes weight of end-of-arm tool.
Robots with 1901mm or longer traverse stroke require a beam-end support stanchion.

[mm]

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N
ZD-H/G-5080S	2670 (2870) (3170) (3470) (3970)	1700 (1900) (2200) (2500) (3000)	1558	2054	2306 (2506) (2706)	1300 (1500) (1700)	284	—	—	1200	100	1100	—	—
ZD-H/G-5080D								1300 (1500) (1700)	324		260	940	940	170

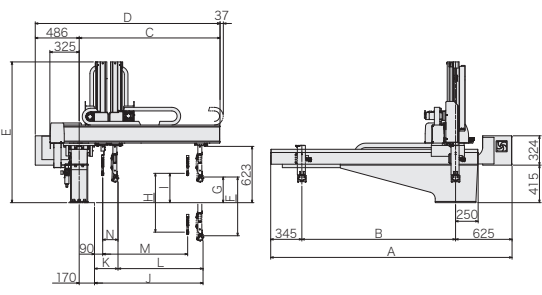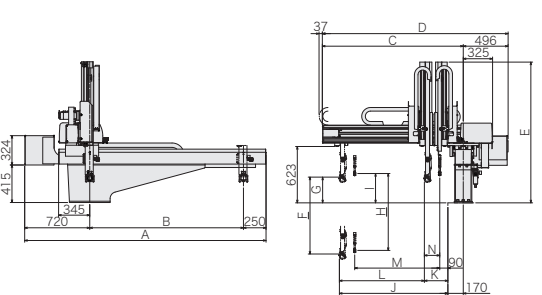| D	G	J	K	L	M	N
2044*	〈225〉	〈1200〉	〈100〉	〈1100〉	—	—
			〈260〉	〈940〉	〈940〉	〈170〉

*Non-operator side   ( ): Modified stroke 〈 〉: Increased wrist flip torque

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ZD2-H/G-3550S/D

■Non-Operator Side Discharge Direction   ■Operator Side Discharge Direction

Model	Power consumption	Traverse stroke [mm]	Kick stroke [mm] Main arm	Kick stroke [mm] Sub arm	Vertical stroke [mm] Main arm	Vertical stroke [mm] Sub arm	Air consumption [NL/cycle]	Payload [kg]	Clamp force of compatible molding machine [tf]
ZD2-H/G-3550S	1.9kVA AC200V×9.3A	1700 (1900) (2200)	1100	—	1100 (1300)	—	4.0 With ECO Vacuum	12 〈17〉	350~500
ZD2-H/G-3550D	2.5kVA AC200V×12.3A		940	940		1100 (1300)			

S type: Main arm only   D type: Main arm and sub arm   ( ): Modified stroke   〈 〉: With increased max. payload option.   Payload includes weight of end-of-arm tool.
Robots with 1901mm or longer traverse stroke require a beam-end support stanchion.

[mm]

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N
ZD2-H/G-3550S	2670 (2870) (3170)	1700 (1900) (2200)	1558	2054	1556 (1656)	1100 (1300)	284	—	—	1200	100	1100	—	—
ZD2-H/G-3550D								1100 (1300)	324		260	940	940	170

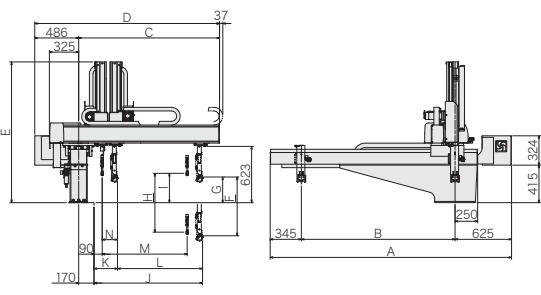| D	G	J	K	L	M	N
2044*	〈225〉	〈1200〉	〈100〉	〈1100〉	—	—
			〈260〉	〈940〉	〈940〉	〈170〉

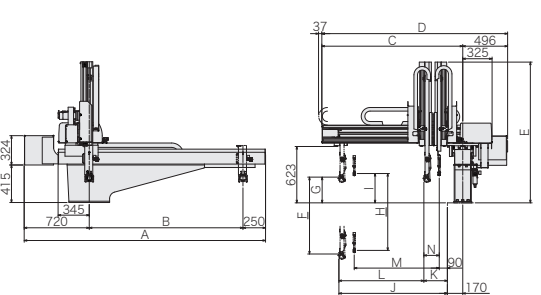*Non-operator side   ( ): Modified stroke 〈 〉: Increased wrist flip torque

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ZD2-H/G-5080S/D

■Non-Operator Side Discharge Direction   ■Operator Side Discharge Direction

Model	Power consumption	Traverse stroke [mm]	Kick stroke [mm] Main arm	Kick stroke [mm] Sub arm	Vertical stroke [mm] Main arm	Vertical stroke [mm] Sub arm	Air consumption [NL/cycle]	Payload [kg]	Clamp force of compatible molding machine [tf]
ZD2-H/G-5080S	1.9kVA AC200V×9.3A	1700 (1900) (2200) (2500) (3000)	1100	—	1300 (1550)	—	4.4 With ECO Vacuum	12 〈17〉	500~800
ZD2-H/G-5080D	2.5kVA AC200V×12.3A		940	940		1300 (1550)			

S type: Main arm only   D type: Main arm and sub arm   ( ): Modified stroke   〈 〉: With increased max. payload option.   Payload includes weight of end-of-arm tool.
Robots with 1901mm or longer traverse stroke require a beam-end support stanchion.

[mm]

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N
ZD2-H/G-5080S	2670 (2870) (3170) (3470) (3970)	1700 (1900) (2200) (2500) (3000)	1558	2054	1656 (1781)	1300 (1550)	284	—	—	1200	100	1100	—	—
ZD2-H/G-5080D								1300 (1550)	324		260	940	940	170

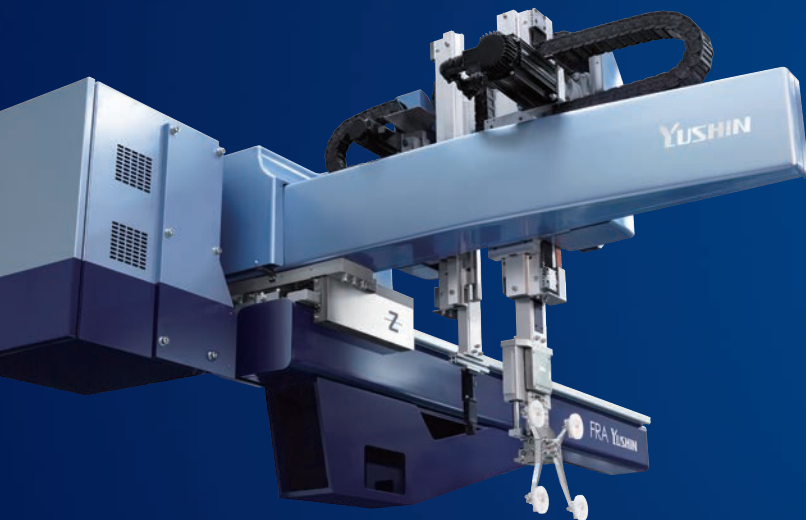| D	G	J	K	L	M	N
2044*	〈225〉	〈1200〉	〈100〉	〈1100〉	—	—
			〈260〉	〈940〉	〈940〉	〈170〉

*Non-operator side   ( ): Modified stroke 〈 〉: Increased wrist flip torque

High End Model **FRA**

provides ZD series with various technologies for vibration control, high-speed, and energy-saving

Take-out Robot **FRA**™

Achieved the world's top-level speed using the design optimization technology.

Design Optimization

Design Optimization is what Yushin calls the practice of applying CAE (Computer-Aided Engineering) to seek the most theoretically optimal form for a robot based on its mechanism and motions. This approach is used to design lighter weight and increased reliability into automobiles and aircraft. By adopting the Design Optimization, the ZD series has achieved a great advancement in vibration control and higher speed.

Shortening Cycle Times

3D-Optimized Kick Frame   `PAT.`

It retains the excellent repeatability of older frame designs, but with reduced weight for even better performance during high-speed operation.

3D-Optimized Kick Frame

Structural optimization

Reformed with slender extremities

Active Vibration Control   `PAT.`

With this feature, the robot senses and analyzes end-of-arm vibration and works actively to neutralize it. It unlocks new levels of high-speed molding without take-out failures by actively eliminating vibration that previous technologies could not touch. It is especially effective on robots with heavy end-of-arm tools or long arm strokes, where it shortens stops pauses needed for vibrations to subside and thereby greatly reduces cycle times.

IoT

Equip even one FRA series robot to change your facility into an Intelligent Factory

NISSEI	Sumitomo Heavy Industries, Ltd.	JSW
Sodick	FANUC	TOYO MACHINERY & METAL
UBE	Shibaura Machine	NIIGATA
KAWATA	MATSUI	
HORAI	USHIO	Futaba	ASKA connect

INTU LINE ™   `PAT.`

INTU LINE can display up to 6 metrics for each linked device.

* Some molding machines and auxiliary devices cannot be connected to INTU LINE.

⚠ To inquire about INTU LINE compatibility with your Yushin robot and other equipment, please contact your Yushin sales agent.

SAFETY

Safety must be the absolute highest priority of any production facility. Yushin built the FRA in strict accord with this belief, incorporating international safety standards into the robot features to maintain workplace safety.
Building safer workplaces is a core concept for the FRA.

ISO/IEC Standards

USA (ANSI)   Europe (EN)   China (GB)   Japan (JIS)

Asia/Oceania (AS)
South Korea (KS)

The Red Dot Design Award, an international design award with a history of more than 60 years, is recognized as one of the three most prestigious awards in the world, along with the iF Design Award in Germany and the International Design Excellence Awards (IDEA) in the USA. The Red Dot Design Award spans three disciplines: product design, brands & communication design, and design concept. Entries are evaluated on nine criteria including innovation, functionality, quality, ergonomics, symbolism, etc.
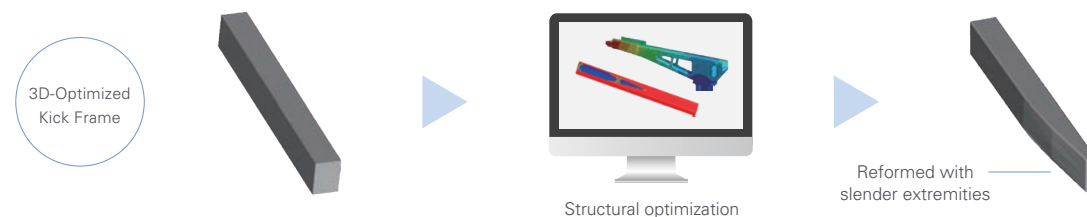
Awards History

The Japan Society of Mechanical Engineers Medal for New Technology in 2018

The 48th MACHINE DESIGN AWARD

The JMF's Energy-Efficient Machinery Award in 2018

red**dot** award 2019 winner