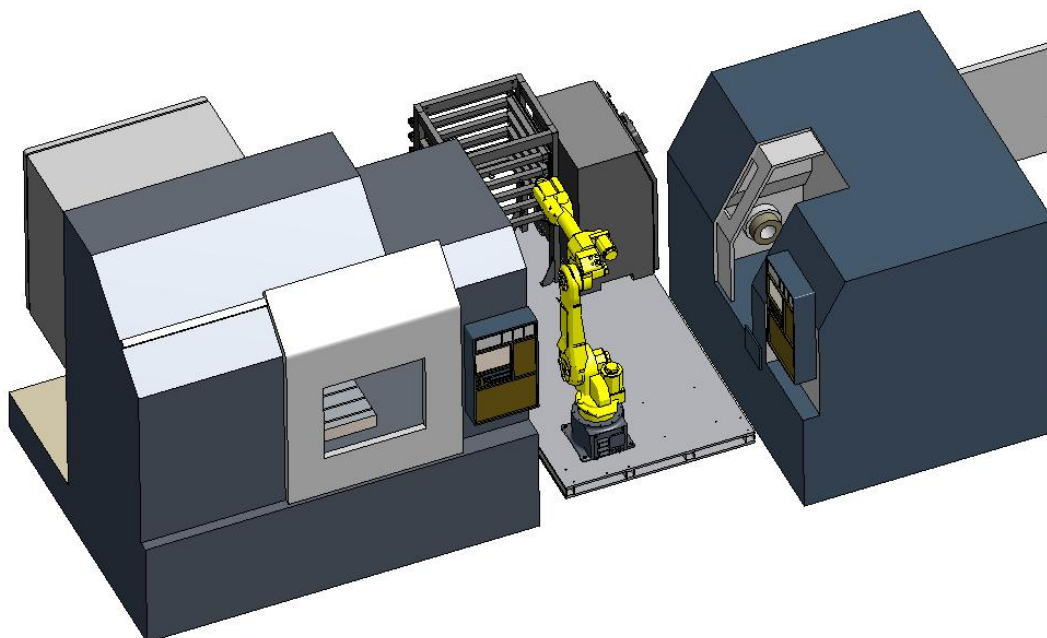




2012 Automation Products and Systems Catalog

2906 21st Avenue
Council Bluffs, IA 51501

712 328 3410

fax 712 328 3630



Company Profile

Ellison Technologies Automation (ETA) is one of the largest FANUC robot system integrators in America. They have designed and implemented comprehensive automation solutions for a broad range of industrial applications, including; welding, palletizing, assembly, material handling, material removal, and part verification. The ETA specialty of Machine tool Load/Unload augments and is integral to the mission of Ellison Technologies; to improve manufacturing productivity through the application of advanced manufacturing technologies. ETA and Ellison engineers have collaborated in developing some of America's most innovative and productive Manufacturing solutions. Having handled a broad range of products from mail to railroad car wheels and axles, ETA is ready to assist our customer's in tackling their next Productivity Challenge.



Company Mission Statement

The employees of Ellison Technologies Automation use technology and innovation to make our customers more productive and lower their manufacturing costs. These factors will be used to measure the quality of our efforts and provide for continual improvement.

Partial List of Markets Served

Aerospace • Defense • Automotive • Medical •
Electronics • Metals • Plastics • Consumer Goods •
Food/Beverage • Glass • Health/Beauty • Paper Goods •
Warehousing

Partial List of Customers Served

Bobcat • Caterpillar, Inc. • Sauer Danfoss • James River
• Trane • ConAgra • John Deere • Boeing • Goodyear •
Becton-Dickinson • American Railcar • Precision Machine

• Products and Services

- Robotic Palletizing Systems
- Robotic Machine Load/Unload Systems
- Robotic Welding Systems
- Robot Transport Units
- Material Removal/Deburring
- Robotic Vision
- Electrical Control Panels
- Indexing Tables
- Positioners
- Headstocks/Tailstocks
- PLC Programming
- Robot Programming
- Engineering Studies
- Operator Training
- System Installation
- Field Service
- Safety Evaluations
- Preventative Maintenance
- Transport units over 150 feet long.

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END OF ARM INTERFACE	Section 5
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RIBS, Robotic Integrated Bending System	Section 7
SYSTEM ACCESSORIES	Section 8
STANDARD LEAN MACHINE SYSTEMS	Section 9
CUSTOM SYSTEMS, COMPONENTS & CONTROLS	Section 10
PRICE LIST	Section 11
APPENDIX	Section 12

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GRIPPER SYSTEMS INDEX

PGN - 2-Finger-Parallel-Grippers:

SING Series	Page 1.1
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BTB Series	Page 1.1
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PZN - 3-Finger-Centric-Grippers:

SING Series	Page 1.2
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BTB Series	Page 1.2
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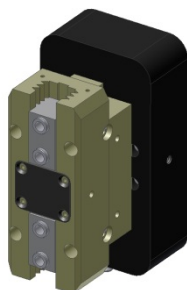
Gripper Finger Blanks:	Page 1.3
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Example of Gripper Identification Number

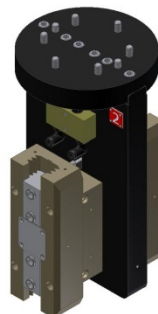
Series	Application	Model	Size	Options						
<u>SING</u>	-	<u>710</u>	-	<u>PGN</u>	-	<u>125</u>	-	<u>B</u>	-	<u>S</u>
Mounting	Robot	Model of gripper	Size of gripper	Blow-off	Spring housing					



SING

Common Single (SING) EOAT configurations

SING-LRMate-PGN-80-Plus/100-Plus (0371100)
SING-M6-PGN-160-Plus (0371104)
SING-M10-PGN-200-Plus (0371108)
SING-M16-PGN-200-Plus (0371108)
SING-M710-PGN-380-Plus (0371107)
SING-M900-PGN-380-Plus (0371107)
SING-R2000-PGN-380-Plus (0371107)



BTB

Gripper stroke Rec. workpiece weight

0.315"/0.394"	4.63# / 7.28#
0.63"	18.08#
0.984"	29.76#
0.984"	29.76#
1.772"	103.6#
1.772"	103.6#
1.772"	103.6#

Common Back-to-Back (BTB) EOAT configurations

BTB-LRMate-PGN-80-Plus/100-Plus (0371101/0371102)
BTB-M6-PGN-125-Plus (0371103)
BTB-M10-PGN-160-Plus (0371104)
BTB-M16-PGN-200-Plus (0371105)
BTB-M710-PGN-300-Plus (0371106)
BTB-M900-PGN-380-Plus (0371107)
BTB-R2000-PGN-380-Plus (0371107)

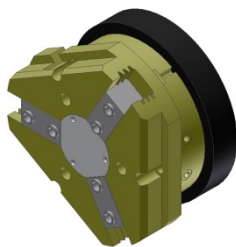
Gripper stroke Rec. workpiece weight

0.315"/0.394"	4.63# / 7.28#
0.512"	11.90#
0.984"	29.76#
0.984"	29.76#
1.378"	66.14#
1.772"	103.6#
1.772"	103.6#

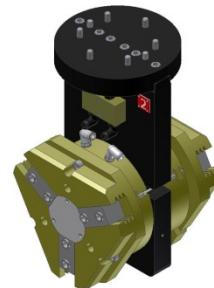


Example of Gripper Identification Number

Series	Application	Model	Size	Options						
<u>BTB</u>	-	<u>900</u>	-	<u>PZN</u>	-	<u>300</u>	-	<u>B</u>	-	<u>S</u>
Mounting	Robot	Model of gripper	Size of gripper	Blow-off	Spring housing					



SING



BTB

Common Single (SING) EOAT configurations

SING-LRMate-PZN-125-Plus (0303313)
 SING-M6-PZN-125-Plus (0303313)
 SING-M10-PZN-160-Plus (0303314)
 SING-M16-PZN-200-Plus (0303315)
 SING-M710-PZN-240-Plus (0303316)
 SING-M900-PZN-300-Plus (0303317)
 SING-R2000-PZN-300-Plus (0303317)

Gripper stroke Rec. workpiece weight

0.512"	34.17#
0.512"	34.17#
0.630"	66.14#
0.984"	78.26#
1.180"	110.2#
1.378"	159.8#
1.378"	159.8#

Common Back-to-Back (BTB) EOAT configurations

BTB-LRMate-PZN-100-Plus (0303312)
 BTB-M6-PZN-100-Plus (0303312)
 BTB-M10-PZN-125-Plus (0303313)
 BTB-M16-PZN-160-Plus (0303314)
 BTB-M710-PZN-200-Plus (0303315)
 BTB-M900-PZN-300-Plus (0303317)
 BTB-R2000-PZN-300-Plus (0303317)

Gripper stroke Rec. workpiece weight

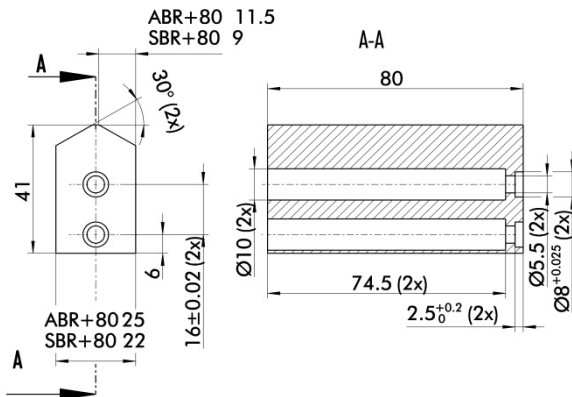
0.394"	19.84#
0.394"	19.84#
0.512"	34.17#
0.630"	66.14#
0.984"	78.26#
1.378"	159.8#
1.378"	159.8#

PGN / PZN Finger Gripper Centric Blanks

Gripper finger blanks are available in aluminum and steel.

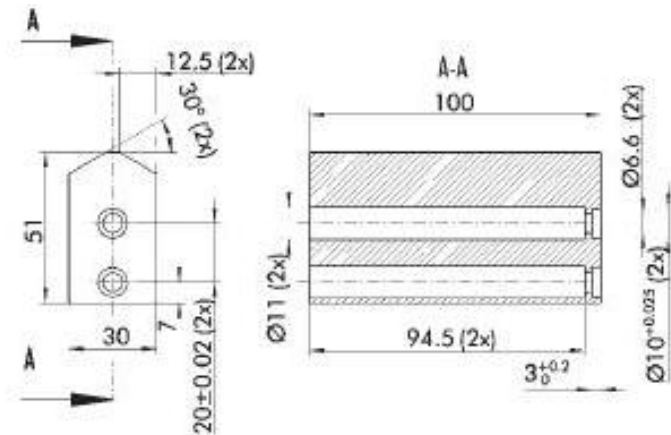
Gripper finger blanks are sold in quantities of one and include screws.

Ellison Technologies Automation can supply gripping solutions for your special applications. Please contact your local ETA representative for further information.



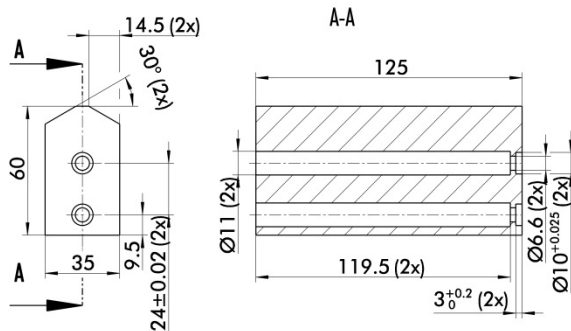
SIZE 080 FINGER BLANK

ALUMINIUM	0300011
STEEL	0300021



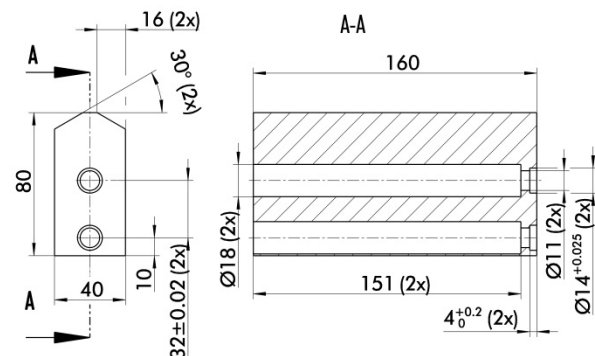
SIZE 100 Plus FINGER BLANK

ALUMINIUM	0300012
STEEL	0300022



SIZE 125 Plus FINGER BLANK

ALUMINIUM	0300013
STEEL	0300023



SIZE 160 Plus FINGER BLANK

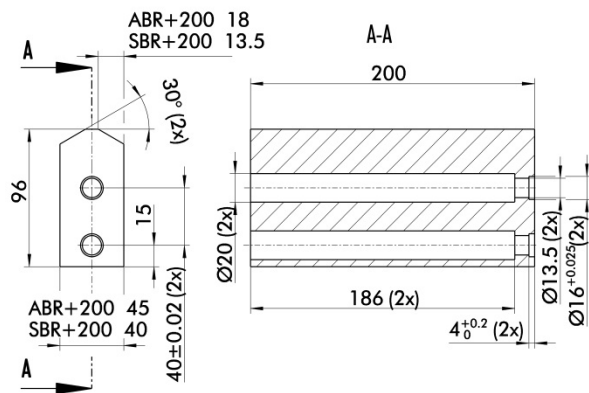
ALUMINIUM	0300014
STEEL	0300024

PGN / PZN Finger Gripper Centric Blanks

Gripper finger blanks are available in aluminum and steel.

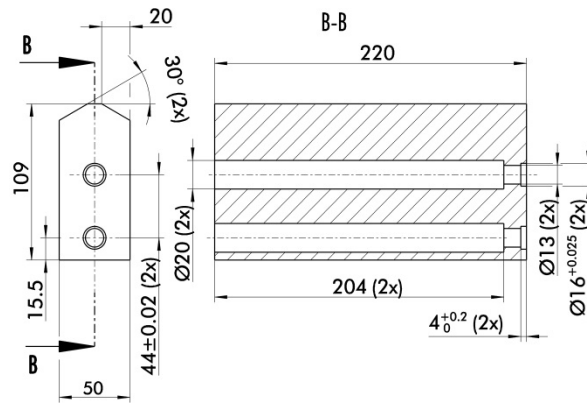
Gripper finger blanks are sold in quantities of one and include screws.

Ellison Technologies Automation can supply gripping solutions for your special applications. Please contact your local ETA representative for further information.



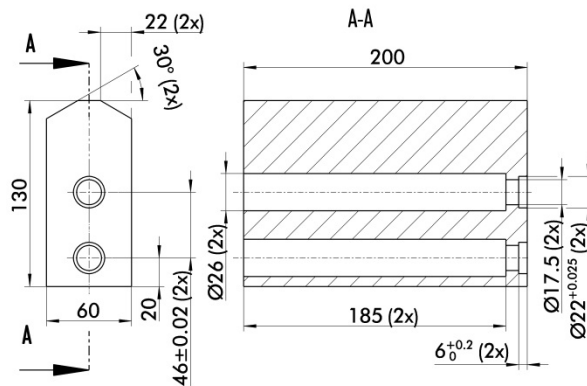
SIZE 200 Plus FINGER BLANK

ALUMINIUM	0300015
STEEL	0300025



SIZE 240 Plus FINGER BLANK

ALUMINIUM	0300017
STEEL	0300027



SIZE 300 Plus FINGER BLANK

ALUMINIUM	0300016
STEEL	0300026

ROBOT PLATES & RISERS INDEX

Robot Base Plates

Series: RBP

Page 2.1

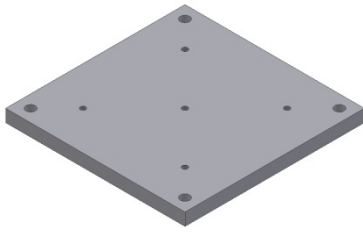
Robot Risers

Series: RR

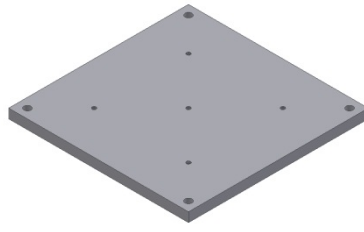
Page 2.2

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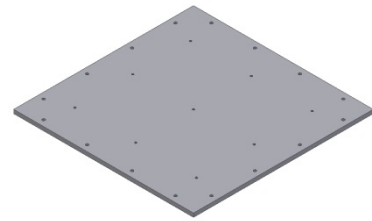
ROBOT BASE PLATES



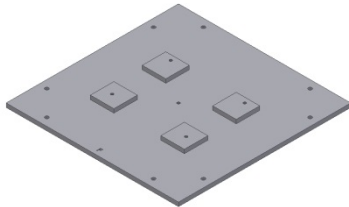
RBP-M10



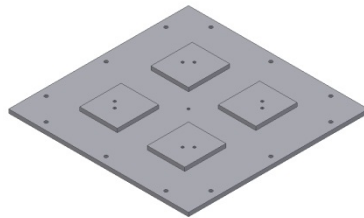
RBP-M20



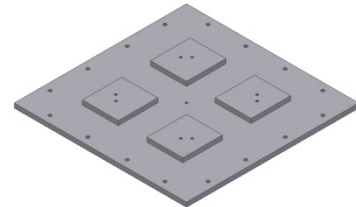
RBP-410



RBP-420 / M710



RBP-R2000

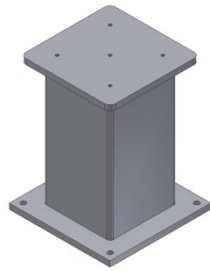


RBP-M900

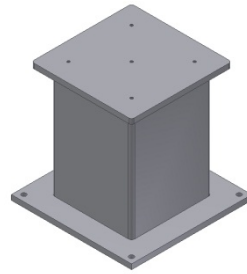
FOR USE WITH FANUC ROBOTICS MODEL	ETA PART NUMBER	OVERALL DIMENSIONS
ARC Mate 100i, M-6i	RBP-M6	18" x 18" x 1-1/4"
M-16i, M-16iL ARC Mate 120i, ARC Mate 120iL	RBP-M16	24" x 24" x 1-1/4"
M-410iB	RBP-410	60" x 60" x 1-1/4"
M-710i, M-710iW, M-710iB45	RBP-M420-M710	44" x 44" x 2"
R-2000i	RBP-R2000	48" x 48" x 2"
S-900i	RBP-M900	48" x 48" x 2-1/4"

- Eye-bolts provided with base plates
- Standard color is dark gray

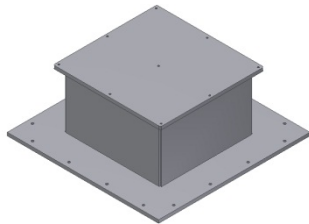
ROBOT RISERS



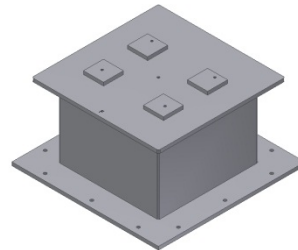
RR-M10-XX



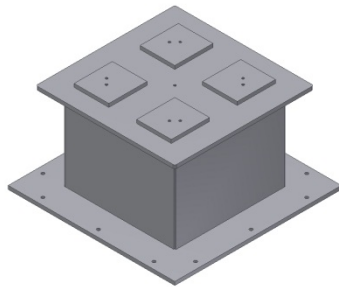
RR-M20-XX



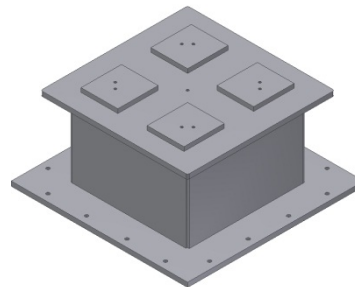
RR-M410-XX



RR-M420-M710-XX



RR-R2000-XX



RR-M900-XX

FOR USE WITH FANUC ROBOTICS MODEL	ETA PART NUMBER	OVERALL DIMENSIONS
Arc Mate 100i, M-10	RR-M10-XX	18" x 18" x XX"
M-20, Arc-Mate 120i, ARC-Mate 120iL	RR-M20-XX	24" x 24" x XX"
M-710i, M-710iW, M-710iB45	RR-M410-XX	60" x 60" x XX"
M-410i, M-410iHS, M-410iHW	RR-M420-M710-XX	44" x 44" x XX"
S-900i, S-900iH, S-900iL, S-900iW	RR-M900-XX	48" x 48" x XX"
S-430i, S-430iF, S-430iW, R-2000i/165F	RR-R2000-XX	48" x 48" x XX"

➤ Standard color is dark gray

➤ Eye-bolts provided for risers without fork lift pockets

POSITIONING EQUIPMENT

Headstock/Tailstocks

HSTS-1000	Page 3.1
HSTS-1500	Page 3.1
HSTS-2000	Page 3.2
HSTS-3000	Page 3.2

Tilt Rotate Tables

TRT-1500	Page 3.3
TRT-3500	Page 3.3

Robotic Swing Boom Positioner

RSBP-ArcMate 120	Page 3.4
RSBP-M710	Page 3.6

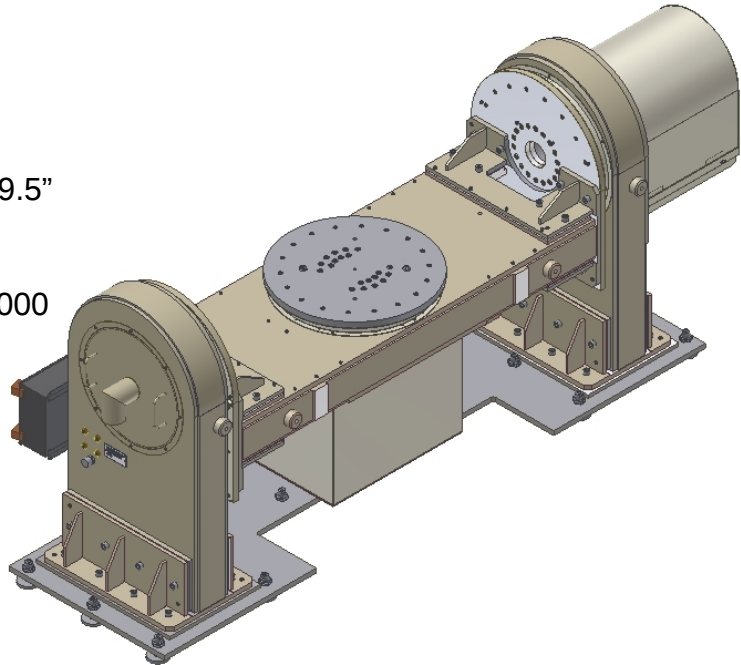
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POSITIONING EQUIPMENT-HEADSTOCK/TAILSTOCK

SERIES: HSTS-1000

Unit specifications

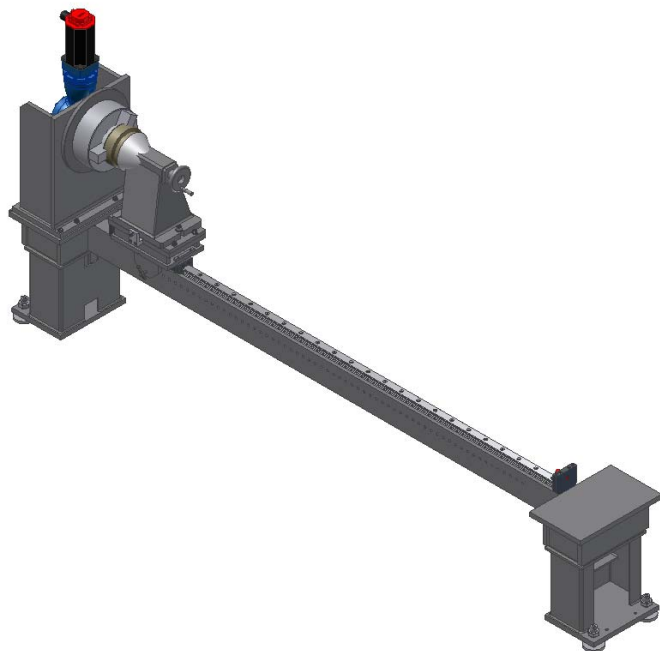
- 360° of Rotation
- Overall dimensions 141" x 36" x 59.5"
- work piece weight, 1,000 lbs
- Designed for FANUC Alpha 22i, 3,000 rpm servo motors.



SERIES: HSTS-1500

Unit specifications

- Overall dimensions: 112" x 16" x 76"
- Work piece weight, 1,500 lbs.
- 360° of Rotation
- Swing radius: 14-1/2"
- Adjustable Idler tailstock.

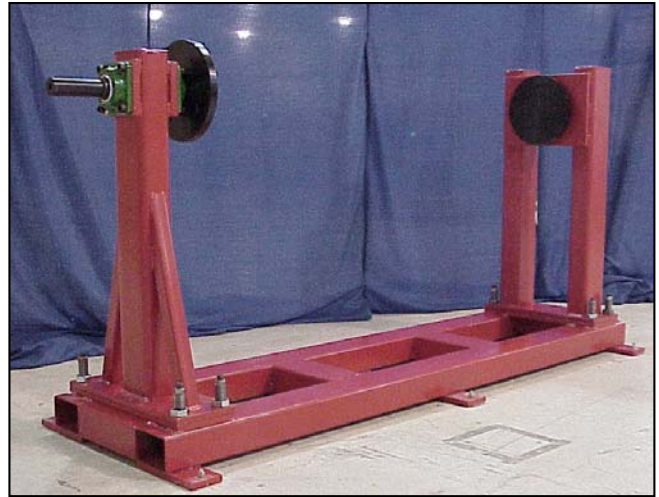


POSITIONING EQUIPMENT-HEADSTOCK/TAILSTOCK

SERIES: HSTS-2000

Unit specifications

- 12" Diameter dial plate
- 600 Amp. rotary ground
- 360° of Rotation
- Common base (32"x96")
- 72" between dial plates
- Accuracy of +/- 0.0003" per inch of radius
- Load capacity of 2000lbs @ 6" off of center
- Overall dimensions 32"x112-3/4"
- Swing radius of 30"
- Requires FANUC Robotics alpha 12 motor or equivalent



HSTS-2000 shown with custom color

SERIES: HSTS-3000

Unit specifications

- 16.5" Diameter dial plate
- 600 Amp. rotary ground
- 360° of Rotation
- Common base (40"x140")
- 110" between dial plates
- Accuracy of +/- 0.0003" per inch of radius
- Load capacity of 3000lbs @ 6" off of center
- Standard color is dark gray
- Overall dimensions 40"x162"
- Swing radius of 30"
- Requires FANUC Robotics alpha 12 motor or equivalent



POSITIONING EQUIPMENT-TILT ROTATE TABLES

SERIES: TRT-1500

Unit specifications

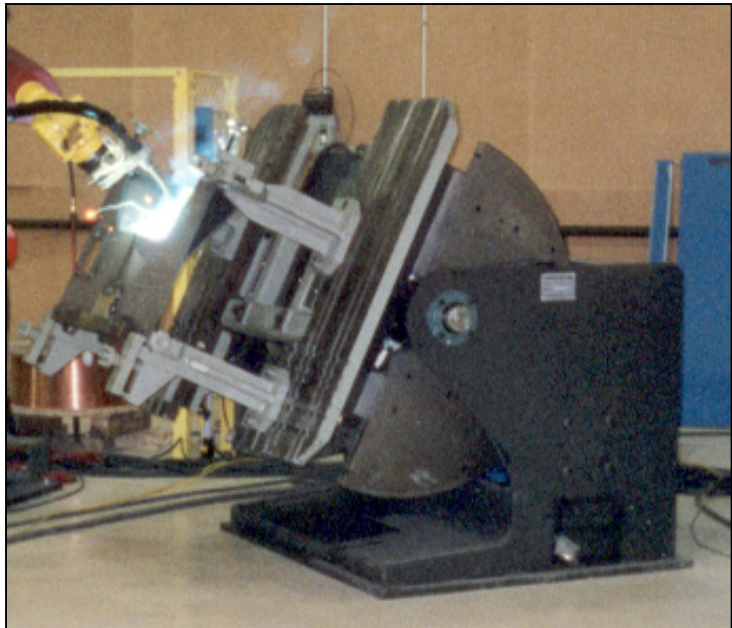
- Table size of 30" square by 1/2" thick
- Load capacity up to 1500 pounds (6" off of face plate and 6" off of center of rotation)
- Table rotation of 360° with +/- 0.001" of repeatability @ 6" from center
- Tilt rotation of 135° with zero backlash
- 600 Amp. rotary ground 360° of Rotation
- Requires 2 FANUC Alpha 12-2000 servo motors
- Standard color is dark gray
- Cable entry provided on both sides of base



SERIES: TRT-3500

Unit specifications

- Table size of 60" square by 1/2" thick
- Load capacity up to 3500 pounds (6" off of face plate and 6" off of center of rotation)
- Table rotation of 360° with +/- 0.001" of repeatability @ 6" from center
- Tilt rotation of 135° with zero backlash
- 600 Amp. rotary ground 360° of Rotation
- Requires 2 FANUC Alpha 12-2000 servo motors
- Standard color is dark gray
- Cable entry provided on both sides of base



ROBOTIC SWING BOOM POSITIONER

RSBP-ArcMate120

The robotic swing boom positioner is used for mounting a FANUC robotics ArcMate120i or 120iL welding robot in an inverted position. The boom drive can utilize a FANUC auxiliary axis motor allowing it to be used as an extended axis of the robot.

The advantage of the robotic swing boom positioner system is an increased robot work envelope and the ability to move the robot clear of fixturing to ease loading / unloading of large parts, welding and many custom applications.



Robotic swing boom positioner shown integrated into weld system with FANUC Robotics Arcmate 120i and part positioner



Robotic swing boom positioner ready for integration

Application

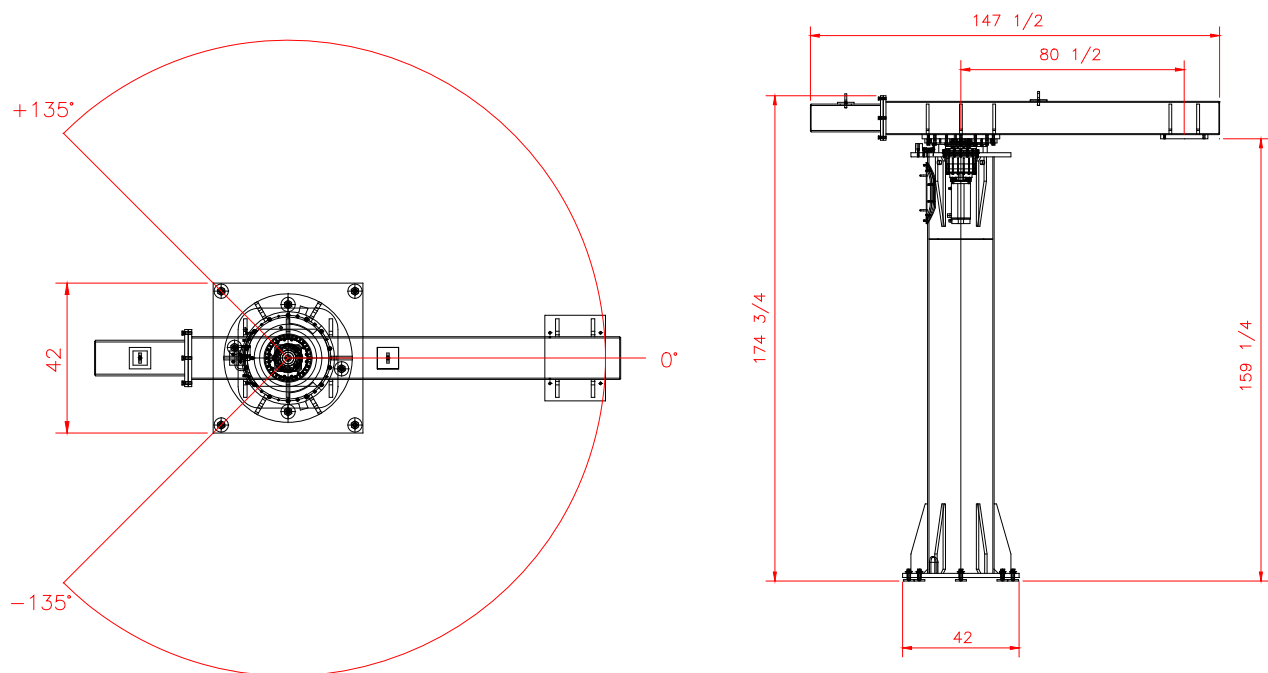
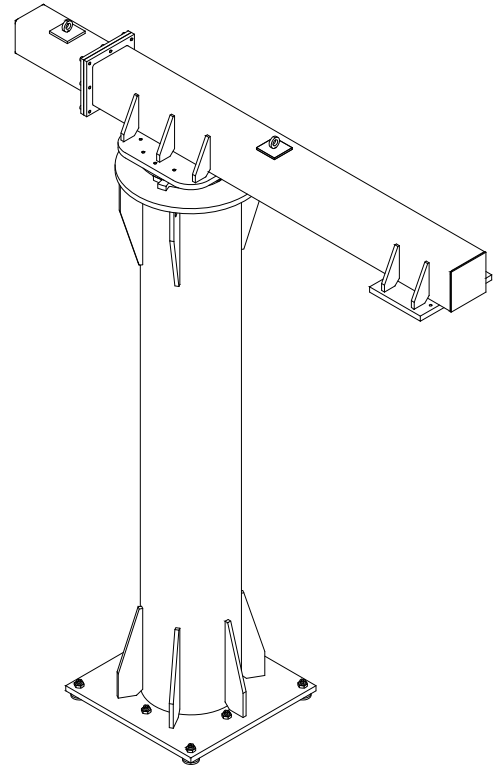
The robotic swing boom positioner is ideal for applications where a fixed overhead robot mounting structure would interfere with the ability to load / unload parts into the fixturing.

The 300°, +/-150° of rotation also allows the swing boom positioner to be used in multi-stationed weld systems.

ROBOTIC SWING BOOM POSITIONER

Specifications

- 270 Degrees of rotation
- Overall height of 174-3/4"
- Robot mounting surface height of 159-1/4"
- Repeatability at a swing radius of 80-1/2" is +/- .002"
- Accuracy of .003"
- Maximum speed of 6° /second
- Shipping weight of 5400 lbs
- Fanuc robotics Alpha 22 2000rpm auxiliary axis motor or equivalent required
- Flooring requirement of 8" thick concrete for tower mount area
- Standard color is dark grey



ROBOTIC SWING BOOM POSITIONER

RSBP-M710iC/20 Long Arm Robot

The robotic swing boom positioner is used for mounting a FANUC robotics M710iC/20 Long Arm robot in an inverted position. The boom drive can utilize a FANUC auxiliary axis motor allowing it to be used as an extended axis of the robot.

The advantage of the robotic swing boom positioner system is an increased robot work envelope and the ability to move the robot clear of fixturing to ease loading / unloading of large parts, welding and many custom applications.



Specifications

- 300°, +/- 150° of rotation
- Overall height of 175"
- Robot mounting surface height of 159-1/2"
- Repeatability at a swing radius of 153-3/4" is +/-0.004"
- Accuracy of 0.003"
- Maximum speed of 2 rpm's/12°/second
- Shipping weight of 7450 lbs
- Fanuc robotics Alpha 22, 3000rpm auxiliary axis motor is required
- A minimum flooring thickness of 8" is required over the entire mounting area
- Standard color is dark grey

ELECTRICAL CONTROLS

Standard Panels:

Standard Panel Selector	page 4.1
EPL1B	page 4.2
EPL2B	page 4.3
EPL3B	page 4.4
WIPL1	page 4.5
WIPL2	page 4.6

Panel Accessories

OS3B	page 4.7
CA0001	page 4.7
WSOB6	page 4.7

Machine Interfaces:

MI16	page 4.8
MI32	page 4.8

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ELECTRICAL CONTROLS-STANDARD PANELS

STANDARD PANEL SELECTOR

Overview:

All standard panels are designed to be used with FANUC Robotics robots with RIA compliant controllers. All enclosures are NEMA 12 rated and finished in ANSI/ASA 61 gray.

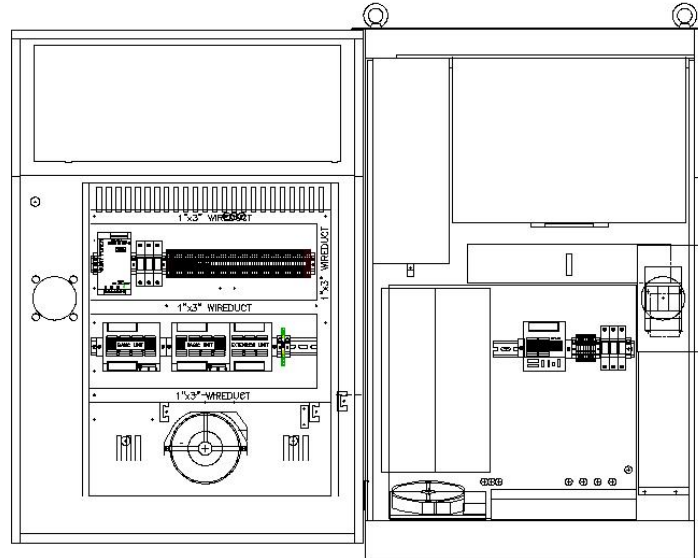
PART #	EPL1B	EPL2B	EPL3B	WIPL1	WIPL2
UOP	NO	YES	YES	terminated	
I/O included	8 in / 8 out	16 in / 16 out	16 in / 16 out	terminated	terminated
Max. optional I/O	16 in / 16 out	24 in / 24 out	48 in / 48 out	0	0
Light tower	NO	YES	YES	NO	YES
Door mounted op.station	NO	YES	YES	NO	YES
Max. number of optional external operator stations	0	3	6	1	3
Disconnect	NO	YES	YES	NO	YES
24vDC power supply	YES (5A@24VDC)	YES (20A@24VDC)	YES (20A@24VDC)	YES (5A@24VDC)	YES (20A@24VDC)
Max # of optional motor starters	0	2	4 *	0	2
Max # of optional variable speed drives	0	2	4 *	0	2
Stand alone panel	NO +	YES	YES	NO+	YES

Legend:

- * A maximum of four 1-1/2Hp motors can be ran from this panel.
- + Optional "B" size controller mount available.
- ^ Panels capable of supporting external operator stations have 15' of quick disconnect cable exiting the panel for each station.

ELECTRICAL CONTROLS-STANDARD PANELS

LEVEL 1 PANEL (with model B I/O) EPL1B



Description:

Low cost interface solution utilizing FANUC Robotics Model "B" I/O. This panel supports a single robot. A 5 amp 24VDC power supply is provided to power I/O modules and customer provided I/O devices. 16 I/O are provided (8 inputs / 8 outputs) and an option can be purchased for an additional 8 inputs / 8 outputs. The panel has expansion space to accommodate additional customer provided relays and fusing. An optional mounting bracket is available for mounting to the rear of a FANUC Robotics "B" size controller. To minimize cost the UOP, light tower and external operator stations have been omitted. This panel will not support zoning, motor starters or drives.

Applications:

- Machine load/unload systems using a single robot, FANUC Robotics model "B" I/O and gravity inbound/outbound systems or inbound/outbound systems controlled by other sources.
- Deburring systems using a single robot, FANUC Robotics model "B" I/O, air powered deburr tools and gravity inbound/outbound systems or inbound/outbound systems controlled by other sources
- Material handling and dispensing systems using a single robot, FANUC Robotics model "B" I/O with conveyor and pump motors controlled by other systems

Features:

- 24VDC 5amp power supply
- Fanuc model "B" I/O
- Ferruled wire ends
- UL/CSA listed components

Options:

- Additional 8inputs / 8 outputs (P/N EPL1XP)
- FANUC Robotics "B" size controller mount (P/N EPL1MB)

ELECTRICAL CONTROLS-STANDARD PANELS

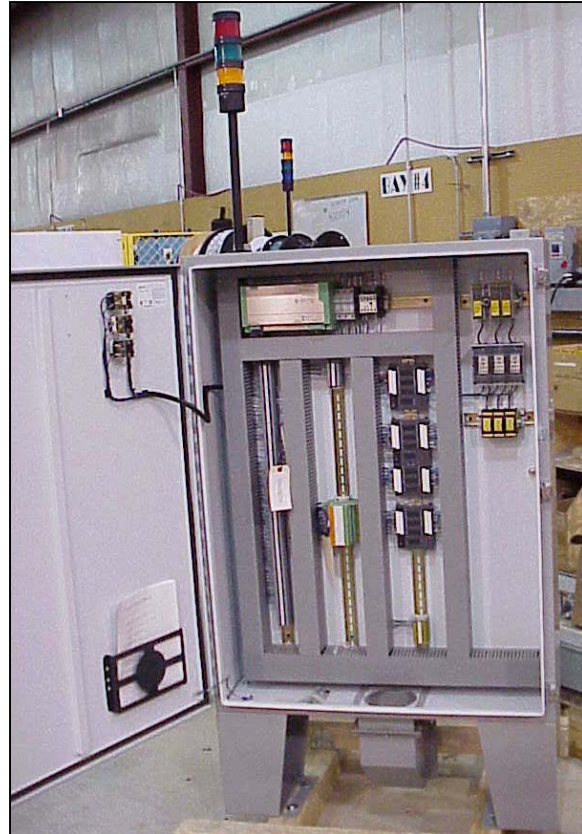
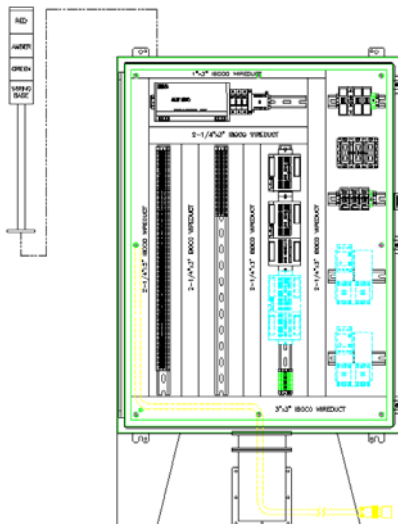
LEVEL 2 PANEL (with model B I/O) EPL2B

Description:

This free-standing panel supports a single robot. A door mounted disconnect and operator station are standard on this panel. A 20 amp 24VDC power supply is provided to power I/O modules and customer provided I/O devices. 8 UOP inputs and 8UOP outputs are included along with 32 I/O (16 inputs / 16 outputs) are wired to labeled terminals. This panel is capable of supporting one optional external 3 button operator station and it has 15' of quick disconnect cable exiting the panel for that station. Options can be purchased for an additional 16 inputs / 16 outputs, up to 2 motor control systems and a remote mounted "plug and play" E-stop,Reset, Hold/Start operator station. The panel has expansion space to accommodate additional customer provided relays and fusing.

Applications:

- Machine load/unload systems using a single robot, FANUC Robotics model "B" I/O and robot controlled inbound/outbound powered conveyors.
- Deburring systems using a single robot, FANUC Robotics model "B" I/O and robot controlled inbound/outbound powered conveyors or motor powered deburring wheels.
- Palletizing systems using a single robot, FANUC Robotics model "B" I/O and robot controlled inbound/outbound powered conveyors.



Features:

- Defeatable disconnect
- Door mounted E-Stop, Reset, Hold/Start operator station
- Status indicating light tower
- FANUC Robotics model "B" I/O
- Ferruled wire ends
- UL/CSA listed components

Options:

- Additional 16 inputs / 16 outputs (P/N EPIOEX32)
- Up to 2 motor starter packages (P/N MSSTD single direction) (P/N MSREV bi-directional)
- External E-Stop, Reset, Hold/Start operator station (P/N OS3B)
- 2KVA Transformer

ELECTRICAL CONTROLS-STANDARD PANELS

Weld Interface Panel Level 1 WIPL1

Description:

Low cost interface panel for FANUC Robotics welding robots. This panel supports a single robot. A 5 amp 24VDC power supply is provided to power I/O and customer provided I/O devices. CRM2A and CRM2B connections are terminated and connected back to the robot controller via the two included cables. The panel has expansion space to accommodate additional customer provided relays and fusing. An optional mounting bracket is available for mounting to the rear of a FANUC Robotics "A" size controller. To minimize cost there is no light tower and only one external operator station can be added. This panel will not support zoning, motor starters or drives.

Applications:

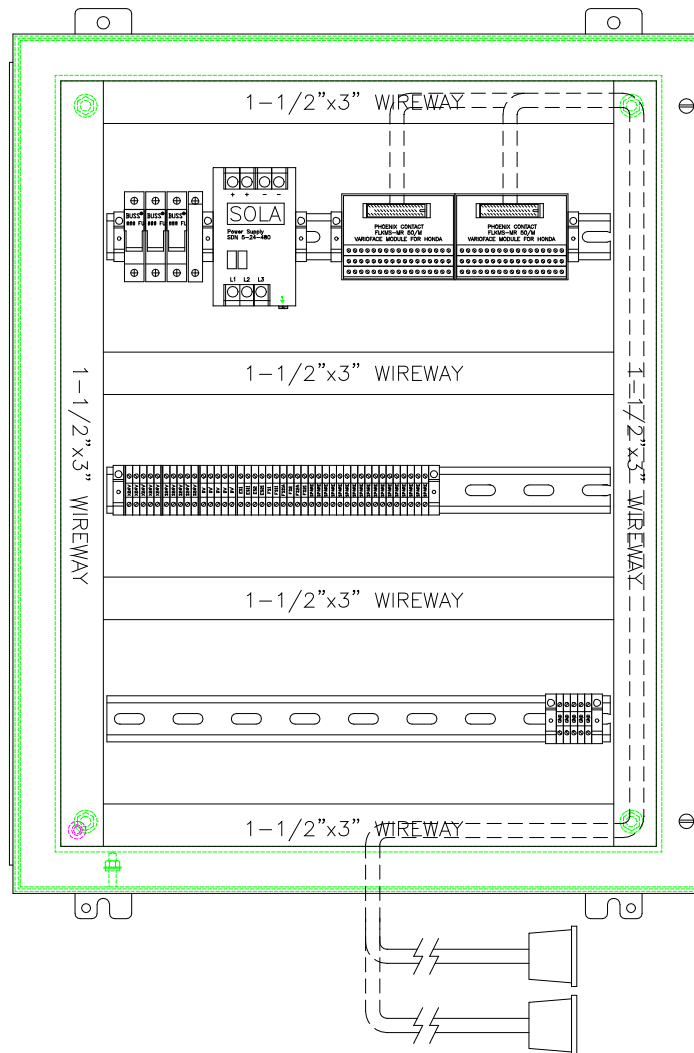
- Weld systems utilizing FANUC Robotics welding robots.

Features:

- 24VDC 5amp power supply
- Ferruled wire ends
- UL/CSA listed components

Options:

- FANUC Robotics "A" size controller mount (P/N EPL1MB)
- Weld panel operator station (P/N WSOB6)



ELECTRICAL CONTROLS-STANDARD PANELS

Weld Interface Panel Level 2 WIPL2

Description:

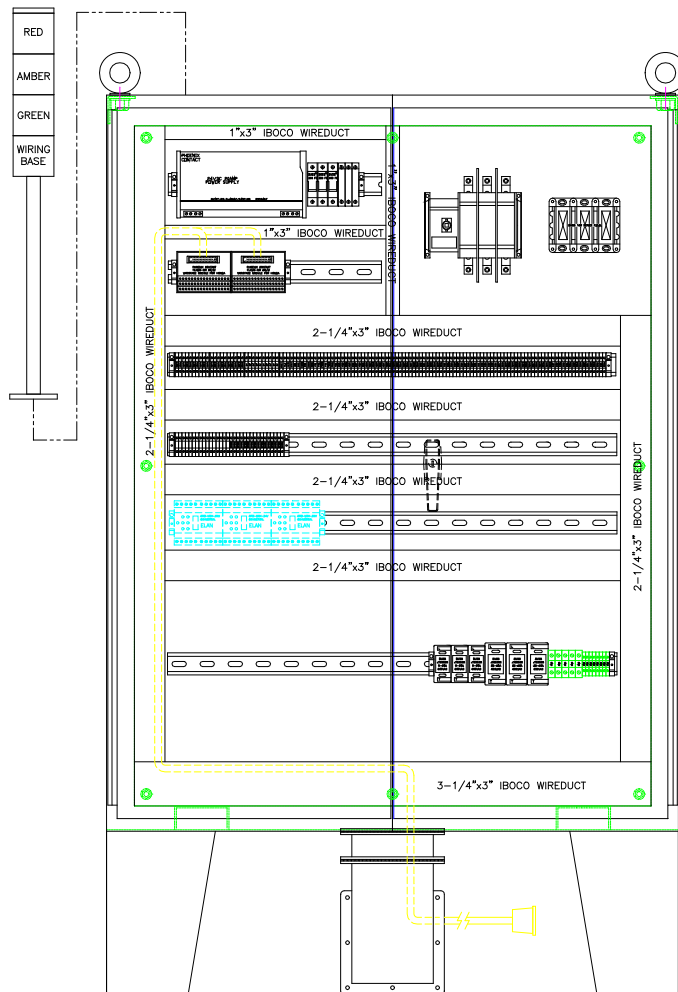
This free-standing panel supports a single FANUC Robotics welding robot and a single weld power supply. A door mounted disconnect, door mounted operator station and status indicating light tower are standard on this panel. A 20 amp 24VDC power supply is provided to power I/O I/O devices and safety equipment. CRM2A and CRM2B I/O connections are all terminated and connected back to the robot controller via the two included cables. The panel has expansion space to accommodate up to 3 safety zone muting relays and 2 optional motor control packages. An option for a 120vac panel mounted transformer is also available. The panel has expansion space to accommodate additional customer provided relays and fusing.

Applications:

- Welding systems using a single FANUC Robotics robot, and a weld power supply not requiring more than 60 amps at 480v.

Features:

- Defeatable disconnect
- Door mounted E-Stop, Reset, Hold/Start operator station
- Status indicating light tower
- Ferruled wire ends
- UL/CSA listed components
- 20amp 24vdc power supply
- CRM2A and CRM2B cables
- Weld power supply fusing
- Robot controller fusing



Options:

- Up to 2 motor starter or drive packages (P/N MSSTD single direction) (P/N MSREV bi-directional) (P/N VSFDR freq. drive)
- 2KVA 120VAC transformer and fusing (P/N 2K120V)
- Weld system operator stations (3 maximum) (P/N WSOB6)
- Safety zone muting (3 maximum)

ELECTRICAL CONTROLS-PANEL ACCESSORIES

OPERATOR STATION OS3B

Description:

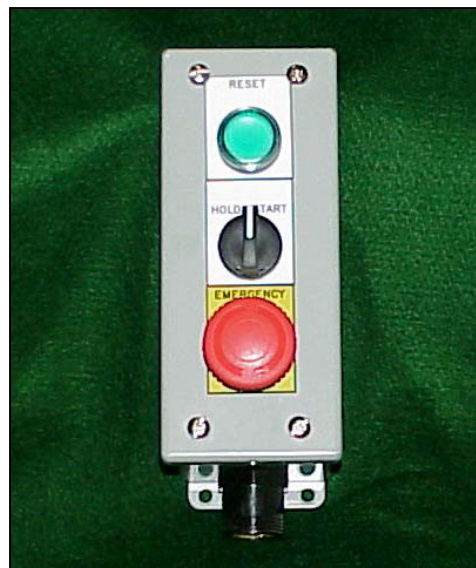
Operator station with Hold/Start, Reset and Emergency stop functions.

Applications:

- External operator station for EPL2B and EPL3B

Standard features include:

- Equipped with a connector for quick integration
- UL/CSA listed components



OPERATOR STATION EXTENSION CABLE CA0001

Description:

Male / Female extension cable 20' long. For use with OS3B operator station. Cable has an environmental rating of IP68, NEMA 6P. The cable is UL recognized and CSA certified.



WELD PANEL OPERATOR STATION WSOB6

Description:

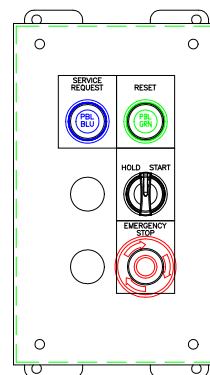
Operator station with Robot Service Request, Hold/Start, Reset and Emergency stop functions plus expansion space for two more switches.

Applications:

- External operator station for WIPL2

Standard features include:

- UL/CSA listed components



ELECTRICAL CONTROLS-MACHINE INTERFACE

16 PT. MACHINE INTERFACE MI16



Description:

This interface designed to mount inside the machine tool electrical cabinet. FANUC Robotics model “B” I/O is utilized to allow this remote mounting capability. This model has eight 24vDC current sinking inputs and eight relay isolated outputs.

Applications:

- Interfacing to machine tools.
- Interfacing to gauging stations.
- Interfacing to grinders.

Standard features include:

- Ferruled wire ends
- FANUC Robotics model “B” I/O
- UL/CSA listed components

32 PT. MACHINE INTERFACE MI32



Description:

This interface designed to mount inside the machine tool electrical cabinet. FANUC Robotics model “B” I/O is utilized to allow this remote mounting capability. This model has sixteen 24VDC current sinking inputs and sixteen relay isolated outputs.

Applications:

- Interfacing to machine tools.
- Interfacing to gauging stations.
- Interfacing to grinders.

Standard features include:

- Ferruled wire ends
- FANUC Robotics model “B” I/O
- UL/CSA listed components

END OF ARM INTERFACE

EOA Interface

EOAI-2 and EOAI-3	Page 5.1
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EOA Interface Valves

EOAI-2000 Valves	Page 5.2
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EOAI-3000 Valves	Page 5.2
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Pneumatic Hose	Page 5.2
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Cables and Splitters	Page 5.3
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Protective Covering	Page 5.3
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ELECTRICAL CONTROLS-END OF ARM INTERFACE

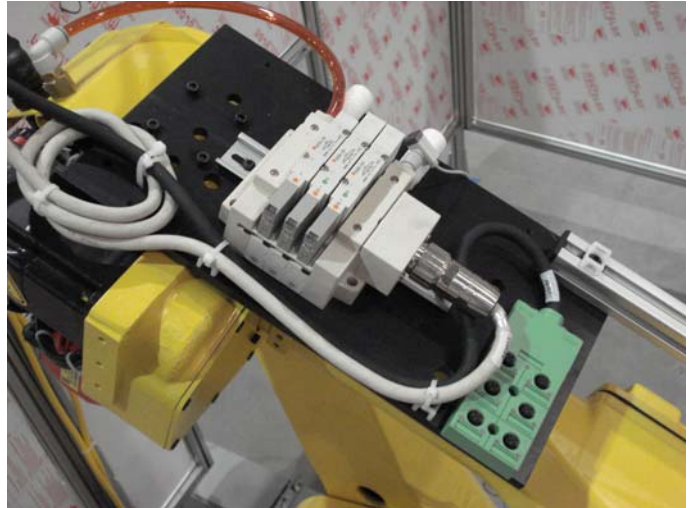
EOAI-2 and EOAI-3 Interface

Description:

This end of arm tooling interface breaks out the I/O from the circular 24 pin end of arm connector. The outputs are pre-wired to a four station pneumatic valve manifold and the inputs are pre-wired to a quick disconnect input block. The interface is available in two styles one style uses a SMC 2000 series pneumatic valve manifold (EOAI-2) the second uses a SMC 3000 series pneumatic valve manifold (EOAI-3). Valves, sensors and sensor extension cables not included.

Applications:

- Fits Fanuc LR Mate series robots
- Fits Fanuc M-10iA series robots
- Fits Fanuc M-20iB series robots
- Fits Fanuc M-710iC series robots
- Fits Fanuc R-2000iB series robots
- Fits Fanuc M-420iA series robots
- Fits Fanuc M-900iA series robots



EOA Interface shown with optional valves and sensor cables integrated onto a robot

EOAI-2000 Specifications:

- SMC one touch fittings for 6mm OD hose
- Minimum operating pressure of 22 PSI
- Maximum operating pressure of 150 PSI
- Double occupied M12 input connections

EOAI-3000 Specifications :

- SMC one touch fittings for 8mm OD hose
- Minimum operating pressure of 22 PSI
- Maximum operating pressure of 150 PSI
- Double occupied M12 input connections

Features:

- SMC one-touch fittings

ELECTRICAL CONTROLS-END OF ARM INTERFACE

Valves and Valve Accessories for EOAI-2000

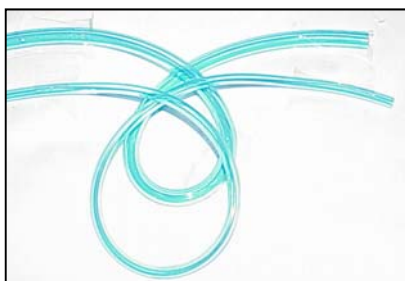
2000 Series Description	2000 Series Part Number	2000 Series Diagram
Single solenoid spring return	PV0102	
Double solenoid spring centered all ports blocked in neutral	PV0104	
Double solenoid spring centered all ports open in neutral	PV0105	

Valves and Valve Accessories for EOAI-3000

3000 Series Description	3000 Series Part Number	3000 Series Diagram
Single solenoid spring return	PV0114	
Double solenoid spring centered all ports blocked in neutral	PV0116	
Double solenoid spring centered all ports open in neutral	PV0117	

Pneumatic Hose

This flexible polyurethane tubing has an operating temperature range of - 40° F to + 165° F. The tubing is highly flexible and works well in robotic applications. Colors are red, black and yellow.



Size	Part Number
8mm O.D. x 100', Red	PFM0053
8mm O.D. x 100', Black	XPFM0052
8mm O.D. x 100', Yellow	XPFM0054
10mm O.D. x 100', Red	XPFM0056
10mm O.D. x 100', Black	XPFM0055
10mm O.D. x 100', Yellow	XPFM0057
12mm O.D. x 100', Red	XPFM0059
12mm O.D. x 100', Black	XPFM0058
12mm O.D. x 100', Yellow	XPFM0060

ELECTRICAL CONTROLS-END OF ARM INTERFACE

Cables and Cable splitters

Splitters are used to consolidate two inputs into a single cable. Splitters are required to access both inputs on double occupied input blocks such as the one used on the FEOAI-2 and FEOAI-3 end of arm interfaces.

The cable we offer for end of arm is a high-flex male/female double ended cord set. This cable is oil and abrasion resistant.

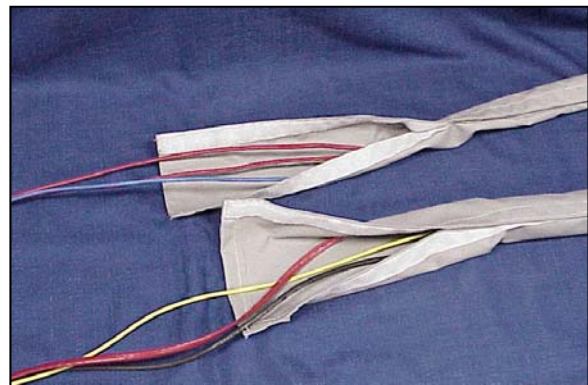
Description	Part Number
M8-M8 to M12 Splitter	ES0195
M12-M12 to M12 Splitter	ES0194
3 meter M/F M12 Cable	ES0143



Protective Covering

Protective rugged 2-ply coated polyester fire resistant covers help prevent snagging and keep the cables and hoses that run down the robot arm to the end of arm tooling grouped neatly. The hook and loop fastener material allows for easy installation and maintenance. Material can be trimmed to required length.

Size	Part Number
6"wide x 10' long	WG0088
8"wide x 10' long	WG0087



RTU, Robot Transportation Unit

Standard RTU	page 6.1
Heavy Duty RTU	page 6.1
Examples of RTU options	page 6.2

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RTU, Robot Transportation Unit

Standard RTU

The standard Robot Transport Unit (RTU) is used to increase a robot's work envelope and efficiency. Travel lengths are available in any length. The standard RTU is designed for robots with a 300kg capacity or less. The speed of the standard RTU is 711 mm/second (An optional high speed RTU is available). The Standard RTU has an repeatability of +/- 0.005".

Ellison Technologies Automation can customize your standard RTU to you application needs. Review the following examples of RTU options to make your RTU more efficient.



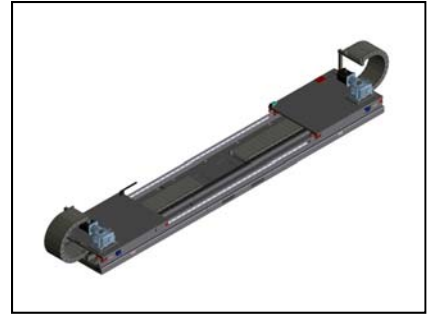
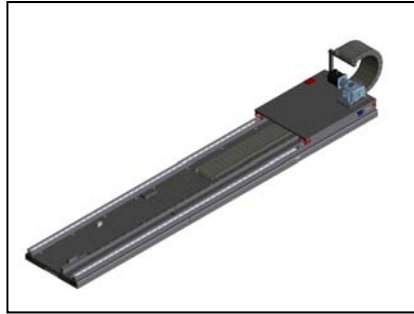
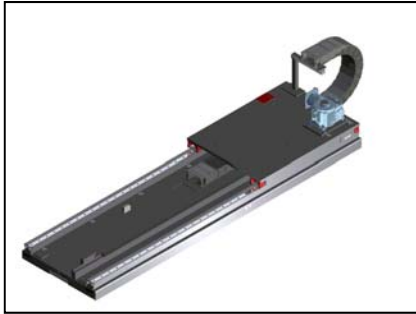
Heavy Duty RTU

Like the standard Robot Transport Unit, the Heavy Duty RTU is used to increase a robot's work envelope and efficiency. Travel lengths are available in any length. The standard RTU is designed for robots with a 300kg to 900 kg capacity. The speed of the Heavy Duty RTU is 711 mm/second (An optional high speed heavy duty RTU is available). The heavy duty RTU has an repeatability of +/- 0.005".

Ellison Technologies Automation can customize your Heavy Duty RTU to you application needs. Review the following examples of RTU options to make your RTU more efficient.



RTU, Robot Transportation Unit

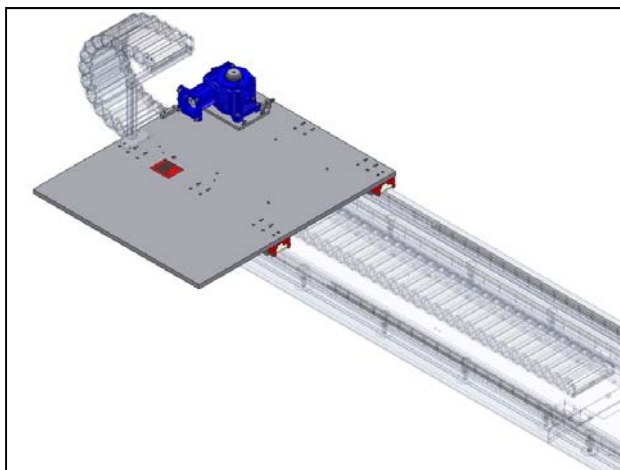


* RTU's shown without way cover belts to help show details.

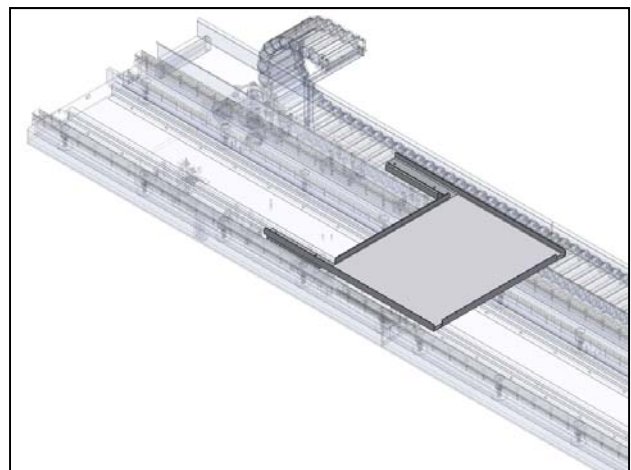
Any length of RTU is possible. The standard RTU section is 12' long. Custom RTU sections can be made so that the combination of single standard or multiple standard sections combined with custom lengths allow any total length you require.

The standard Robot Transport Unit (RTU) is used to increase a robot's work envelope and efficiency. Travel lengths are available in any length. The standard RTU is designed for robots with a 300kg capacity or less. The speed of the standard RTU is 711 mm/second (An optional high speed RTU is available). The Standard RTU has an repeatability of +/- 0.005".

Ellison Technologies Automation can customize your standard RTU to you application needs. Review the following examples of RTU options to make your RTU more efficient.



Cantilevered carriage plate with six linear bearings.

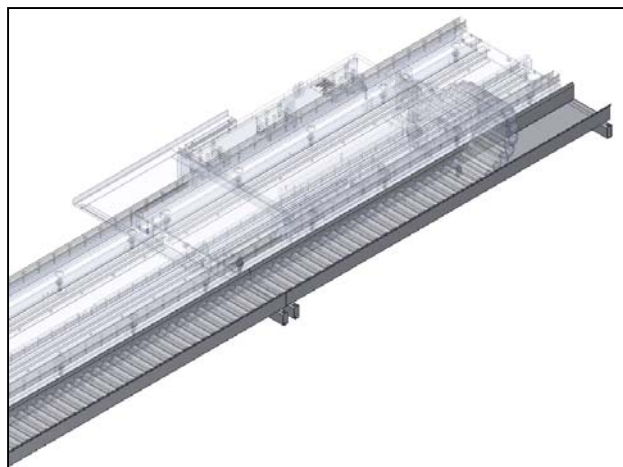


Carriage plate with a drip pan attached

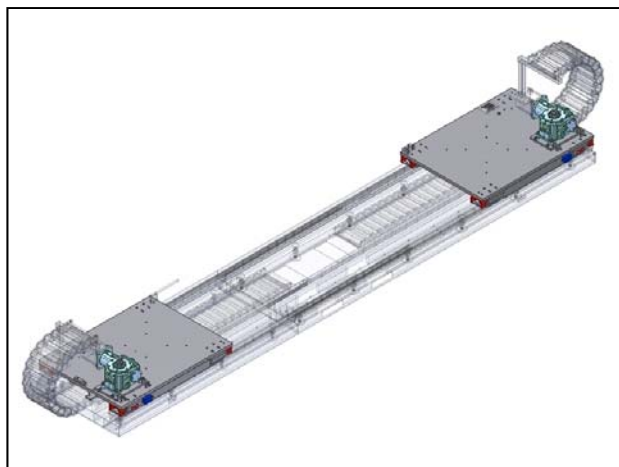
RTU, Robot Transportation Unit

Examples of RTU options (continued) .

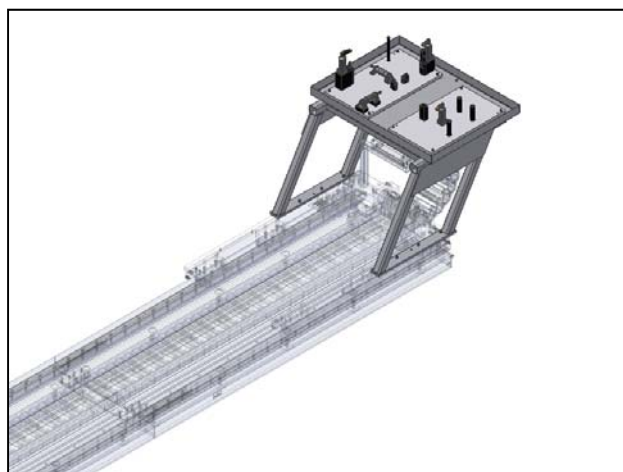
Ellison Technologies Automation can provide many customized options for your RTU. A few of the options we have made for past customers are shown below.



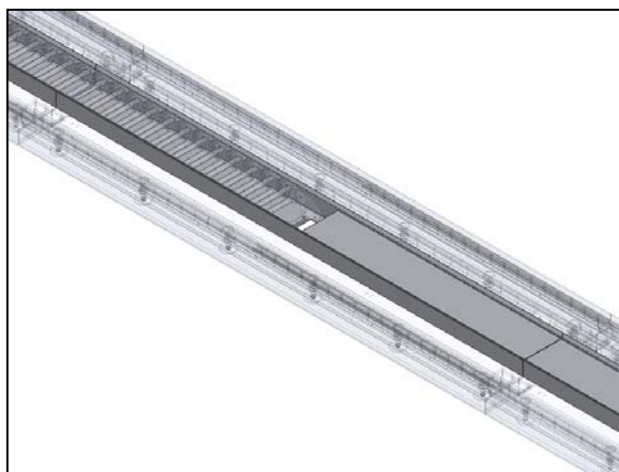
Side mounted Igus cable track.



RTU with dual carriage plates.



Work piece carrier mounted on the RTU carriage plate.



RTU with center Igus trays.

* RTU's are shown without some details hidden to help show details.

RIBS, Robotic Integrated Bending Solution

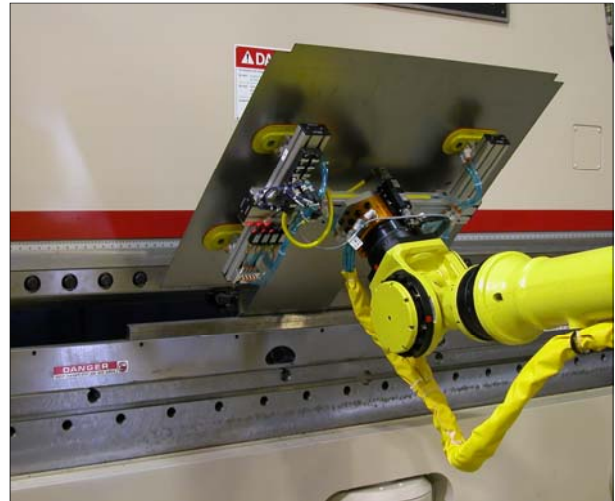
RIBS System Introduction	page 7.1
RIBS System examples	page 7.2
Examples of RIBS System components	page 7.3

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RIBS, Robotic Integrated Bending Solution

RIBS

The Robotically Integrated Bending Solution (RIBS) brings a robot into coordinated motion with a press brake. With seamless integration provided by SimulEasy bending software, the user can create robot and press brake programs within minutes. Seamless integration means that you can focus on making parts, not programming machines. By following the part through the entire bending sequence, RIBS is the first system capable of full sheet metal escort. That means the robot gripper holds on to the part the entire time, which substantially increases the bend quality and throughput. Sheet metal separation and loading are also completely automated. This system solution can be installed on to a down-acting CNC press-brake. It is flexible, easy-to-use and designed to meet your automation needs. In addition, thanks to the SimulEasy bend software, the user can create the robot and press brake program with little difficulty. This reduces your system idle time substantially while increasing the system throughput and profitability.



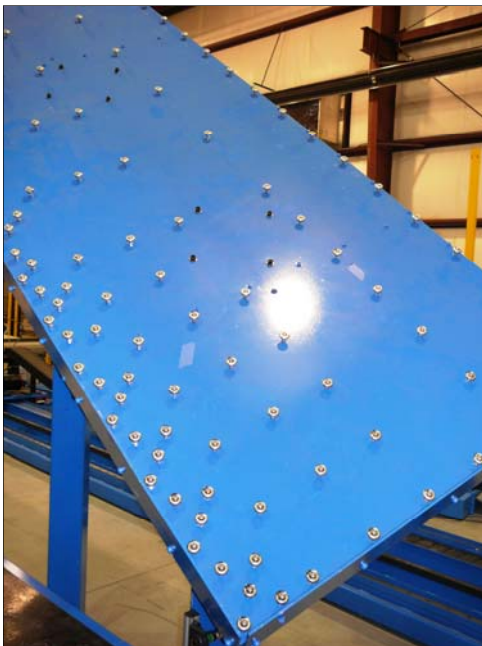
View of interchangeable RIBS tooling



RIBS, Robotic Integrated Bending Solution



A typical RIBS system with inbound / outbound conveyors, re-grip stand and Robot tool storage station.



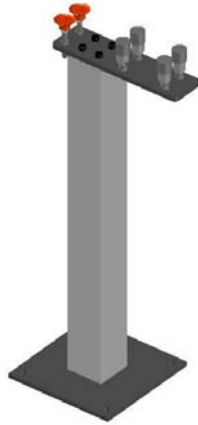
An example of a ball transfer qualifying table.



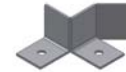
A Robot tool storage station with multiple robot tools for different applications.

RIBS, Robotic Integrated Bending Solution

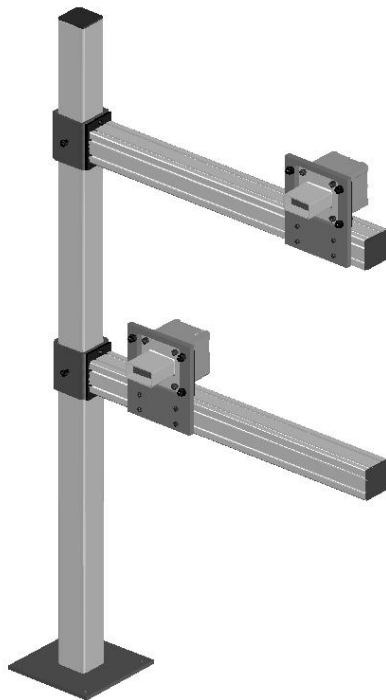
Examples of RIBS components



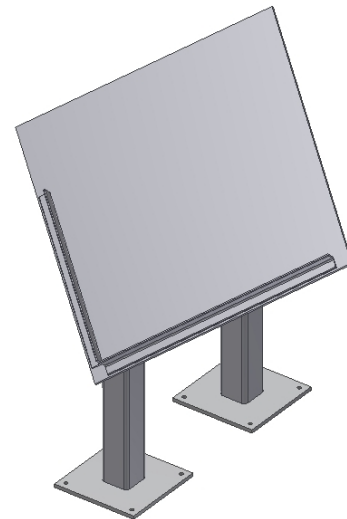
A small re-grip stand with vacuum and magnetic holding.



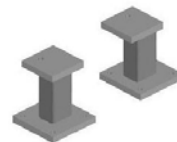
Left and right pallet locators.



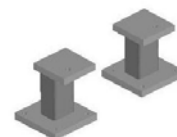
A large magnetic turn-over stand.



Qualifying stand.



Press risers.



SYSTEM ACCESSORIES

RG-10 Re-grip stand	Page 8.1
CFD-10 Constant Force Device	Page 8.1
O.F. Conveyors	Page 8.2
Welding System Accessories	
Nozzle cleaning station	Page 8.3
Wire cutting station	Page 8.3
Anti-spatter applicators	Page 8.3
Weld Accessory stands	Page 8.4
ACWD12 - 1,000lb Wire dispenser	Page 8.4
ACWD10 - 1,000lb Wire dispenser	Page 8.4
Camera Stand CS-10	Page 8.5
Tool Balancer TB-10	Page 8.5

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SYSTEM ACCESSORIES

REG RIP STAND RG-10

Unit specifications

- Overall height of 58"
- 18"x18" floor mount plate
- Pneumatic requirement of 80psi
- Includes cylinder retracted sensor
- Dual solenoid detented valve
- Sensor and valve wiring terminated in junction box
- Standard color is deep bronze
- Steel V-block and Nylon Plunger clamp for lo-mar clamping

Part capacities

- Maximum part diameter of 5-1/2"
- Minimum part diameter of 3"
- Maximum part length of 3"
- Minimum part length of 1/2"



CONSTANT FORCE DEVICE CFD-10

A constant force device (CFD) is used primarily in material finishing applications (deburring and buffing). This device compensates for wear of the grinding or buffing medium eliminating the need for complex robot programs.

Unit specifications

- Maximum travel of 2"
- 24vdc PNP sensors for maximum and minimum travel
- Single 4 pin M12 electrical connection
- Pneumatic requirement of 80psi
- Low pressure pneumatic regulator included
- Overall dimensions 3-1/2"x13"x15-5/8"
- Rugged construction

Capacities

- Maximum load of 50lbs
- Minimum linear force available 1lb
- Maximum linear force available 30lb



SYSTEM ACCESSORIES

O.F. CONVEYORS

Description

O.F. conveyors are an indexing style conveyor. They are available in lengths of 5', 10' and 15' with fixture spacing of 6" and 9". The conveyor is controlled by a small PLC and a variable frequency drive making integration quick and simple.



	6" fixture spacing	9" fixture spacing
5'long	OFC0506	OFC0509
10'long	OFC1006	OFC1009
15'long	OFC1506	OFC1509



SYSTEM ACCESSORIES-WELDING

NOZZLE CLEANING STATIONS

Nozzle cleaning stations remove spatter build up from the tip and nozzle of the torch. Keeping the torch clean improves weld quality, reduces manual intervention and torch maintenance. ETA offers both Binzel and Tweco as options to our Q-sys standard weld systems.

Manufacturer	Part Number
Binzel*	ACQRC-1000
Tweco*	ACTCS-6

* Clamps and reamers sold separately. Please contact your ETA sales representative for application and pricing.

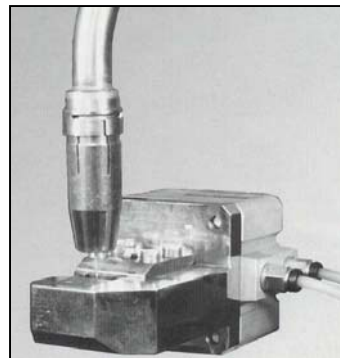


WIRE CUTTING STATIONS

Wire cutting stations remove the ball end of the wire and create a constant wire stick out. Constant wire stick out is sometimes required for operations such as touch sensing and seam tracking. Removing the ball end also improves arc start and prevents oxidation in weld starts. ETA offers both Binzel and Tweco as options to our Q-sys standard weld systems.

Manufacturer	Part Number
Binzel	ACWCS
Tweco*	ACQWT-120

* Requires 120vac to operate.



ANTI-SPATTER APPLICATORS

Anti-spatter applicators improve weld consistency and reduce down time. ETA offers both Binzel and Tweco as options to our Q-sys standard weld systems.

Manufacturer	Part Number
Binzel	ACAASI
Tweco	ACQRM-1

Anti-spatter fluid sold separately.



SYSTEM ACCESSORIES-WELDING

WELD ACCESSORY STANDS

Accessory stands for mounting nozzle cleaning stations, wire cutting stations and anti-spatter applicators on.

Stand for	Part Number
Binzel	ACBINSTD
Tweco	ACQRS-1



1,000lb WIRE DISPENSER ACWD12

Low cost dispenser for wooden reels up to 1,000lb. This dispenser can be used with steel, aluminum and stainless steel wire. The arm is spring loaded and adjustable to keep wire taut at all times. Will accommodate wire up to .052" diameter. Require approximately 30" diameter circle of floor space.

Other accessories are available for this dispenser please contact your ETA sales representative for further information.



1,000lb WIRE DISPENSER ACWD10

This dispenser handles up to 1,000lb. wooden reels. The wire let-off system requires approximately 5lbs. of pull to activate a 1,000lb. reel of wire at 700IPM feed rate. The let-off design ends wire flip. This dispenser can be used with steel, aluminum and stainless steel wire. Please specify wire diameter when ordering.

Other accessories are available for this dispenser please contact your ETA sales representative for further information.

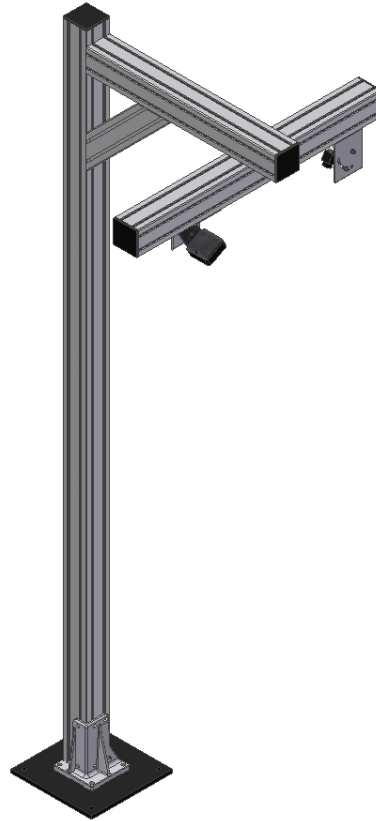


SYSTEM ACCESSORIES

CAMERA STAND CS-10

Unit specifications

- Overall height of 96"
- 12"x12" floor mount plate
- Adjustable height 8" to 88"
- Optional backlight available



TOOL BALANCER TB-10

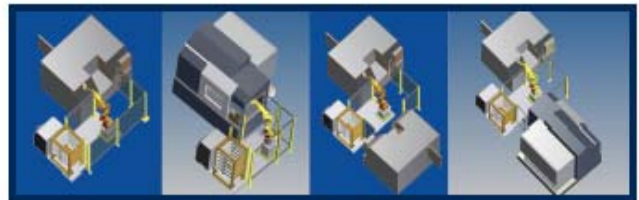
A Tool Balancer (TB) is used primarily in applications where cables or hoses can get cut or damaged . This device keeps hoses or cables away from wear of pinch points.



Unit specifications

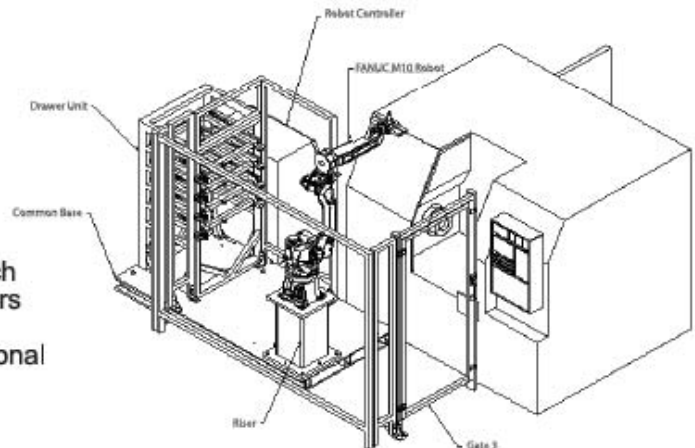
- Overall capacity of xx lbs.
- 12"x12" floor mount plate
- Available with custom mounting brackets
-

- ✓ Pre-engineered to reduce costs and improve deliveries
 - Increase profit per hour by a factor of 3 or higher
 - Increase productivity of existing machine tools by thirty percent or more
 - Decrease the percent of labor cost in a work-piece down to less than 10%
 - Manage small batch sizes and large runs
 - Allows unmanned "lights out" manufacturing
- ✓ The flexible robotic machine tool tending platform can be re-deployed for an array of programs over its 20 year life
- ✓ Ideal for retrofitting to existing machine tools
- ✓ If leasing, the amortized capital cost/hour is
 - \$ 3 - \$ 15/hr during the lease period
 - \$ 0 after the lease period



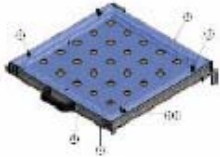
Platform Specifications

- ✓ Four drawer inbound/outbound part stocker (20" x 20" usable envelope, 6" spacing between drawers, and 150 lb. capacity for each drawer)
- ✓ The FANUC Robotics M-10i six axis robot with through the wrist cable routing, R-30iA controller and Handling Tool programming software is standard. Other sizes of FANUC robots are available.
- ✓ Fabricated robot riser, platform (84" x 48" x 5")
- ✓ Safety guarding, and interlocked access gate
- ✓ Robot I/O for communication to machine tool
- ✓ Back to back two jaw or three jaw gripper module is standard.
- ✓ Capable of servicing one or two machine tools such as lathes, VMC's, Grinders, small HMC's and others
- ✓ Supports an optional 2nd drawer system for additional unmanned production



The platform that increases spindle utilization now.

Additional Information & Options



Quick release tray option for short runs.



Heavy duty part stocking system with four drawers as standard. Drawers are accessed by pulling the drawer toward you when outside the cell, and the robot accesses a drawer by pulling it into the robot's operating zone.

Latches and drawer position sensors are included with the system.

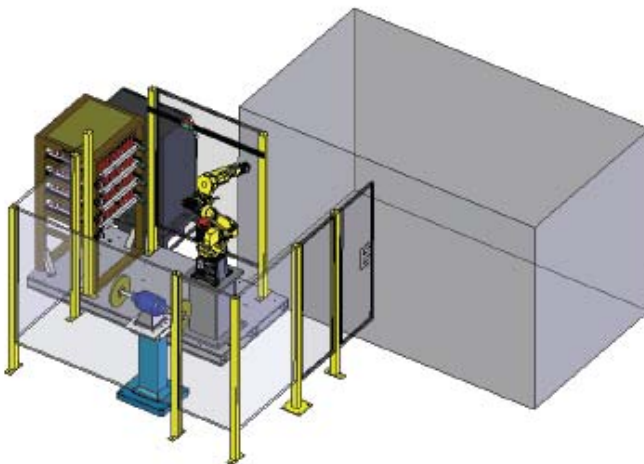


FANUC Robotics M-10iA

- 10 Kg capacity
- Cables routed through arm
- 1420 mm reach
- Repeatability of +/- .08mm
- 70,000 hours MTBF

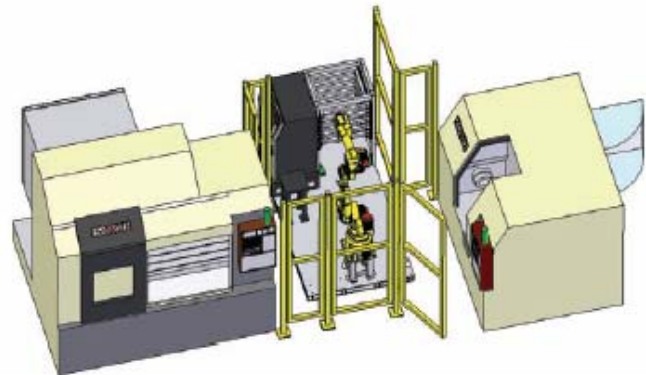
*Larger robot models available

Additional Expansion Beyond Machine Tending



- *Designed for short run jobs*
- *Changeover in less than 5 minutes*

- ✓ Post process gauging / error proofing inspection
- ✓ Part flip between Op A and B machining
- ✓ Deburring



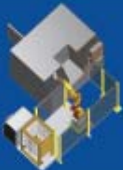
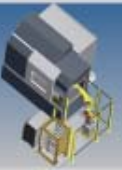
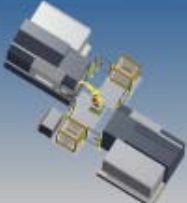
Standard System Automation

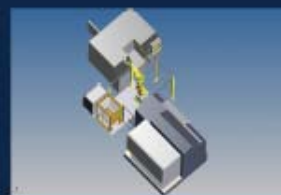
Flexible Robotic Automation has helped our customers achieve competitive manufacturing costs. Some of the immediate benefits of automation include:

- ✓ Dramatic spindle utilization increase (*from 60% to 95%*)
- ✓ Labor content reduction
- ✓ Quality increase
- ✓ Waste reduction

Different Configurations to Satisfy Your Automation Requirements

Some examples...

Lean Machine M10 L1D1 <u>M10-L1D1 Components:</u> • M10i Robot • Common Base • Robot Riser • Drawer System • Guarding Package • One Model A Interface • BTB 2 - Jaw Gripper • (4) Drawers	
Lean Machine M10 L2D1 <u>M10-L2D1 Components:</u> • M10 L1D1 Base System • Guarding Package with 2nd Gate Entry • 2nd Machine Model A Interface	
Lean Machine M10 V1D1 <u>M10-V1D1 Components:</u> • M10 L1D1 Base System • Autodoor and Control for Vertical	
Lean Machine M10 V2D2 <u>M10-V2D2 Components:</u> • M10 L1D1 Base System • Guarding Package with 2nd Gate • 2nd Machine Model A Interface • 2nd Drawer System and Common Base • (2) Autodoors and Controls for Vertical	



Lean Machine M10 L1V1D1

- M10-L1V1D1 Components:
- M10 L1D1 Base System
 - Guarding Package with 2nd Gate Entry
 - 2nd Machine Model A Interface
 - Autodoor and Controls for Vertical

If product requirements change, Lean Machine automation cells can be redeployed in one to two shifts to another process.

*** Also available with M20iA Robot*

The right configuration for the right job.

CUSTOM AUTOMATION



Robot Transfer Unit (RTU)

Benefits

Ellison Technologies engineering, assembly and programming expertise can improve production, quality while reducing down time in your process by providing everything from components to complete turnkey automated assembly lines.

ETA works closely with the customer to gather information about the project. Once the requirements are determined, our team of mechanical and electrical engineers setS out to produce an efficient and reliable system for the process.



Palletizing system

Applications

Ellison Technologies is an industry leader in producing specialized automation systems and components for unique applications.

- Palletizing systems
- Welding systems
- Machine loading systems
- Deburring, grinding and buffing systems
- Assembly systems
- Material dispensing systems



Large gripper with rail car wheel

Safety Features

ETA is dedicated to the safeguarding of personnel and providing a productive environment. Safety through design techniques and state of the art devices (i.e., area scanners, light curtains, safety mats, etc.) are used to reduce hazards while maintaining a high system throughput.

Custom Automation

Manufacturing Reliability through Modularity and Technology



Largest FANUC
Robotics Material
Handling servicing
Integrator - Broadest product
range for Material Handling
solutions



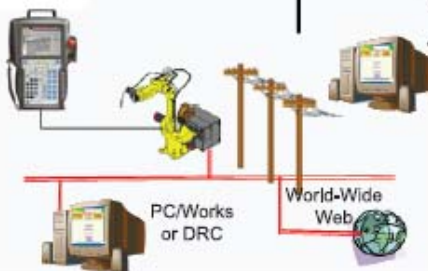
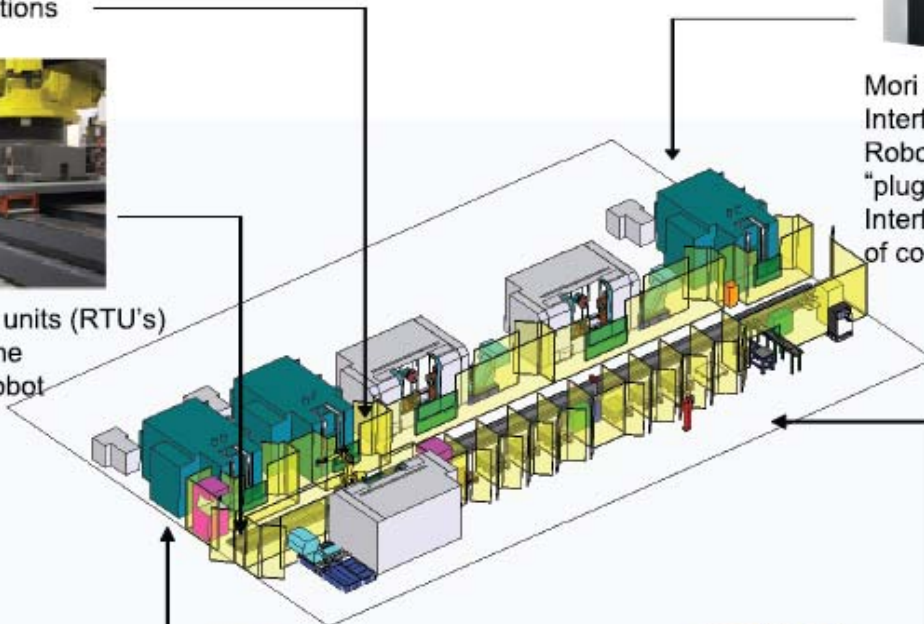
*Ellison Technologies Automation
is a registered
ISO 9001-2000 company*



Mori Seiki **Ethernet IP**
Interface to FANUC
Robotics controller
"plug and play"
Interface allows ease of
communication



Robot transport units (RTU's)
Increase machine
utilization and robot
efficiency



Remote monitoring and troubleshooting

Ethernet based
system for production
recipe management
and seamless
changeover



FANUC Robotics
integrated vision
for part location
and error proofing

2D and 3D vision
for bulk part
picking



CUSTOM AUTOMATION



Welding application with custom fixtures



Dual Robot Weld Cell and Positioner



Drop Center Positioner



Robotic Positioner w/ Dual Welding Robots

Services

ETA is a full service system integrator that offers many services in addition to the design and construction of equipment. Other services ETA provides are:

- Programming (Robots, PLCs and other controllers)
- Installation services
- Preventative maintenance programs
- Risk assessments / safety analysis
- Operator training / service training
- 24-Hour service hotline
- Electrical control systems / panel building
- Machine retrofits

APPENDIX -UNIT CONVERSION

ENGLISH TO METRIC

LENGTH

1 in = 25.4 mm (exact)

1 in = 2.54 cm (exact)

1 in = .0254 m (exact)

WEIGHT

1 oz = 28.3495 g

1 lb = .4536 kg

FORCE

1 lbf = .4546 kgf

1 lbf = 4.4482 N

TORQUE

1 lb-ft = 1.3558 N-m

1 lb-ft = .1383 kg-m

1 lb-in = .1130 N-m

1 lb-in = .1152 kgf-m

PRESSURE

1 psi = 6.8947 KPA

1 psi = .06895 bar

METRIC TO ENGLISH

LENGTH

1 mm = .0394 in

1 cm = .3937 in

1 m = 39.3700 in

WEIGHT

1 g = .0353 oz

1 kg = 2.2046 lb

FORCE

1 kgf = 2.2046 lbf

1 N = .2248 lbf

TORQUE

1 N-m = .7375 lb-ft

1 kgf-m = 7.2330 lb-ft

1 N-m = 8.8508 lb-in

1 kgf-m = 86.7962 lb-in

PRESSURE

1 KPA = .1450 psi

1 bar = 14.5038 psi



NOTES: