
YASKAWA

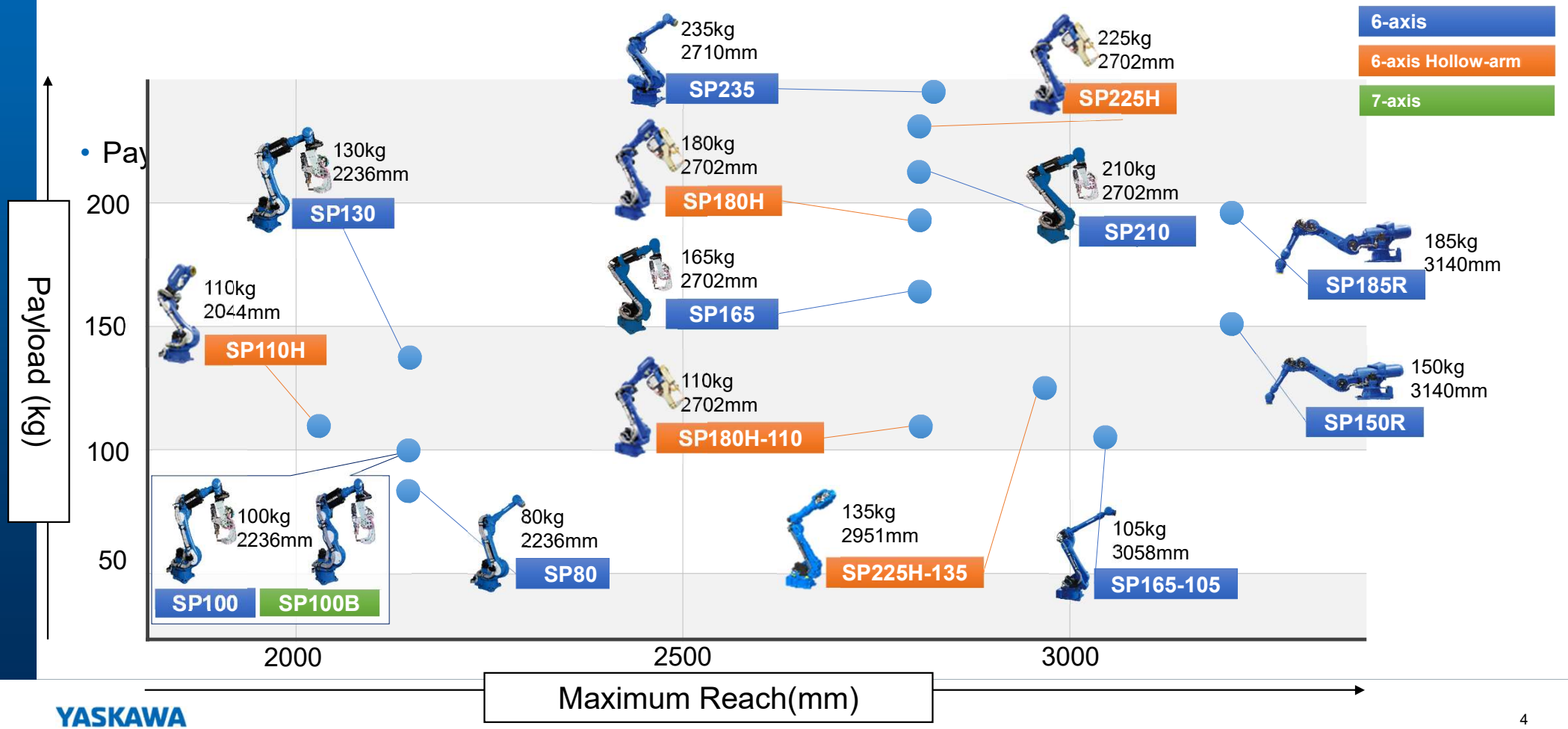
SPOT WELDING

SP SERIES ROBOTS

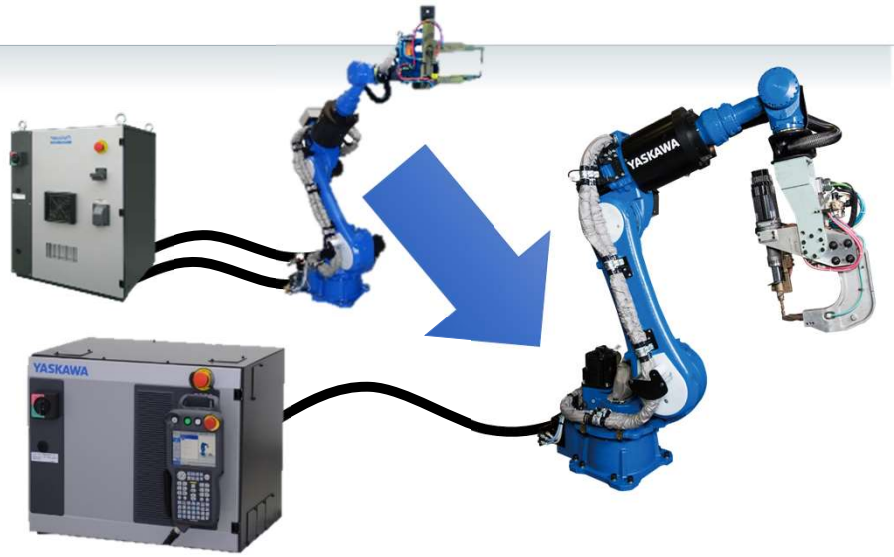
15 models for a wide variety of payloads, reaches, and servo spot guns

- Coordinated motion between other Yaskawa robot models and positioners
- Exclusive integrated spot harness improves wrist flexibility and reduces downtime
- Servo-controlled spot guns with efficient Direct Current (DC) spot timers are synchronized to provide improved quality at reduced cycle time
- Programming of Medweld and Nadex timers with commands from robot pendant
- Service and warranty coverage from a single source - Yaskawa

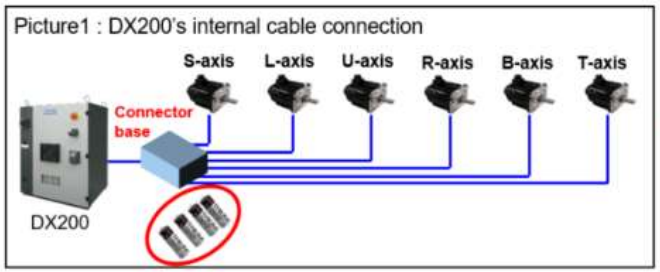
SP-SERIES LINEUP

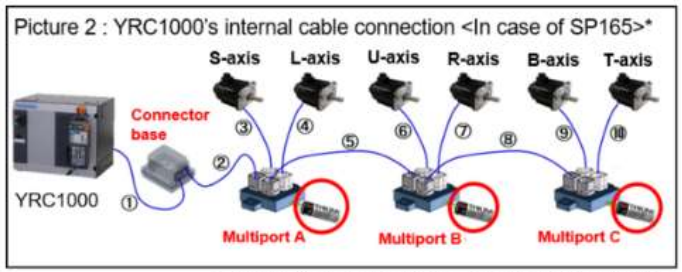


YRC1000 IMPROVEMENTS



- Single controller cable decreases setup time and reduces cable trip hazards
- Improved wiring harness improves maintenance and trouble shooting
  - Error messages can pinpoint axis faults
  - No battery in new Sigma 7 motor encoders
    - Includes Spot guns using Yaskawa Sigma 7 motors

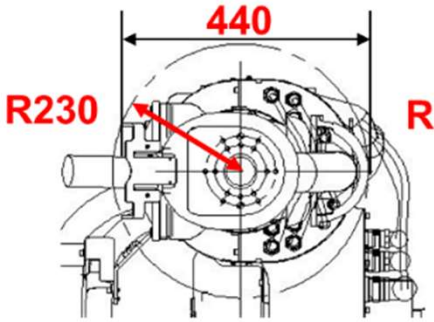




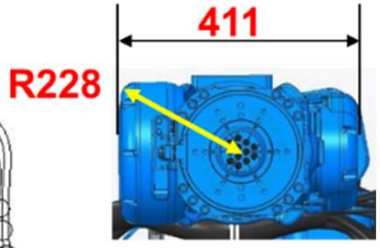
* The location of the multiport may vary by model

SP HOLLOW ARMS

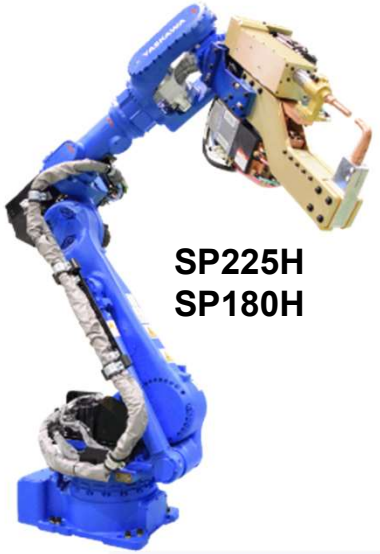
- Reduces external cabling by adding through-arm routing
- Ideal for Aluminum spot guns that require larger gauge harness
- Yaskawa aluminum welding spot harness included
- Reduced wrist interference



SP210

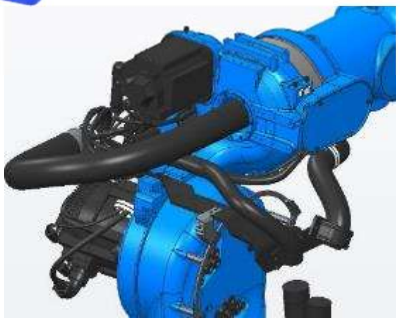


SP225H



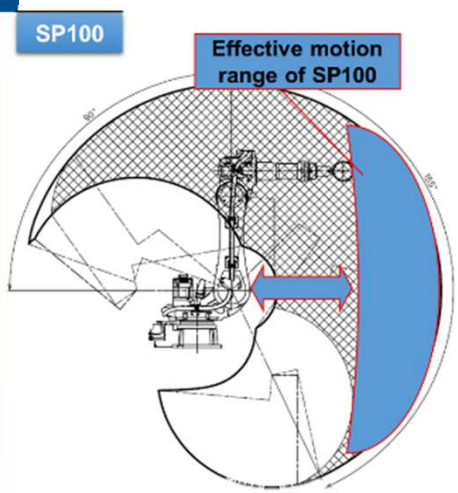
SP225H
SP180H

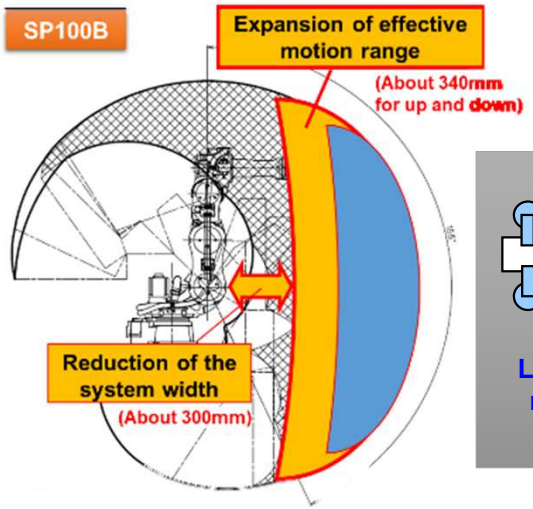
SP110H

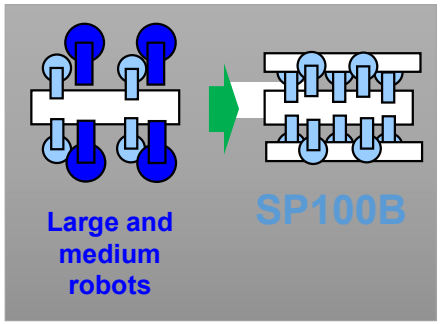


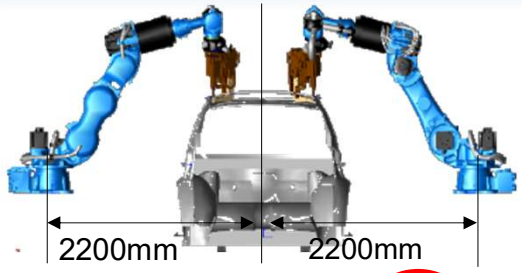
SP100B – 7 AXIS ROBOT

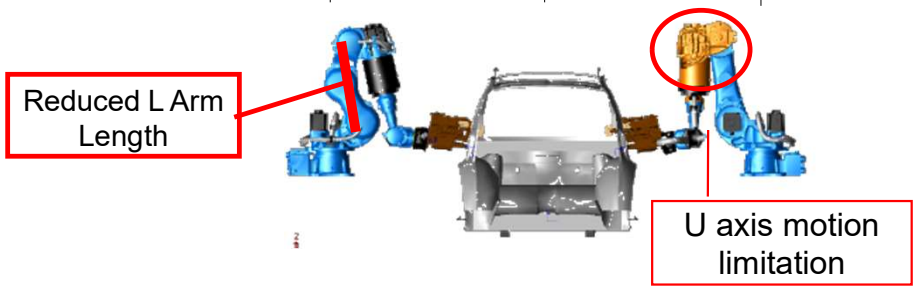
- L-Arm length can be changed by bending E-Axis (extra axis)
- Expands the available spot welding range
- Can access inside of tight spaces with flexible range
- Can weld entire automotive body from top to under side
- High-density system layout with smaller footprint

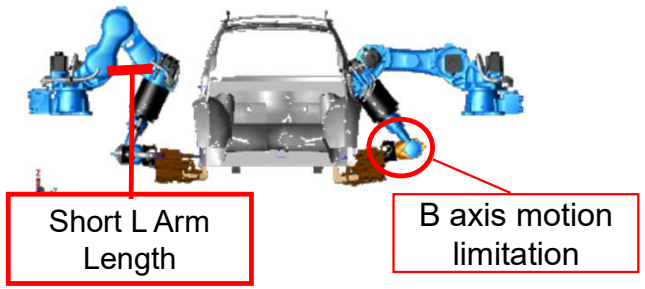












DEDICATED SPOT WELDING PENDANT FUNCTIONS

- YRC1000 calculates welding conditions by entering plate condition
- Wave form visualization of weld timer and results
- Check welding conditions when setting up a production line
- Check welding status when a defect is detected
- Check wave forms when correcting welding conditions
- Automatic workpiece search function

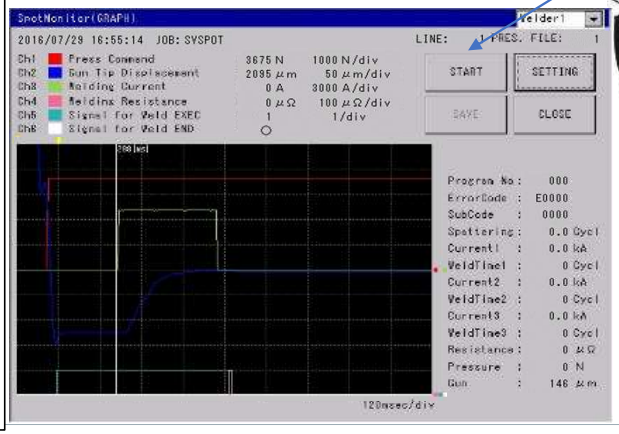
User Sets:
- Material
- Tension
- Plate thickness
- Number of plate

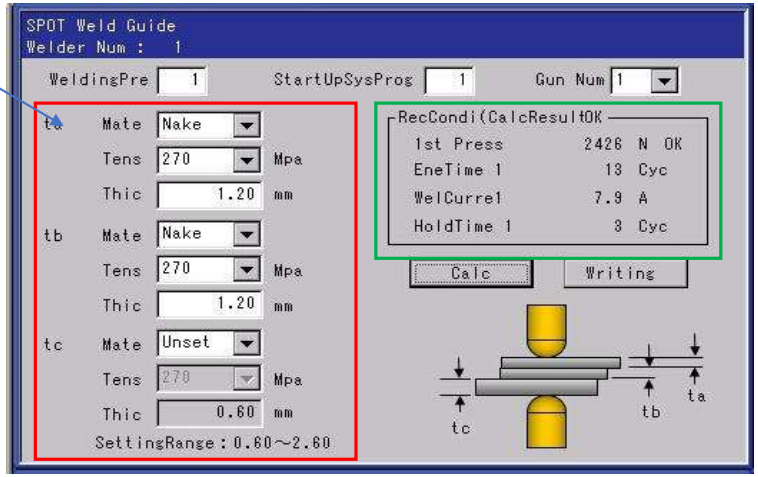
Recommended welding conditions
- Gun pressure
- Resistance welding time
- Welding current
- Hold time

Robot data
- Gun pressure instruction
- Gun axis movement amount

Welding timer
- Welding current
- Welding resistance

IO signal
- Signal for welding starting conditions
- Signal for welding completion

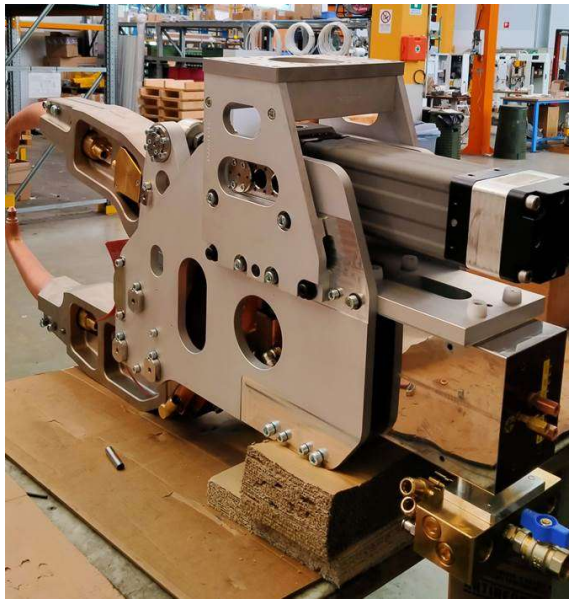


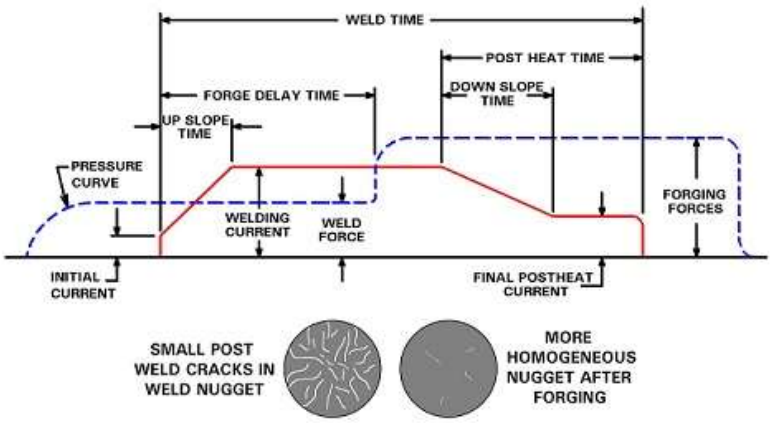


ALUMINUM SPOT WELDING

Resistance Welding Forging at Point of Weldment Plastic State

- Market request for aluminum spot welding programs.
- Developed specification for use with spot program and strain gauge, allowing sensor and timer to trigger increased forging force by servo gun after initial weld current and force.





TIME DIAGRAM ILLUSTRATES COMPLETE FUNCTIONS, INCLUDING UPSLOPE AND DOWNSLOPE, POST HEAT, AND FORGE

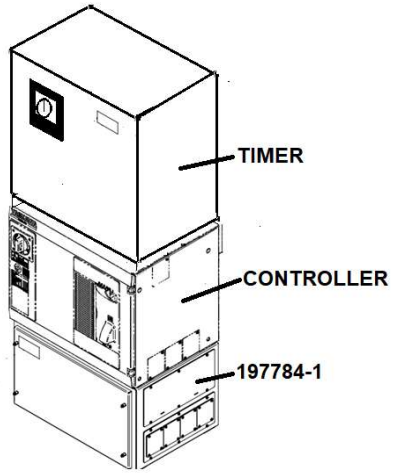
Reference: RWMA - Resistance Welding Manual 4th Edition

SPOT CABINET

- Spot Timers are often designed to be mounted above the controller.
- Our Top Hat enclosure provides space for I/O, DC power supply, external axis, ethernet switch, and other options
  - Can not use top hat with top-mount timer
- Can also be used for SP or other robots
  - Ultrasonic cutting
  - Pneumatic packages
  - Multiple stacked controllers

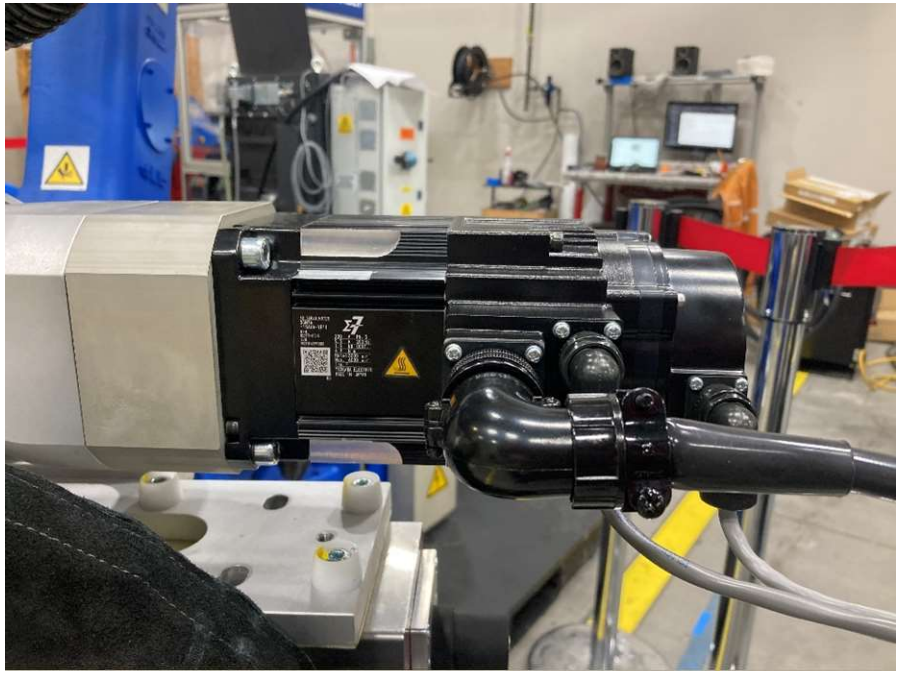
SPOT CABINET

- For SP, but compatible with GP robots
- Works with YRC1000 only
- Includes 24-VDC, 10-Amp Power Supply
- Choice of 8-port ethernet switch, managed or unmanaged
- Optional I/O Interface
- Additional space for future expansion options



SIGMA7 ENCODERS FOR SPOT

- Allows for new Yaskawa SIGMA7 encoders to be used with other brand motors and be controlled by the robot for coordinated motion.
  - Compatible brands include:
    - Tolomatic
    - Exlar



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