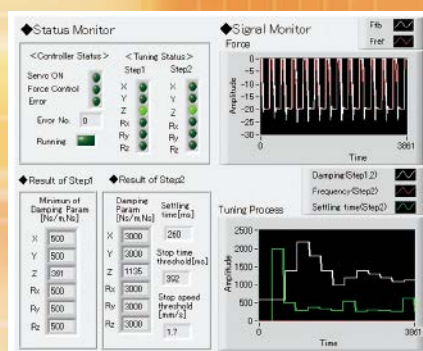


## 6-axis Force Sensing Control Function

# MotoFit



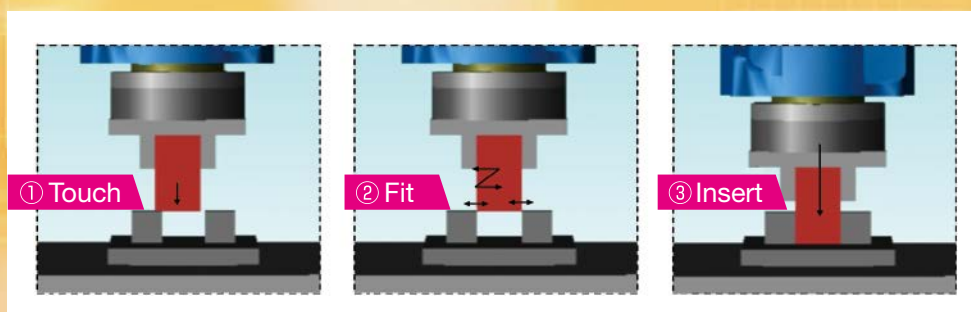
6-axis force sensor



Engineering support tool

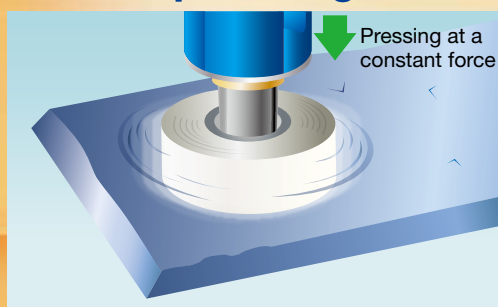
## Improving robot autonomy Force Sensing Function

### Application 1 Precision fitting



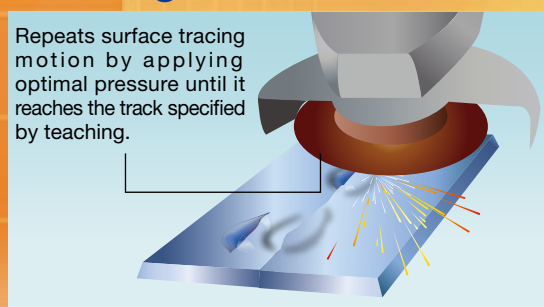
Guarantee a high speed precision fitting of  $10\ \mu\text{m}$  by combining the three controlled operation patterns of touching, fitting, and inserting with force feedback.

### Application 2 Surface polishing



Improve polishing quality by pressing a workpiece at a constant force.

### Application 3 Grinding

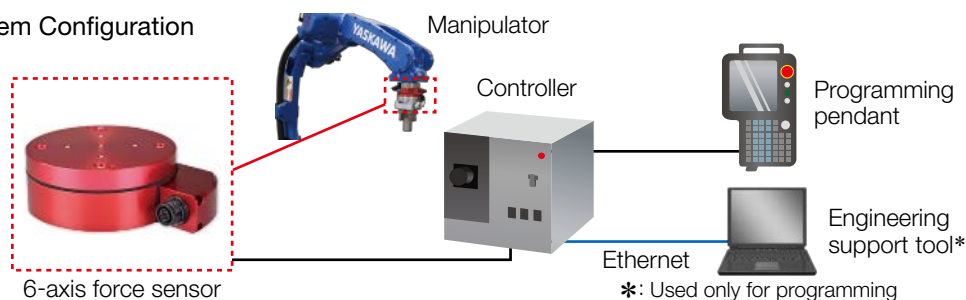


Grinding (e.g., removing welding beads) can be automated by combining position control and force control.

MotoFit can be used for other work applications that require force control, such as tape sticking, fitting inspections, etc.

# MotoFit

## System Configuration



## Force Sensor Specifications

Force Sensor Type		200 N/20 N·m	1000 N/30 N·m	500 N/100 N·m	1000 N/200 N·m
Manufacturer		WACOH-TECH Inc.	WACOH-TECH Inc.	SINTOKOGIO, LTD.	SINTOKOGIO, LTD.
Rated Load	Fx, Fy, Fz	± 200 N	± 1000 N	± 500 N	± 1000 N
	Mx, My, Mz	± 20 N·m	± 30 N·m	± 100 N·m	± 200 N·m
Maximum Static Load	Fx, Fy, Fz	± 800 N	± 5000 N	± 2500 N	± 5000 N
	Mx, My, Mz	± 80 N·m	± 50 N·m	± 500 N·m	± 1000 N·m
Linearity		± 3%FS	± 3%FS	± 2%FS	± 2%FS
Hysteresis		± 3%FS	± 3%FS	± 2%FS	± 2%FS
Cross-axis Sensitivity		± 5%FS	± 5%FS	± 2%FS	± 2%FS
Temperature Characteristics		± 0.2%FS/°C	± 0.2%FS/°C	± 0.7%FS/°C	± 0.5%FS/°C
Dimensions		90-mm dia. × 32.5 mm	90-mm dia. × 40 mm	100-mm dia. × 40 mm	120-mm dia. × 40 mm
Mass		600 g	600 g	1900 g	2400 g
Protection Rating		IP65	IP65	IP67	IP67
Operating Temperature		0 °C to +45 °C			
Storage Temperature		-10 °C to +60 °C			
Humidity		20% to 80%RH (non-condensing)			

## MotoFit Functions

Item	Function Overview
Fitting Function	Performs precision fitting by combining the three operation patterns of touching, fitting, and inserting.
Force-tracking Function	Tracks the external force and operates in response to it.
Pressing Function	Presses at a constant force in any direction.
Force-detection Function	Detects the force to determine if the specified force is applied.
Register Output Function	Outputs sensor information to an external PLC or other device.

## Engineering Support Tool Functions

Item	Function Overview
Automatic Adjustment Function for Force Control Parameters	Automatically adjusts force control parameters optimized for fitting operation.
Fitting Job Creation Function	Creates jobs required for fitting operation.
Force Data Monitoring Function	Monitors and saves force waveform data.

Applicable Manipulators: Please contact your Yaskawa representative about applicable manipulators.

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# YASKAWA

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In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply. Specifications are subject to change without notice for ongoing product modifications and improvements.

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LITERATURE NO. CHEP C940352 00H <7>-0

Published in Japan August 2021  
21-07-47