azbil

Machining ▪ Metalworking

Proximity Switches

Four-area sensing by 2-output teaching

Reduce man-hours by easy adjustment and output visualization

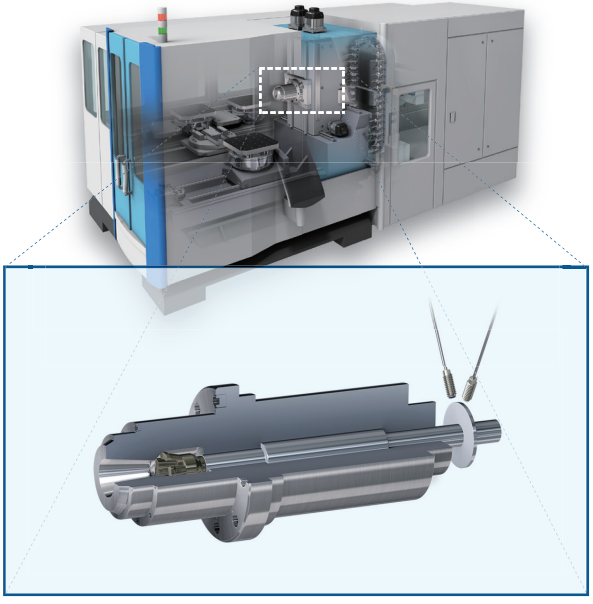
Product	Discrete sensor Adjustable Proximity Sensor
Model	H3C
Process/ Equipment	Machining Center

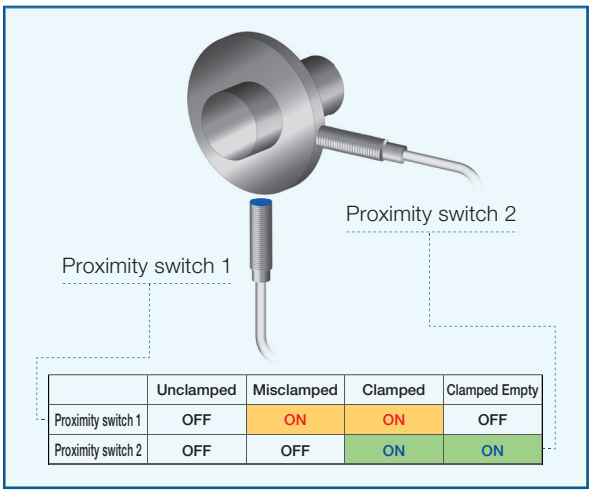
Current Situation

- After a tool change, the tool's position must be detected to see if it is properly clamped.
- 4 positions must be distinguished: Unclamped, Misclamped, Clamped, and Clamped Empty.
- To detect 4 positions, the ON/OFF outputs of 2 proximity switches are used.

Current Problems

- Two proximity switches are installed with an offset, and adjusting the on and off positions for Unclamped, Misclamped, Clamped, and Clamped Empty takes a great deal of time.
- Workers vary in how they do the work, and we don't know how much safety margin we have for the sensing settings, so we are dependent on skilled workers.
- Switch positions must be adjusted very precisely, so onsite readjustment may be required.
- Proximity switches are installed inside the equipment, so they are difficult to access.





	Unclamped	Misclamped	Clamped	Clamped Empty
Proximity switch 1	OFF	ON	ON	OFF
Proximity switch 2	OFF	OFF	ON	ON

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Solutions

Solution 1 Remarkable 2-output 4-area proximity switch sensing

1 proximity sensor with 2 outputs does the work of multiple switches.

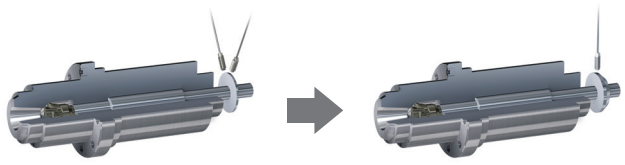
Solution 2 Auto-tuning function automatically sets the detection threshold

Automatic setting of optimum threshold helps to reduce problems on the line.

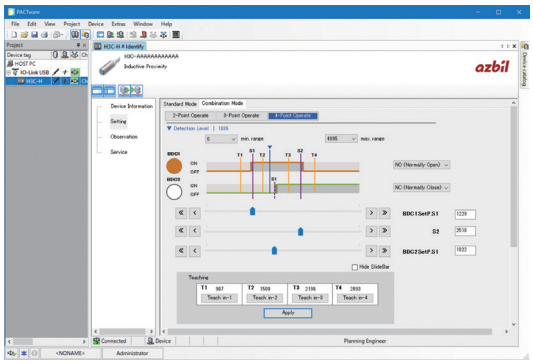
Solution 3 Configuration Tool makes detection levels easily visible

Monitor safety margins for sensing with the Tool, check for optimum thresholds, and make adjustments.

Solution 1 Sample proximity switch installation



Solution 3 Configuration Tool

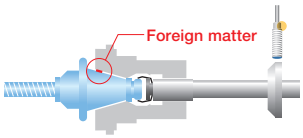


Solution 2 Clamp positions and detection results

Unclamped

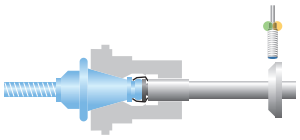
	Unclamped	Misclamped	Clamped	Clamped Empty
Output 1	OFF	ON	ON	OFF
Output 2	OFF	OFF	ON	ON

Misclamped



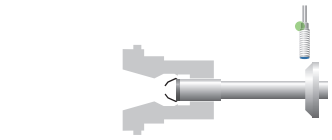
	Unclamped	Misclamped	Clamped	Clamped Empty
Output 1	OFF	ON	ON	OFF
Output 2	OFF	OFF	ON	ON

Clamped



	Unclamped	Misclamped	Clamped	Clamped Empty
Output 1	OFF	ON	ON	OFF
Output 2	OFF	OFF	ON	ON

Clamped Empty



	Unclamped	Misclamped	Clamped	Clamped Empty
Output 1	OFF	ON	ON	OFF
Output 2	OFF	OFF	ON	ON

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