

# Watertight Switches in Transportation Applications

### BACKGROUND

Honeywell's MICRO SWITCH™ watertight basic switches can be used in a wide variety of washdown applications, including trucks, buses, forklifts, lawn mowers, ATVs, and golf carts. The V15W, ZD and ZW series switches are designed specifically for these challenging outdoor applications. Rugged yet precise, they accurately control the machine and are rated to meet IP67 ratings for water and dust protection (switch body only). Reliability, accuracy, and flexible design options make Honeywell V15W, ZD and ZW basic standard watertight switches suitable for electrical absence/detection in these challenging applications.

For design engineering flexibility, the MICRO SWITCH™ V15W, ZD, and ZW series of basic standard switches feature a variety of actuators, terminations, wire connections, operating and electrical characteristics to choose from. From subminiature to miniature switches, select the series that's right for your application.

**Figure 1. Golf Cart**



**1** Reverse alarm – sounds when lever is moved to “reverse” setting

### SOLUTIONS

Brake lights, auxiliary controls, reverse alarms, position detection for forklift trucks and operator presence detection switches all require extra protection in wet and dusty environments.

- **Brake light switches** – Position sensing behind brake pedal to turn on brake lights
- **Auxiliary controls and alarms** – Continuous position status with enhanced reliability and accuracy
- **Forklift position detection** – Position sensing on the forks for safe operation
- **Operator presence detection switches** – Presence detection for operator presence in the driver's seat for safety

**Figure 2. Forklift**

- 1** Foot brake switch – Activates brake light
- 2** Hand lever switch – Activates brake light
- 3** Fork lift mast –Travel limit switch stops vertical travel of the forks
- 4** Fork lift tilt –Travel limit switch stops tilt travel of the forks
- 5** Operator presence – Detects presence of driver, and provides shut-down protection



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Figure 3. MICRO SWITCH™ ZW, ZD and V15W Series Basic Switches

MICRO SWITCH™ ZW and ZD Series Subminiature Switches		MICRO SWITCH™ V15W Series Watertight Miniature Basic Switches
		
<b>ZD SERIES</b> <ul style="list-style-type: none"> <li>Designed for outdoor, wash down, and high-dust environments, meets IP67 standards for sealing (wired version)</li> <li>Available in 0.1 A and 3 A 125/250 Vac/12 Vdc ratings</li> <li>500K to 2,000K operating life, 500K electrical</li> <li>Available in wired and terminal options with wide variety of shapes and mounting features</li> <li>Dimensions: 14,70 mm x 7,50 mm</li> </ul>	<b>ZW SERIES</b> <ul style="list-style-type: none"> <li>Designed for outdoor, wash down, and high-dust environments, meets IP67 standards for sealing (wired version)</li> <li>Available in 0.1 A, 5 A, and 6 A 125/250 Vac ratings</li> <li>500K to 2,000K operating life, 6K to 50K electrical life</li> <li>Available in wired and terminal options</li> <li>Dimensions: 19,90 mm x 9,15 mm</li> </ul>	<ul style="list-style-type: none"> <li>Designed for outdoor, wash down, and high-dust environments, meets IP67 standards for sealing (wired version)</li> <li>Wide current range: 0.1 A, 5 A, and 10 A</li> <li>SPDT, SPNO, and SPNC options</li> <li>Straight, roller, simulated roller, and special actuators</li> <li>Available in wired and terminal options, special terminations available upon request</li> <li>Gold contacts available for low current operation</li> <li>Global approvals; UL, cUL, ENEC, and CQC</li> <li>RoHS compliant</li> <li>Dimensions: standard V-Size package</li> </ul>

## WARRANTY/REMEDY

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## SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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