



MATERIAL HANDLING



OTTO[®]
Expect Excellence.



OTTO IN MATERIAL HANDLING

OTTO designs and manufactures precision switches, grips, joysticks, operator control modules and custom solutions for the most demanding applications including a broad range of standard and unique products from traditional snap action switches to Hall effect technology, USB, PWM, CANopen® and J1939 communication protocols.

In business for nearly 60 years, OTTO's products perform in some of the toughest industries including material handling, where high performance and reliability are essential. We are ISO 9001, ISO 14001 and AS9100 registered, A2LA accredited to ISO/IEC 17025, and TL 9000, TS 16949 and QS 9000 compliant—maintaining the highest quality standards.

AVIA-DYNAMICS CORP.

QUALITY ELECTRONIC COMPONENTS








OUR PRODUCTS

ELECTROMECHANICAL SWITCHES



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P9 SEALED DOME PUSHBUTTONS

P9 Features



P9 Sealed Dome

- Flush and raised dome button styles in gloss or matte finish
- Small bezel option
- Double break or shorting bar, momentary action
- All plastic housing & button construction
- Threaded body or snap-in panel mounting
- Withstands extreme shock & vibration
- Positive tactile feedback contact transfer on snap-action models
- Solder, PC Pin & 0.110" Quick Connect terminal styles
- Moistureproof & dusttight to IP64 or watertight to IP68S and IP69K
- UL recognized & CSA certified
- RoHS compliant

The P9 series is a quality precision switch designed for use in control panels, grips, computers, instruments, heavy equipment and other demanding applications where attractive, rugged, long life pushbutton switches are required.



P9M LATCHING PUSHBUTTONS

P9M Features

- Sealed to IP68S
- Latching switch
- Ideal for basic ON/OFF functions
- All plastic housing & button construction
- 15/32" standard bushing
- Flush and raised dome button styles in gloss or matte finish
- RoHS compliant



Flush Dome
Also available with
Raised Dome

Latched Position

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The P9M is a quality precision switch designed for use in control panels, grips, computers, instruments and other applications where attractive, rugged, long life pushbutton switches are required.



HP7 HALL EFFECT PUSHBUTTONS



Raised Dome HP7



Raised Dome HP7



Exposed Dome HP7



Lower Cost HP7C



Flush Dome HP7



HP7 Features

- 10 million cycles
- Hall effect technology for long life
- Moistureproof and dusttight to IP64 or watertight to IP68S
- Offered in raised dome, flush dome and exposed dome button styles
- Stylish dome-shaped buttons in 9 colors
- Momentary action
- Choice of termination styles
- Mechanical detent available for tactile feedback
- RoHS compliant

This rugged switch is designed to withstand harsh environments while being subjected to high rates of actuation. Applications that require repeated “jogging” and other continuous operations are prime applications for the HP7 Hall Effect Switch. Examples of such can be found in material handling equipment such as loaders, lift trucks, bucket and shovel, and other applications where positioning of the load is critical.



FLUSH DOME PUSHBUTTONS

P3-D Features

- Attractive dome style button
- 2 contoured button styles
- Double break momentary action
- Withstands extreme shock & vibration
- Positive tactile feedback
- Solder & screw terminal styles
- Moistureproof & dusttight to IP64
- Watertight to IP68S and IP69K available
- RoHS compliant



P3-D Sealed Flush Dome Momentary Action



P5-D Alternate Action Flush Dome, Sealed Options

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P5-D Features

- 2 contoured button styles
- Button sealed with patented "rolling sleeve" principle
- Alternate action: "push on, push off"
- Contact area sealed at case & terminals
- Handles logic level up to 5 amps
- Moistureproof & dusttight to IP64 & MIL-PRF-8805 Design 2 or watertight to IP68S options
- Unsealed construction also available
- RoHS compliant

OTTO's Flush Dome pushbuttons are quality precision snap-action switches designed for use in panels, control sticks, computers, instruments, heavy equipment and other demanding applications where attractive, rugged pushbutton switches are required.



SEALED COMMERCIAL GRADE PUSHBUTTONS

Pushbutton Features

- Button sealed with patented “rolling sleeve” principle
- Features inherent rocking action that breaks welds and wipes contacts clean
- Contact area sealed at button & terminals
- Positive tactile feedback
- Engraved buttons & bezels available
- UL recognized & CSA certified
- 1 million mechanical cycle life
- Snap-action mechanism features high contact force and short contact bounce
- Watertight to IP68S available in all versions
- Watertight to IP69K available in non push-pull versions
- RoHS compliant



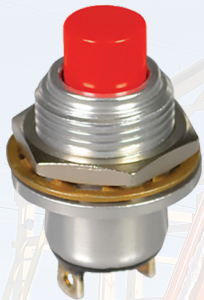
Style P3-7



Style P3-3



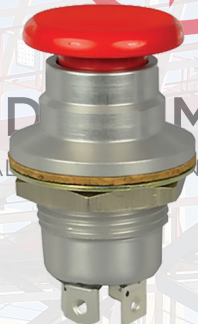
Style P3-6 with Push-Pull Action



Style P3-6



Style P3-8



Style P3-3 with High Force Push-Pull Action



Custom P3 with Wire Leads

Commercial grade pushbutton switches offer vastly improved life under extreme conditions found in some industrial environments.



ILLUMINATED PUSHBUTTON SWITCHES

Pushbutton Features

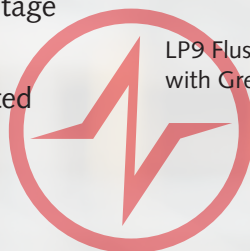
- Watertight to IP68S and IP69K, moistureproof & dusttight to IP64, or unsealed
- LED lighted with the ability to accommodate 2, 12 & 24VDC power & includes reverse voltage protection
- Tall & dome style buttons permitting printed legends
- Logic level options
- Quick disconnect terminals
- Withstands shock & vibration
- 5/8" thread, press fit & dome case options
- RoHS compliant



LP9 Flush Button Style with Green LED



LP9-5 Fully Illuminated with Legend



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LP9 Group with White LEDs

Illuminated pushbuttons are quality precision switches designed for use in panels, control grips, instruments, heavy equipment and other demanding applications where attractive, rugged, lighted pushbutton switches are required.



LP3S Front Mount



LP3S Dome



ILLUMINATED VANDAL RESISTANT SWITCHES



LP3S-V



LP5-V

Pushbutton Features

- Security (aluminum) or vandal resistant (stainless steel) case & button
- Ring illuminated
- Watertight to IP68S
- Variety of button options and LED colors
- LP3S-V offers shorter behind panel depth
- UL recognized
- RoHS compliant

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LP5-V

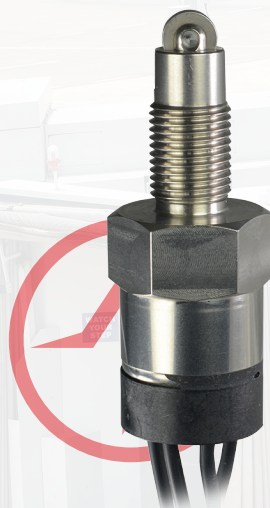
The Vandal Resistant series has been designed to provide attractive, lighted position indication for applications in harsh environments, where security and reliability are paramount.



WATERTIGHT LIMIT SWITCHES

Limit Switch Features

- Commercial grade limit switches
- Sealed watertight to IP68S and IP69K
- One-piece Stainless Steel housing
- Built to withstand extreme temperatures
- Choice of ball or roller plunger
- Can be configured as single pole and double pole plus single throw and double throw.
- Three connection method options



P6-4 with
Roller Plunger



P6-4 with
Ball Actuator

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The P6-4 Limit Switches are designed to be operated in extreme temperature ranges and with their stainless steel housing, are for use in the most rugged, harsh environments.

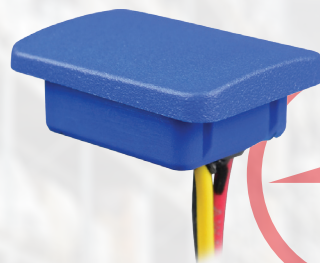
CAPACITIVE TOUCH SENSOR SWITCHES

CS Series Features

- Can be used as a switch or operator presence
- Operates with a gloved or ungloved hand
- Two standard shapes but can be customized
- Logic level high or low output available
- Switch life is 50M cycles
- No moving parts to wear out
- Operate force: 0 lbs.
- Wide operating temperature range
- Completely sealed to IP68S and IP69K
- RoHS Compliant



Capacitive Switch
Concave
CS-1



Capacitive Switch
Slightly Bowed
CS-2

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The CS Series Capacitive Touch Sensor Switch is designed for applications where control functions are needed for an unobtrusive style.



TOGGLE SWITCHES

Toggle Switch Features

- Seal options include IP64, IP68S and IP69K
- Single, double and up to 8 pole (T1) circuits
- MIL spec and UL recognized versions available
- Lever lockout options
- Non-teasible versions
- Panel snap-in versions available
- Wide variety of toggle styles, bushing styles and terminal styles



T3 with 15/32" Bushing and Lever Lock in Center Position



T3 Double Pole with 1/4-40 Bushing

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T7 - Double Pole with Bushing Seal



Thin T71 Single Pole



Custom T7 with Long Bat Handle



T3 with Concave Button

These toggle switches are rugged, high performance sealed switches designed for use under severe conditions found in heavy equipment, industrial control, marine and appliance applications.



ROCKER SWITCHES



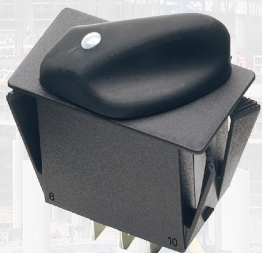
K1 Single Pole Rockers



K2 Double Pole Rockers

Rocker Switch Features

- Snap into industry standard panel opening
- Seal options include IP68S and IP69K
- Low level up to 20A
- Single and double pole circuits
- Mating connectors available on some styles
- UV & solvent resistant
- Incandescent, neon and LED illumination options with independent & dependent light source options
- Standard and custom legends available
- UL recognized & CSA certified



R2 Rocker

Sealed Rocker Switches are precision designed to comply with standards established for appliance, marine (ignition protection) and off-road vehicles.

K3 Sealed Illuminated Rocker with Legend



K5 Rockers for Rugged Environments

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KC CAN ROCKER MODULES

KC CAN Rocker Features

- Backlit legends
- Decorative ergonomic design with soft touch buttons (multiple color options)
- Rocker switches can have up to two laser etched icons to be in accordance with SAE/ISO or custom
- Rocker button is field replaceable and fully interchangeable if damaged, without removing the module
- Switch function is field configurable with the changing of a single item after button is removed
- Locking rocker is available for two and three position switches
- Standard rocker options include ON/ON/ON and a choice of 2 or 3 positions per switch
- Momentary, maintained and 3 position switches available in single and 2 pole versions
- Modules are gangable horizontally
- 3 position module is offered as a master and slave. The 2 position module is a slave only.
- RoHS Compliant



KC CAN Double Rocker Module



KC CAN Triple Rocker Module

OTTO's new multi-function KC CAN rocker module with CAN standard J1939 protocol communication is available in a 2 switch or a 3 switch module with single or double pole option per switch.



HALL EFFECT THUMBWHEELS

HTWM Features

- Hall effect technology
- Shorter behind panel depth: 0.96" max.
- 8 output options
- Spring return-to-center single axis actuator and return-to-end single axis actuator options
- Knurled & Paddle style actuators
- Rocker switch style mounting
- 3 million cycle rotational life
- Electronics sealed to IP68S
- Excellent EMI/RFI immunity
- Tighter center tolerance options
- Wire or pinned termination options
- RoHS compliant



Paddle Wheel HTWM



Knurled Wheel HTWM



Knurled Wheel HTWME
(Return-to-End)

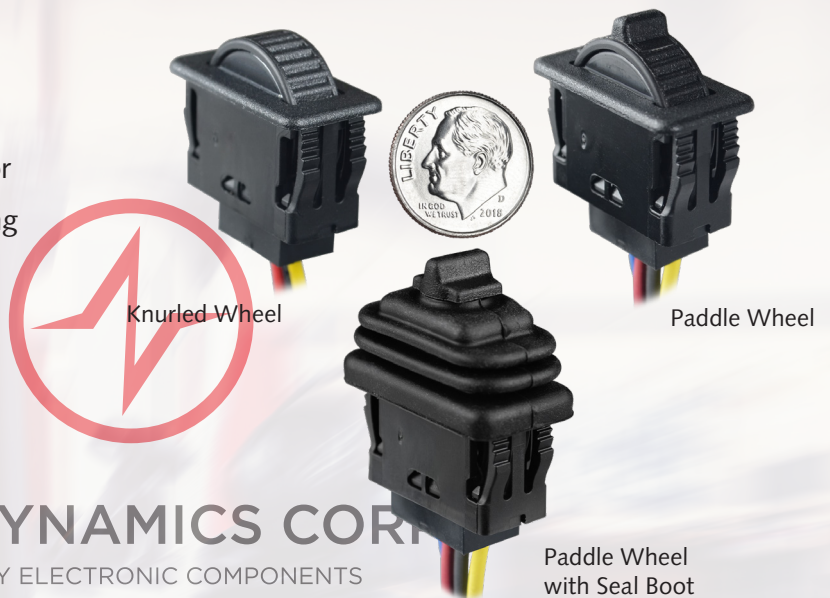
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These Hall effect thumbwheels are ideal for use in grip, armrest and panel applications. The HTWM Series can be incorporated into OTTO's joysticks.

SUBMINIATURE THUMBWHEELS

HTWS Features

- Hall effect technology
- 8 output options
- Spring return-to-center single axis actuator
- Installs into 0.895" x 0.420" panel opening
- Integrated snap-in retaining feature
- Sealing boot option
- 3 million cycle rotational life
- Electronics sealed to IP68S
- Excellent EMI/RFI immunity
- Flow through design
- RoHS compliant



The HTWS is a spring return-to-center, single axis thumbwheel that provides a linear change in voltage output corresponding to actuator movement in either direction from center.

HALL EFFECT FINGER JOYSTICKS

Mini Joystick Features

- Hall Effect finger joystick
- Performs like a full size, dual axis joystick
- Designed for grip, armrest & panel mounting
- Available in 2-way, 4-way and 360° styles
- Wire or pinned terminations
- Redundant outputs available
- 1 million cycles (HTL)
- 3 million cycles (HTLT)
- Electronics watertight to IP68S
- Outstanding EMI/RFI immunity
- Pushbutton option (HTLT)

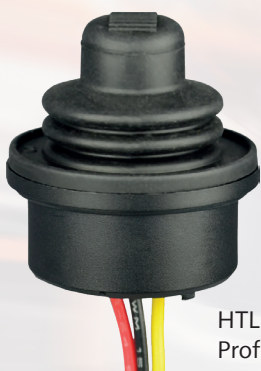


HTL4 with Bat Handle Style Button

HTL2 with Tall Concave Stadium Style Button



HTL4 with Castle Style Button



HTL2 with Low Profile Button



HTLT with Pushbutton



The HTL series provides all of the performance of a full size, dual axis joystick in a miniature package that can be mounted in control handles, armrests and panels.



SINGLE AXIS JOYSTICK

JHS Features

- Available in either friction-hold or return-to-center
- Rugged compact design
- Hall effect contactless sensing
- Electronics sealed to IP68S
- Excellent proportional control
- Outstanding EMI/RFI immunity
- Redundant output available
- RoHS compliant



JHS-F Single Axis
Friction Hold Joystick

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The JHS-F is a compact, single axis, friction hold or return-to-center joystick that was designed for the construction equipment and off-road vehicle market.



HALL EFFECT JOYSTICKS



JH Large Joystick
shown with G3-A
Universal Grip

Hall Effect Joystick Features

- Designed around the rugged mechanism of a traditional hydraulic joystick
- Up to 15 million cycle mechanical life
- Single axis, dual axis and z-axis (JH and JHT) available
- Outstanding EMI/RFI immunity
- Multiple output options
- CAN, J1939, USB, Ethernet and serial output options
- Redundant options available



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The JH Series Joystick is designed around the rugged mechanism of a traditional 4-way hydraulic joystick, but it utilizes contactless Hall Effect technology.



HALL EFFECT JOYSTICKS



JHM Handle 11



JHM with Handle 21



JHM Handle 31



JHM Handle 33

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JHM Handle 41



JHM Handle 61



JHM with Ball Handle 71

The JHM series Medium Hall Effect Joystick is a full function operator control in a package that will fit in an armrest or on a panel.



UNIVERSAL GRIPS

Universal Grip Features

- Modular design eliminates the need for tooling charges
- Compatible with the OTTO JH and JHM series Hall effect joysticks
- Small & medium sizes available
- Accommodates a full line of pushbutton, rocker, toggle, HP Hall effect & HPL proportional output series of switches
- Various mounting & termination options available
- Includes mounting adapter with boot ring
- Contour Grips offer ergonomic design to reduce muscle strain and fatigue
- Contour Grips feature left-handed, right-handed or universal orientation



G3-A Universal Grip with Pushbutton and Rocker Switches



G3-C Universal Contour Grip



G3-C Contour Grip Available in Left-hand and Right-hand Options



G3-D GRIP

G3-D Grip Features

- Compact design excellent for armrest & panel mounting
- Proven contactless analog output Hall effect technology
- Up to 1 million operational cycles in all directions
- Electronics sealed per IP68S
- Available with a variety of switch options
- Top and bottom mount options
- Redundant sensors available
- RoHS compliant



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The G3 Universal Grips can be customized for top-of-the-line machines requiring high switch content, or to provide only basic control functions on lower tier units.



G3-D Grip with Rocker and Operator Presence



OTTO[®]

VERTICALLY INTEGRATED MANUFACTURING AND VALUE ADDED CAPABILITY

For nearly 60 years, OTTO has been designing and manufacturing precision switches and operator controls for the most demanding applications. OTTO has a broad range of standard and custom products including traditional snap action switches, Hall effect technology and grips. OTTO excels in providing all levels of value added services to meet our customers needs by managing every phase of the project from conceptual design to finished product. On site capabilities include product engineering, 3D printing, injection molding, stamping, milling, machining and full quality testing.

Our expertise allows us to offer complete custom interfaces incorporating various control products plus LED indicators, keypads/touchpads, cable assemblies and additional electronic circuitry. From a simple basic switch to a sophisticated panel assembly integrating many components, the array of possibilities are endless.

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