

Meat&Doria **231928**
Hoffer Products **21031928**



FOCUS

Steering Column Switch



Our Premium Quality

A superior quality range, guaranteed by direct control of the entire process.

Design and production are supervised by the Group's engineers, in compliance with the original equipment specifications. Subsequently, each component undergoes end-of-line validation testing by the Quality team, with the aim of offering a product that always stands out for its quality, reliability, and durability.



Design



Fleet Coverage



Testing



After-Sales Support

Definition and Function

The steering column switch, commonly referred to as the indicator stalk or multifunction switch, is a **multifunction control device** installed on the steering column, usually positioned behind the steering wheel. Its main function is to allow the driver to **manage various vehicle systems** without removing their hands from the steering wheel, ensuring **operational safety and continuous control**.





Main Functions

The system generally consists of two stalks:

Left Stalk

Controls lighting and signaling systems:

- Turn indicators (blinkers)
- High and low beam headlights
- Parking lights (if equipped)
- Flash function (headlight flash)

Right Stalk

Controls visibility systems:

- Windshield wipers (activation and speed)
- Washer system
- Wiper intermittent adjustment

Operating Principle

The steering column switch functions as a **multifunction electromechanical switch**.

Operational Logic

Each stalk movement corresponds to a specific command:

- Vertical movement > function selection
- Axial movement (push/pull) > temporary or permanent activation
- Rotation (if present) > incremental adjustments

Functional Process

- Mechanical actuation of the stalk
- Activation of internal contacts
- Generation of an electrical signal
- Transmission of the signal to:
 - Actuators (lights, motors)
 - Electronic control unit (ECU)

Architecture in Modern Vehicles

In modern vehicles, the stalk does not act directly on actuators but functions as an **electronic input device**:

Sends signals to control units (BCM)

Interacts with sensors (rain, light)

Automated function management



Automated Function Management

Traditional Mechanical Switches

- Direct electrical contacts
- Limited functionality
- High durability

Electronic Switches

- Interfaces with control units
- Supports automatic functions
- More complex circuitry

Multifunction Switches

Integration of advanced controls:

- Cruise Control
- Speed limiter
- Onboard computer

Integrated Modules (Switch Assembly)

- Unified system including stalks, wiring, and sensors (e.g., steering angle sensors)
- Typically replaced as a complete module

Alternative Systems

- Removal of traditional stalks. Controls are integrated into the steering wheel and touchscreen interfaces.

Operational Importance

The steering column switch is critical for:

Safety

- Direction signaling
- Active visibility (lights)
- Passive visibility (wipers)

Ergonomics

- Operation without releasing the wheel
- Reduced reaction times

System Integration

Connected to:

- Electronic control units
- ADAS systems
- Environmental sensors

Common Failures and Anomalies

Electrical contact wear

- Intermittent operation
- Commands not activating

Return mechanism malfunction

- Turn signals not canceling automatically



Lighting system faults

- High/low beams not activating

Electronic faults

- Commands not responding
- ECU errors

Wiper anomalies

- Incorrect speed
- Sudden stop

Structural damage

- Stalk bent, loose, or broken

Replacement Criteria

Replacement is recommended when:

Turn signals activate irregularly

Lighting malfunction (including flashing)

Washer system not working

Mechanical deformation of the stalk

Stalk does not return automatically

Wipers not consistent with commands

Intermittent operation

Persistent electronic errors

Causes of Failure

Mechanical Causes

- Wear from prolonged use
- Improper use

Environmental Causes

- Temperature fluctuations
- Moisture and water ingress

Manufacturing Defects

- Non-compliant metals
- Suboptimal design

Electrical Causes

- Contact oxidation
- Faulty wiring

Electronic Causes

- ECU malfunctions
- Defective sensors

Components to Check

During diagnosis or replacement, inspect:

Wiring and connectors

Lighting system (bulbs)

Steering angle sensor

Electronic control unit (BCM/ECU)

Fuses and relays

Wiper motor

Clock Spring

Diagnosis and Error Codes (OBD)

The steering column switch has no dedicated universal codes but generates indirect errors in related systems.

Steering System Codes

B1000 - B1099

Steering module

C1231 - C1232

Steering angle sensor

Communication Codes

U0001 - U0100

CAN network

U0121

ABS/ESP communication

Lighting Codes

B2575

Light command

B2580

High beams

Wiper Codes

B3715

Wiper command

B3800

Washer system

Airbag Codes

B1801 / B1802

Airbag circuit

B1001

Airbag module





Diagnostic Guidelines

For proper diagnosis:

- 1 Verify real function symptoms
- 2 Perform OBD scan
- 3 Inspect related components
- 4 Exclude external faults (fuses, bulbs, motors)
- 5 Consider replacement only after confirmation



Meat&Doria **231538**
Hoffer Products **21031538**

Technical Recommendations



Avoid **sudden stalk movements**



Intervene promptly in case of **anomalies**



Perform a **full diagnosis** before replacement



Consider **replacing the complete module** in integrated systems

Conclusion

The steering column switch is an essential component for active vehicle safety. Despite its apparent simplicity, it is a complex system, especially in modern electronic architectures.

Proper diagnostic and maintenance approaches are fundamental to ensuring reliability, safety, and system performance.

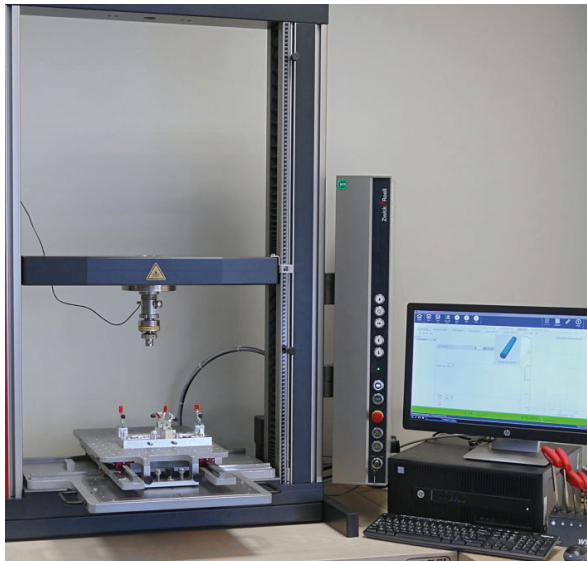
Testing

Using state-of-the-art equipment, **high-performance testing** can ensure compliance with top automotive standards.

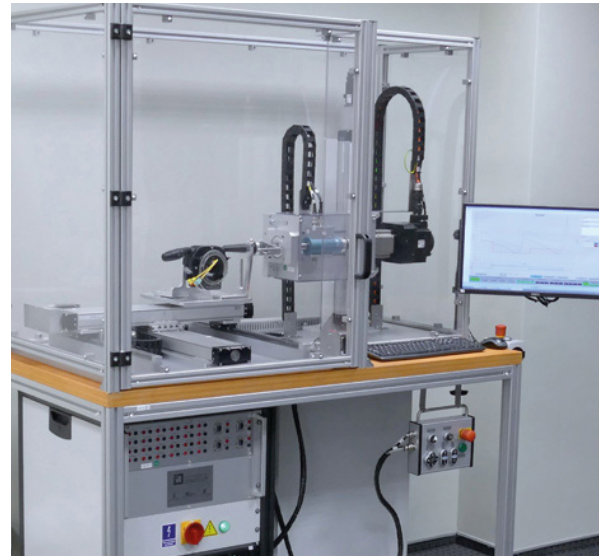


Functional Tests

Torque-angle verification at defined speed per customer specification.



Tensile and compression tests.



Tests

Force and stroke measurement | Contact stroke verification | Mechanical testing | Destructive testing

Vibration Tests

Test bench with **electrodynamic shaker and climatic chamber**.



Tests

Random vibration
Sinusoidal tests
Resonance tests (frequency search, duration)
Mechanical shocks
Temperature and humidity control during vibration tests



Environmental Tests

Water resistance verification for electro-technical products.



Dust resistance verification for electro-technical products.

