CASTOLDI

ACES

The ultimate waterjet drive control system by Castoldi

The Castoldi ACES is a fully integrated Electronic Control System powered by a high-performance 32-bit embedded processor utilizing a proprietary CAN bus network protocol.
ACES is compatible with both single and multiple waterjet installations across the Castoldi range.
The system delivers precision control of engine RPM, waterjet steering nozzles and reversing buckets, seamlessly transitioning between docking and cruising operational modes for optimal vessel handling in all conditions.

ACES has two switchable operating modes:

CRUISING MODE

(Control box + Electronic steering + Gauges or Display)

Control box

Precision-engineered control delivered through an ergonomic single or twin lever configuration, providing precise management of engine RPM and proportional waterjet bucket control.

Advanced functionalities are smoothly accessible through the integrated control panel, providing operators with direct command over:

- Waterjet built-in hydraulic clutch engagement/disengagement
- Clear-Duct unclogging system and intake grid opening
- Driving station selection
- Engine RPM/reversing bucket synchronization

Each lever incorporates a booster switch, enabling operators to increase engine RPM even with the reversing bucket in intermediate positions, for modulated thrust and precise control.

Electronic steering

Optimizes the steering system by eliminating the traditional hydraulic apparatus and complex hose routing from helm to waterjet, delivering a cleaner installation and enhanced reliability.

Advanced-engineered with an electromagnetic brake system, operators can easily customize steering parameters to match specific vessel requirements and operating conditions:

- Adjustable torque resistance for optimal steering feedback
- Customizable helm rotation settings for precise control
- Configurable nozzle travel limits for enhanced safety

In multiple waterjet installations, the system provides the electronic synchronization of the steering nozzles, eliminating the need for mechanical tie rods.

DOCKING MODE

(Joystick + Gauges or Display)

Joystick

Designed to revolutionize vessel maneuverability by transforming complex operations into intuitive control movements that enhance both safety and operational efficiency.

Inexperienced operators benefit from the simplicity of the "push to go" system, delivering more intuitive control than conventional systems. Experienced captains appreciate the precision and time reduction during critical docking operations and close-quarters maneuvering.

The advanced joystick provides complete freedom of movement across all three axes with 360-degree rotational capability through the ergonomic rotating head, enabling precise vessel positioning in any direction.

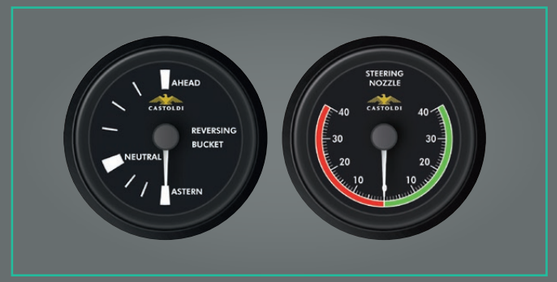
Integrated functionality is accessible through the backlit control panel, providing operators with direct command over:

- Joystick call
- Built-in hydraulic clutch engagement/disengagement
- Bow thruster control, Dynamic Positioning System or Smart Anchor activation (when equipped)

The wireless version extends operational flexibility, enabling full vessel control from any position onboard for enhanced situational awareness and operational convenience.

Display

Available as alternative to the gauges



Gauges

Show the position of the steering nozzles and reversing buckets.

BACKUP PANEL

Essential safety redundancy that ensures continuous vessel operation in case of primary control system malfunction. When activated, the backup panel bypasses the ACES system and provides direct manual control over all critical waterjet functions:

- Reversing bucket and steering nozzle
- Hydraulic clutch engagement/disengagement
- Movable intake grid operation
- Engine RPM management

This fail-safe system guarantees that operators retain full vessel control, ensuring safe navigation and maneuvering capability.

FEATURES / TECHNICAL DATA

- Power supply 12 V or 24 V
- CAN bus communication
- Interface with all type of engines governor including mechanical, analogic and digital (PWM, NMEA, etc..)
- Nmea 4 x enclosures, sensors and connectors
- IP 67 watertight joystick, control box, steering system and gauges
- Complete optical insulation of electrical signals
- Independent smart backup system
- Operating temperature: - 40° to 85°

SCOPE OF SUPPLY

- Electronic steering system with steering wheel
- Joystick with switches
- Control box with switch panel
- Steering and reversing gauges or display
- Integrated compass
- Backup control system with panel

The control box and the steering system can be ordered apart from the ACES electronic control system

ADDITIONAL FUNCTIONS

- Multi-deck installations
- Dynamic Positioning System
- Smart Anchor
- Autopilot interface
- Fire fighting docking mode
- USV interface for remote control platform

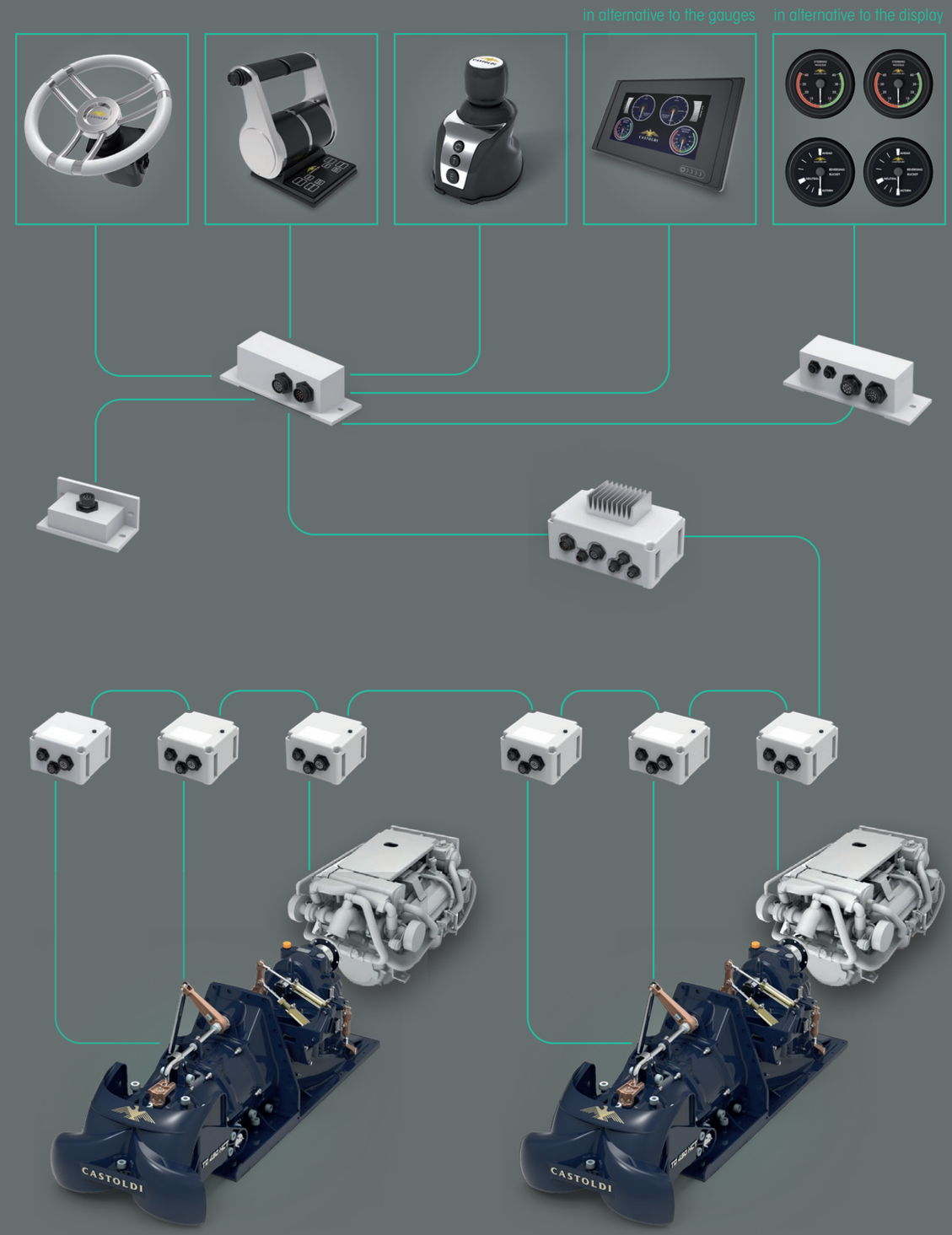
BENEFITS

- Fast and easy installation and setup
- Easy maintenance
- Easy retrofit
- Intuitive quick learning and user friendly
- Electronically synchronized steering nozzles in multiple waterjet installation (no steering linkage rod required)

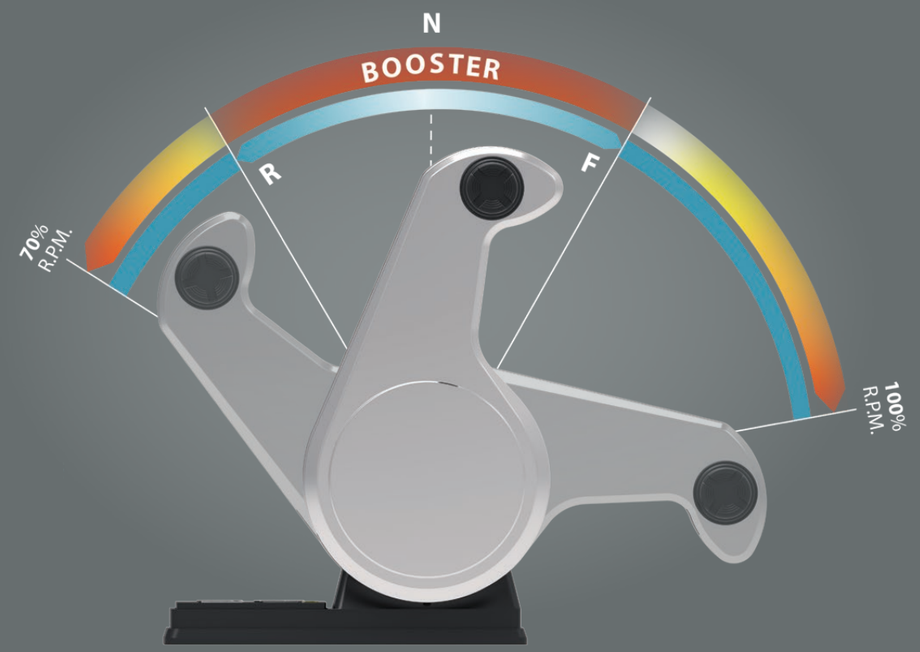
ADDITIONAL COMPONENTS

- Dual-redundant CAN-BUS system (suggested for triple and quadruple installations)
- Proportional joystick for steering (instead or with the steering wheel)
- Joystick with cruising mode function
- Azimuthal levers (instead of the twin lever control box - instead or with the steering wheel)

SYSTEM LAYOUT

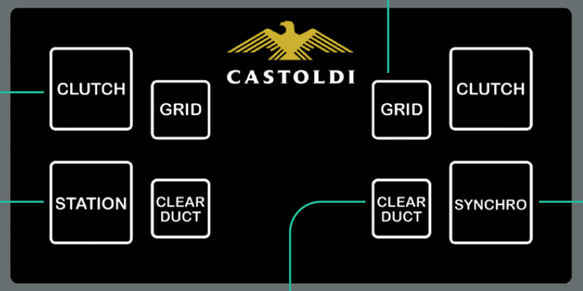


CONTROL BOX



Clutch
Press once to engage/disengage the waterjet built-in multi-disc hydraulic clutch

Grid
Press once to open/close the movable grid protecting the waterjet intake



Station
Press twice to call the control box at boat startup or when switching from the joystick. In multi-deck installations, enables control transfer between stations

Clear duct
Press and hold to activate the advanced Clear-Duct unclogging system, which simultaneously reverses impeller rotation and opens the intake grid to clear debris

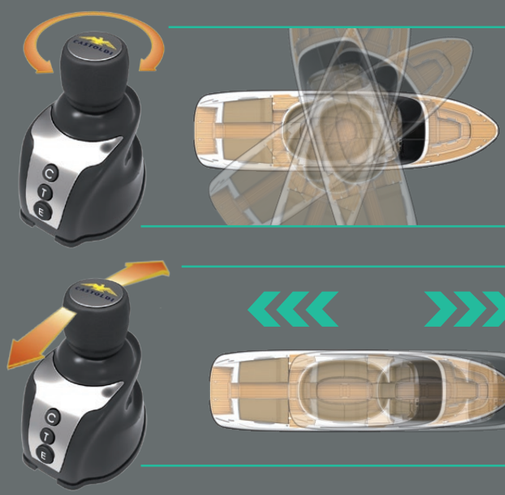
Synchro
In twin or multiple installations, press once to synchronize engine RPM and reversing buckets, enabling single-lever operation

JOYSTICK

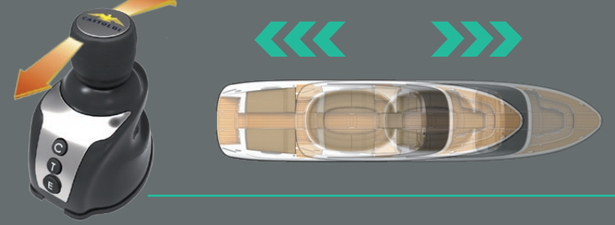
C button
Press twice to call the joystick at boat startup or when switching from the control box.

T button
When using the control box, press once to activate bow thruster control (when equipped).
When using the joystick, press twice C button to activate Dynamic Positioning System or Smart Anchor.

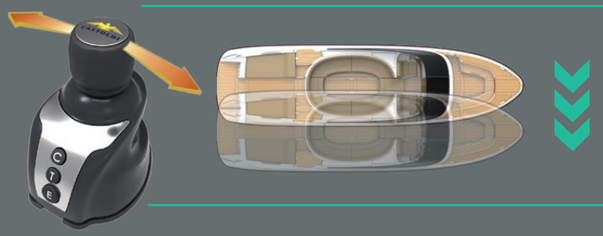
E button
Press once to engage/disengage the waterjet built-in multi-disc hydraulic clutch.



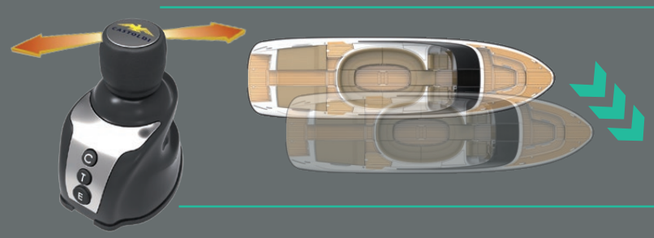
ROTATION
Rotating the joystick head pivots the vessel around its center point, with rotation speed proportional to head movement. The integrated compass ensures precise angular control by compensating for wind and current



FORWARD AND BACKWARD
Pushing the joystick forward or backward moves the vessel in the selected direction, with speed proportional to movement.The integrated compass ensures constant heading control



SIDEWAYS
Moving the joystick laterally shifts the vessel sideways, with speed proportional to joystick movement.
The integrated compass maintains a fixed bow heading throughout the maneuver

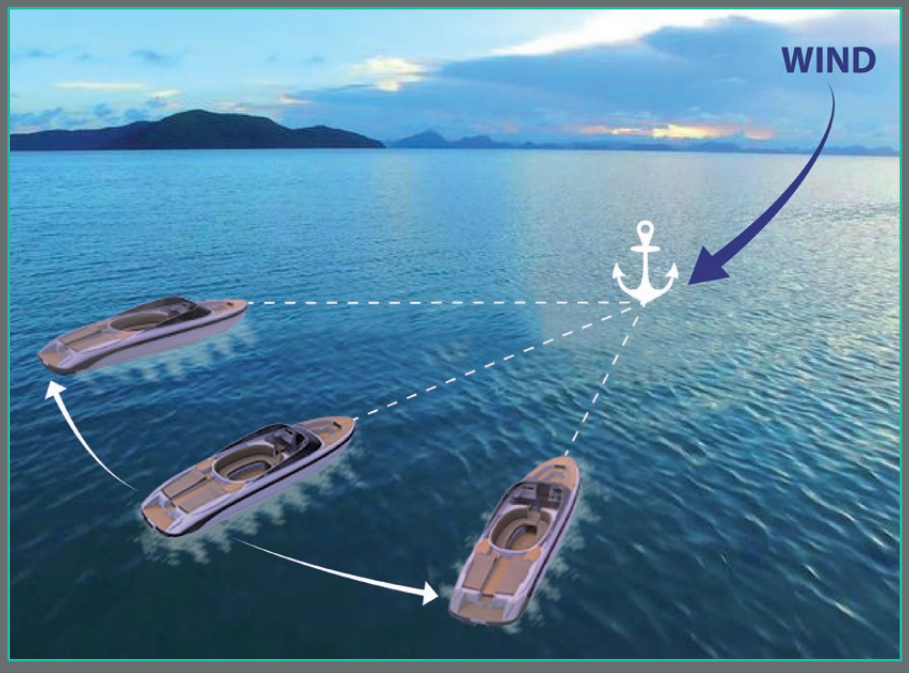


DIAGONAL
Moving the joystick diagonally moves the vessel in the set direction, with speed proportional to joystick movement. The integrated compass maintains a constant heading throughout the maneuver

ADDITIONAL FUNCTIONS

Dynamic Positioning System

When activated, automatically maintains the vessel's exact position and heading, compensating for wind, current, and wave action.



Smart Anchor

Simulates traditional anchoring by holding a virtual GPS point. The vessel swings freely around this position while the system automatically keeps the bow oriented into the wind.

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Since 1962

Forerunners, always

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