

VIPER JOYSTICK GRIP SERIES



CALDARO



THE LINK BETWEEN MAN AND MACHINE

VIPER – THE NATURAL GRIP



The first product we designed was the Viper grip in 2003. We first tried to convince our supplier that they needed to develop a better grip for their joystick, but they didn't see a problem. As soon as the Viper grip was available, two prominent market leaders in the mining industry wanted to use it in their machines.

One of them pushed us to develop an FNR switch with a lifespan of 5 million operations while meeting the IP67 standard for protection against particles and water. At that time, we could not find such a highly specified product anywhere in the world, so we had to develop it ourselves. That was a significant development step for the company.

Caldaro is a modern company with a decentralised organisation where people enjoy working and take responsibility. Exciting problems make our brains tick.

I love my job because it's rewarding to be part of developing the future operator environment. I also

think it's an honour to work with the leading manufacturers of machines in the world; they trust us and rely on our expertise.

Thanks to working with prominent customers, we quickly realised the importance of sustainability issues, which are close to our hearts.

We always want to deliver the very best product to our customers. Best as in "solving the customer's challenges and fulfilling their needs". We started as a trading company, but since 2003, we have been designing our own products.

To customise a product will sometimes mean just configuring or modifying one of the products we have already developed. In other cases, it means creating a whole new product.

Don't hesitate to ask us even if you want just a small batch; it's a matter of adapting the manufacturing methods. Our speciality is to think outside the box. Please go ahead and challenge us!

Claudio Talamo, CEO Caldaro

VERSATILE AND ADAPTABLE VIPER SERIES

Viper™ allows variable grip positions and thus prevents awkward angles and wear on the wrist joint, thanks to its highly appreciated, ergonomic design. Proportional steering can be performed easily with the thumb via a rocker button for maximum sensitivity and control, which means no more thumb rolling. As an option, you can even have a unique index finger-controlled gear selector (FNR) that makes operation comfortable and distinct.

The three largest Viper grips – standard, plus, and XT – are made of double-moulded plastic, with a hard inner core for durability and a soft outer shell for superior comfort. This provides not only an exclusive touch but also seals the two plastic halves properly, providing a grip made for harsh environments. The electronics are effectively protected.



BUILD IT TO MEET YOUR REQUIREMENTS

Viper™ is available in many different versions and sizes. The modular design makes it easy to fit all the functions you need to get quick access within your palm. The possibilities for adapting the controls are almost endless.

The Viper grips fit our joystick bases C14 and C15.

AVOID DOWNTIME

Viper™ has been tested and approved for tough environments and has a proven lifetime of more than 20 million operations*.

Viper™ proves that quality pays for itself. With Viper grips, you get a tool that makes your daily life easier and more comfortable at the same time as the operators' work becomes efficient.

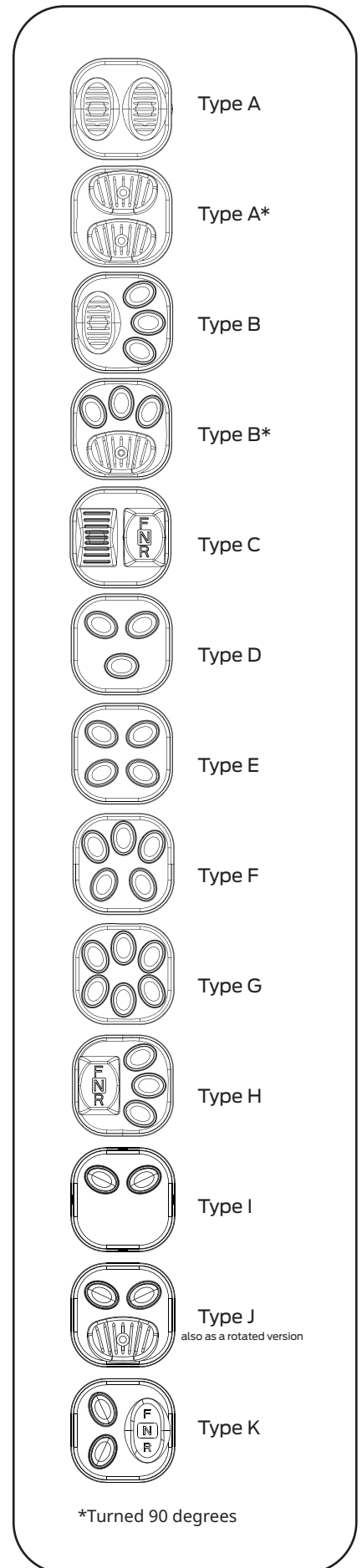
*referred to Viper + C14 12-degree angle deflection

FEATURES FOR THE VIPER GRIPS

- Fits C14 and C15
- Directly suitable for a hydraulic valve
- Modular design; numerous adaptation possibilities
- Multifunction grip
- Ergonomic design
- Buttons
- A capacitive sensor for "operator presence" detection

OPTIONS FOR THE VIPER GRIPS

- Choose between 10 faceplate panels
- Incorporate the small Co3B joystick within the Viper faceplate
- Black buttons
- Multicoloured buttons
- Hall effect sensor

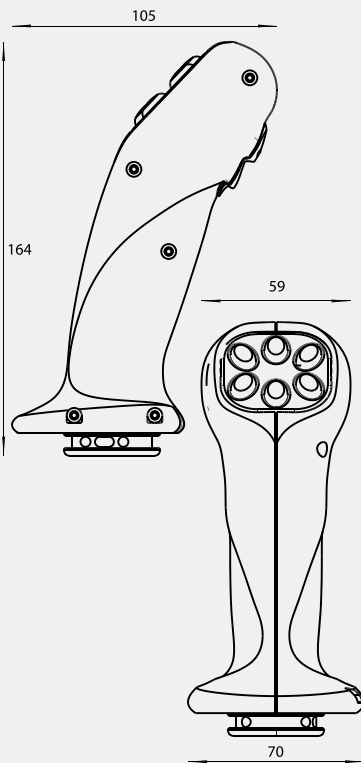




C14

VIPER

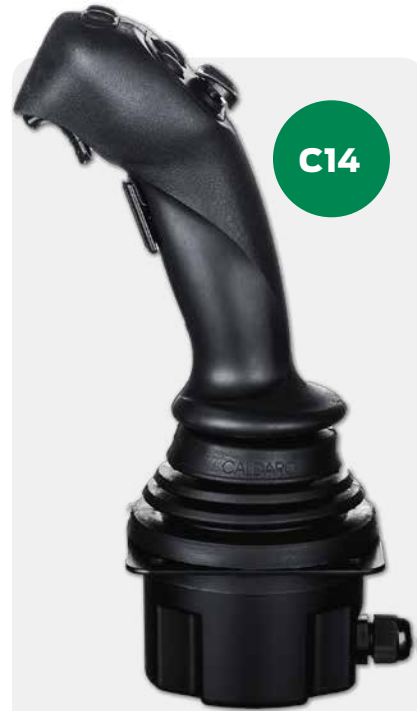
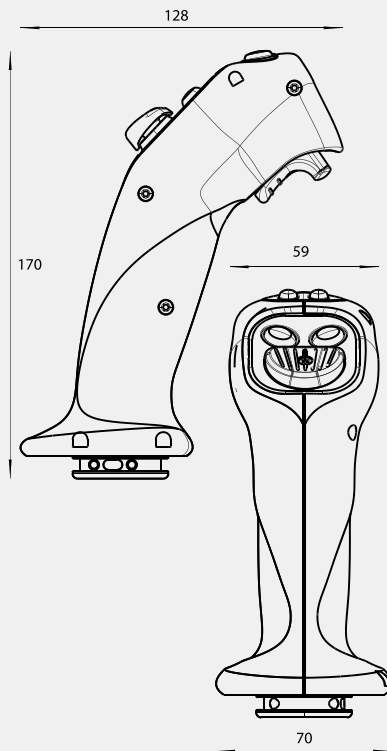
1-2 proportional sensors,
height 164 mm



C14

VIPER PLUS

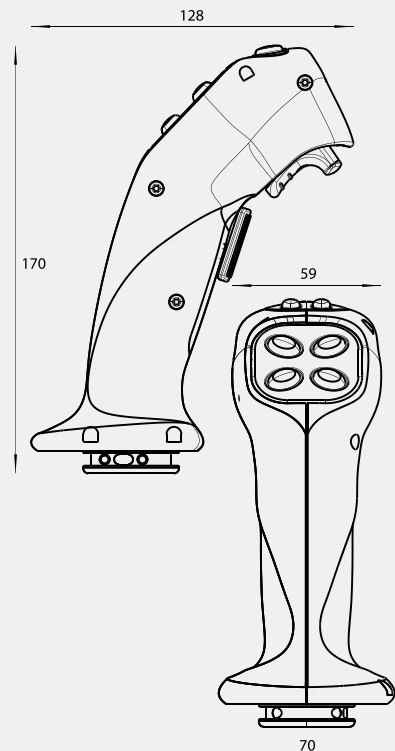
1-2 proportional sensors,
height 170 mm



C14

VIPER XT

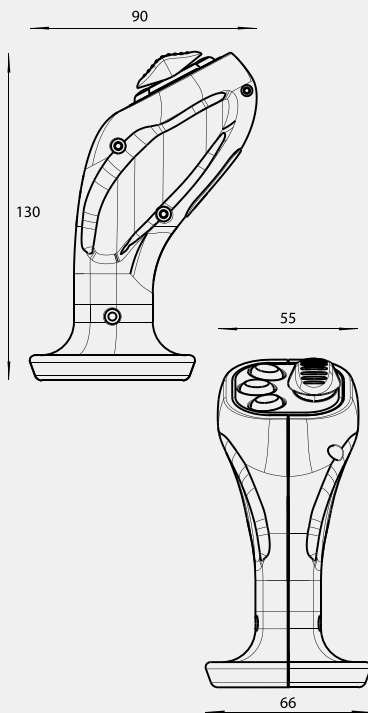
1-3 proportional sensors,
height 170 mm





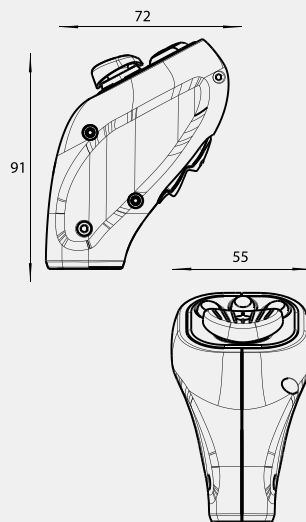
VIPER MEDIUM

1-3 proportional sensors,
height 170 mm



VIPER SLIM

1-2 proportional sensors,
height 164 mm



SPECIFICATIONS

CAN'T FIND YOUR REQUIRED SPECIFICS? CONSULT US!

MECHANICAL PERFORMANCE

Viper Standard, Plus, XT: dual mould black plastic

Viper Medium, Slim: single mould black plastic

High grade silicon (button)

Temp. range: -40°C to +85°C (-40°F to 185°F)

Ingress Protection: IP 66 & IP67 (Viper), IP65 (ViperPlus)

Maximum load: 600 N

PUSHBUTTON AND TRIGGER SWITCHES

Function: Momentary type, tactile action

Switch life: min 10 000 000 operations

Power rating: 50mA at 24 VDC

Optional: Changeover type (NO/NC)

Optional: High current switch (1A at 24 VDC)

FNR SHIFTER

Function: Alternating type, haptic action

3-position rocker switch (F, N and R)

Separate switch signal for each position

Life expectancy: Min 5 000 000 operations (mechanical)

Power rating: 1A at 24 VDC

PROPORTIONAL ROCKER

Sensor: Hall effect, ratiometric

Single or dual output

Mechanical travel: $\pm 12^\circ$ from centre

Power supply: regulated 5 VDC ($\pm 10\%$)

Proportional voltage output: 10–90%, dual crossed or parallel, others upon request

Life: min 10 000 000 operations

Current consumption: 14mA

EMC: 100 V/m

ESD (Connector pin/air): $\pm 8\text{kV}/+15\text{kV}$

OPERATOR PRESENT SENSOR (DMH)

Optional contactless electronic sensor located inside handle.

Power supply: 7.0–28 VDC or 5 VDC

Characteristics of output: 5 VDC = ON (with hand present) and 0V = OFF (with hand not present)

Current consumption: 30mA at 28 VDC and 15mA at 5 VDC

Switching time: 0.1 ms

EMC: 100 V/m (preliminary)

BUILT FOR HEAVY DUTY



The Caldaro C14 joystick base provides the best combination of full grip size and perfect precision. It's large enough to match the full-sized heavy-duty machines and strong enough to withstand the toughest operators. You can rely on the C14 to stay intact and keep its precision year after year.

All temperatures, hot or cold, the C14 will endure all temperatures from -40°C to $+85^{\circ}\text{C}$ (-40°F to 185°F).

The best material has been chosen for each component. The rubber mixture endures the toughest conditions.

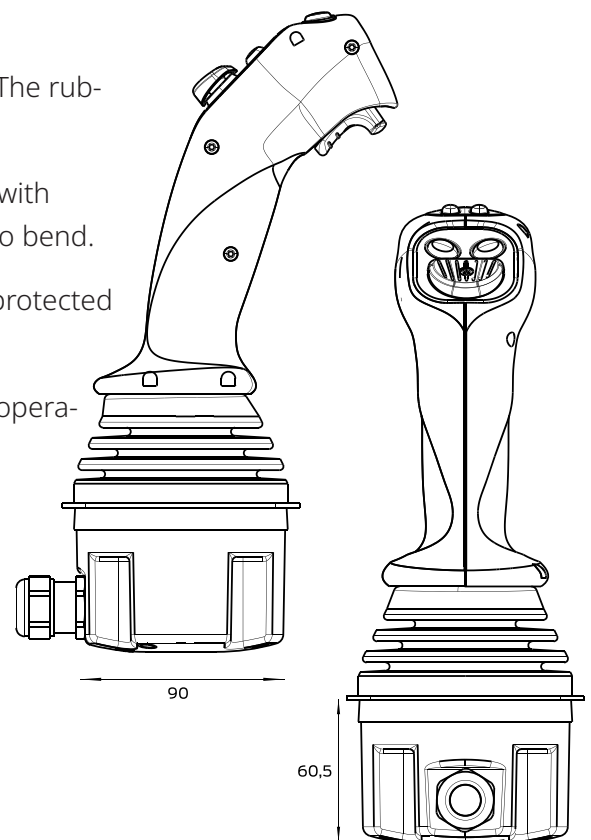
The strong shaft is manufactured in one single piece and with extended dimensions. This makes it practically impossible to bend.

Thanks to its **sealed panel mounting**, the electronics are protected from fluids, salt, and oil.

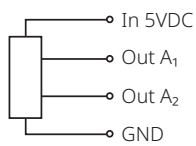
Precision that lasts; it will withstand more than 10 million operations and keep its precision over time.

DEVELOPED WITH CUSTOMER INPUT

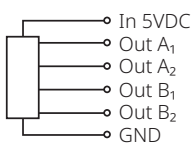
- Tested in salt and copper mines
- Excellent guide-feeling



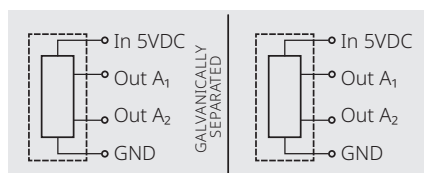
SINGLE OUTPUT



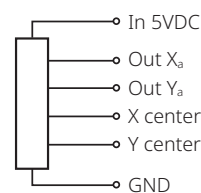
DUAL OUTPUT



DUAL INDEPENDENT OUTPUT



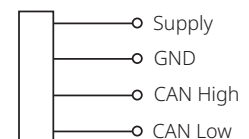
SINGLE + DIGITAL OUTPUT*



*Centre validation signal 1 per axis (please consult Caldaro)

CAN INTERFACE

CANopen, CANopen Safety or J1939 protocol



THE UNBREAKABLE JOYSTICK



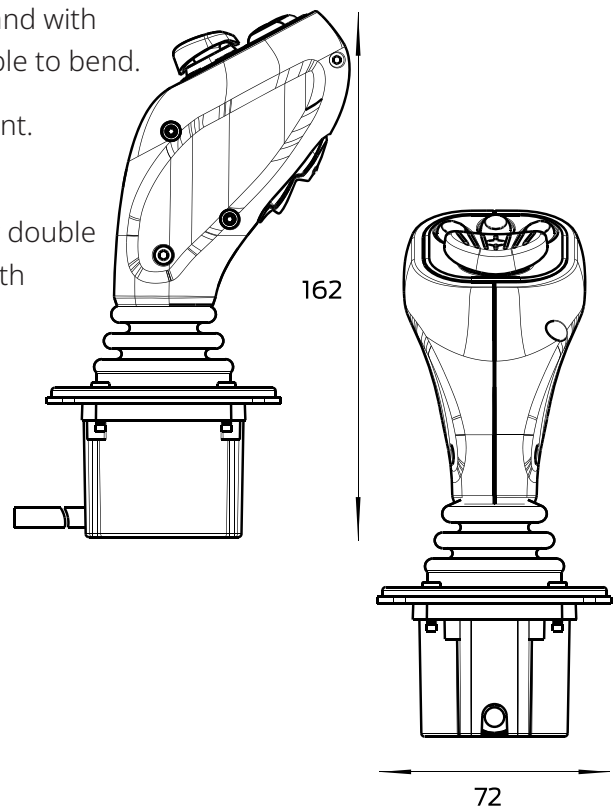
Caldaro tackled the challenge of designing an unbreakable joystick. The result is the C15. This can be used across a spectrum of applications, from the toughest environments to exquisitely high-precision, fine-tuned medical equipment.

Protected electronics: circuit boards and electronics are potted with a silicone compound that protects them from threats such as salt, mist, water, lubricants and virtually all chemicals.

The strong shaft is manufactured in one single piece and with extended dimensions. This makes it practically impossible to bend.

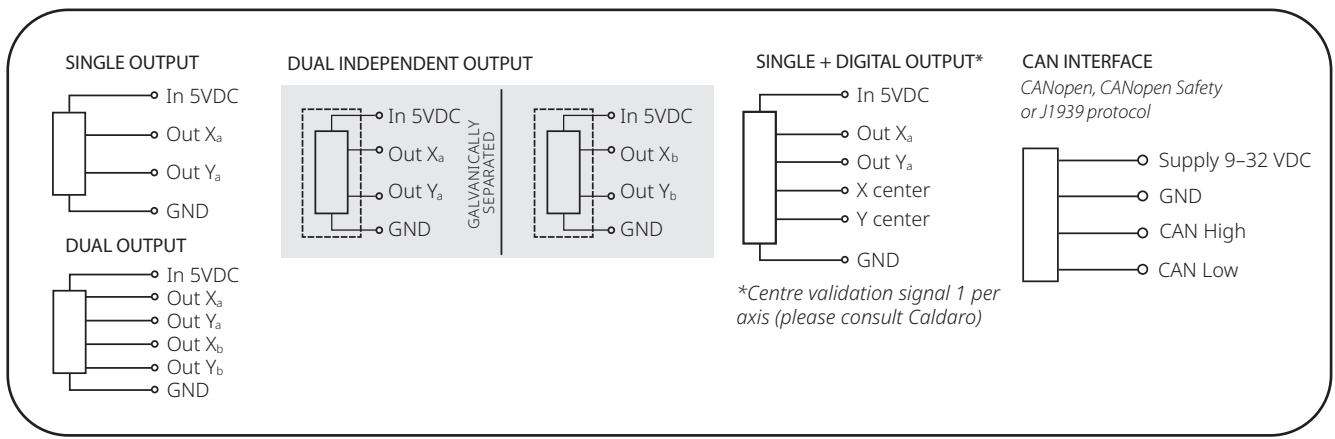
The best material has been chosen for each component. The rubber mixture endures the toughest conditions.

Full redundancy with direction switches and double or double independent output signals. The C15 is also available with CAN interface.



OTHER FEATURES MAKING C15 IRRESISTIBLE:

- Guide-feeling
- Operating angle 9, 12, 17 or 20 degrees
- Sealed panel mounting



CUSTOMER-ADAPTED PRODUCTS MADE IN SWEDEN

Caldaro is an international company based in Sweden that develops premium HMI products like joysticks, pedals and sensors for customers with high-quality expectations and special requirements. Our products are typically used in harsh conditions or operating environments where ergonomics and design are important.

We develop our products according to each customer's distinctive needs while pushing the boundaries of design and technology. Our extensive know-how from several demanding applications allows us to design each product according to each customer's quality and function needs.

We are dedicated to providing modern, safe controls that lead the industry in durability, precision, and dependability through constant innovation. Ergonomics and simplified design go hand in hand. We are the link between man and machine; our task is to optimise that interaction.

WE DELIVER HIGH-END SOLUTIONS

We have become the go-to supplier for customers with high performance, accuracy, and functionality demands in various industries worldwide.

With solid growth, we have established ourselves as the leading player in our niche. A modern organisation with cutting-edge expertise at our head office means we can deliver on short lead times with a proven track record of reliability.

Outsourced production allows us to increase or decrease capacity as necessary while we get the best help and solutions. We see this as a winning model.

We operate in an exciting technical environment where, in close cooperation with our customers, we are designing the operator environments of the future.



SUSTAINABILITY IS NECESSARY



We are committed to building a sustainable society with our customers, partners and stakeholders. Our focus areas are the environment, ethics, social responsibilities, and economy.

In everything we do, we follow Caldaro's values, ethical principles, and appropriate laws and regulations. In line with our values and Code of Conduct, we aim to provide excellent customer experiences professionally in all our projects. We deliver on our customers' promises and are committed to increasing customer satisfaction.

Our fundamental principle is to offer the best working conditions. With happy, skilled and motivated employees, we can design the best possible products and thereby get satisfied customers.

We increase environmental awareness by communicating our sustainable goals and results internally and externally to ensure that quality and environmental policies are embedded and adhered to at all levels of the organisation.

In 2019, we committed to the UN Global Compact's sustainability goals. In 2022, we received our first. Ecovadis sustainability rating: their Platinum medal for the top 1% of companies.

CALDARO QUALITY

- Joysticks and pedals built to last "forever". We always perform extensive life and other tests to ensure we can exceed our specified requirements.
- Long life expectancy is also a matter of sustainability.
- We use the most durable materials.
- Ergonomic design.
- Excellent precision.
- Simplified design to reduce the number of parts.
- Custom-made to fit the customer's needs.
- Constantly working to get more sustainable: environment, ethics, social, and economy.
- The ID number on each manufactured item allows for full traceability and test data from end-of-line testing if needed.

PREMIUM PRODUCTS

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INDUSTRIAL JOYSTICKS

Our full grip-sized industrial joysticks are designed to suit the most demanding heavy-duty applications in terms of mechanical strength and environmental requirements. Designed with the operator in focus, these joysticks are ergonomic and user-friendly, built for operating every productive hour.

Our palm grip joysticks are designed with particular emphasis on operator comfort and precision control. After decades of experience working with joysticks, our technical advisers are well placed to supply customers with the ideal solution for their individual needs, and always with various CAN bus options.

Our fingertip joysticks are designed for smooth operator control with high precision. These mini joysticks are often used in precision machines, forklifts and remote controls but can also be found in agricultural applications.

We can offer a wide range of joysticks with up to 5 analog axis and contactless redundant sensors.



INDUSTRIAL PEDALS

Our specially designed foot pedals for heavy-duty throttle, brake and retardation control are as robust as they are precise. All our industrial pedals are designed and manufactured for the most demanding applications in harsh environments. The pedals withstand the toughest conditions in all surroundings for dependability and your safety.



POSITION SENSORS

Caldaro has been supplying sensors since the early 80's. Initially, it was only potentiometers with wire-wound or conductive plastic in both rotating and linear versions. Currently, contactless technology (Hall effect and inductive) has evolved and is now used effectively in many different sensor types, both rotating and linear.

MARINE CONTROLS

Real craftsmanship levers made by our specialist team. Every control lever has a smooth, elegant feeling resulting from decades of refinement and engineering experience. Since we started in 1985, we have developed about 200 different variations for a wide variety of marine and offshore applications.

