

# Remote-controlled valve system



At your service



**MACGREGOR**

Designed to perform with the sea



1

### Networked HMIs for

- Control
- Monitoring
- Diagnostics

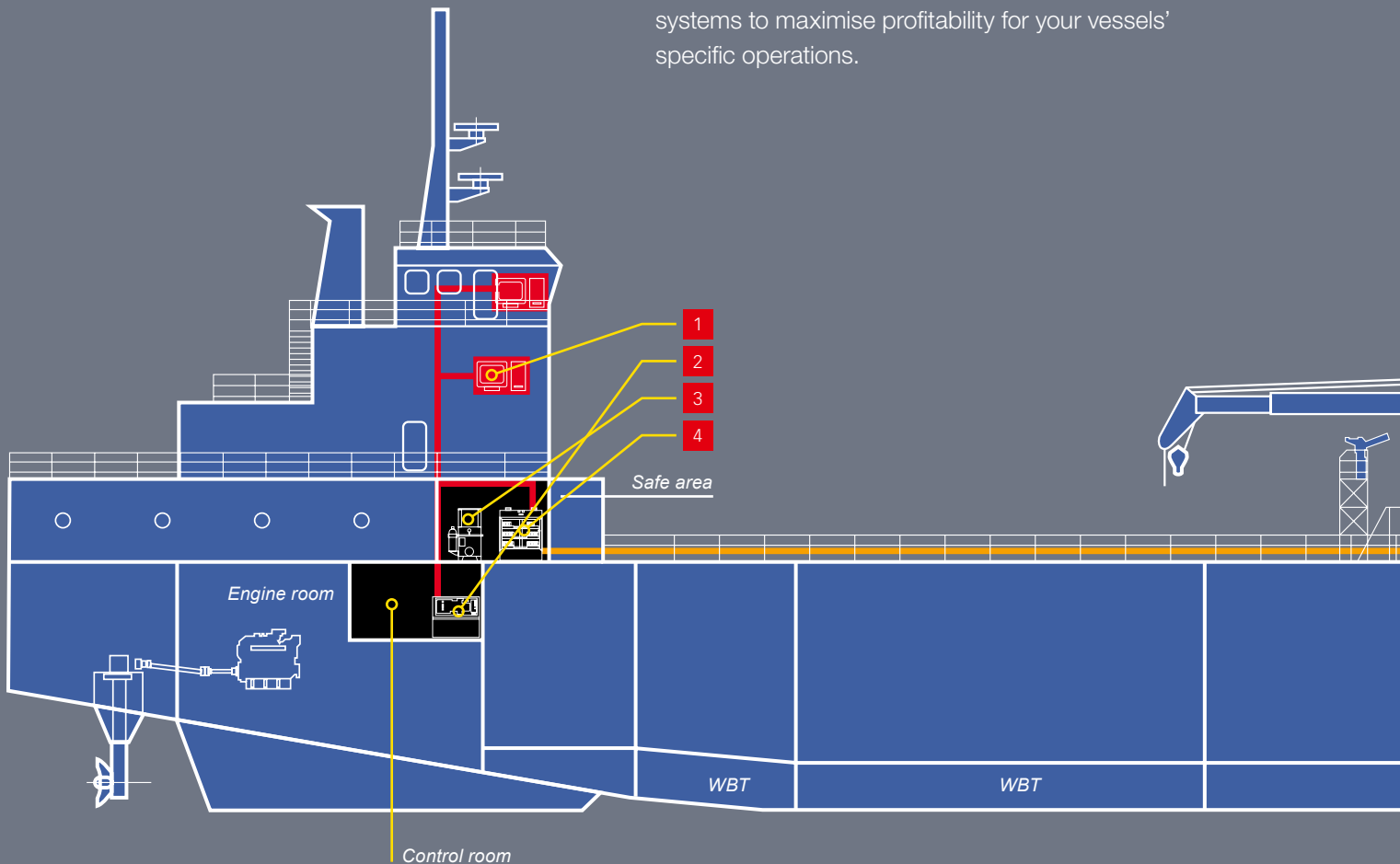


## Overview

MacGregor's remote controlled valve system utilises the physical characteristics within a hydraulic circuit to produce reliable information on valve position without the use of electrical cabling either on deck or in the tanks. The system gives the operator positive positional indication for variable valves and clear indication when the O/C (Open/Closed) valves are locked in either fully open or closed positions.

MacGregor's global manufacturing expertise produces a cost effective solution while focusing upon maximising reliability.

Flexibility and local knowledge enables us to design systems to maximise profitability for your vessels' specific operations.



2

### Modular valve control unit (VCU)

- Designed for specific systems
- Simplified visual layout
- Modular design provides standby capacity

3

### Compact hydraulic power unit

- Accumulator matched to system operation
- Low noise
- Standard components

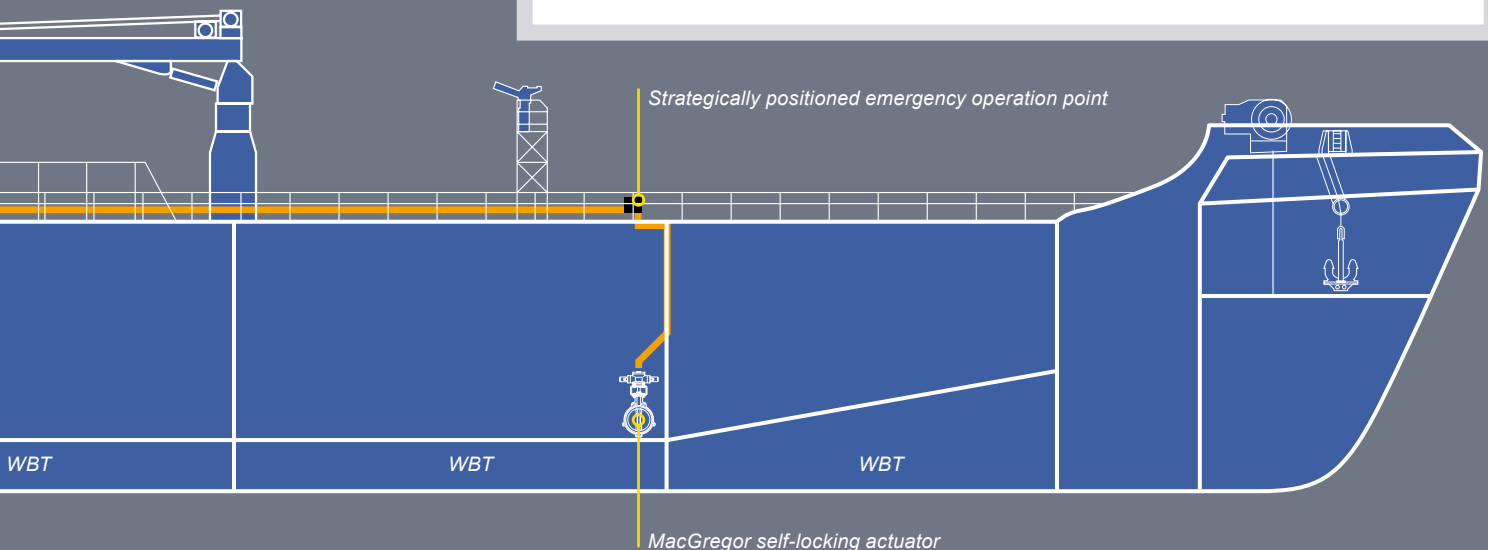
4

### Control valve stand

- Local operation of solenoid valves
- Simple tube identification and installation
- Quick fit field wiring connections
- Correct maintenance access
- Supplied ready for installation

### System features

- No electrical equipment on deck or in tanks
- Competitively priced world-class manufacturing techniques
- Great flexibility during conversions and modernisation
- Mechanical end locking status for each valve
- Accurate and reliable control through proven design
- Use of standard, off-the-shelf components
- Backed by MacGregor's worldwide service network and our experience in the design of ship systems







### **Modernisation opportunities**

- Remote deck controls replaced
- Replacement of worn flow metres
- Accurate throttling
- Simplification of unreliable system

# Flow management components

## Easy VCU

The MacGregor VCU is specifically designed to offer flexibility combined with accuracy for repeatable valve operation.

Simple programming language allows operators to commission and alter program parameters with the easy-to-use keypad mounted on the fascia. No peripherals are required.

A modular network arrangement gives a high level of standby capacity which also allows modernisation to be completed with minimum disruption and a reduction in costs.



## Hardware integration

HMI interface and control for cargo, ballast and fuel tanks is fast becoming a standard installation feature.

Significant increases in operating performance can be gained by correctly designing and installing the HMI interface. MacGregor offers specialised consultancy to ensure that the proposed system is optimised for the vessel's use.

MacGregor HMI integration offers remote dialogistic, data collection and monitoring of the entire loading/unloading cycle of ballast and cargo systems.



## Engineered system control

Each MacGregor control panel is built using world-class manufacturing techniques. The vessel operating efficiency drives the design.

Control during loading and unloading operations is simplified by featuring only relevant indication and switches.

All panels, valve stands and other power plant are supplied with easy-to-fit connections which reduce installation time and increase build quality.



## Flow control

The MacGregor Mark III flow meter has been developed to offer lifetime accuracy combined with cost-effectiveness. Its modular simplicity is the result of the latest advances in manufacturing techniques.

The modularity and size of the flow meter facilitates easy modernisation of any remote control valve system without the need to change the main equipment.

The Mark III flow control assembly is designed to the Cetop Three standard, allowing a wide variety of system modernisation at low cost.





# Flow management components

## Valve stands & power packs

Valve stands and power packs form the heart of any hydraulic system. A consultation with MacGregor will establish the requirements of each valve stand and power pack to ensure that the system:

- Is reliable and easy to commission and maintain
- Is provided with suitable standby capacity
- Has all relevant system dynamics considered
- Keeps space requirements to a minimum.

The MacGregor valve system can be used to upgrade actuators and valve combinations of any make or age. A free survey is available through your local MacGregor service office.



## Tubing

MacGregor recommends using copper nickel multicore tubing for all large hydraulic systems.

The benefits are:

- Typically 30–40% less man hours required
- Low risk of damage due to bundle strength
- Tube identification is easy

MacGregor's established partnership with tube manufacturers allows a competitive offering of a comprehensive range of multicore tubing. Installation, training and site assistance are available on request.

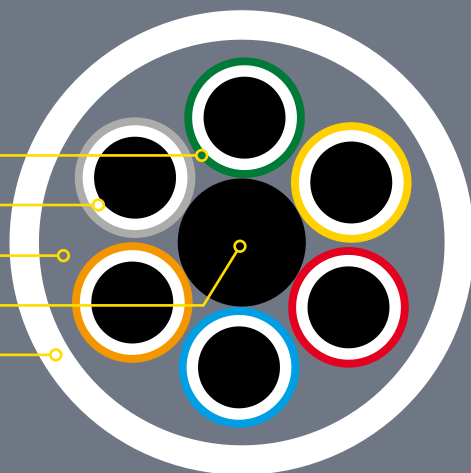
Coloured identifying inner sheath

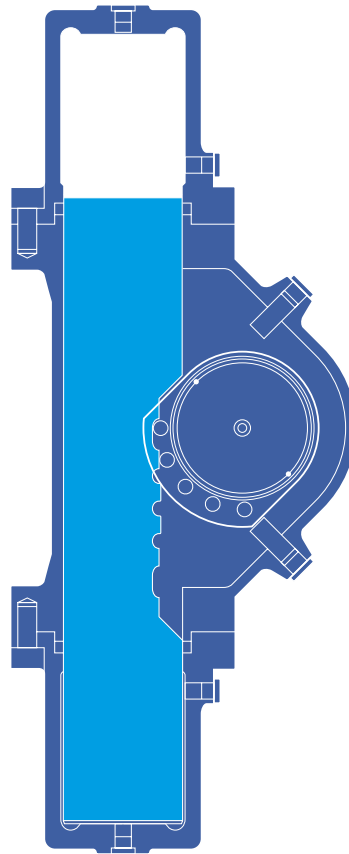
Tube

Filler

PVC rod

Outer sheath





Double acting actuators		
Size	T @ 150Bar NM	Flange ISO
30	247	F07
35	450	F10
45	780	F12
55	1245	F12
65	2010	F16
75	3135	F16
90	5273	F16
115	9825	F25

## Actuators

The MacGregor double acting actuator is designed with secure mechanical self end locking. The trusted rack and pinion design has an extended groove preventing the spindle from rotating without the piston first being moved.

The actuator also has air bleed fittings at either end of the cylinder allowing the connection of a standard hose for easy removal of air during filling and commissioning of the system.

MacGregor actuators can be fitted to any manufacturer's valve using an adaptor. Different applications will require various valve type, material, size, design and pressure. MacGregor offers a wide variety of valves for many applications.

MacGregor will always mount the actuator to the valve to guarantee correct operation.



1



2 core



3 core



4 core



5 core



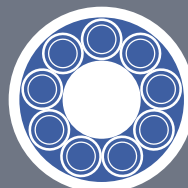
6 core



7 core



8 core



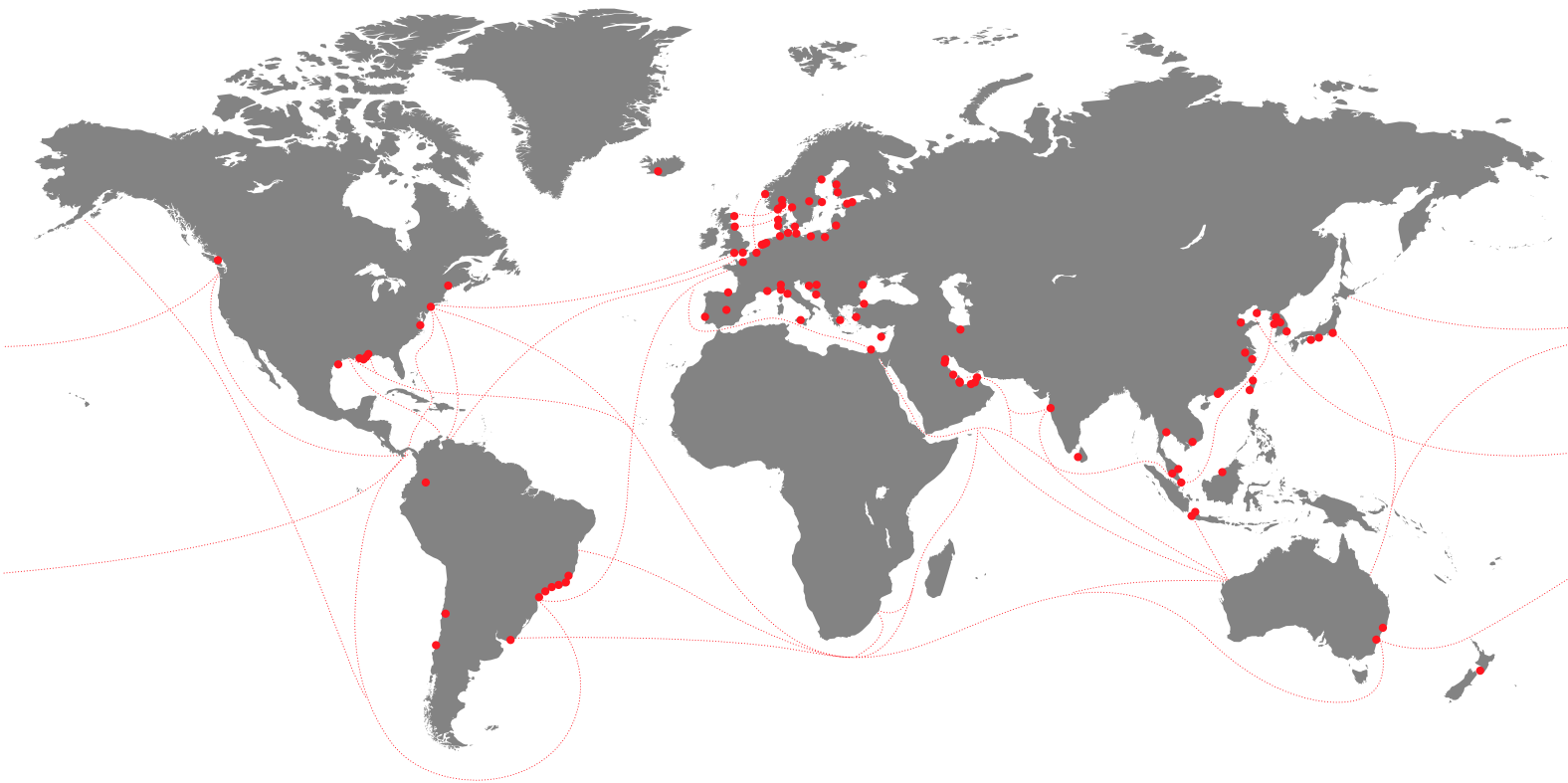
9 core

## A complete range of services and components

is available from MacGregor worldwide network, including:

- Newbuildings
- Modernisations
- Conversions
- Maintenance contracts
- Hydraulic fluid testing
- Comprehensive survey of existing system
- Tool kits

Wherever needed, you can rely on our support.



MacGregor shapes the offshore and marine industries by offering world-leading engineering solutions and services with a strong portfolio of MacGregor, Hatlapa, Porsgrunn, Pusnes and Triplex brands. Shipbuilders, owners and operators are able to optimise the lifetime profitability, safety, reliability and environmental sustainability of their operations by working in close cooperation with MacGregor.

MacGregor solutions and services for handling marine cargoes, vessel operations, offshore loads, crude/LNG transfer and offshore mooring are all *designed to perform with the sea*.

*MacGregor is part of Cargotec. Cargotec's class B shares are quoted on NASDAQ OMX Helsinki Ltd.*

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