SHIPBUILDING

Pressure and temperature monitoring solutions



trafag
sensors controls

Trafag - Swiss quality solutions to rely on

Since more than 50 years, Trafag has been a trusted partner in the maritime industry for pressure and temperature monitoring instruments. We meet the continuously rising expectations of the shipbuilding industry in respect of safety and reliability of our products through constant innovation and close partnerships with industry leaders. Ship docking times are short and spare parts are needed quickly. Worldwide Trafag branch offices and distributors ensure that instruments can be delivered to any port in minimal time.

Pressure and temperature monitoring solutions for marine applications

Engines
Monitoring of pressure and temperature of lubricants, fuel, intake air, turbo charge, cooling water or common rail injection

Hydraulics
Hydraulics on deck cranes, cylinders or line pressure

Pumps
Monitoring of pump pressure of various media also for explosive areas

Filling level
Level monitoring in ballast tanks or water ingress control systems

Ballast water
Pressure monitoring in physical and chemical treatment units

Gears
Pressure and temperature monitoring of lubricant

Compressors
Monitoring of inlet and outlet pressures prior to and after compression

Separators
Preparation of fuel oils and treatment of bilge water

Steering
Pressure monitoring of hydraulic oil



Approved worldwide

Product lines for pressure and temperature control

Trafag draws from decades of experience in the production of pressure and temperature measuring instruments for maritime applications. Long life reliability of Trafag products continuously meets the rising expectations of the ship building industry. Research and development works hand-in-hand with engineering to meet the requirements of marine classification authorities.



Pressure transmitters

The electronic pressure transmitters are based on Trafag's own sensor technologies: thin-film-on-steel and thick-film-on-ceramic. In combination with the in-house developed ASIC electronics, these offer excellent long-term stability and maximum precision under the roughest of conditions. The large selection of designs makes it possible to choose the optimal product for a multitude of applications.



Pressure switches

Trafag's mechanical pressure switches offer high vibration resistance and switchpoint accuracy in combination with an extraordinary rugged design for years of maintenance-free operation in rough conditions. Different sensors based on bellow, membrane and piston principle cover a wide range of pressure ranges, media and load cycle profiles.



Thermostats

For decades of experience in successfully supplying thermostats to the shipbuilding industry, Trafag products have a long track record of proven reliability and accuracy. Different product lines with a variety of features and options offer a wide media temperature range and high switchpoint accuracy in a very robust design.

NAE 8256

Miniature Pressure Transmitter



Features

- Measuring accuracy 0.3 %, 0.5 %
- Completely welded steel sensor system without additional seals
- Smallest design
- High resistance to over pressure
- Excellent long-term stability

Technical Data	
Measuring principle	Thin film on steel
Measuring range	0 ... 6 to 0 ... 600 bar 0 ... 100 to 0 ... 7500 psi
Output signal	4 ... 20 mA
Accuracy @ 25°C typ.	0.5 %: ± 0.5 % FS typ. 0.3 %: ± 0.3 % FS typ.
Media temperature	–40°C ... +125°C
Ambient temperature	–40°C ... +125°C
Approval / conformity	ABS, BV, DNV-GL, KRS, LRS, NKK, RINA, RMRS

Data sheet www.trafag.com/H72305

NSL 8257

Low Pressure Transmitter



Features

- Smallest design
- Relative or absolute pressure measurement
- Excellent temperature resistance
- Improved vibration resistance
- Completely welded steel sensor system without additional seals

Technical Data	
Measuring principle	Thin film on steel
Measuring range	0 ... 0.2 to 0 ... 2.5 bar 0 ... 3 to 0 ... 30 psi
Output signal	4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric
Accuracy @ 25°C typ.	0.15 ... 0.8 % FS typ.
Media temperature	-40°C ... +125°C
Ambient temperature	-40°C ... +125°C
Approval / conformity	DNV-GL, RINA

Data sheet www.trafag.com/H72302

EPN 8288

Marine Pressure Transmitter with steel sensor



Features

- Excellent long-term stability
- High resistance to over pressure
- Completely welded steel sensor system without additional seals
- Different accuracy classes

Technical Data	
Measuring principle	Thin film on steel
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi
Output signal	4 ... 20 mA, 0 ... 10 VDC 0.5 ... 4.5 VDC ratiometric
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Media temperature	–40°C ... +125°C
Ambient temperature	–40°C ... +125°C
Approval / conformity	MRC (Mutual Recognition Certificate) pending

Data sheet www.trafag.com/H72318

ECTN 8477

Marine Pressure Transmitter with ceramic sensor



Features

- Economical
- Good media compatibility
- Relative or absolute pressure measurement
- Titanium version optional

Technical Data	
Measuring principle	Thick-film-on-ceramic
Measuring range	0 ... 0.1 to 0 ... 250 bar 0 ... 1.5 to 0 ... 3000 psi
Output signal	4 ... 20 mA
Accuracy @ 25°C typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)
Media temperature	-25°C ... +125°C
Ambient temperature	Max. -25°C ... +125°C
Approval / conformity	DNV-GL, KRS, RINA

Data sheet www.trafag.com/H72322

EPN/EPNCR 8298

Engine Pressure Transmitter



Features

- Nominal pressure up to 2500 bar (Common Rail) with high pressure threaded connection
- High vibration resistance
- Good temperature resistance
- Different accuracy classes
- Completely welded steel sensor system without additional seals

Technical Data	
Measuring principle	Thin film on steel
Measuring range	0 ... 2.5 to 0 ... 2500 bar
Output signal	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Media temperature	-40°C ... +125°C
Ambient temperature	-40°C ... +125°C
Approval / conformity	ABS, BV, CCS, DNV-GL, KRS, LRS, NKK, RINA, RMRS

Data sheet www.trafag.com/H72312

NPN 8264

Picotrans - Pressure transmitter for flange connection



Features

- Compact design
- Flange connection (PICO family)
- High vibration resistance
- Good temperature resistance
- Completely welded steel sensor system without additional seals

Technical Data	
Measuring principle	Thin film on steel
Measuring range	0 ... 2.5 to 0 ... 250 bar
Output signal	4 ... 20 mA
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Media temperature	-40°C ... +100°C
Ambient temperature	-40°C ... +100°C
Approval / conformity	ABS, BV, CCS, DNV-GL, KRS, LRS, NKK, RINA, RMRS

Data sheet www.trafag.com/H72313

DCS 8864

Display Control Switch



Features

- Simple adjustment of switchpoints
- Back-lit LCD-Display
- Measurement and indication of pressure (incl. switch state) and sensor temperature in various units
- High resistance to pressure cycling
- Output signal 2 relays, electrically isolated

Technical Data	
Measuring principle	Thin film on steel
Measuring range	0 ... 1 to 0 ... 600 bar
Output signal	4 ... 20 mA, 0 ... 10 VDC 2 Relays, electrically isolated 30W (max.1A), 36 VAC/ DC
Accuracy @ 25°C typ.	± 0.5 % FS typ.
Media temperature	-25°C ... +125°C
Ambient temperature	-25°C ... +80°C (LCD display active -10°C ... +70°C)
Approval / conformity	DNV-GL

Data sheet www.trafag.com/H72605

EPN-S 8320

Electronic Pressure Switch



Features

- Rugged design for harsh environments
- Wide temperature range
- Excellent long-term stability
- Very compact design
- Switchpoint factory set or programmable on site with Trafag Sensor Communicator SC

Technical Data	
Measuring principle	Thin film on steel
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi
Output signal	Transistor (open source)
Accuracy @ 25°C typ.	± 0.5 % FS typ. (Switchpoint)
Media temperature	-40°C ... +125°C
Ambient temperature	Standard: -25°C ... +85°C Option accessory 67: -40°C ... +125°C
Approval / conformity	DNV-GL

Data sheet www.trafag.com/H72333



Programming device Sensor Communicator SC
see page 14

trafag sensors controls

EXNT 8292

Ex Pressure Transmitter



Features

- II 1G Ex ia IIC T4/T6 Ga
  II 1 D Ex ia IIIC T130° Da
  I M1 Ex ia I Ma
  II 1/2G Ex ia IIC T4/T6 Ga/Gb (with plastic-type connector)
- Pressure ranges from 0.4 to 2000 bar
- Completely welded sensor system
- Optional with hydrogen-compatible sensor
- ATEX and IECEx

Technical Data	
Measuring principle	Thin-film-on-steel
Measuring range	0 ... 0.4 to 0 ... 2000 bar 0 ... 5 to 0 ... 30000 psi
Output signal	4 ... 20 mA
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Media temperature	Max. –40°C ... +120°C
Ambient temperature	Max. –40°C ... +120°C
Approval / conformity	GL, KRS ATEX / IECEx, according to the norm EN/IEC 60079-0/EN 60079-11/ EN 60079-26/ EN 50303

Data sheet www.trafag.com/H72329

EXNA 8852/8853

Ex Pressure Transmitter



Features

- Explosion-proof Ex ia IIC T3 ... T6
- Pressure ranges from 100 mbar
- Versions with frontal flush diaphragm
- Media temperature to 150°C
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 µs)

Technical Data	
Measuring principle	Piezoresistive
Measuring range	0 ... 0.1 to 0 ... 1000 bar
Output signal	4 ... 20 mA
Media temperature	T3: -25°C ... +150°C T4: -25°C ... +100°C T6: -25°C ... +55°C
Ambient temperature	T3/T4: -25°C ... +85°C T6: -25°C ... +55°C
Approval / conformity	GL, KRS

Data sheet www.trafag.com/H72227

ECL 8439

Submersible Pressure Transmitter



Features

- Suitable for thick and viscous media
- Different materials for optimum media compatibility
- Lightning protection integrated
- Configurable measuring ranges

Technical Data	
Measuring principle	Thick film on ceramic
Measuring range	0 ... 0.1 to 0 ... 2.0 bar 0 ... 1.5 to 0 ... 30 psi
Output signal	4 ... 20 mA
Accuracy @ 25°C typ.	± 0.3 % FS typ. Range 0 ... 0.1 to 0 ... 0.2 bar: ± 0.5 % FS typ.
Media temperature	max. -25°C ... +70°C
Ambient temperature	max. -25°C ... +70°C

Data sheet www.trafag.com/H72336

Configuration of the measuring ranges

All measurement ranges can be configured via Smartphone app (Android). The SMI Sensor Master Interface as well as the Smartphone, which are necessary for the configuration, are not part of the delivery. The Android app is available for free in the Google Play Store.

Sensor Master Interface see page 14



ECL 8438

Submersible Pressure Transmitter



Features

- Good media compatibility
- Economical
- Cable PUR/PE or FEP
- Lightning protection integrated

Technical Data	
Measuring principle	Thick film on ceramic
Measuring range	0 ... 0.1 to 0 ... 10 bar
Output signal	4 ... 20 mA
Accuracy @ 25°C typ.	± 0.3 % FS typ. Range 0...0.1 to 0...0.4 bar: ± 0.5 % FS typ.
Media temperature	-25°C ... +80°C (+70°C)
Ambient temperature	-25°C ... +80°C (+70°C)
Approval / conformity	GL, KRS

Data sheet www.trafag.com/H72328

NAL 8838

Special Submersible Pressure Transmitter



Features

- Pressure ranges from 100 mbar
- No media contacting O-rings
- PUR or Teflon cables
- Option: Chemical resistant material, e.g. titanium
- Option: Lightning protection (IEC 61000-4-5)

Technical Data	
Measuring principle	Piezoresistive
Measuring range	0 ... 0.1 to 0 ... 25 bar
Output signal	4 ... 20 mA 0 ... 10 VDC
Media temperature	-5°C ... +50°C
Ambient temperature	-5°C ... +50°C
Approval / conformity	GL, KRS

Data sheet www.trafag.com/H72228

EXL 8432

Ex Submersible Pressure Transmitter



Features

- Ex
  II 1G Ex ia IIC T4/T6 Ga
  I M1 Ex ia I Ma
- Good media compatibility
- Cable PUR/PE or FEP
- EMC protection, IEC 61000

Technical Data	
Measuring principle	Thick film on ceramic
Measuring range	0 ... 0.2 to 0 ... 10 bar
Output signal	4 ... 20 mA
Accuracy @ 25°C typ.	± 0.3 % FS typ. ± 0.5 % FS typ.
Media temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C
Ambient temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C
Approval / conformity	GL, KRS Ex ATEX/IECEx, EN 60079-0/ EN 60079-11/EN 60079-26/ EN 50303

Data sheet www.trafag.com/H72330

PST4B 9B4

Picostat Pressure Switch



Features

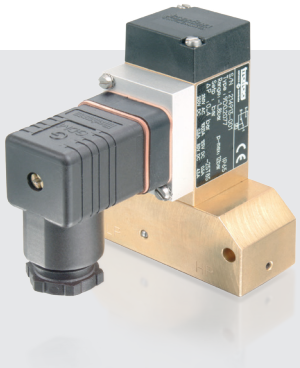
- Improved vibration resistance
- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

Technical Data	
Measuring principle	Bellow
Measuring range	-0.6 ... 3.4 to 4 ... 40 bar -8 ... 45 to 60 ... 500 psi
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 0.5 % FS typ.
Media temperature	Standard: –25°C ... +125°C sensor 789/790/791: –40°C ... +125°C
Ambient temperature	Standard: –25°C ... +85°C sensor 789/790/791: –40°C ... +85°C
Approval / conformity	ABS, BV, CCS, DNV-GL, GL, KRS, LR, NKK, RINA, RMRS EN60730-1/ EN60730-2-6: Typ 2.B.H

Data sheet www.trafag.com/H72367

PSTD 9D0

Picostat Differential Pressure Switch



Features

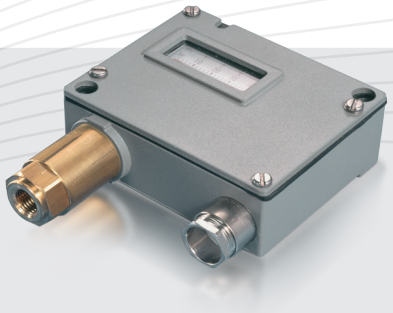
- Compact design
- Rugged housing
- High repeatability
- Protection IP65 (with plug connector)
- Any mounting position possible

Technical Data	
Measuring principle	Bellow
Measuring range	-1 ... 6 and -1 ... 8 bar
Differential pressure	0 ... 4 and 0 ... 6 bar
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-25°C ... +120°C
Ambient temperature	-25°C ... +85°C
Approval / conformity	DNV-GL EN60730-1/ EN60730-2-6: Typ 2.B.H

Data sheet www.trafag.com/H72273

P/PS 900/904/912

Pressostat



Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

Technical Data	
Measuring principle	Bellow
Measuring range	-0.9 ... 1.5 to 10 ... 100 bar 5 ... 50 to 125 ... 1500 psi
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-40°C ... +150°C
Ambient temperature	-25°C ... +70°C
Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H

Data sheet www.trafag.com/H72252

EXP 900/904/912

Ex Pressostat



Features

- Rugged aluminium housing,
  option: housing stainless steel
- Protection IP66
- Any mounting position possible
- Ex db eb IIC T6 Gb
- Ex tb IIIC T80°C Db

Technical Data	
Measuring principle	Bellow
Measuring range	-0.9 ... 1.5 to 4 ... 40 bar
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-40°C ... +150°C
Ambient temperature	-50°C ... +65°C
Approval / conformity	SEV 15 ATEX 0157 X IECEx SEV 17.0013X
Type of protection	Areas with gaz explosion hazards: II 2 G Ex db eb IIC T6 Gb Areas with dust explosion hazards: II 2 D Ex tb IIIC T80°C Db

Data sheet www.trafag.com/H72263

ISP/ISPT 474

Picotherm - Engine Thermostat



Features

- Compact design
- Rugged housing
- High repeatability
- Protection IP65
- Any mounting position possible

Technical Data	
Designation of application	Compact thermostat for shipbuilding
Measuring range	+5°C ... +95°C to +20°C ... +150°C
Output signal	Floating change-over contact
Switching differential	Not adjustable
Repeatability	± 1 % FS typ.
Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72113

ISN/ISNT 471/472

Navistat - Shipbuilding Thermostat



Features

- Compact design
- Rugged housing
- High repeatability
- Protection IP65
- Any mounting position possible

Technical Data	
Designation of application	Thermostat for shipbuilding
Measuring range	+20°C ... +110°C to +40°C ... +300°C
Output signal	Floating change-over contact
Switching differential	Not adjustable
Repeatability	± 0.5 % FS typ.
Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA, RMRS EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72111

SMI

Sensor Master Interface



Features

- Read out of sensor data
- Parameterization of switching points on NAx pressure switches
- Measuring range adjustment on submersible pressure transmitter ECL
- Fast and easy operation via Android App "Sensor Master Communicator SMC"
- Reset pressure measurement instruments to factory settings

Technical Data	
Ambient temperature	0°C ... +40°C
Supply voltage	5 VDC, 1 A (Supply via USB interface)
Protection	IP20
Storage temperature	-10°C ... +50°C
Dimensions	LxWxH: 120x76x27 mm
Communication SMC/SMI	via Bluetooth
Operation Interface	via Android App "Sensor Master Communicator SMC"

Data sheet www.trafag.com/H72618

SC

Sensor Communicator



Features

- Read out of sensor data
- Adjustment of set point or zero point and span
- Real time pressure measuring
- Software update and battery charge with USB-interface

Technical Data

- Identification of device data: Model, signal output, type plate, manufacturing date
- Setting of switchpoint (8320 EPN-S)
- CANopen: Setting of Node-ID and baudrate
- Reset to factory settings

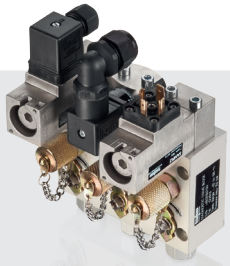
Content of delivery:

1 pce SC incl. batteries
1 pce USB-cable
1 pce Measuring bridge cable
Option: Adapter cable (see table)

Instruction www.trafag.com/H73699 en
H73698 de

DVB

Diagnostic Valve Block



Features

- Function tests during operation (no interruption necessary) with stop valve and test connection

Technical Data	
Pressure	-0.8 ... 100 bar
Ambient temperature	-20°C ... +120°C

Data sheet www.trafag.com/H72361

V6/V7

Stop valve



Features

- Allows replacement of instruments without interruption of process (max. 40 bar)

Technical Data	
Material	1.4305 / FKM
Pressure	max. 600 bar
Media temperature	-25°C ... +125 °C

Data sheet www.trafag.com/H72258

A../D..

Adapters with manometer pressure ports



Features

- Pressure adapters with different thread combinations and materials for individual applications

Technical Data	
Material	1.4435 (AISI316L) / Brass
Connection	G1/4"m - G1/2"m, G1/4"m - G3/8"m, G1/4"f - G1/2"m

Data sheet www.trafag.com/H72258

trafag sensors controls

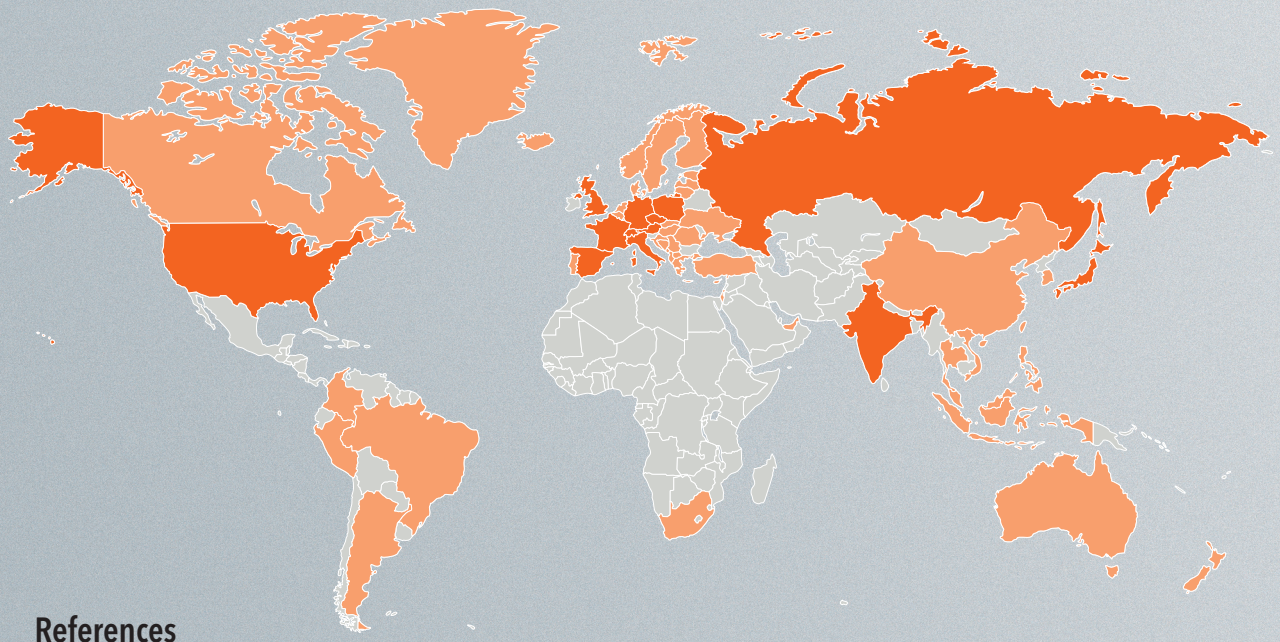
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References
ABB I AIT I AKG I Alstom I Areva T&D I Atos I AVL I Benninghoven I Bharat Heavy Electrical I Blohm & Voss I Bombardier I Bosch Rexroth I BMW Rolls-Royce Bühler I Caterpillar I Charmilles I CRRC I Dalian Marine Diesel Ltd. I Detroit Diesel I Deutsche Bahn AG I Doosan Group I Dräger I Electrolux Elektrobudowa S.A. I Faiveley I Fincantieri I Flender I Goninan I Greenfield I G&W I Hermetic Pumpen I Roche I Hudong Heavy Machinery Hyundai Heavy Industries I IAV I Ingersoll Rand I Iveco I KOMA I MAN I B&W I Melag I Mitsubishi I MTU I Noske-Kaeser I Oilon I Ormat Turbines I Parker PESA I Philips I PKN Orlen S.A. I PMC I Polarteknik I Promeco I Queensland Rail I Reintjes I Renk I Rolls-Royce I Schindler I Schneider Electric I Schottel Sciteq-Hammel I Siemens I SNCF I STX Heavy Industries I Thermax Limited I Toshiba I Trumpf I Verolme Shipyard I Vesta I Viessmann I Voith Wärtsilä I Westfalia Separator I W&H I Yichang Marine Diesel Ltd I York I ZF Marine

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