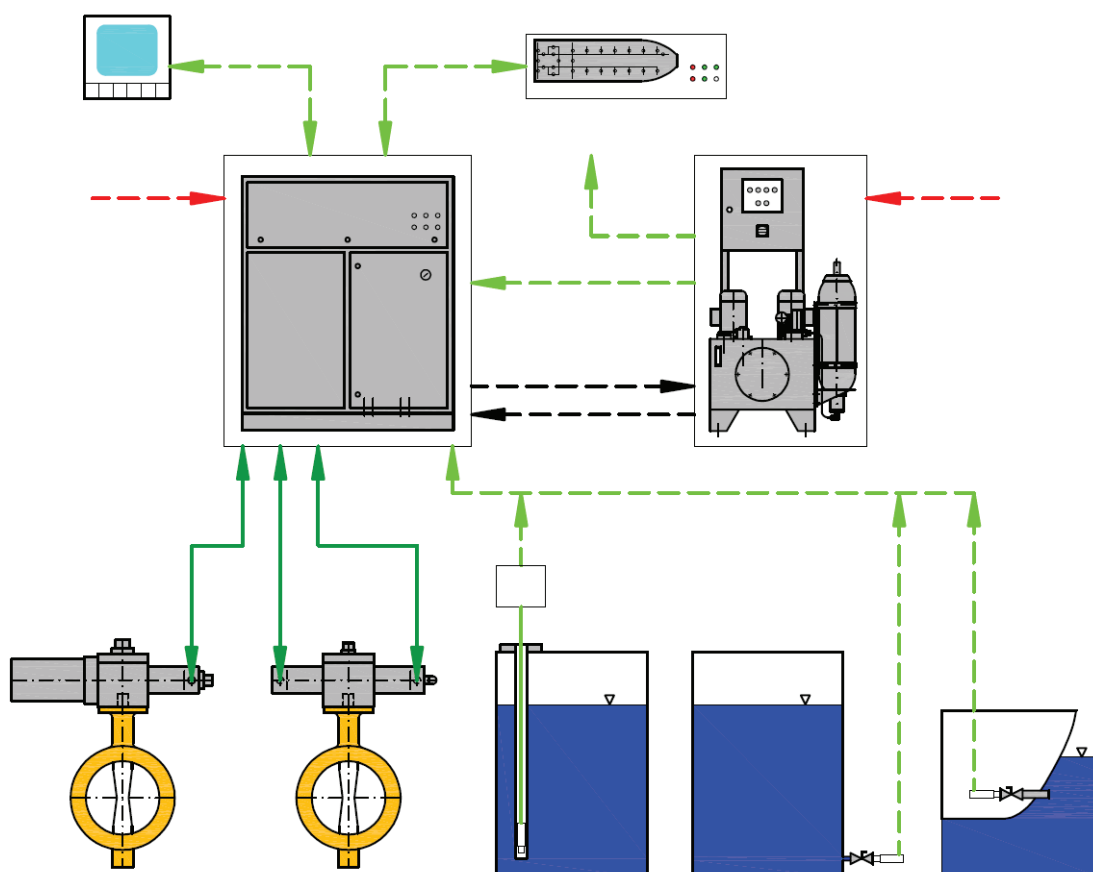




Cramer Systemtechnik GmbH

Introduction catalogue

Remote control systems



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The history of company Cramer Systemtechnik GmbH dates back to 1974, when Mr. Klaus Cramer starts with the company Cramer Hydraulik-Service for industrial hydraulics in Bielefeld, Germany. 10 years later the first contacts to the marine business as a supplier of parts have been made. In 1986 the first remote control system was delivered, the company moved to the near town Lage and changed name into Cramer Hydraulik GmbH.

Mr. Michael Cramer joined the company in 1993 and was in charge for the complete marine business since 1996. In the beginning of 1999 Mr. Michael Cramer had been appointed as managing director.

In 2004 the shareholders decided to split and the company re-started under the name Cramer Systemtechnik GmbH in Leopoldshöhe. The company is an independent, 100% family owned business.

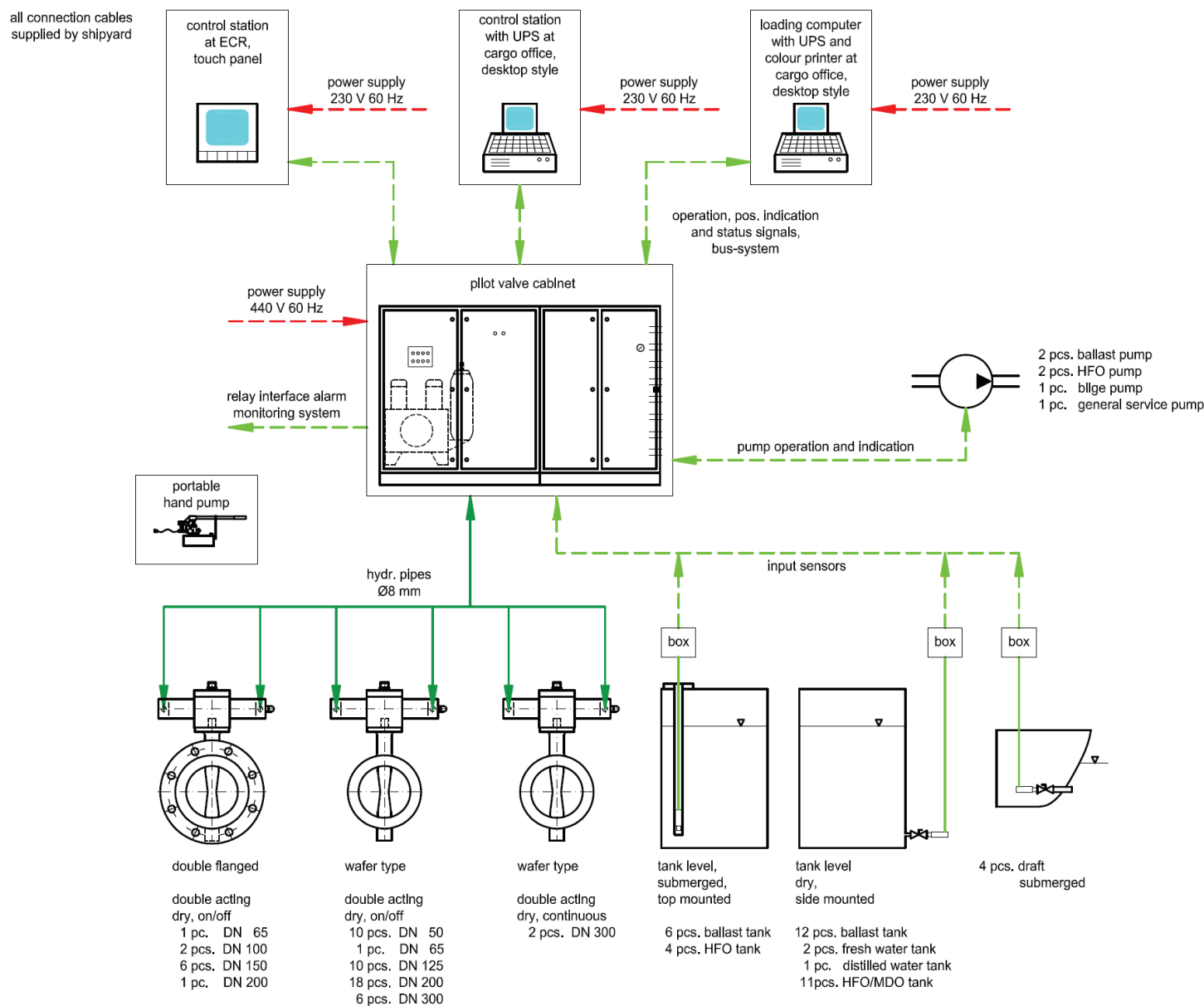
The core products are remote control and tank level measurement systems, which are individually designed and manufactured acc. to the customer's applications and the rules and regulations of the related classification society. They are available for all power sources (hydraulic, pneumatic, electro-hydraulic and electric) and all configurations (centralized, de-centralized, operation by mimic, computerized control stations).

CST is designing and assembling the complete systems. Mechanical parts are manufactured by partner companies acc. to CST design and drawings.

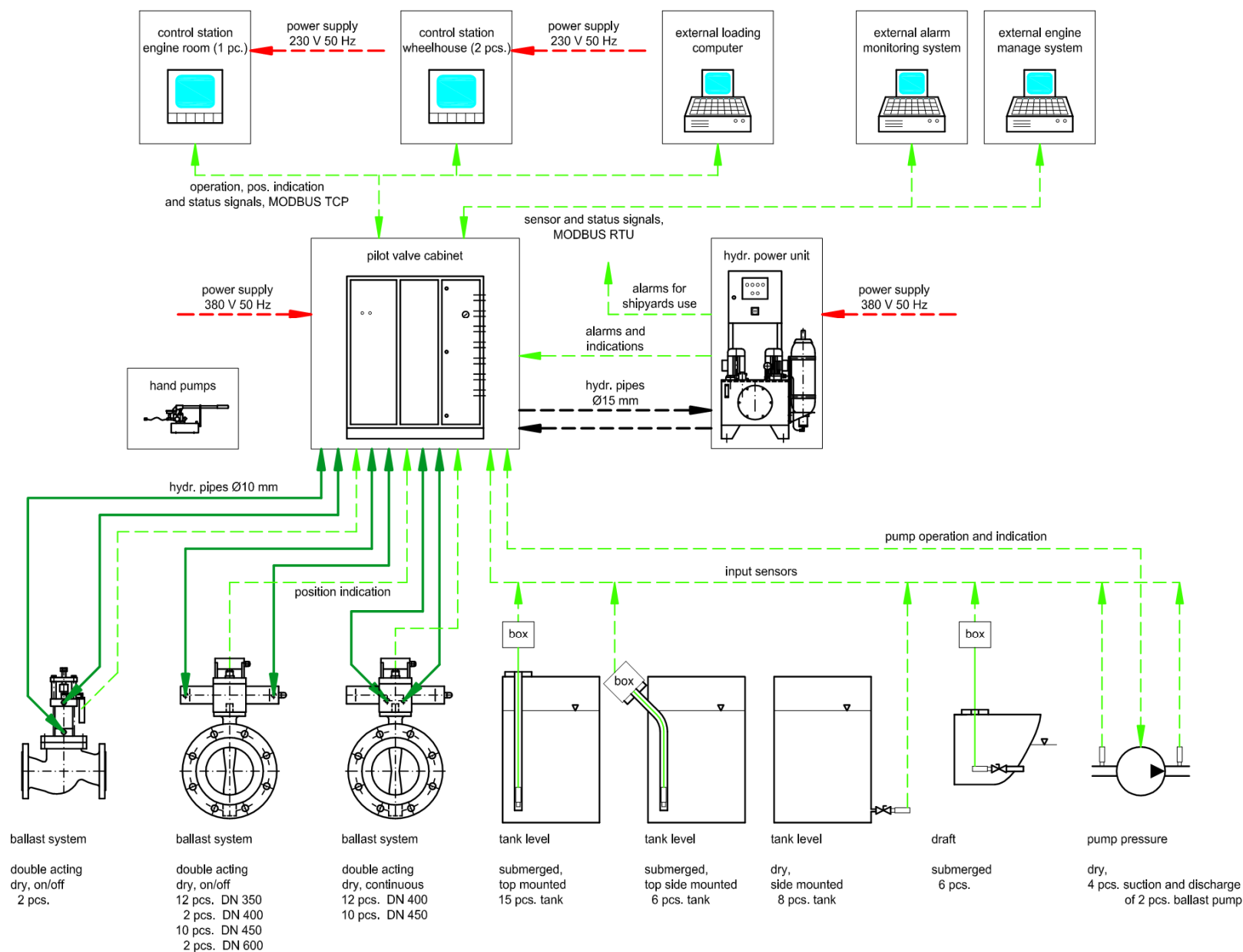
Depending on the power source and configuration the following main components are used for remote control and tank level measurement systems

- hydraulic, pneumatic, electro-hydraulic, electric rotary or linear actuators
- hydraulic or pneumatic pilot valve cabinets
- electric control cabinets
- hydraulic power units
- hydraulic or pneumatic foot or hand pumps
- mimic diagrams and/or computerized control stations
- tank level, temperature and/or pump pressure sensors

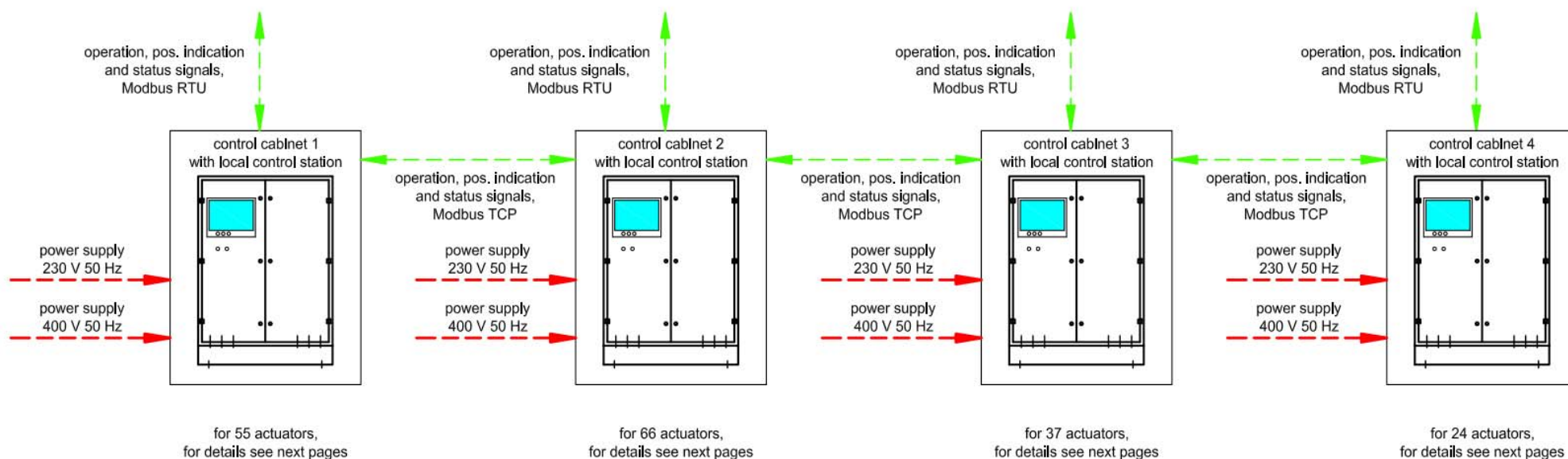
system layout of remote control and tank level measurement system Mawei VMW451 32000 dwt bulk carrier P1760-1763

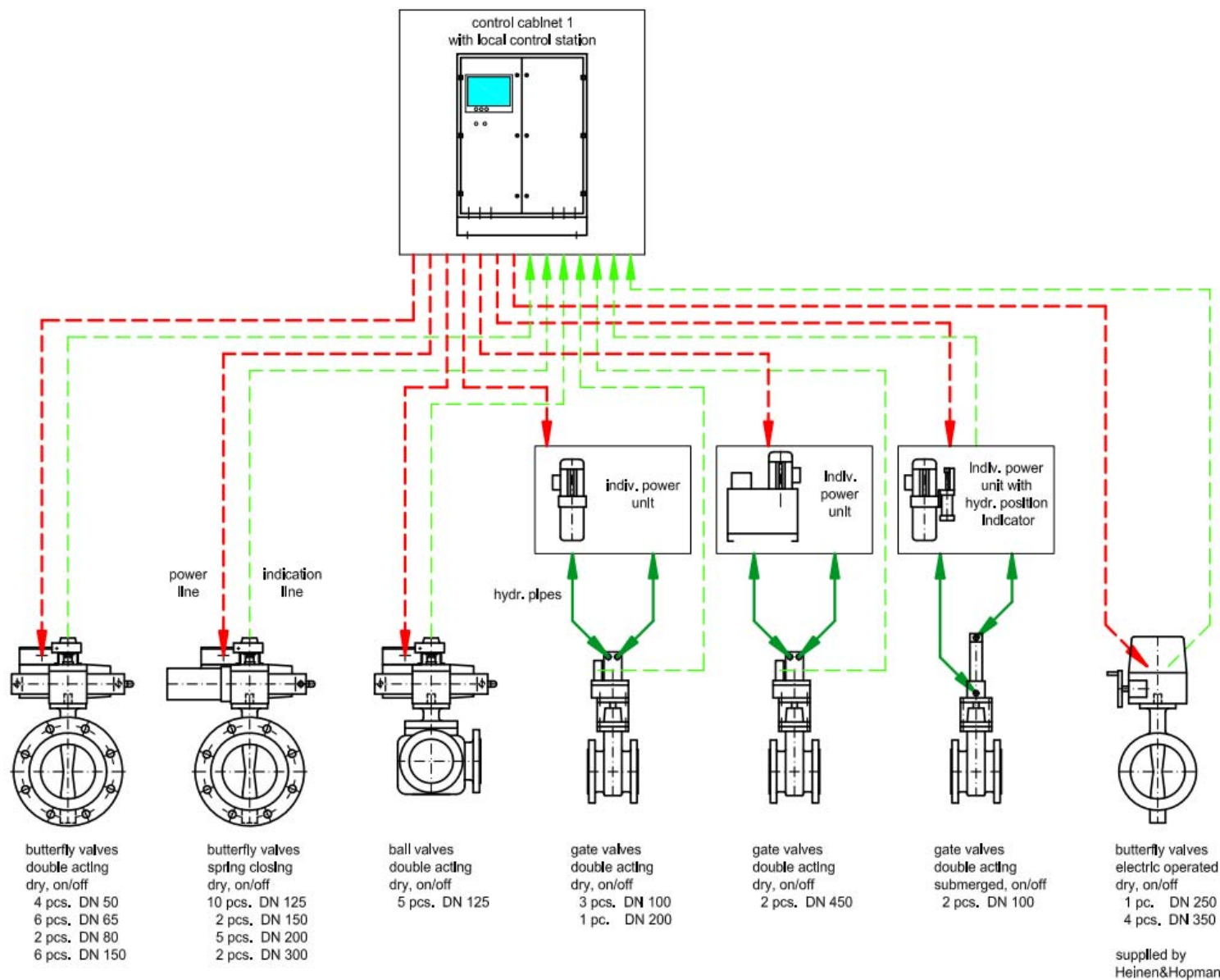


system layout of remote control system Jiangsu Haixin HX019

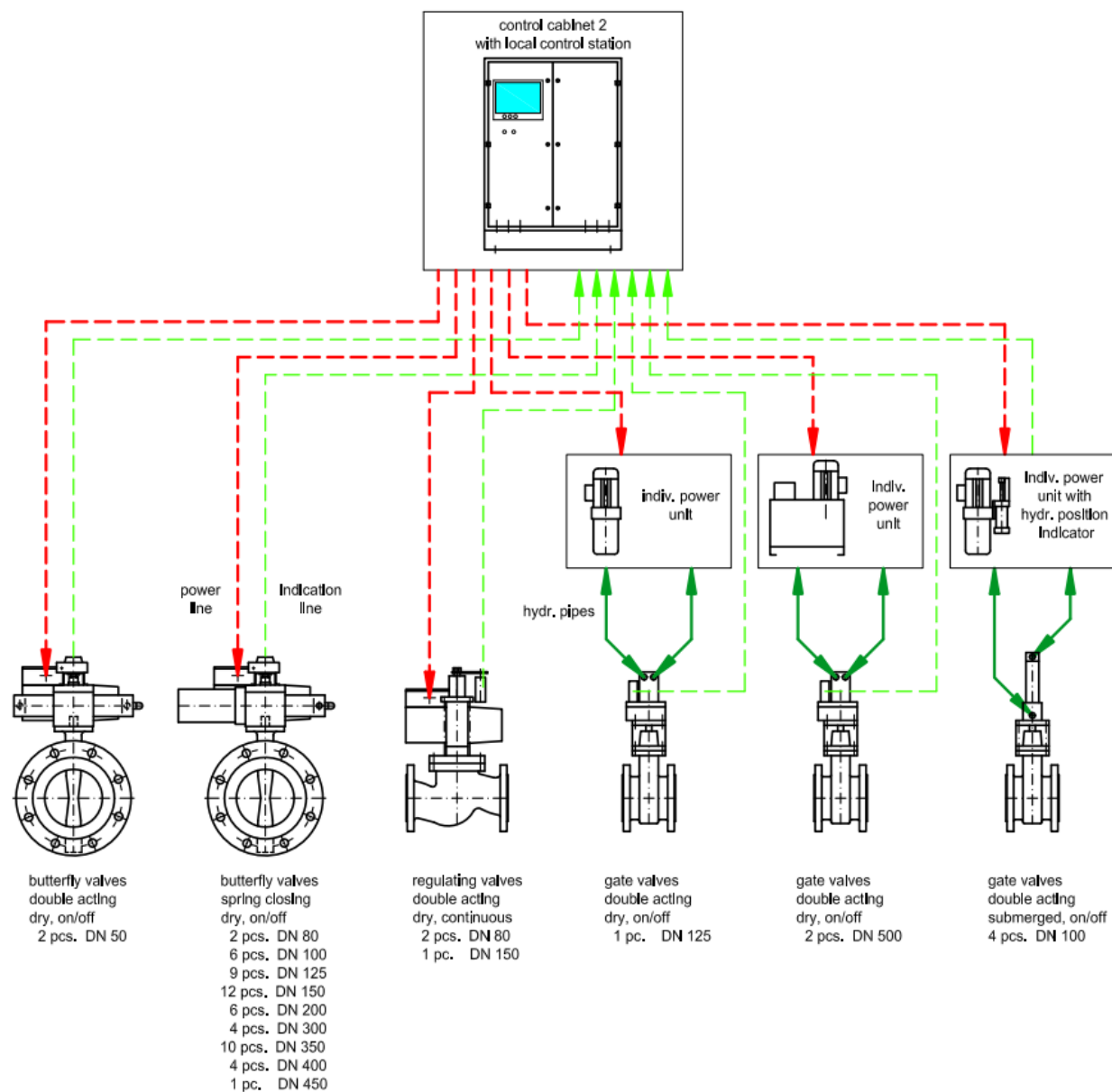


system layout of remote control system Kuzey Star H191 H192

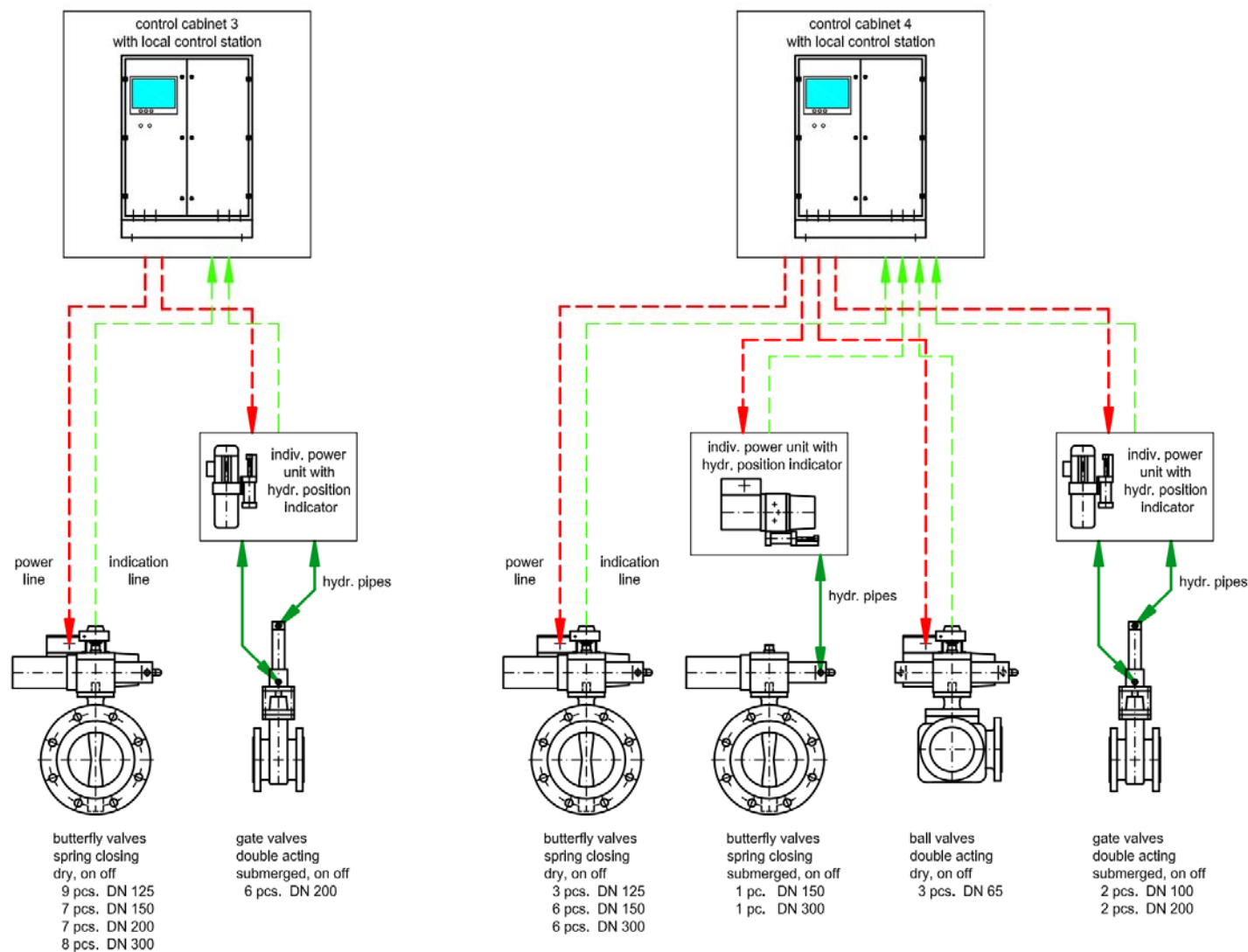




system layout of remote control system Kuzey Star H191 H192



system layout of remote control system Kuzey Star H191 H192





- actuator function double acting, spring closing or spring opening
- design principle rack / pinion
- hydr. pressure standard 100 bar, higher pressures on request
- pivoting angle 90°, closed position adjustable $\pm 2^\circ$, open position not adjustable
as standard, range $\pm 2^\circ$ as an option
- installation for dry environment as standard, for submerged or open deck use
caps to protect the pinion and end position adjustment may be
retrofitted at any time
- position indication each actuator is equipped with a mechanical interface acc. to
VDI/Namur, which is also used as local position indication, to
ensure easy adaption of standardised limit and proximity switches
or potentiometer units
- mounting position either parallel or cross to pipeline possible at any time, for valves
with flat head shafts or change of position on site the pinion is
turnable by 90°
- emergency operation prepared for portable hand pump, smaller double acting actuators
of standard type may be operated additionally manual by wrench
- accessories a hydro-lock or manifold Cetop3/NG6 may be retrofitted at any
time. Hydro-locks are used to ensure that the valve remains in last
position in case of power failure also when external forces (f.e.
stream forces) are existing
limit switches or proximity switches for open/closed position
indication
potentiometer units for continuous position indication
couplings for emergency operation by hand pump

type	HAR
function	hydraulic opening and closing
design	rack and pinion
designed for :	
- angle range	$90^{\circ} \pm 2^{\circ}$
- hydr. pressure	100 bar
installation	at open deck
coating	epoxy final coating
emerg. operation	by portable hand pump



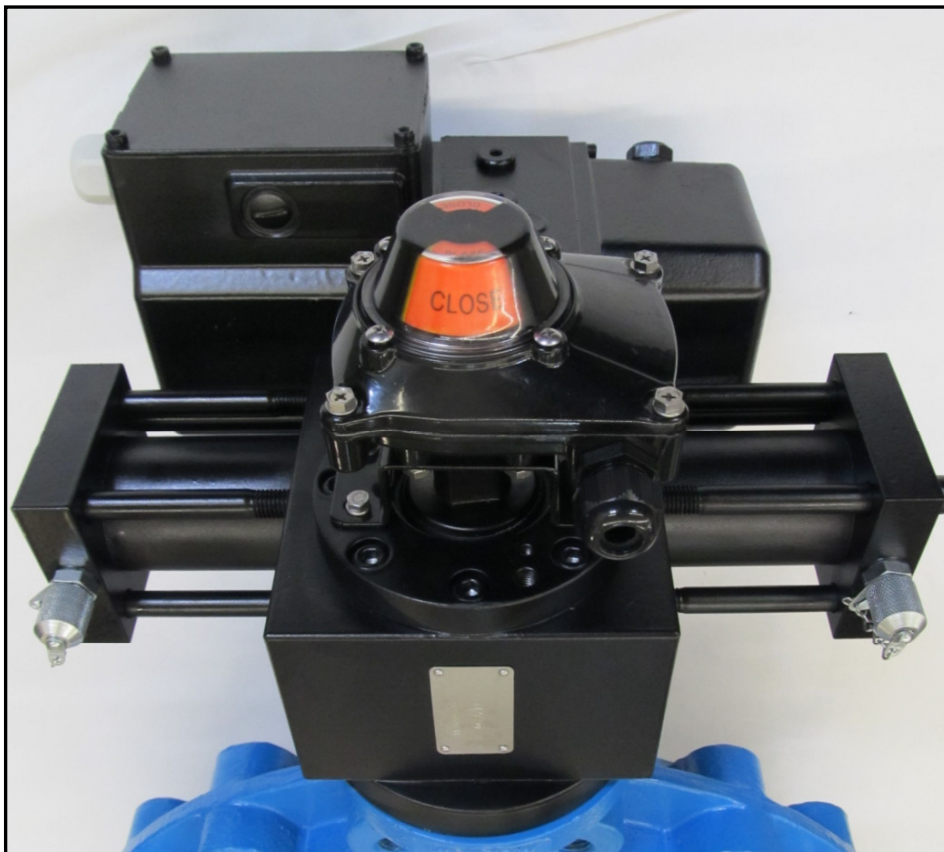
example : type HAR-D225-HL-OI

type	HAR
function	hydraulic opening and closing
design	twin rack and pinion
designed for :	
- angle range	$90^{\circ} \pm 2^{\circ}$
- hydr. pressure	150 bar
installation	outdoor
coating	epoxy final coating
position indication	limit switches and special visual indicatio
emerg. operation	prepared for hand pump
application	for butterfly valve DN1600, power plant



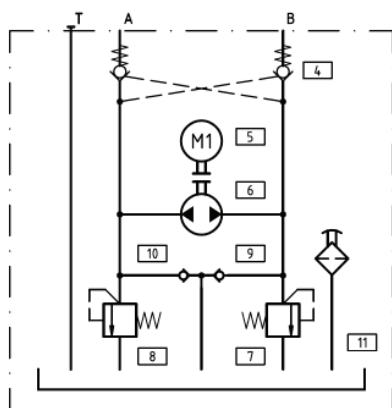
example : type HAR-D36500-WB

type	EHAR
function	electro-hydraulic opening and closing
design	rack and pinion
designed for :	
- angle range	$90^{\circ} \pm 2^{\circ}$
- hydr. pressure	100 bar
installation	dry
coating	epoxy final coating
position indication	limit switch box
emerg. operation	prepared for hand pump
accessories	couplings for emerg. operation by hand pump, material steel
direct mounting at	butterfly valve

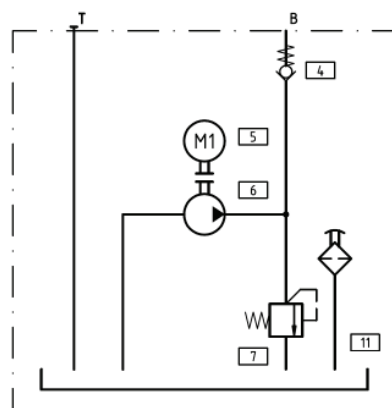


example : type EHAR-D2170-LSB

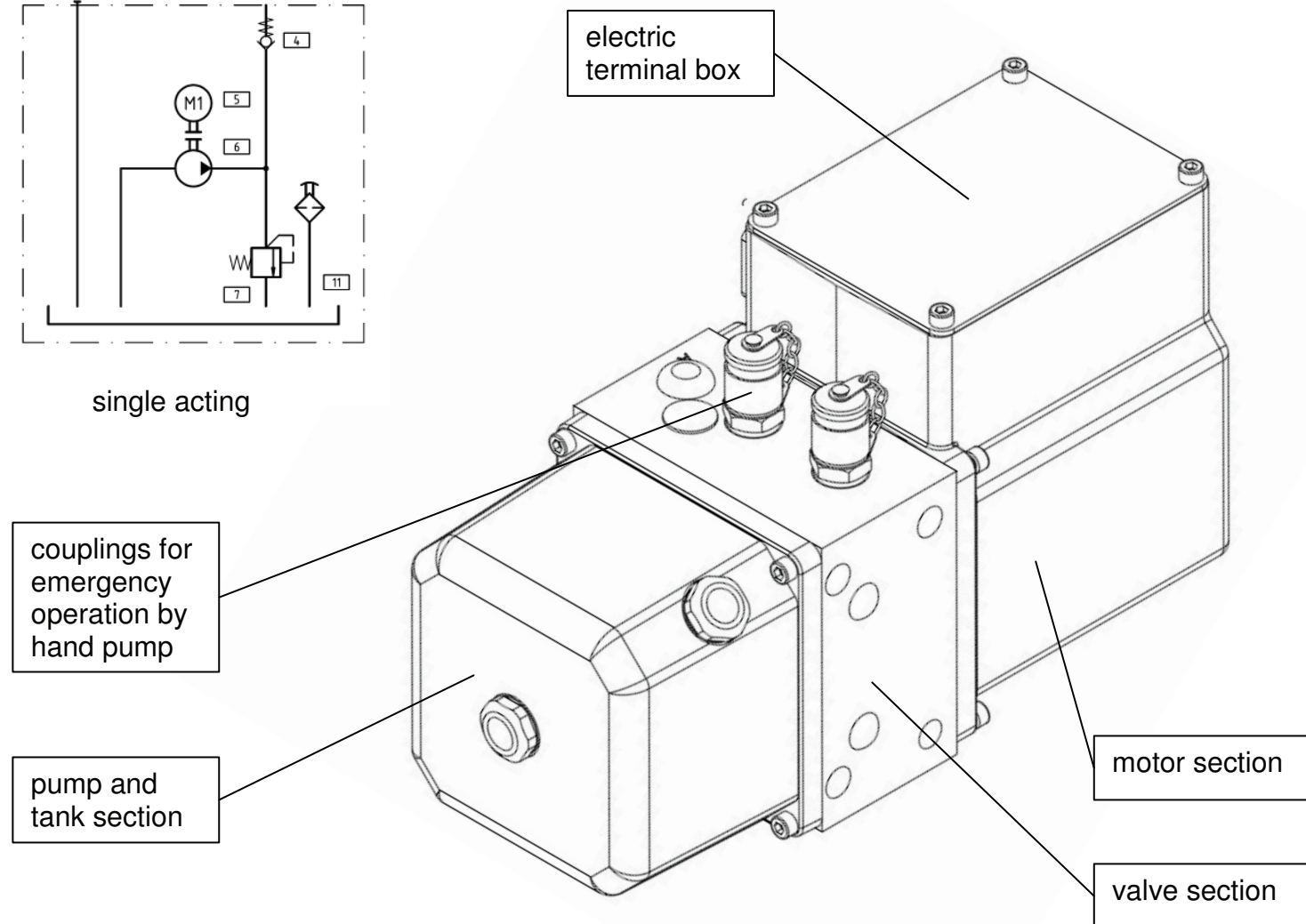
one power unit with modular design for double and single acting actuators



double acting



single acting



type	HAL
function	hydraulic opening, spring closing
designed for :	
- hydr. pressure	100 bar
- max. medium pressure	5 bar
installation	dry
coating	epoxy final coating
position indication	local position indicator
emerg. operation	manual by wrench
direct mounting at	SDNR valve, straight way type



example : type HAL-C100-DI-DN200

type	HAL
function	hydraulic opening and closing
designed for :	
- hydr. pressure	100 bar
- max. medium pressure	10 bar
installation	dry
coating	epoxy final coating
position indication	local position indicator and limit switches
emerg. operation	manual by hand wheel
direct mounting at	stop valve, straight way type



example : type HAL-D100-DI-HW-DN250

type	HALG
function	hydraulic opening and closing
designed for :	
- hydr. pressure	100 bar
- max. medium pressure	5 bar
installation	dry
coating	epoxy final coating
position indication	limit switches
emerg. operation	prepared for portable hand pump
mounted at	gate valve by distance rods



example : type HALG-D-DI-LS-DN150

type	PAL
function	pneumatic opening, spring closing
designed for :	
- pneum. pressure	6-8 bar
- max. medium pressure	5 bar
installation	dry
position indication	local position indicator and limit switches
emerg. operation	manual by wrench
direct mounting at	stop valve, straight way type



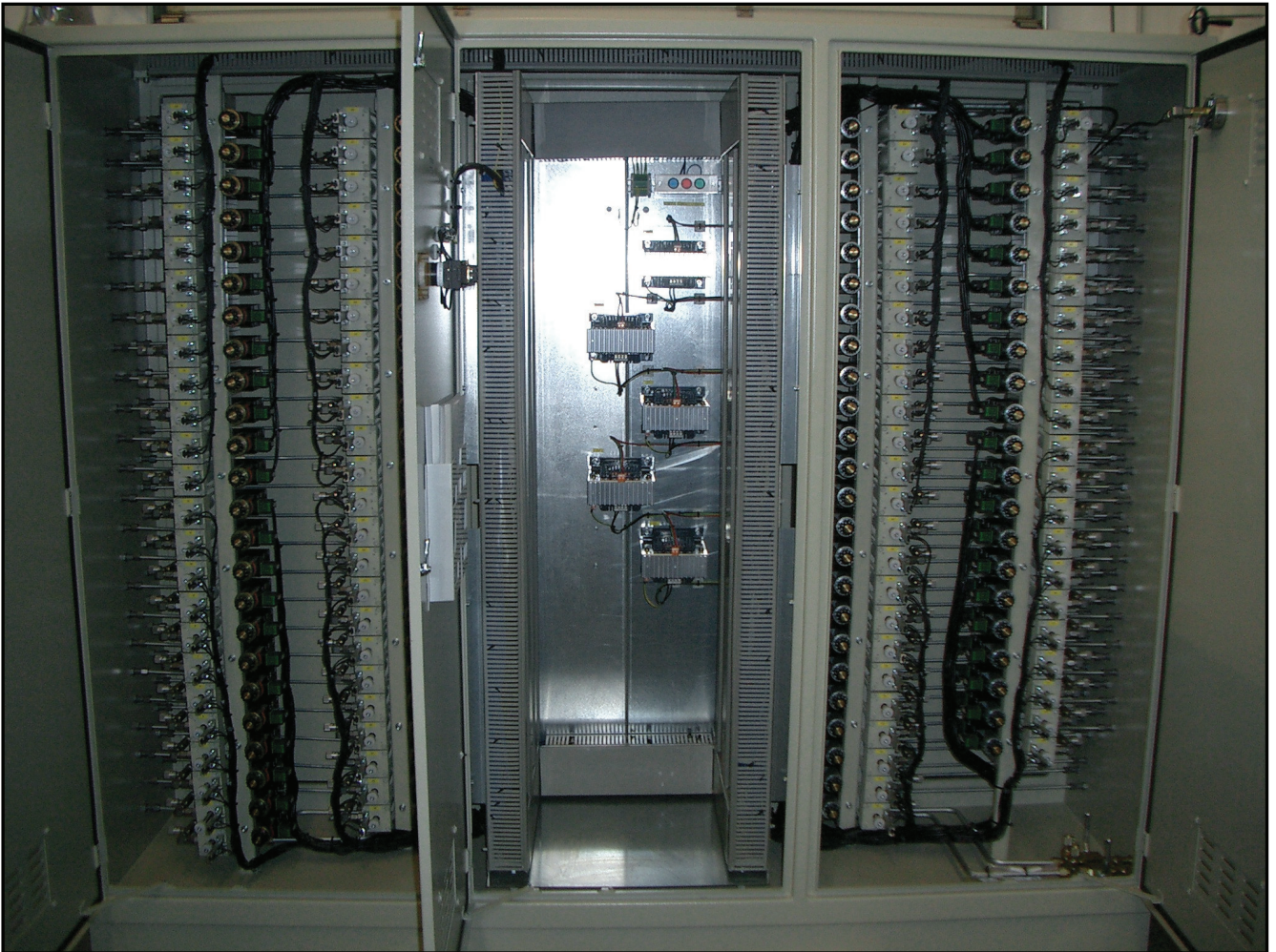
example : type PAL-C160-DN125

design features pilot valve cabinet bottom mounted, left and right side outlet

installation
pipe connections
operation
cable entrance

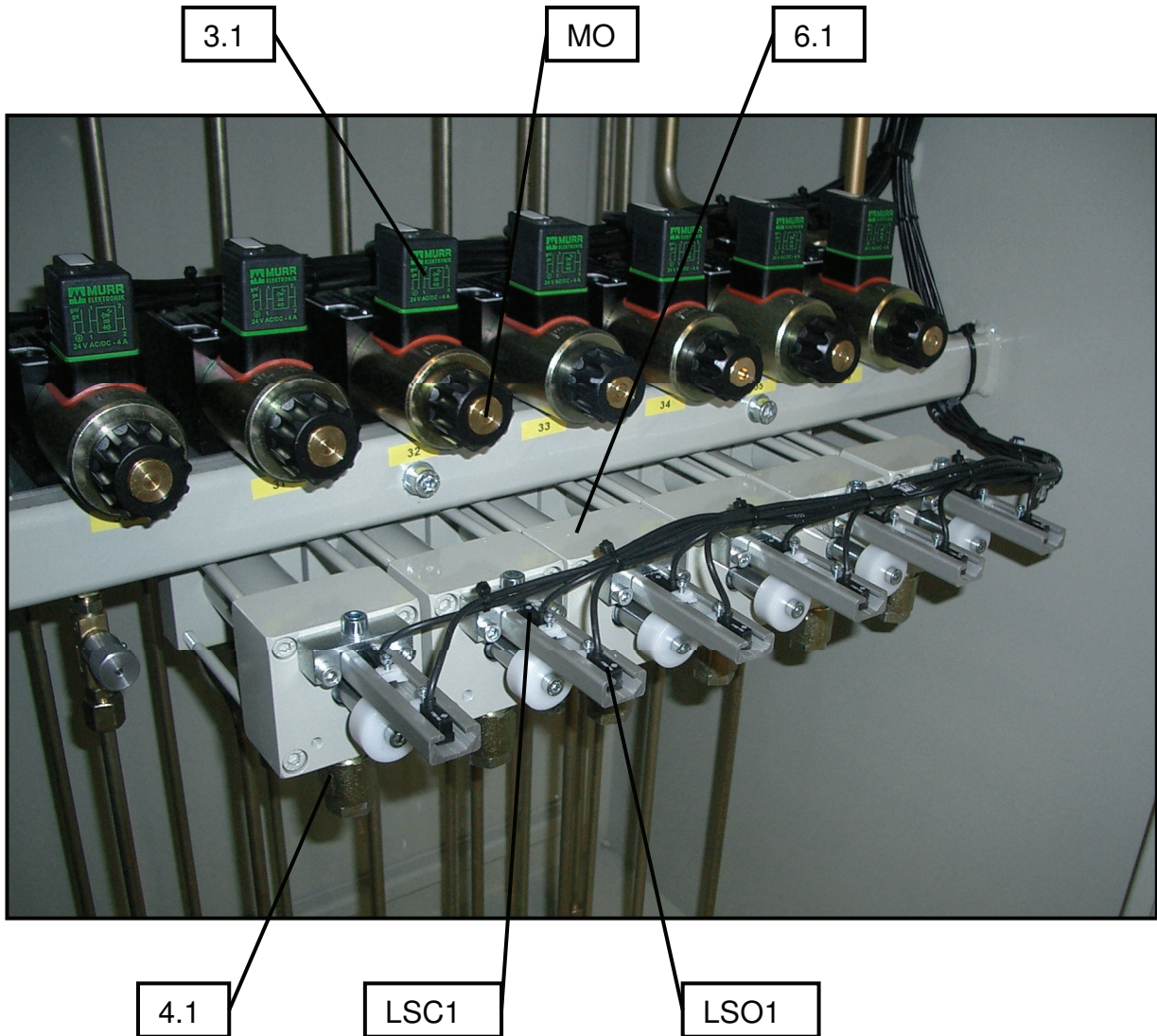
bottom mounted
at left and right side,
by external computer system
on left and right side

internal view



pilot valve unit
type of actuator
type of pos. indication

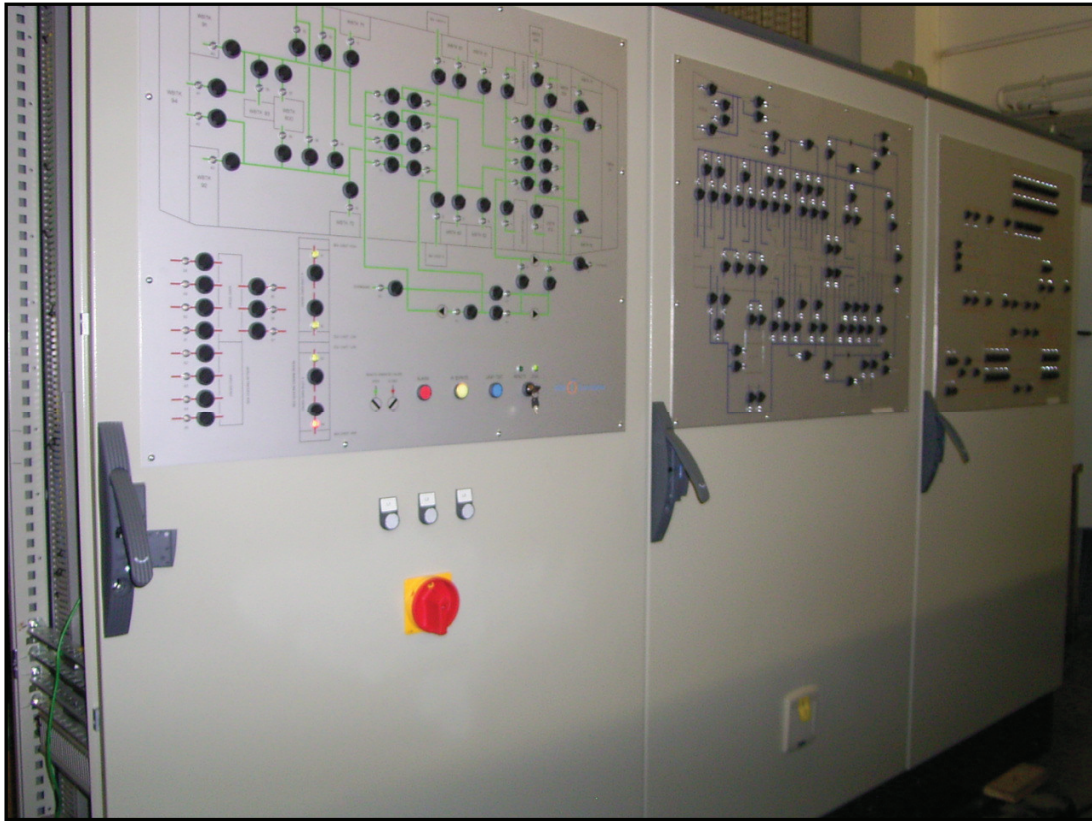
spring closing actuator
hydr. position indicator



item	denomination
3.1	pilot valve
4.1	throttle check valve
6.1	hydr. position indicator
LSO1	limit switch, open position
LSC1	limit switch, closed position
MO	manual override

installation
operation

bottom mounted
221 pcs. electric actuators by
mimic diagram and external computer system

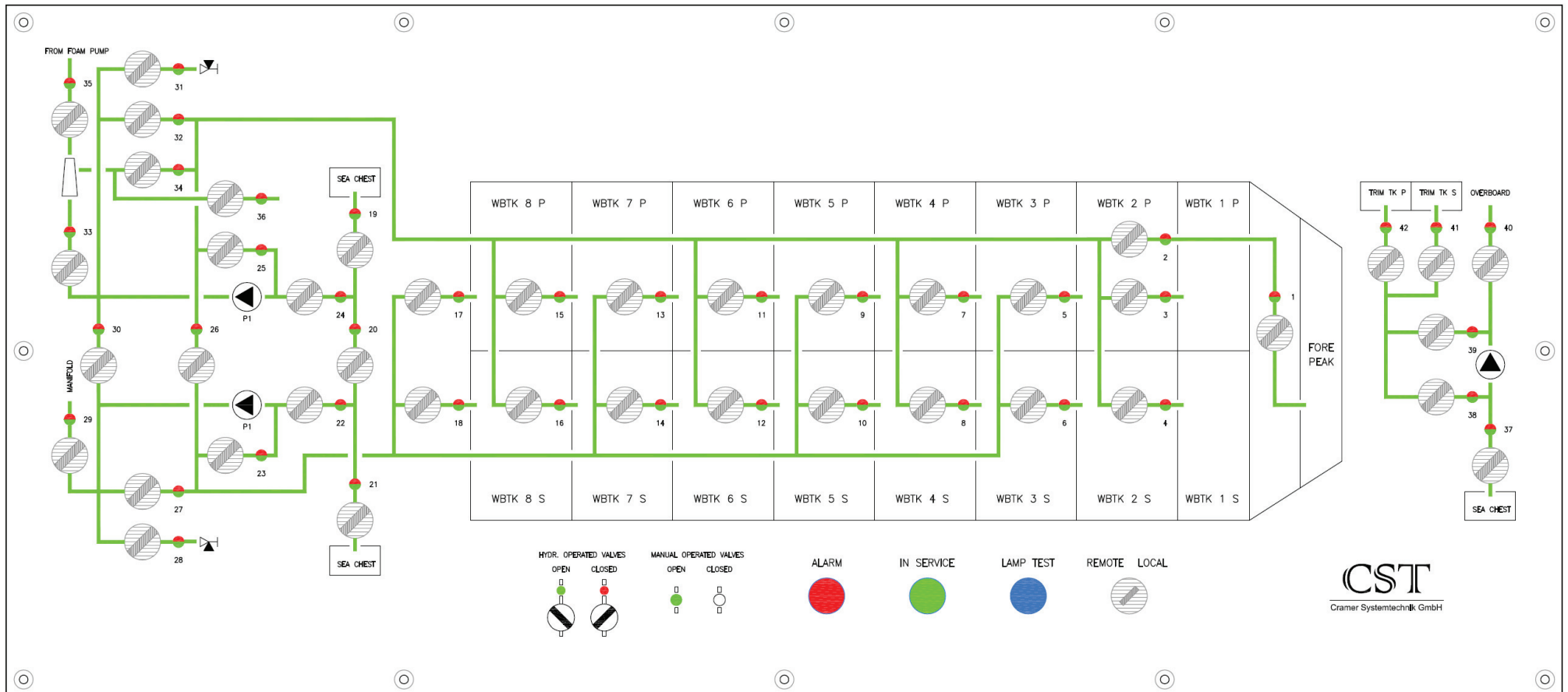


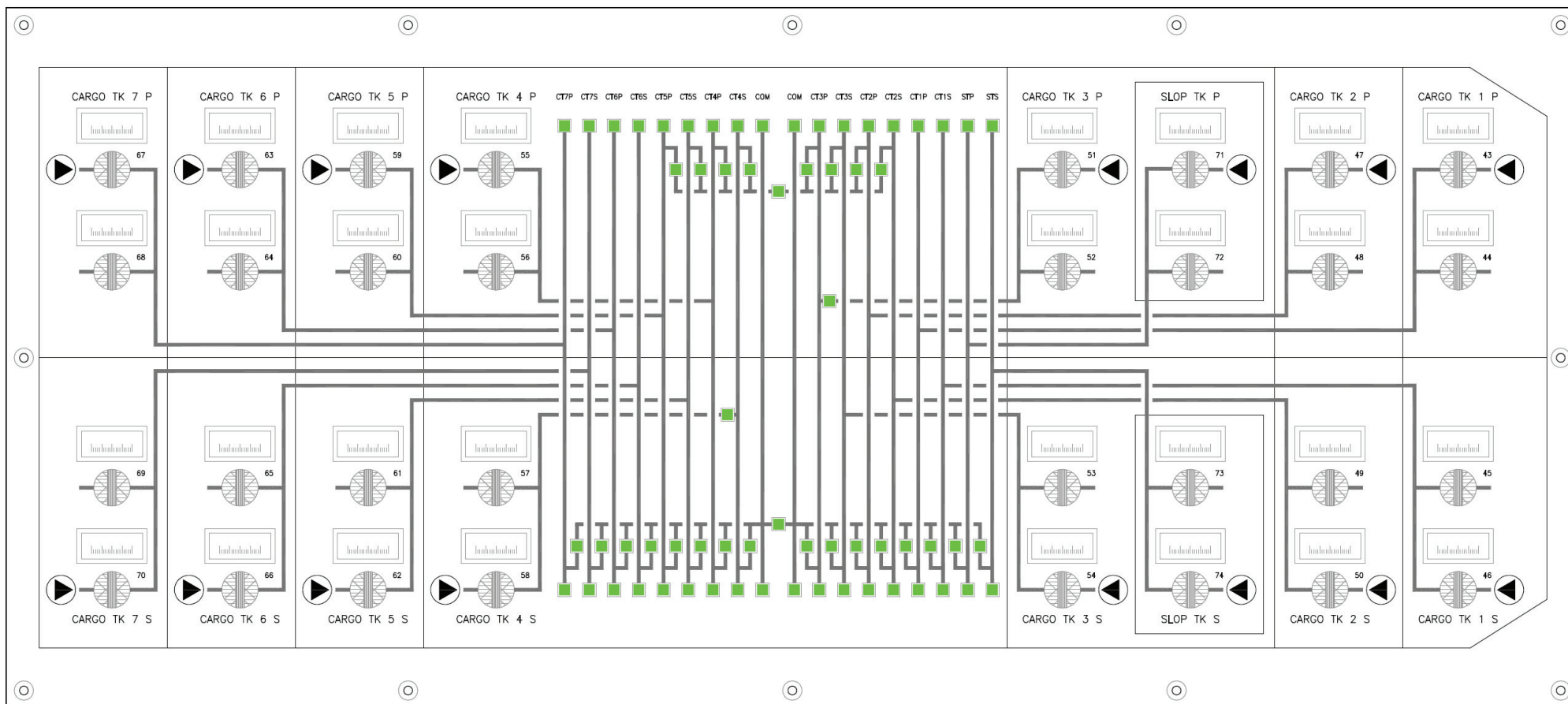
example of mimic diagram

mimic diagrams for
amount of hydr. actuators
position indication

amount of man. actuators
with memory switches

: ballast, bilge and cargo system
: 74 pcs.
: on/off by LED red/green
continuous by analogue display
: 64 pcs.

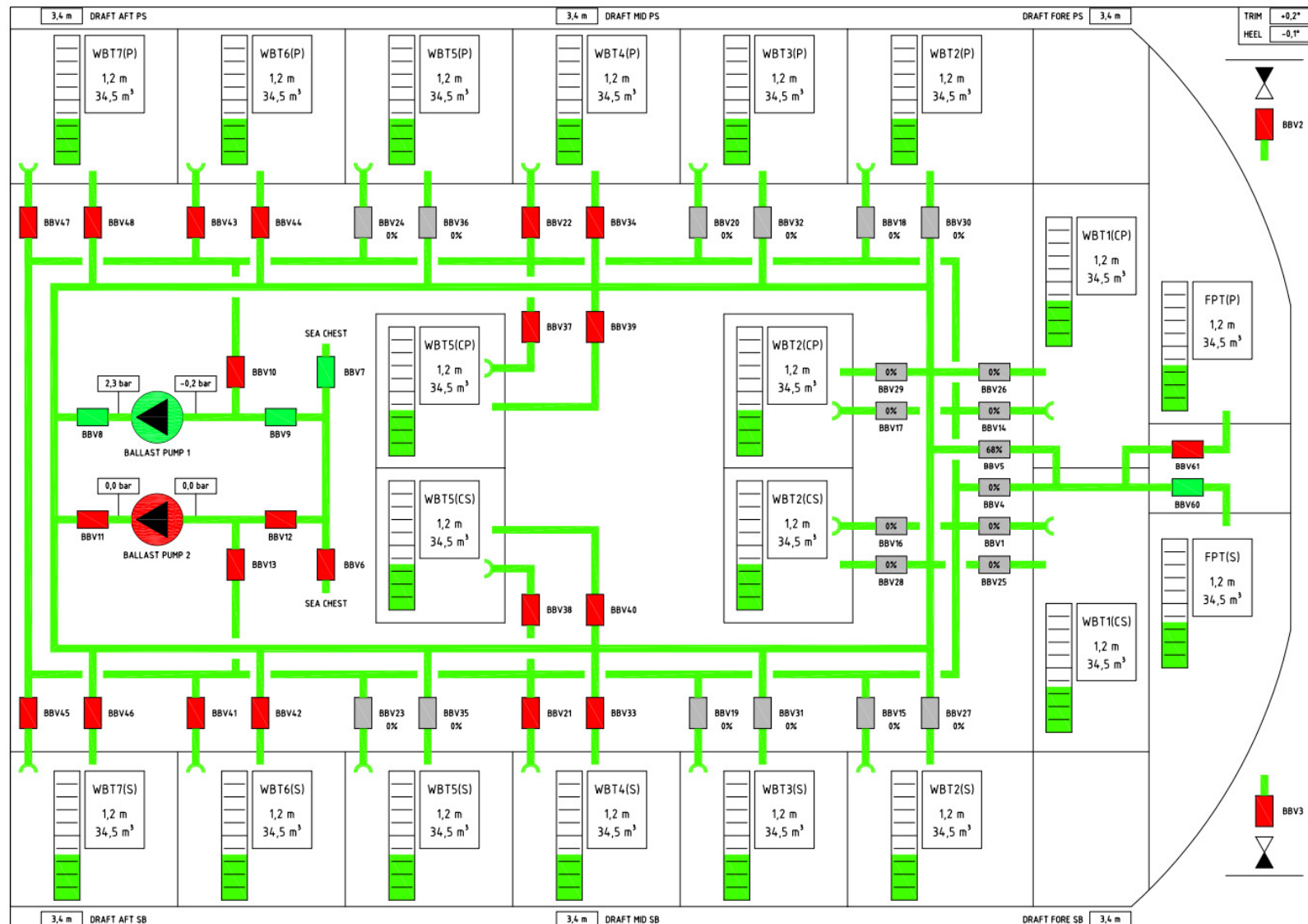


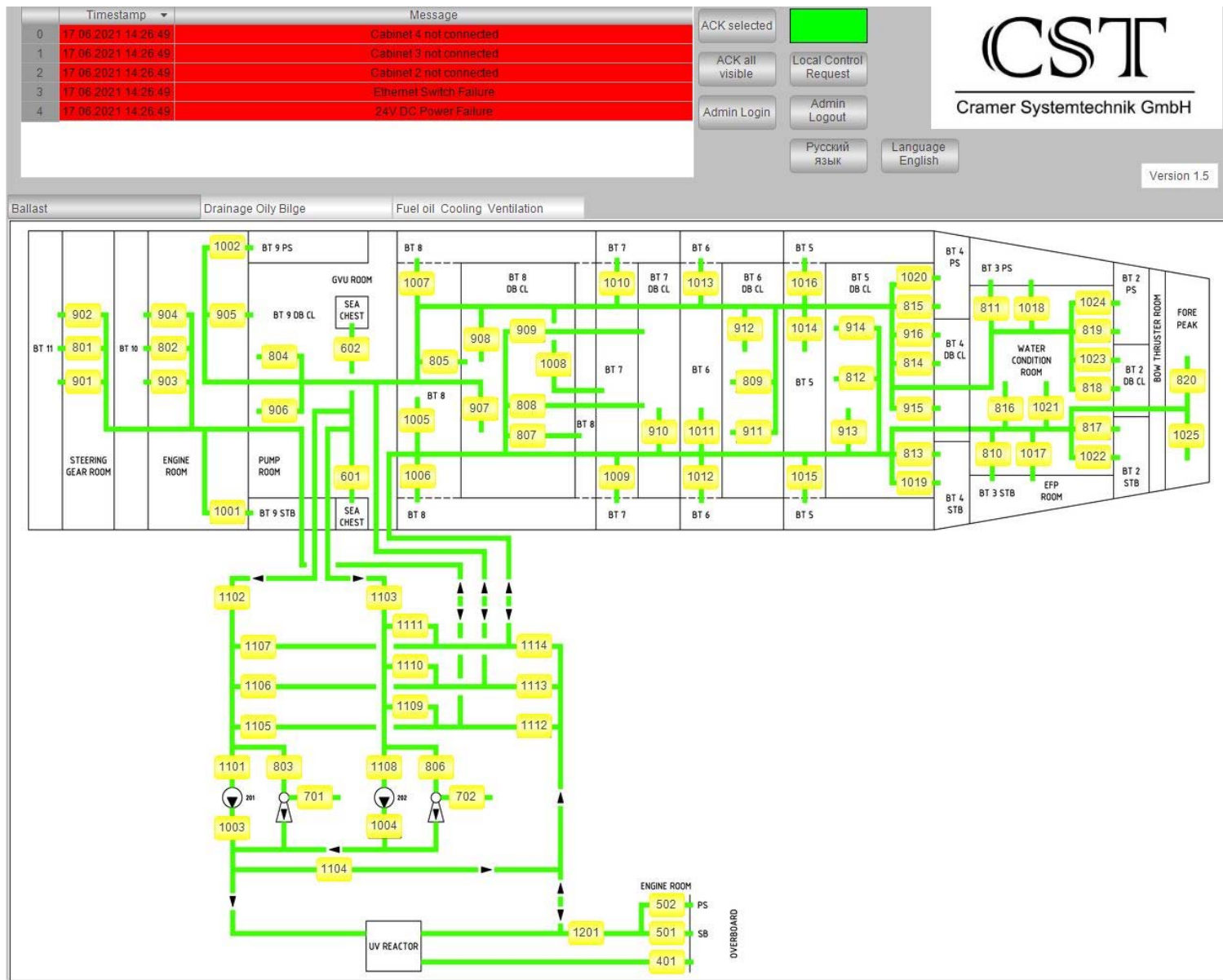


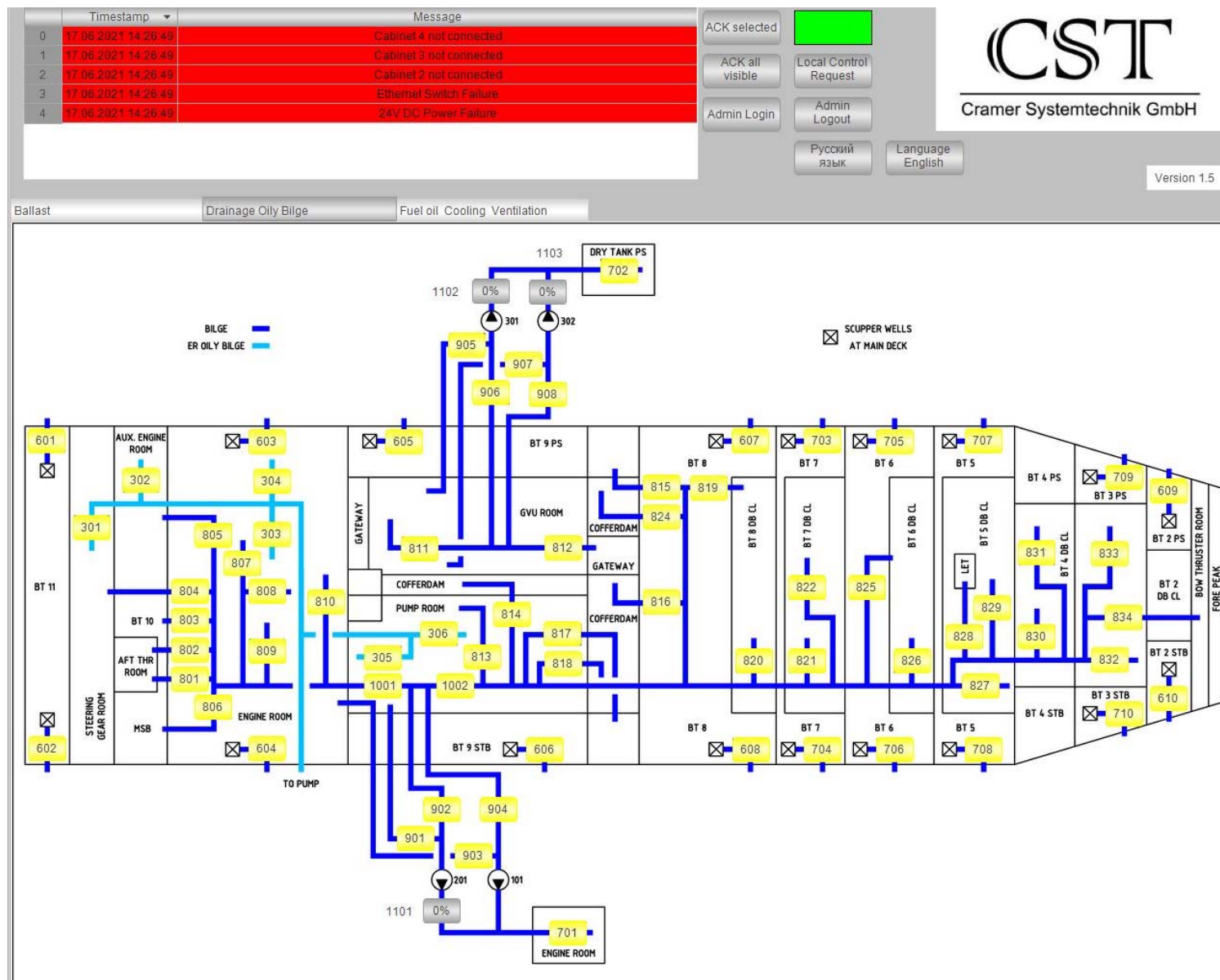
design features
example of mimic diagram for
valve remote control and tank level measurement

mimic diagram for
operation by

valve remote control and tank level measurement
touch screen at control station



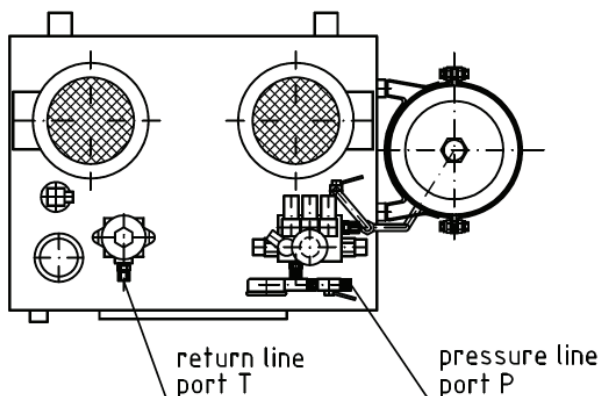
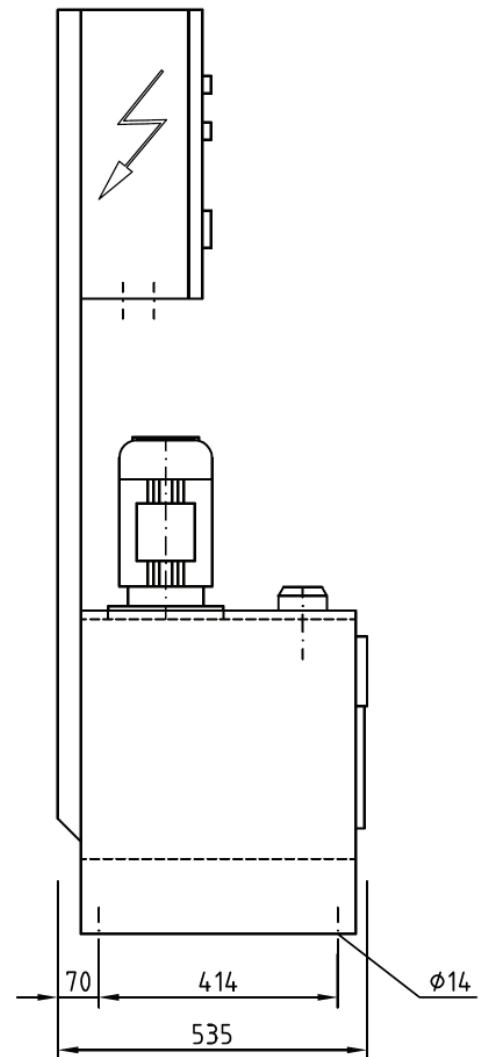
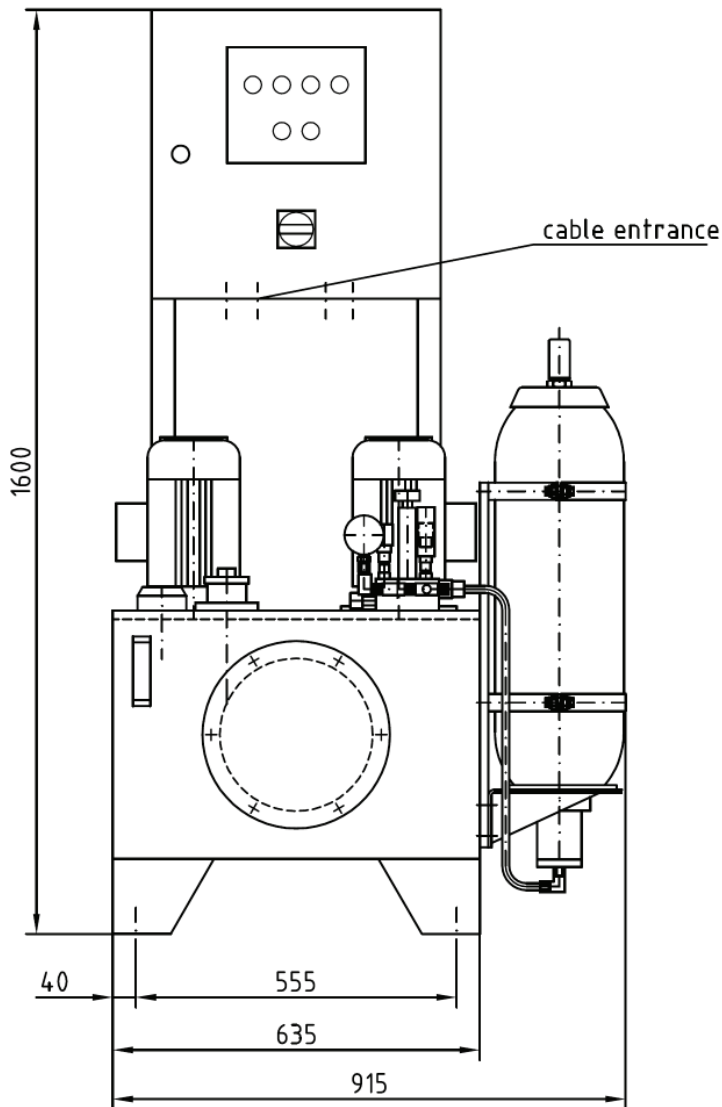




nominal size
installation
pipe connections

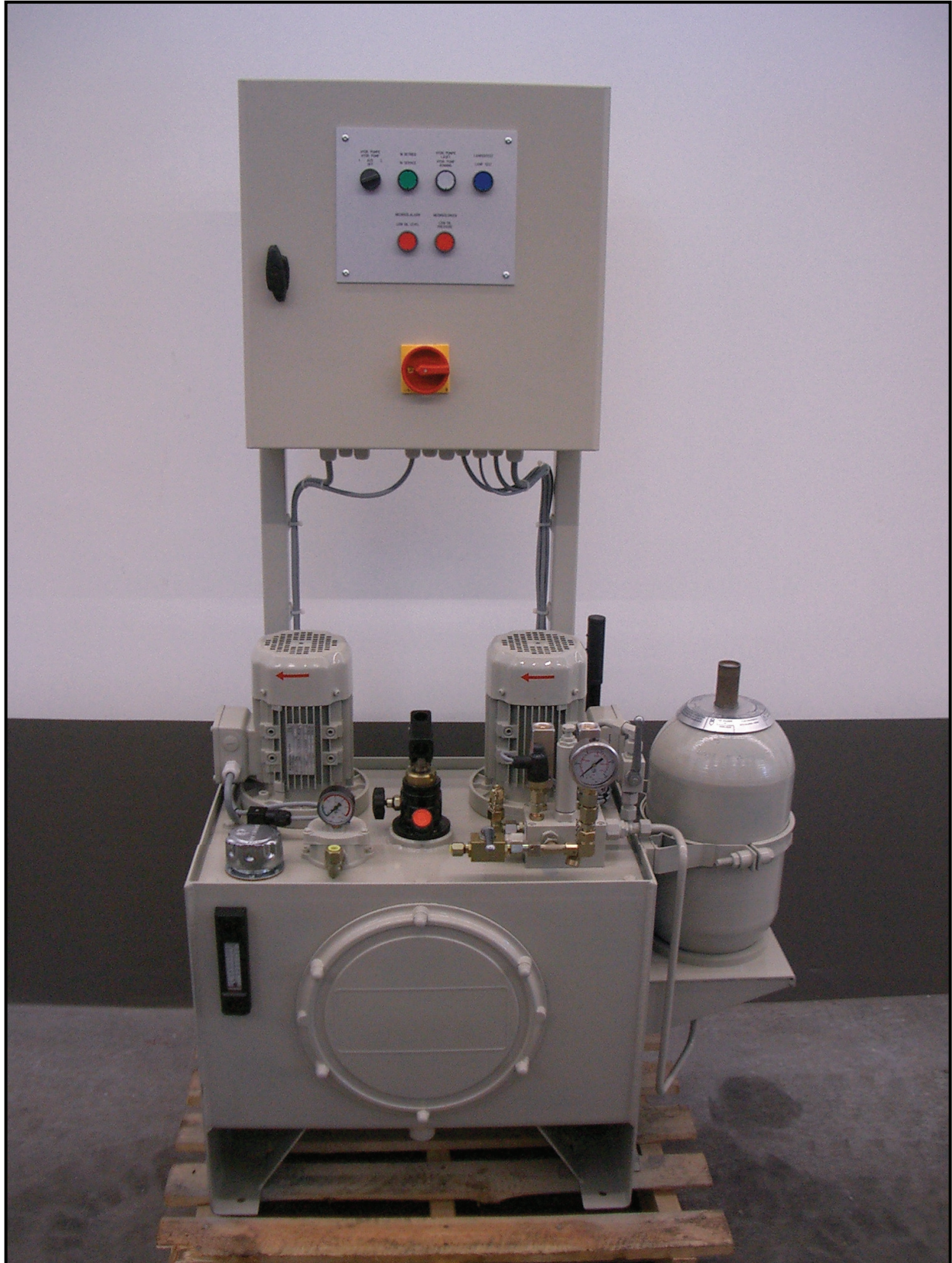
electric control box
colour

oil tank 60 l
stand-alone type
to pilot valve cabinet standard size for pipe dia.
12 mm, others on request
mounted at the power unit
standard RAL 7032, others on request



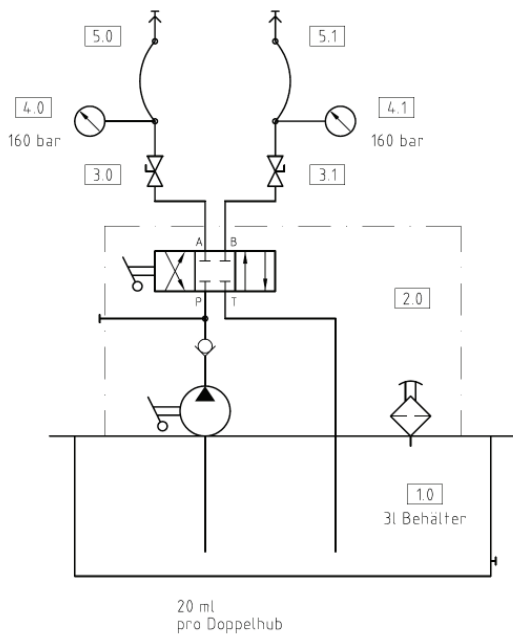
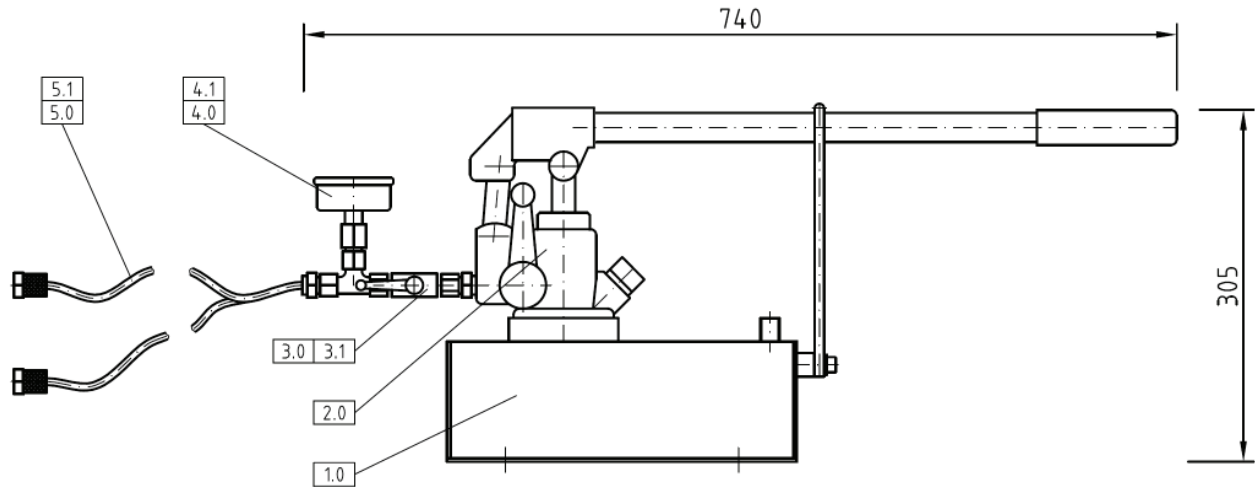
example
installation
electric control box

nominal size oil tank 60 l
stand-alone type
mounted at the power unit



nominal size
installation

oil tank 3 l
portable type

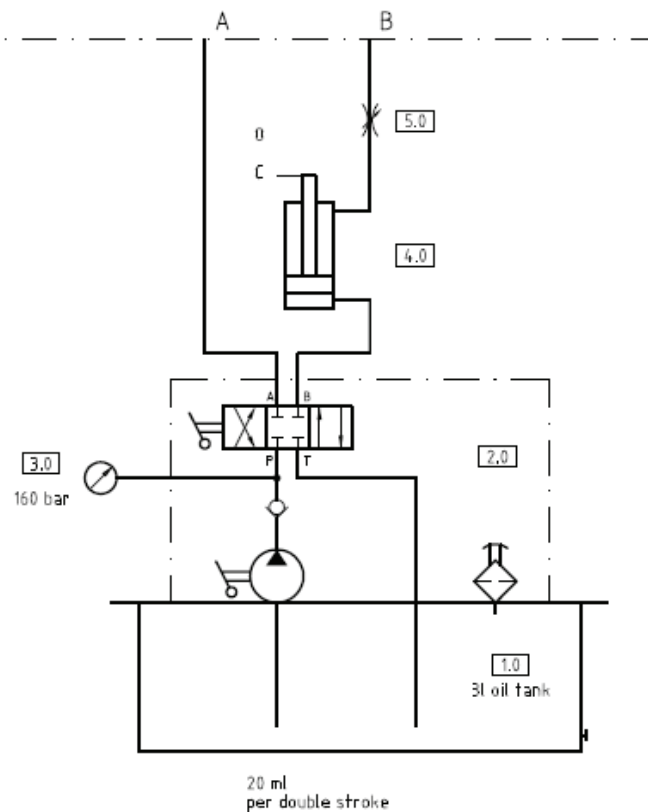
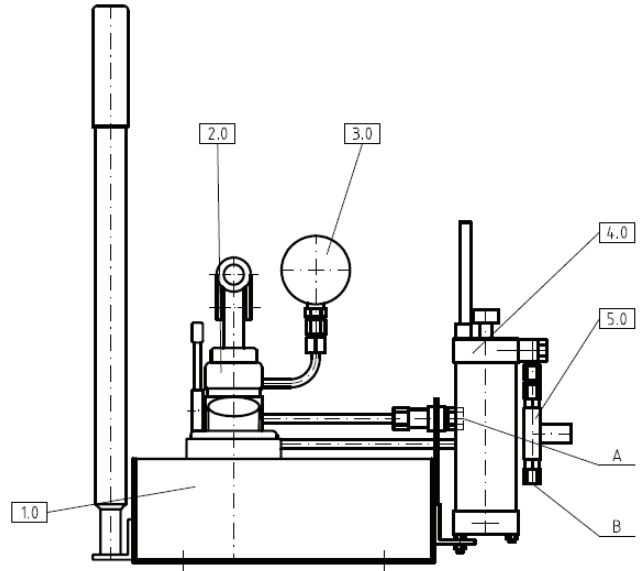
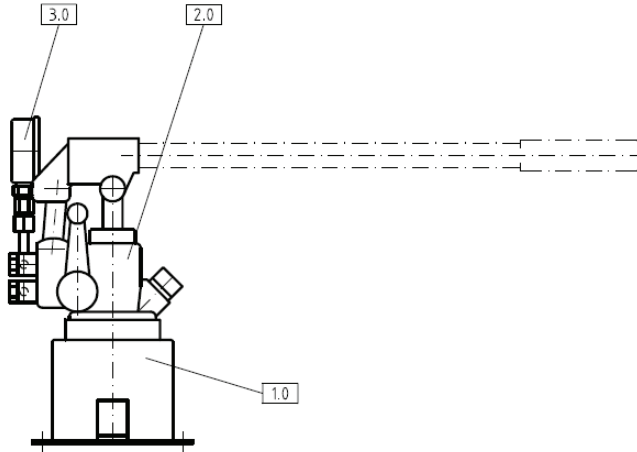


hydraulic diagram

item	denomination
1.0	oil tank
2.0	hand pump
3.0, 3.1	ball valve
4.0, 4.1	hydr. pressure gauge
5.0, 5.1	hose with coupling, standard length 1,5 m

nominal size
installation

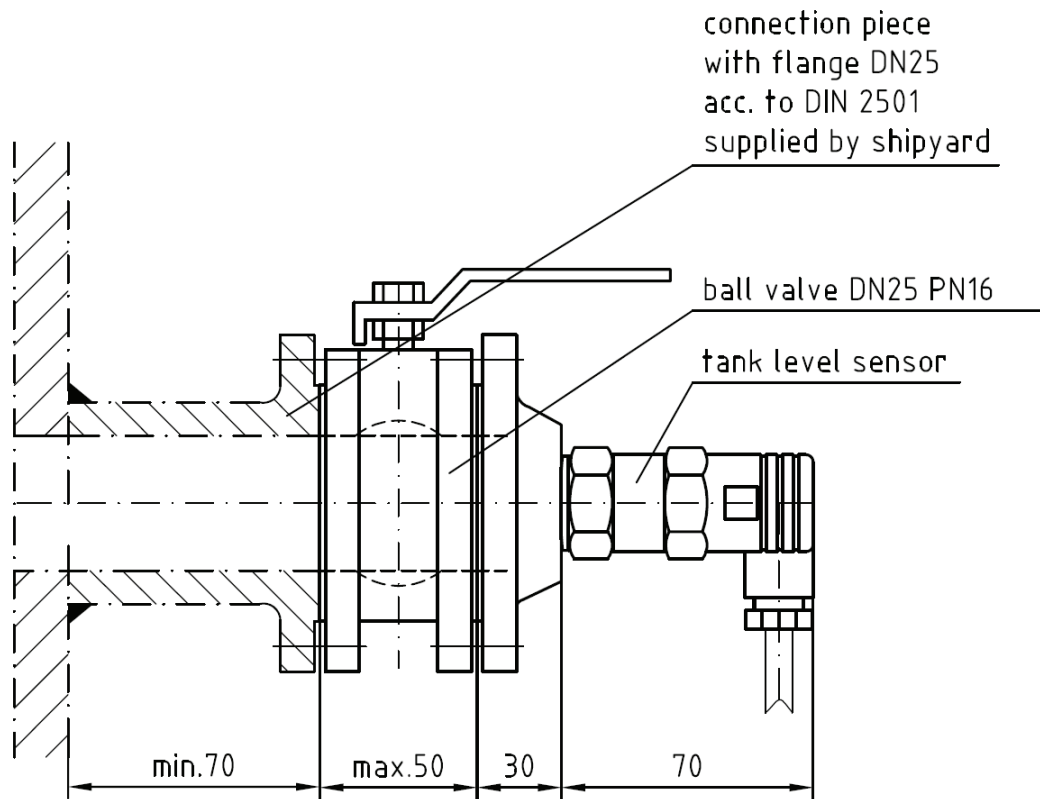
oil tank 3 l
fixed type



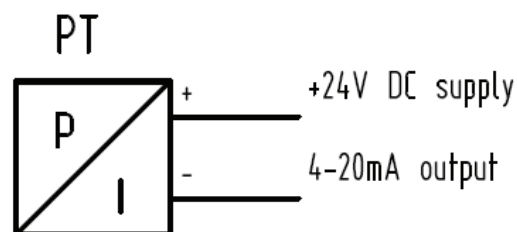
item	denomination
1.0	oil tank
2.0	hand pump
3.0	pressure gauge
4.0	hydr. position indicator
5.0	throttle valve
A, B	connection to actuator, for pipes \varnothing 8 mm

hydraulic diagram

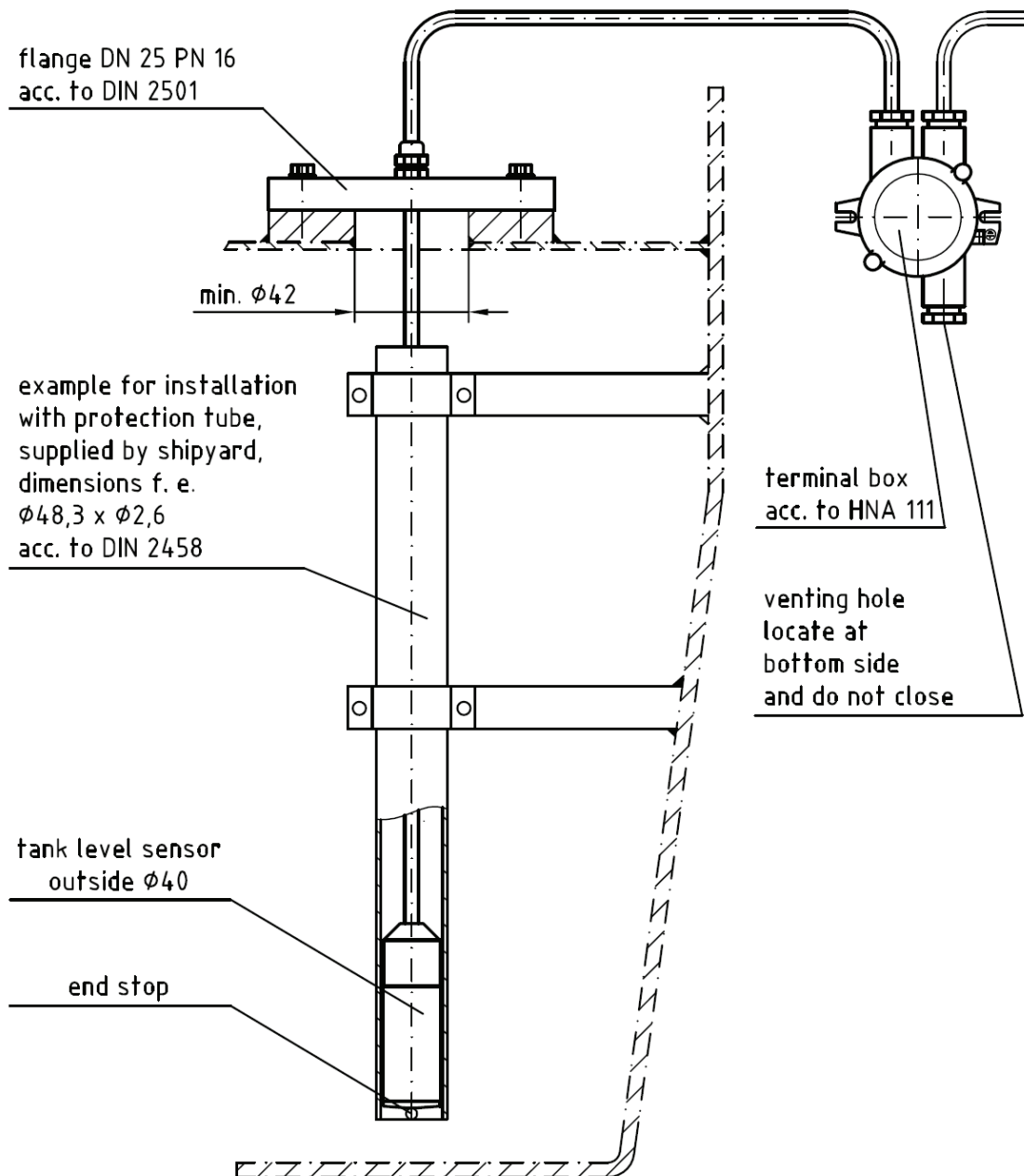
type	pressure sensor with ceramic cell and integrated transmitter unit
installation	dry, side mounted
measuring range	selected acc. to application
power supply	12...30 V DC
output	4-20mA
protection class	IP 65



electric diagram



type	pressure sensor with ceramic cell and integrated transmitter unit
installation	submerged, from tank top
measuring range	selected acc. to application
power supply	12...30 V DC
output	4-20mA
protection class	IP 68



electric diagram

