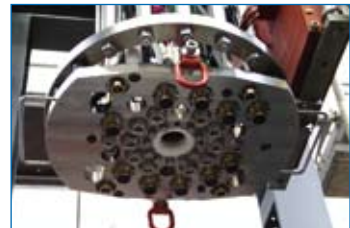




walther
präzision

OFFSHORE TECHNIK
OFFSHORE TECHNOLOGY





The Company

Carl Kurt Walther GmbH & Co. KG was founded in 1931 as a mechanical engineering company in Wuppertal. Since 1951, the **WALTHER PRÄZISION** division has been developing and producing monocouplings, multicouplings and docking systems used wherever there are liquids, steam, gases, electrical or optical signals and electrical power to be transferred and disconnected safely.

Our engineers develop solutions which fulfil the very strictest demands, prove their worth in adverse conditions and protect the environment in the automotive industry, aerospace and aviation, chemical and pharmaceutical sectors, offshore, medical technology, transportation technology, mechanical and plant engineering and defence technology.

This extensive variety means that today we offer the world's largest programme of monocouplings, multicouplings and docking systems with more than 300,000 variations. Nearly every application can be served with our standard programme, and for special cases we offer individual custom designs.

The offshore industry has benefitted for over 25 years from the existing experience and the will to move on.

Material selections range from coated carbon steels, over bronze to stainless steels of the 316 class and super duplex kinds. New materials to optimize performance are being tested as they become available.

Pressure ratings starting at 345 bar (5000 psi) years ago constantly increase. 690 bar (10000 psi) has become a common standard and is taken beyond to 1400 bar (20000 psi) in some cases.

As sea water depths increase the coupling designs follow. The inhouse pressure chamber verifies correct function of couplings up to 5000 m water depth.

Since 1992, the certification of our quality management systems according to DIN EN ISO 9001 is a self-evident consequence to **WALTHER-PRÄZISION** for our high quality demand.

We manufacture quick self sealing couplings for the aerospace and aviation industry as well as nuclear technology according to DIN EN 9100 and KTA 1401. Our production for medical technology meets all requirements of DIN EN 13485. Cleanliness classes to SAE AS4059 can be met.

Your advantages at a glance:

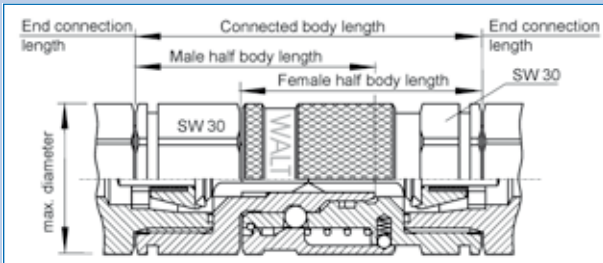
- no additional connecting adaptors required as we offer a wide range of different adaptors and connections for our coupling systems
- easy and comfortable handling due to low couple forces
- cost- and energy-saving due to the very excellent characteristic flow values
- high durability due to an extremely sturdy and resistant design
- space saving by compact design



Mono Couplings

Quick release version

Series HP



Characteristics:

- Rugged and reliable design
- Field proven in over 25 years offshore use
- Wide choice of end connections
- Various material versions available
- Both sides self sealing

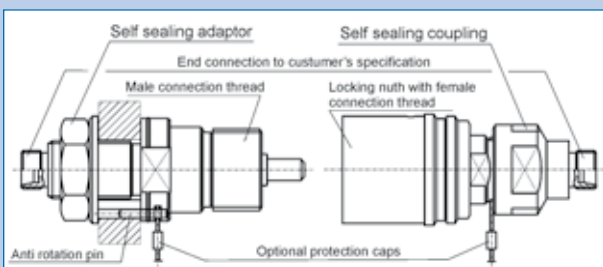
Optional features:

- Additional safety lock by axial safety sleeve (50 g proof)
- Non interchangeable versions by keying rings
- Pressure venting valves
- Dirt - or pressure retaining protection caps
- 3/8" size also available as ultra high pressure version for 20000 psi working pressure in stainless steel.

Size	Type	Typical end connection	Max. dia.	Total body length connected	Male half body length	Female half body length	Max. stat. working pressure carbon steel / stainless steel	Cv value
1/4"	HP-004	JIC #4, NPT 1/4", Autoclave 1/4" MP	30 mm	90,0 mm	57,5 mm	57,5 mm	29000 psi / 15000 psi	0,40
3/8"	HP-006	JIC #6, NPT 3/8", Autoclave 3/8" MP	34 mm	100,5 mm	65,5 mm	65,5 mm	15000 psi / 10000 psi	0,65
1/2"	HP-010	JIC #8, NPT 1/2", Autoclave 1/2" MP	46 mm	125,0 mm	80,5 mm	80,5 mm	9000 psi / 7500 psi	1,85
3/4 "	HP-016	JIC #10, NPT 3/4", Autoclave 3/4" MP	56 mm	152,0 mm	96,5 mm	96,5 mm	7500 psi / 6500 psi	5,50
1 "	HP-020	JIC #12, NPT 1"	62 mm	154,0 mm	98,5 mm	98,5 mm	6000 psi / 5000 psi	8,50

Diver screw type version

Series SH



Characteristics:

- Both sides self sealing
- Rugged connectors with screw sleeve to connect by screwing action under pressure
- Round connection thread for easy action under adverse conditions
- End connections to customer specification
- Standard material AISI 316 L and F6 Nm or other stainless steel / duplex combinations
- Sizes: 3/8" , 1/2" and 3/4"
- Working pressure: depending on material combination up to 10000 psi

Optional features:

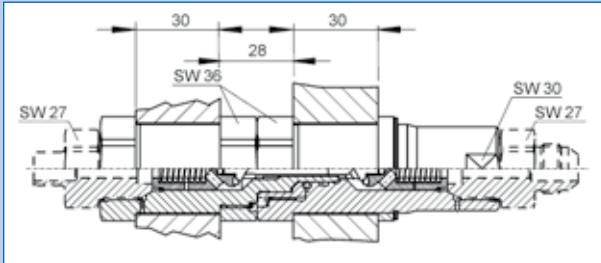
- Non interchangeable versions by different keying components
- Sealing technique dual o-ring or metal seal with resilient back up
- Connectable under pressure up to 1500 psi
- Metal seals



Coupling elements

Plate mounted elements

Types OM-006, OM-010, OM-016



Characteristics:

- Rugged and reliable design
- Both sides self sealing
- Wide choice of end connections
- Various material versions available (standard = 316 L)
- Redundant seals
- Metal static seals

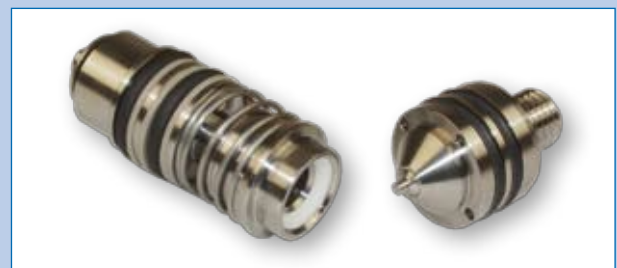
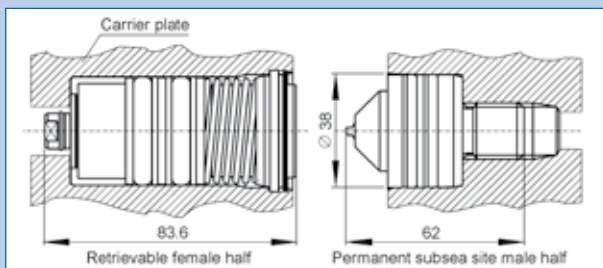
Optional features:

- Shallow water design with dual o-ring seal (-Z04) up to 1000 m water depth
- Deep sea design with polymer seal plus resilient back up (-Z05) up to 5000 m water depth
- Pressure venting valves
- External pressure resistant valves
- Front or rear mounting variants
- Metal primary seal (c-ring)

Size	Type	Typical end connection	Max. dia.	Total body length connected	Male half body length	Female half body length	Max. stat. working pressure carbon steel /stainless steel	Cv value
1/4" - 3/8"	OM-006	Thread or weld stub	40,0 mm	153,0 mm	91,5 mm	93 mm	10000 psi	0,65
1/2"	OM-010	Thread or weld stub	55,5 mm	188,5 mm	112,5 mm	115 mm	10000 psi	1,85
3/4" - 1"	OM-016	Thread or weld stub	61,3 mm	181,5 mm	117,5 mm	121 mm	10000 psi	6,00

Cavity mounted elements

Type 82-007



Characteristics:

- Cavity mounted coupling element
- Both sides self sealing
- Max. working pressure 5000 psi
- Conical face seal in PTFE
- Possibility to connect with strong angular inclination 10° with hinge point distance 90 mm
- Max. water depth 3400 m

Optional features:

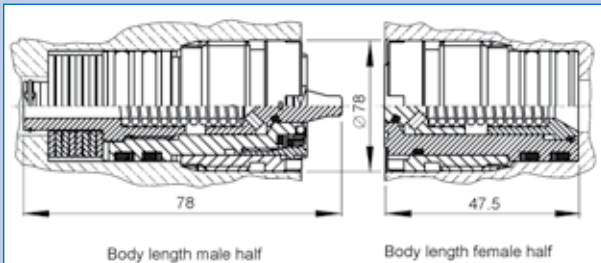
- Version to suit standard Petrobras cavity
- Flush face version
- Thru type versions (without valves)



Coupling elements

Cavity mounted versions

Type 84-006



Characteristics:

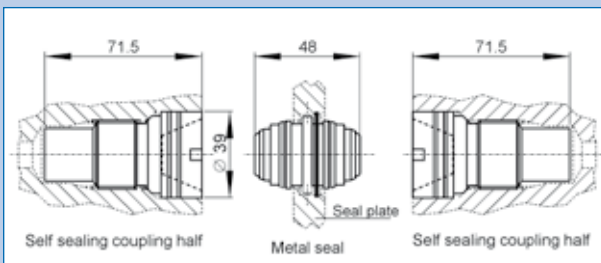
- Metal to metal primary seal
- 100 and more connection cycles with the same metal seal
- High angle connectability
- Both sides self sealing
- Flush cavity mounting
- Max. working pressure 12500 psi
- Cv value 0,56
- Redundant seals

Optional features:

- Resilient seal version for work shop operations
- Increased body size version for misdrilled cavities
- Long stroke elements for large lateral tolerances

Cavity mounted elements

Type OE-006



Characteristics:

- Metal to metal sealing cone situated in separate seal carrying plate between 2 hubs
- Seal plate ROV exchangeable
- Metal seal reusable up to 10 connection cycles
- Coupling halves self sealing
- Valves resistant to external pressure
- Design approved for 5000 m water depth
- Max. working pressure 5000 psi for OE-006 and 10000 psi for OE-010
- High angle connectability

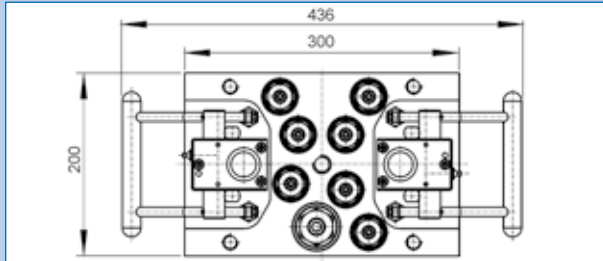
Optional features:

- 2 sizes available 6mm and 10 mm nominal bore
- Different cavity mounting arrangements for OE-010
- High angle connectability



Workover stab plates

Cam locking



Type 90735 8-way



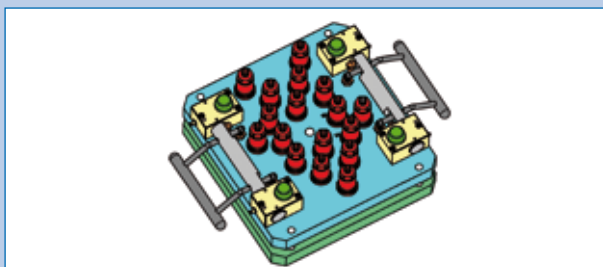
Characteristics:

- Cam action assisted 8-way plate
- Populated with: 7 coupling elements type OM-006-Z04 (3/8")
1 coupling element type OM-010-Z04 (1/2")
- Working pressure: 10000 psi
- Secured position for handles in connected position

Optional features:

- Super duplex materials
- Protection covers
- Variation in element population
- Strain relief

Cam action operated



Type 90771 17-way



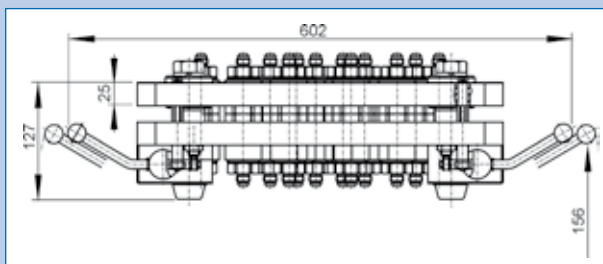
Characteristics:

- Cam action assisted 17-way plate
- Populated with: 17 coupling elements type OM-006-Z04
- Working pressure: 10000 psi for each single element
- Secured position for handles in connected position

Optional features:

- Super duplex materials
- Protection covers
- Variation in element population
- Strain relief

Cam action operated



Type 90734 30-way



Characteristics:

- Cam action assisted 30-way plate
- Populated with: 30 coupling elements type HP-006-Y0A
- Working pressure: 5000 psi for each single element
- Secured position for handles in connected position

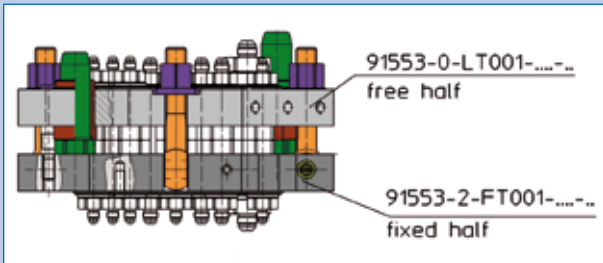
Optional features:

- Super duplex materials
- Protection covers
- Variation in element population
- Strain relief

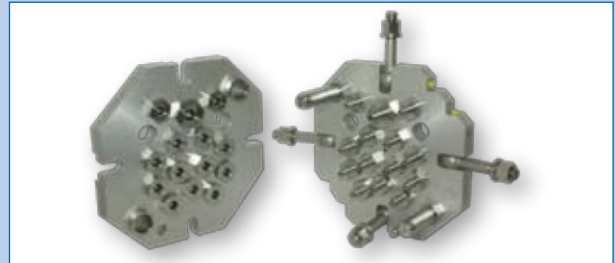


Workover stabplates

Swing bolt locking



Type 91553 16-way



Swing bolt stab plates

Swing bolt stab plates are a cost optimized version of the cam action variant. They connect by prepositioning the free half on the fixed side, swinging the bolts into place - into the cut out of the other half and carefully torquening the nuts to pull the halves together.

Characteristics:

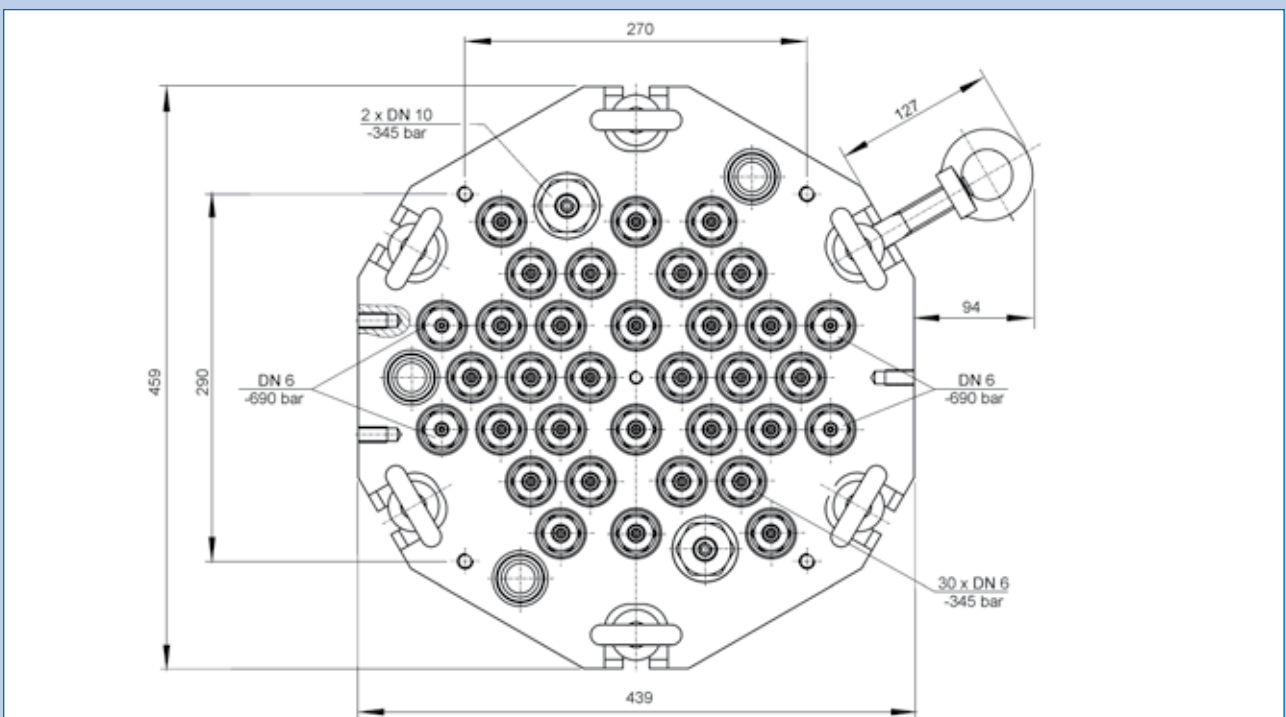
- 4 swing bolts to lock up to 16 coupling elements.
- Populated with: 9 coupling elements type HP-006-Y6C for 10000 psi
6 coupling elements type HP-006-Y7C for 5000 psi
1 coupling element type HP-010-Y90 for 5000 psi

Optional features:

- Super duplex materials
- Protection covers
- Variation in element population
- Strain relief

Swing bolt locking

Type 91547 36-way



Characteristics:

- 6 swing bolts to lock up to 36 coupling elements.
- Populated with: 30 coupling elements type HP-006-Y7C for 5000 psi
4 coupling elements type HP-006-Y6C for 10000 psi
2 coupling elements type HP-010-Y90 for 5000 psi

Optional features:

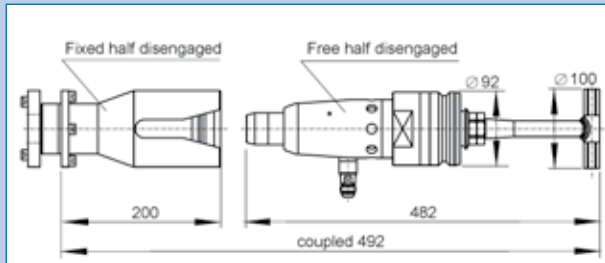
- Super duplex materials
- Protection covers
- Variation in element population
- Strain relief



ROV single couplings

ROV single couplings

Type 87-006



Characteristics:

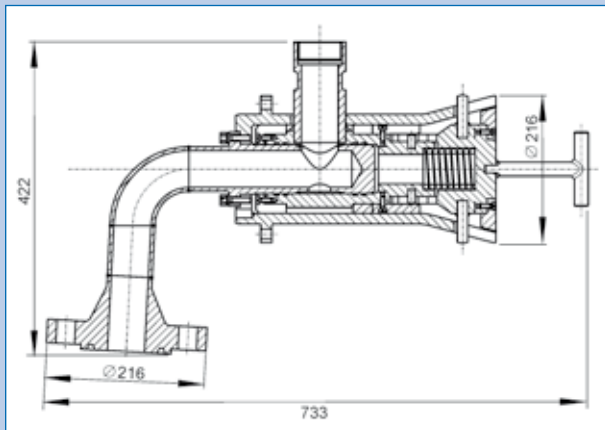
- Manipulator make, no special tooling required
- Connects under full working pressure. Make up torque only 40 Nm.
- Max. working pressure 10000 psi
- Both sides self sealing
- Cv value 0.56
- All primary seals and moving components on retrievable half
- Metallic primary seal with resilient back up
- Metal seal good for +100 connection cycles

Optional features:

- ROV handle as T-bar, or other profile
- 2 non interchangeable versions by mechanical profile
- Shallow water version up to 1000 m water depth
- Deep sea version up to 5000 m water depth
- Supplied as complete tested system with jumper hose

ROV single couplings

Type 87-050 ROV for gas lift



Characteristics:

- ROV operated by claw action only (no tools required)
- Pressure balanced in connected position (no reaction force)
- Max. working pressure 5000 psi
- Thru type version
- All primary seals and moving components on retrievable half

Optional features:

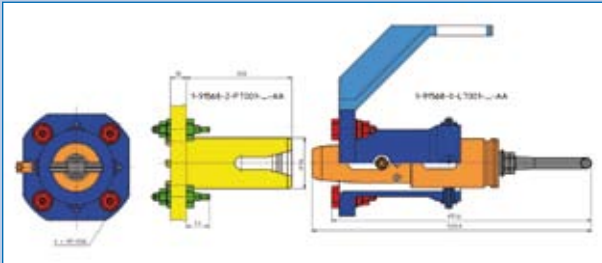
- ROV handle as T-bar, or other profile
- Pressure sealing caps
- Pressure caps with relief valves



ROV Multicouplings

ROV operated stab plate

Type 91568



ROV stabplates

As well as the elements which are used to populate the plates the method of connection and termination to the umbilical determines if the system works well or will give trouble in practise. Walther Präzision uses 2 methods of connecting umbilicals subsea:

Small umbilical or bundle solution:

91568 – which is being operated by the ROV manipulator, or in case of heavily armored and stiff umbilicals also by API 17D torque tools. The central locking mechanism is stabbed into the funnel until metal end stop and then turned until final stop is reached. Locking balls radially lock into the funnel and the carrier plate moves forward to make final connection with the subsea plate. This locking principle has been used and proven on many subsea projects.

Characteristics:

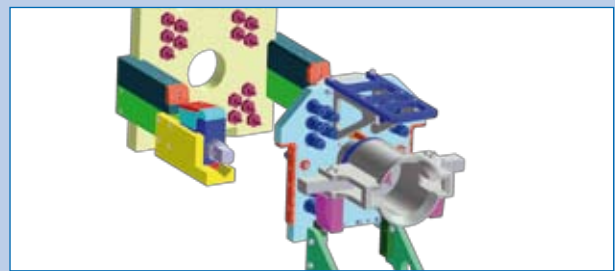
- Easy operation by ROV claw
- Population with up to 4 coupling elements for 10.000 psi
- Unique anti rotation termination between coupling elements and umbilical tubes
- Reliable locking mechanism

Optional features:

- 6 coupling elements with reduced working pressure
- Umbilical termination flange acc. to project requirement
- Full systems (stab plate + umbilical) available as complete tested sets
- Parking stations and covers

ROV operated stab plates

Type 91561 and 91548



Large umbilical solution:

- 91561 - which requires an API 17D class 4 tool or similar to handle the increased total mass
- The ROV drops the unit on to the catching arms of the fixed half. It will rest repositioned in the cut outs.
- From there the torquing action of the torque tool will move the plate with the coupling elements in a controlled manner to final engagement.

Characteristics:

- Easy operation of stiff umbilicals by very forgiving prealignment process and secured final engagement
- ROV carrying mode is sufficient for operation
- Umbilical termination as all welded solution or with unique anti rotation fitting
- Population with up to 17 coupling or electrical elements

Optional features:

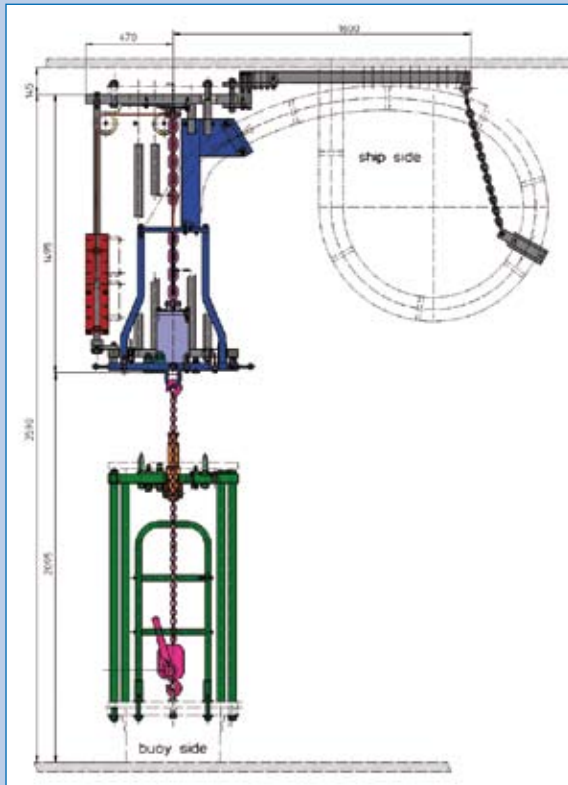
- Umbilical termination flange acc. to project requirement
- Full systems (stab plate + umbilical) available as complete tested sets
- Parking stations and covers



Docking systems

FPSO - Buoy connectors

Type 91551



FPSO - Buoy connectors

FPSOs can be threatened by a number of environmental conditions such as icebergs or hurricanes. It is then of utmost importance to separate the FPSO from the riser buoy to avoid disastrous damage. After letting the threat pass speedy repositioning and reconnection limits production loss to a minimum.

Walther QCDC (quick connect, disconnect) systems allow to separate hydraulic control lines, chemical injection lines and electro cables within a few minutes by remote control only. This is done safely at any pressure situation. Reconnection is facilitated by manually pulling the halves together again.

Characteristics:

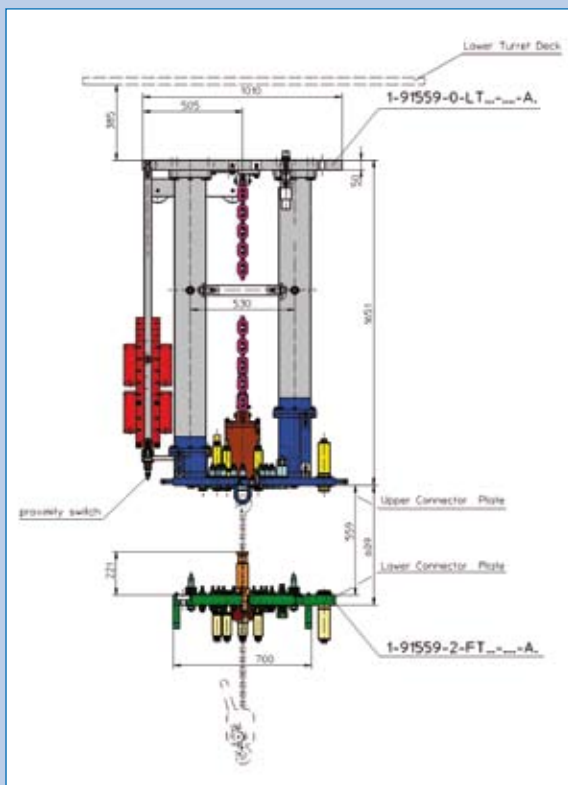
- Manual connection by ratchet and chain.
- Automatic release by hydraulic unlocking signal to WALR and subsequent automatic separation by gravitational counter weights
- Hanging arrangement of upper ship half to tolerate misalignments between buoy and ship +/- 12 mm side to side and 2° angular

Population:

- 2 coupling elements type HP-006-Y9C, wp 10000 psi
- 10 coupling elements type HP-010-Y92, wp 7500 psi
- 3 coupling elements type HP-016-Y44, wp 5000 psi
- 13 electro connectors, type 95290, 4 way, wet mateable, ex protected fully potted with Draka or Duco cable
- Electro connectors with PTB and CSA approval

FPSO - Buoy connectors

Type 91559



Characteristics:

- Manual connection by ratchet and chain
- Automatic release by hydraulic unlocking signal to WALR and subsequent automatic separation by gravitational counter weights
- Hanging arrangement of upper ship half to tolerate misalignments between buoy and ship +/- 10 mm horizontal and vertical +/- 15 mm torsional

Population:

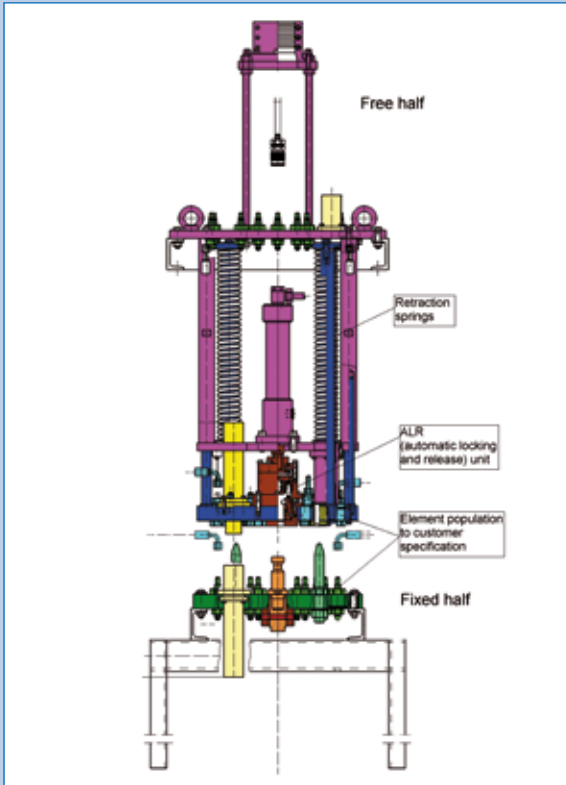
- 28 coupling elements, type OM-006-Z03, wp 10000 psi
- 1 coupling element, type OM-016-Z03, wp 7500 psi
- 7 electro connectors, type 95290-Z03, 4 way, 20 V
- 3 electro connectors, type 95290-Z03, 37 way, 20 V
- 2 electro connectors, type 95291, 4 way, 690 V
- All wet mateable, exd protected, PTB and CSA approved
- Self sealing adaptor elements (buoy side) with external pressure resistant valves
- Fire protected hoses
- System DNV approved



Emergency Disconnect Units

EDU

Type 91355



EDUs are coupling systems which separate in a planned and controlled way on special command. Mostly used on BOPs the separation sequence can be initiated by pulling force or a hydraulic signal coming from a remote control. Various mechanical or hydraulic solutions are possible. Systems which do not use shear bolts are superior and cost saving as they can be brought back into operation without component replacement thus bringing the system back to money making operation much faster. This allows to be tested them at any time to verify the function.

Characteristics:

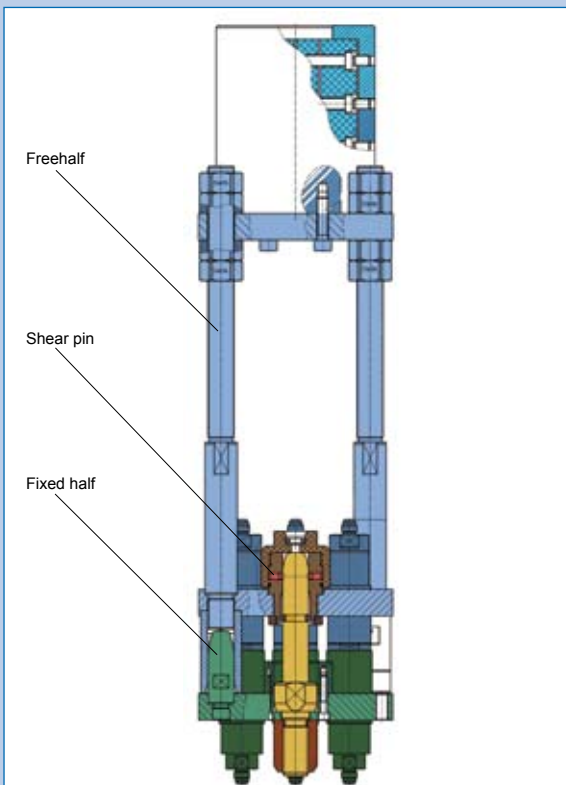
- Movement by single or double action cylinder
- Connected position secured by WALR (mechanical lock, hydraulic release) unit
- Hydraulic power can be switched off in connected position
- WALR opens lock on hydraulic command
- Either cylinder action or retraction springs will separate coupling halves
- Mechanical override by shear pin in case of hydraulic failure
- Upper interface plate for easy termination of umbilical
- Max misalignments on make up: +/- 3mm

Population:

- 18 self sealing coupling elements 3/8" size, type HP-006
- Elements optional with deep sea check valves to avoid water ingress
- 1 x Electro connector, 4-way
- Free half optional with jumper hoses between interface and carrier plate

EDU

Type 91571



Characteristics:

- Manual make up by central screw element
- Emergency separation by breaking shear pin in the locking element
- The use of pressure balanced coupling elements ensures that no reaction force of the working pressure will influence the break away result

Optional features:

- 6 pressure balanced coupling elements, type 63-006, working pressure 10000 psi
- size 3/8"

WALTHER-PRÄZISION

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