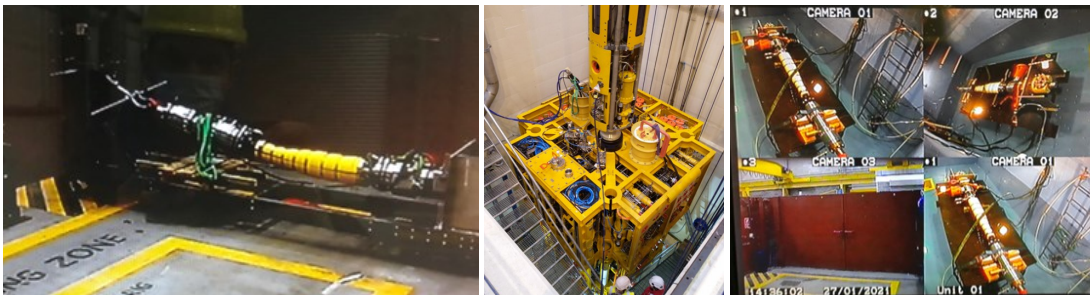




KILL LINE CONNECTOR

Subsea Intervention Connection System

The Flint Subsea Kill Line Connector is installed on the end of a downline or jumper and provides protection against vessel drift or drive-off. It is a full-bore pressure balanced system suitable for operating in up to 10000ft water depth and pressures up to 15000PSI. Normal connection and disconnection is performed with the hot-stab whilst emergency release occurs passively or actively via the Mid Line Weak Link .

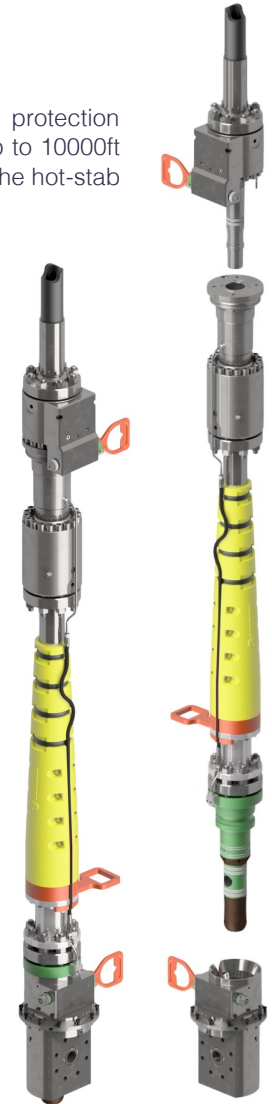


The Flint Subsea Kill Line Connector is easily integrated into new or existing well intervention packages, subsea tools or manifolds and has been utilized on existing systems for over 3 years.

The system comprises a female receptacle and a male assembly. The female receptacle has a very small footprint and is mounted on the subsea tools or manifold. The male assembly includes a hot stab, hose assembly and EQD and is mounted on the end of a jumper or downline. An optional valve can be installed between the hose and hot stab giving flexibility around deployment and recovery.

In normal operations, the dual port hot stab provides quick and easy means of connection and disconnection. A locking handle is turned to lock and unlock the hot-stab in the receptacle. Upon connection, the hydraulic release function is engaged automatically through the dual port hot stab and secondary hydraulic hot stabs are not required.

In the event of an emergency, the Mid Line Weak Link can be disconnected actively or passively up to 16° angle. In passive mode, the tensile hose load will pull the system apart. In active mode, hydraulic pressure is supplied from the subsea tool or manifold and the unit is pushed apart. In both cases, internal valves shut off automatically and prevent egress and ingress of fluids or gases from the bore to the environment.



| SPECIFICATIONS | | | |
|------------------------|---------------------------------------|------------------------|--------------------------------|
| Max Working Pressure | 15'000 PSI [1034 Bar] | Operating Temp Range | 14°F to 180°F [-10°C to +82°C] |
| Maximum Depth | 10'000 ft [3048m] | Maximum Angle | 16° |
| Material Class | API HH available | Material Certification | BS EN 10204 3.1 |
| Specification Level | PSL3 (3G available) | Standard | API 17G |
| Qualification | API 6A PR2 | Hydraulic Disconnect | Included |
| Hold Back Points | 2 x M20 each end | Hot Stab Lock | 11000lbs [5Te] capacity |
| Ingress Valve | Optional | Tension Pin Override | 11000lbs [5 Te] capacity |
| Tension Pin Break load | 1650lbs to 11000lbs [0.75 Te to 5 Te] | | |

| Bore Size | Pressure Rating | Length (mm) | Total Weight (kg) | Male Weight (kg) | Female Weight |
|-----------|---------------------|---------------|-------------------|------------------|----------------|
| 2" | 10'000PSI [690Bar] | 102" [2600mm] | 812lbs [369kg] | 592lbs [269kg] | 220lbs [100kg] |
| 2" | 15'000PSI [1034Bar] | 119" [3025mm] | 1104lbs [502kg] | 840lbs [382kg] | 264lbs [120kg] |





MID LINE WEAK LINK

Emergency Quick Disconnect (EQD) Device

The Mid Line Weak Link, available for sale or rental, is a full-bore, straight through, pressure balanced emergency quick disconnect (EQD) device suitable for operating in water up to 10000ft deep, installed on flexible hoses. In the event of an over pull on the hose, or hydraulic disconnect the unit will separate and internal barriers will close off to prevent discharge of fluid to the marine environment.



OPERATION

The Flint Subsea Mid Line Weak Link EQD systems have extensive track record and have been operating for several large profile intervention and pumping operators in 5 continents for over 5 years.

Mounted mid-line in a hose, either subsea or topside, the device is held together with pre stressed tension pins. The pressure balanced design features integrated check valves.

When the hose tension exceeds the pin strength, the disconnect sequence is initiated. Once disconnected, the valves close, preventing discharge from both ends of the connector. An optional valve prevents ingress of water to the bore.

Each unit is supplied with integrated hold back points allowing them to be tied back to subsea or topside structures.

The unit is also available with hydraulic override capability. Simply attach a hydraulic input to the side of the device and pump it apart and avoid tensile loads damaging the hose.

SPECIFICATIONS

| | |
|-------------------------------|---|
| Max Working Pressure | 15'000 PSI [1034 Bar] |
| Operating Temp Range | 14°F to 180°F [-10°C to +82°C] |
| Maximum Depth | 10'000 ft [3048m] |
| Material Class | API HH available |
| Material Certification | BS EN 10204 3.1 |
| Specification Level | PSL3 (3G available) |
| Standard | API 17G |
| Qualification | API 6A PR2 |
| Hold Back Points | 2 x M20 each end |
| Hydraulic Disconnect | Included |
| Tension Pin Break load | 1650lbs to 11000lbs [0.75 Te to 5 Te] |
| Ingress Valve | Available as option to prevent ingress of environment to device |

| Bore Size | Pressure Rating | Length | Diameter | Total Weight | Male Weight | Female Weight |
|-----------|-------------------|---------------|--------------|----------------|---------------|----------------|
| 2" | 5'000 [345 Bar] | 23.2" [590mm] | 6.3" [160mm] | 176lbs [80kg] | 75lbs [34kg] | 101lbs [46kg] |
| 2" | 10'000 [690 Bar] | 29.5" [750mm] | 8.7" [220mm] | 223lbs [101kg] | 101lbs [46kg] | 121lbs [55kg] |
| 2" | 15'000 [1034 Bar] | 33" [840mm] | 9.0" [230mm] | 419lbs [190kg] | 176lbs [80kg] | 243lbs [110kg] |
| 4" | 1'400 [100 Bar] | 28" [700mm] | 9.8" [250mm] | 265lbs [120kg] | 160lbs [73kg] | 104lbs [47kg] |

