Especially in climates with high rainfall water can accumulate on the external floating roof. Adequate draining of this rain water is very important for safe and reliable operation of storage tanks with external floating roofs.

Drain water on external floating roofs may contain sediments and debris, which causes the drains to malfunction. Also the placement of the drains inside the stored product makes the drain design challenging. The CTS drain solutions take these important aspects into consideration. Our drain solutions include the drain master system, swivel joint system, drain hose and flextube system.

Safety and certifications
CTS drain systems comply with all relevant international standards. These systems are designed as low pressure systems, nevertheless the assembly is tested to 10 bar with water. All certificates are included in the supply.
The drain master consists of a reinforced composite hose fitted in a metallic pivoting joint. This is an ideal long-lasting flexible pipe connection for this application.

**Construction**

**Hose**
- Inner wire: SS316 (1.4401)
- Lining: Polypropylene (PP)
- Outer cover: Hostaflon (PTFE with PE added for maximum tightness)
- Outer wire: SS316 (1.4401)
- Operating pressure: Max. 14 bar
- Vacuum: Suitable for vacuum up to -0.85 bar
- Temperature range: -20°C up to +100°C

**Frame**
- CS, SS304L (1.4304), SS316L (1.4404)

**Product data**

<table>
<thead>
<tr>
<th>Internal diameter</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>Weight (kg)</th>
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<td>310</td>
<td>230</td>
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<td>1,300</td>
<td>650</td>
<td>430</td>
<td>385</td>
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</tr>
</tbody>
</table>

**Highlights**

- Drainmaster flexible connections can be supplied in 3", 4", 6", 8", 10" and 12"
- Designed for submerged service in aggressive environments
- Maintenance free
- Service live in well in excess of 20 years
- Suitable for 100% aromatics
Tanks drain systems can only be replaced when the tank is out of service, therefore the consequence of a malfunctioning tank drain is significant. To ensure long service life CTS has developed a tank drain pipe solution with high quality swivels. The CTS drain pipe system is a complete system, including the connections, swivels and the piping required. Please refer to the swivels leaflet for more information on our swivels.

CTS flexidrain tubes are available from 3-inch to 8-inch internal diameter. It consist of an interlocking metallic carcass, inside a barrier layer. This combination of layers allows the flexidrain to be installed in a repetitive lay pattern, which ensures the safe operation of the tank roof. All tank drain flexible lay patterns are custom engineered for each specific tank.

Key properties

- Repetitive lay pattern that is easy and relatively inexpensive to install
- No maintenance required
- Accommodation of the lowest possible operating roof position
- Compatible with 100% aromatics
- No abrasion to either tank floor or covering layer
- No swivel joints or other connections that bind or require maintenance
- No lateral forces on floating roof

Details and dimensions can be provided upon request.

Test results

Burst and tensile testing has been completed with excellent results. In the case of the 4-inch tank drain flexible both samples failed in burst mode and away from the end fittings. The actual burst pressures from testing were 33.8 and 33.9 bar respectively, and well above the predicted calculated value of 30.4 bar.
**Drain hoses**

CTS tank drain hoses are a proven solution for the challenging draining of rain water on external floating roofs. The major advantage of these hoses is its simplicity in design. It has a limited amount of connections and therefore high reliability. To avoid floating the CTS drain hose includes a lead ballast cable and suspension system. All hoses are supplied electrically continuous to prevent buildup of static electricity.

### Construction
- **Lining**: Nitrile (NBR) or Neoprene (CR)
- **Reinforcement**: Textile cord with a high tensile wire helix
- **Cover**: Smooth wrapped finish in the following materials:
  - Specification  | Rubber quality | Content           
  - CTS604        | Nitrile        | Aromatic content up to 50% 
  - CTS608        | PVC/Nitrile    | Aromatic content up to 70% 
  - CTS603        | Viton®         | Aromatic content up to 100% 
- **Flanges**: Mild steel nipples with fixed ASA150 R/F
- **Other flanges**, including bronze and swivels, and material types on request
- **Ballast connection**: Stainless steel threaded section welded to the hose nipple
- **Lead ballast**: Each hose assembly incorporates a permanently attached lead covered stainless steel cable to prevent the hose from floating in the stored product. The ballast is secured with two threaded stainless steel nuts retaining the cable loop which is itself secured with two stainless steel U type clamps with double nuts.
  - Clamps and chains for roof attachment are supplied and the roof end of each hose is marked as follows: “Attach this end to roof”

### Proven efficiency
- A longitudinal white stripe is permanently branded on the cover of each hose to ensure correct alignment.

### Features
- Designed for immersed use
- Suitable for 100% aromatics or corrosive liquids
- Can be equipped with spark-free flanges
- Length up to 40m
- Pressure tested and certified, before shipping
- Steel hose protectors can be supplied as an option

*More details and dimensions can be provided upon request.*