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Originator TOM HAYDEN		Checked By C. SLAIGHT	Page 1 of 4	Reference ODN-139-23	Class 23

**SUBJECT: HANDLING AND STORAGE PROCEDURE FOR OIL-FILLED JUMPER ASSEMBLIES**

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1.0 **INTRODUCTION:**

This storage and handling manual covers oil-filled jumper assemblies. Specific instructions regarding ODI connectors can be found in the documents referenced below.

DOCUMENT NO.	REFERENCE	TITLE
10272	ODN-214-23	MKII WET-MATE HYBRID CONNECTORS
10368	ODN-004-23	NAUTILUS CONNECTORS
10369	ODN-084-23	DRY-MATE STYLE CONNECTORS
63860	ODN-342-23	NAUTILUS HIGH POWER CONNECTORS

**Note: This is intended to be a generic manual covering all oil-filled jumpers. Any project specific instructions will be dealt with in a separate document.**

2.0 **HANDLING:**

In general, oil-filled jumpers are robust and require few special handling requirements.

**Note: Where jumper termination work and mounting are carried out by those other than ODI, then the responsibility for that work lies with the customer or the subcontractor.**

2.1 Connector protective caps should always remain installed except as needed for test or deployment.

2.2 Excessive loads should be avoided. At no time should any heavy or sharp object be placed on top of a hose assembly. Hoses should also be supported to avoid kinking. The minimum bend radii and maximum working load for ODI hose is provided below. D/N 19421 (ODN-130-24) offers detail specifications of ODI hose. Bends with smaller radii must be avoided. The weight of unsupported hose must be considered when calculating actual axial loads. A figure "8" pattern is recommended for deployment. Spooled assemblies may not allow for free movement of wire/fiber, so lesser loads could cause damage.

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OCEAN DESIGN JUMPER HOSE	MINIMUM BEND RADIUS	MAXIMUM WORKING LOAD
10.700 OD (ODHOSE-6 5/16 NOMINAL BORE)	3" (80mm)	300 LB (1334N)
10.850 OD (ODHOSE-8 13/32 NOMINAL BORE)	4" (100mm)	400 LB (1780N)
11.150 OD (ODHOSE-12 5/8 NOMINAL BORE)	5" (130mm)	600 LB (2670N)

2.3 Under no circumstances should any of the fasteners be removed from any connector or hose termination.

2.4 If tie-wraps or hose clamps are used to retain the jumpers, then they must not be over-tightened. When tightened, the hose should not be deformed or squeezed by the tie or clamp.

2.5 When the jumper spans an unsupported length, the maximum distance between supports should not exceed 3 feet.

2.6 In the event that the jumpers or connectors are damaged, please contact ODI for instructions on the necessary rework/replacement.

2.7 At no time should any object be inserted into an ODI connector; proper test connectors should always be utilized.

|| 2.8 When removing a jumper from a box or crate, DO NOT remove entire jumper at once. **REMOVE ONE LOOP AT A TIME IN ORDER TO AVOID INJURY.** ||

3.0 **STORAGE:**

Subsea jumper and connector assemblies are designed for operation in harsh conditions; therefore, storage is straightforward with only a few guidelines.

3.1 Materials used in the manufacture of jumper and connector assemblies include elastomers. Therefore, jumpers and connectors should not be stored in direct sunlight. Wrapping the assemblies in UV blocking plastic sheeting or equivalent will limit degradation due to UV light. If possible, storing in the original packaging is recommended.

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3.2 Elastomers are also prone to degradation when left in an open-air environment (due to ozone damage, etc.). Wrapping in UV blocking plastic sheeting will also help reduce this degradation.

3.3 Exposure to aggressive fluids must be avoided since elastomers may have adverse reactions. Contact ODI if in doubt of a fluid's compatibility.

3.4 Connector protective caps should always remain installed except as needed for test or deployment.

3.5 Assemblies should only be stored within the following temperature range:

-20°C (-4°F) to +50°C (+122°F)

3.6 Assemblies should be stored in a manner that will not kink or bind hoses. The minimum bend radius for the hose is provided above. Bends with smaller radii must be avoided. No sharp or heavy objects should be placed on top of assemblies for storage.

3.7 Shelf Life - If unused after 5 years, contact ODI for instructions on refurbishment.

In the event of damage, or for more information, contact Ocean Design at the address below:

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