Gmail

FXFSP50606

Crimp Specs are as follows

- Align the dies to the machined line on the fitting. Although this fitting is shorter than the previous design, you do not crimp the full length.
- Once you have aligned the dies to the crimp line, then proceed to crimp down to the target dimension of 20.10mm

19mm or 20 mm dies will work.

Erich Vargas

Product Manager

Direct Dial: 281 275 6627

umbilicals international

10711 Cash Road, Stafford, Texas, 77477
t: +1 281 275 6600 w: www.umbilicals.com

Champlain Undersea Cable Corp.
dba Umbilicals International

CHAMPLAIN CABLE

1. Purpose

The purpose of this document is to provide basic crimping/swaging guidelines on installation of Umbilicals International (UI) Fittings to UI manufactured Hoses.

2. Health and Safety

Only fully trained staff or staff undergoing training and working under supervision are to carry out Fitting Termination and Burst Pressure Test. Staff conducting testing shall ensure that the work area is safe and that the Essential Health and Safety Instructions are understood. UI is not responsible for damage or mishandling by any unauthorized service personnel performing installation and termination of hoses beyond our control.

3. Tooling and Equipment

These tools are required and suggested to complete the intended procedure:

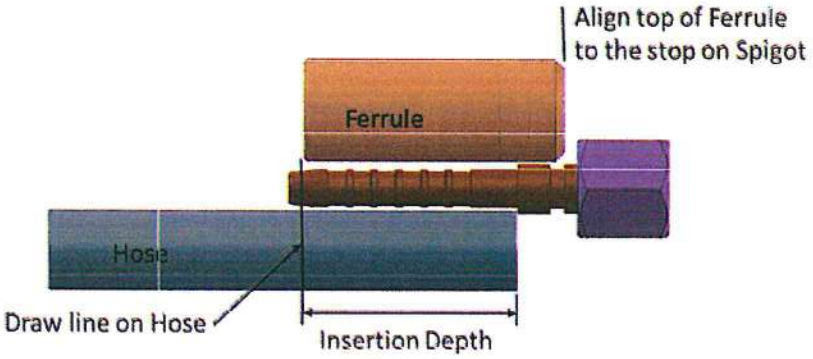
- Swaging Tool (Swaging device, Pusher, Die set)
- 8 Die Hydraulic Crimping Tool with necessary Die set
- Bore Gauges (Collapse Mandrel)
- PVC pipe cutter (optional)
- Cutting Knife
- Non Stretch Tape
- Marking Pens/Pencils
- Calipers
- Latex gloves
- Cleaning Rags
- Ziploc® Style Plastic Bags
- Food grade anti-seize grease
- Rubber mallet

4. Hose Preparation

4.1 Using a sharp blade, cut the hose to required length, (keep in mind that the length of the hose is between fittings, so make provision to allow for the extra lengths between the face of the nut to the end of the hose), make sure the cut is clean and square.

4.2 Deburr the outer edge of the OD and ID with a sharp blade or knife, remove all loose plastic material from the end of the hose. Do not let any debris fall into the hose. (This is to ease the insertion of the Spigot and the Ferrule)

4.3 Mark the Insertion Depth of the hose with marker; (see illustration below), this Insertion Mark will serve as a guide throughout the Crimping or Swaging process to ensure that the fitting is in its correct location prior to crimping or swaging. For Fittings that do not have separate Ferrules, use the straight section of the Ferrule as the Insertion Depth.



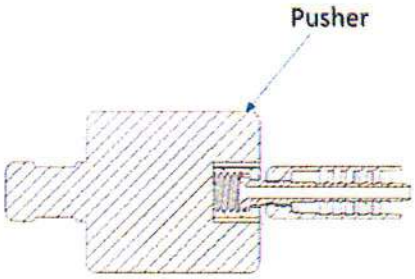
4.4 Insert Fitting Assembly fully into hose until it reaches the reference marking of the Insertion Depth. (Some Fittings may be a tight fit and may require tapping in with a rubber mallet, make sure you have good hold on the hose before using a rubber mallet).

Go to Step 5 for Swaging instructions and Step 6 for Crimping instructions

5. Swaging Instructions

The Swaging Operation requires a Swaging Device, Pusher and Die Sets

5.1 Select the corresponding Swage Die and Pusher set corresponding to your fitting assembly (see appendix B for Die and Pusher Selections and Dimensions, each hose / fitting combination has a specific die and pusher set) See illustration below.



5.2 Attached Pusher to the top cavity of the Swaging Device and lock with bolt provided

5.3 Apply anti-seize grease on the inside surface of the die and on the outside of the Ferrule.

5.4 Push Hose and Fitting assembly through the bottom opening and clamp the 2 Die Halves around the Ferrule and flush with the base surface of the press, make sure the 2 halves are aligned and centered perfectly around the fitting.

5.5 Bring pusher down until it engages with the nut of the Fitting Assembly, make sure everything is still aligned and die set flush with base surface.

5.6 Continue lowering the pusher all the way down. Never use an End Cap or any other Adaptor in the nut while swaging.

The pusher cavity depth allows just the right amount of swage length.

5.7 Raise Pusher up to the original position after swaging is completed.

5.8 Remove swaged assembly out of device.

5.9 Clean off grease from Fitting assembly and Die set. With Swaging there is no need for dimensional check if the correct Pusher and Die Set are selected.

5.10 Proceed to pressure test

6.0 Crimping Instructions

NOTE: Crimping dies should be one size smaller than the target OD.

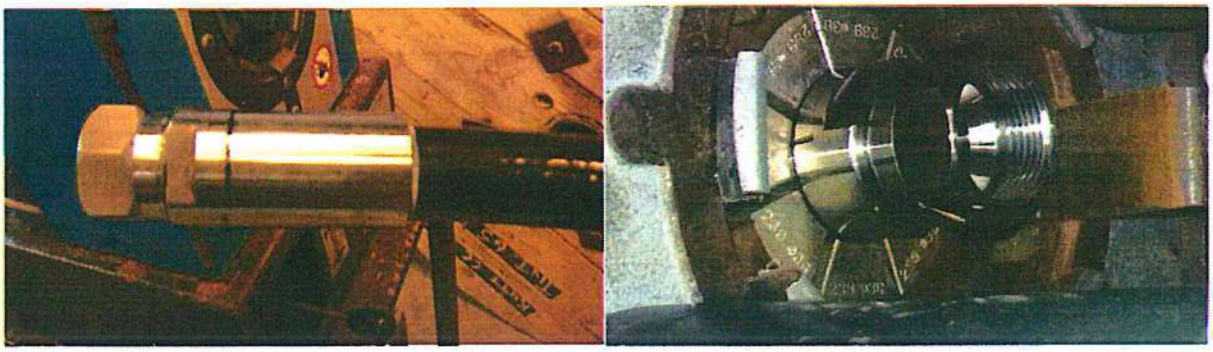
6.1 Measure ID of Spigot with suitable bore gauge from the nut end, a suitable bore gauge is a pin gauge size that can barely fit through the ID of the Spigot. (A list of reference internal diameter of UI Spigot can be found in Appendix A, these internal diameters are for reference only and individual spigot ID may be different due to machine tolerance).

6.2 Select the crimping die set from the recommended die set list for the individual crimper. Reference Appendix C (Finn Power or Uniflex-Hydraulik).

6.3 Install the Crimping Die Set to the respective positions on the Crimper, and make sure they are locked in place

6.4 Recheck Ferrule alignment with the Insertion Mark.

6.5 Insert Hose Fitting assembly into the 8 Finger crimping head and align the ring mark of the Ferrule close to the edge of the crimping dies but do not pass it (see picture below). Use mirror on back of the UNIFLEX Crimper to monitor the alignment position (FINN Power does not have mirror).



6.6 Initiate Ferrule Crimping process, reduce the crimp diameter by 0.5mm at a time until the fitting is no longer free to rotate on the hose.

6.7 After the Ferrule is tight on the hose, reduce the crimp diameter step to 0.2mm (.008") and continue the crimping process, and with each setting, check the internal diameter of the Spigot with the same bore gauge and also the external squeezed diameter of the Ferrule each time. Compare the measured squeezed OD of the Ferrule with the Reference SDD (Swage Down Dimension) diameter of the Ferrules listed on Appendix A. If additional crimping is required make sure to align the sleeve die marks with the die's. Do not attempt to smoothen the sleeve surface by rotating the sleeve during the crimping process. Continue the crimping process until there is a reduction in the ID of the Spigot or the OD of the Ferrule

has reached the minimum diameter specified on Appendix A. whichever comes first.

Note: If pin gauges are not available, use the Reference Swage Down Dimension (SDD) in Appendix A as a target diameter for the finished OD of the Ferrule. Sufficient spigot collapse is determined to be acceptable when the pin or bore gage does not pass through the spigot.

6.8 Proceed to pressure test.

Hydrostatic Testing

7.1 Remove and clean swaged or crimped assembly away from tool.

7.2 Pressurize hose assembly to 1.5X the System working pressure

7.3 If umbilical or hose has been in storage for an extended amount of time *or* this is a re-termination for a system in use, test to 1.1X system working pressure

7.4 Hold test pressure for 10 minutes. Ensure no leaks are present

WARNING!
Take necessary safety precautions and use correct equipment when pressurizing system. Contact your Umbilicals International Representative if any concerns.

Appendix A – Hose and Fitting Crimp/Swage Specifications

The crimp/swage down dimensions (SDD) shown below are a guide only.
At all times, unless noted below, the hose fitting should be tested with a 'Bore Gauge' to confirm the correct collapse of the Ferrule.

Hose Size	Fitting	Hose Part No.	Fitting Part No.	Bore Gauge Size	SDD Dimension
3/16"	-3JIC	HDF0303	FJFSP30403	0.099"	12.00mm
1/4"	OXY	HDA0104	FXFSP10404	*See Note 1*	14.70mm
1/4"	-4JIC	HDA0104	FJFSB10404	*See Note 1*	14.00mm
1/4"	-4JIC	HDA0104	FJFSS10404	*See Note 1*	15.50mm
1/4"	OXY	HDF0304	FXFSP10404	0.145"	14.25mm
1/4"	-4JIC	HDF0304	FJFSP30404	0.145"	14.60mm
1/4"	-4JIC	HDF0304	FJFSS10404	0.155"	15.50mm
1/4"	NPT	HDF0304	FNMSS10404	0.155"	15.50mm
1/4"	-4JIC	HDF0404	FJFSP30404	0.145"	Swage
1/4"	-4JIC	HDF0404	FJFSS10404	0.155"	Swage
3/8"	OXY	HDA0106	FXFSP20606	*See Note 1*	19.20mm
3/8"	-6JIC	HDA0106	FJFSP20606	*See Note 1*	19.20mm
3/8"	-6JIC	HDA0106	FJFSS10606	*See Note 1*	20.00mm
3/8"	-6JIC	HDA0106	FJFSS10806	*See Note 1*	19.90mm
3/8"	OXY	HDA0106	FXFSP50606	*See Note 1*	19.50mm
3/8"	OXY	HDF0306	FXFSP40606	0.280"	19.50mm
3/8"	-6JIC	HDF0306	FJFSP40606	0.280"	20.80mm
3/8"	-6JIC	HDF0306	FJFSS30606	0.275"	20.85mm
3/8"	-6JIC	HDT0106	FJFSS30606	0.275"	21.10mm
3/8"	-6JIC	HDT0106	FJFSP40606	0.280"	22.80mm
1/2"	NPT	HDA1108	FNMSS10808	*See Note 1*	22.60mm
1/2"	-8JIC	HDA1108	FJFSS20808	*See Note 1*	22.60mm
1/2"	-8JIC	HDF0308	FJFSS10808	0.371"	Swage
1/2"	-8JIC	HDF0308	FJFSP30808	0.390"	Swage
1/2"	-8JIC	HDF1308	FJFSP30808	0.390"	Swage
1/2"	-8JIC	HDT0108	FJFSS10808	0.371"	25.80mm
1/2"	-8JIC	HDT0108	FJFSP30808	0.390"	24.80mm
1/2"	-8JIC	HDR0208	FJFSP30808	0.390"	23.95mm
1/2"	-8JIC	HDR0208	FJFSS20808	0.371"	22.00mm

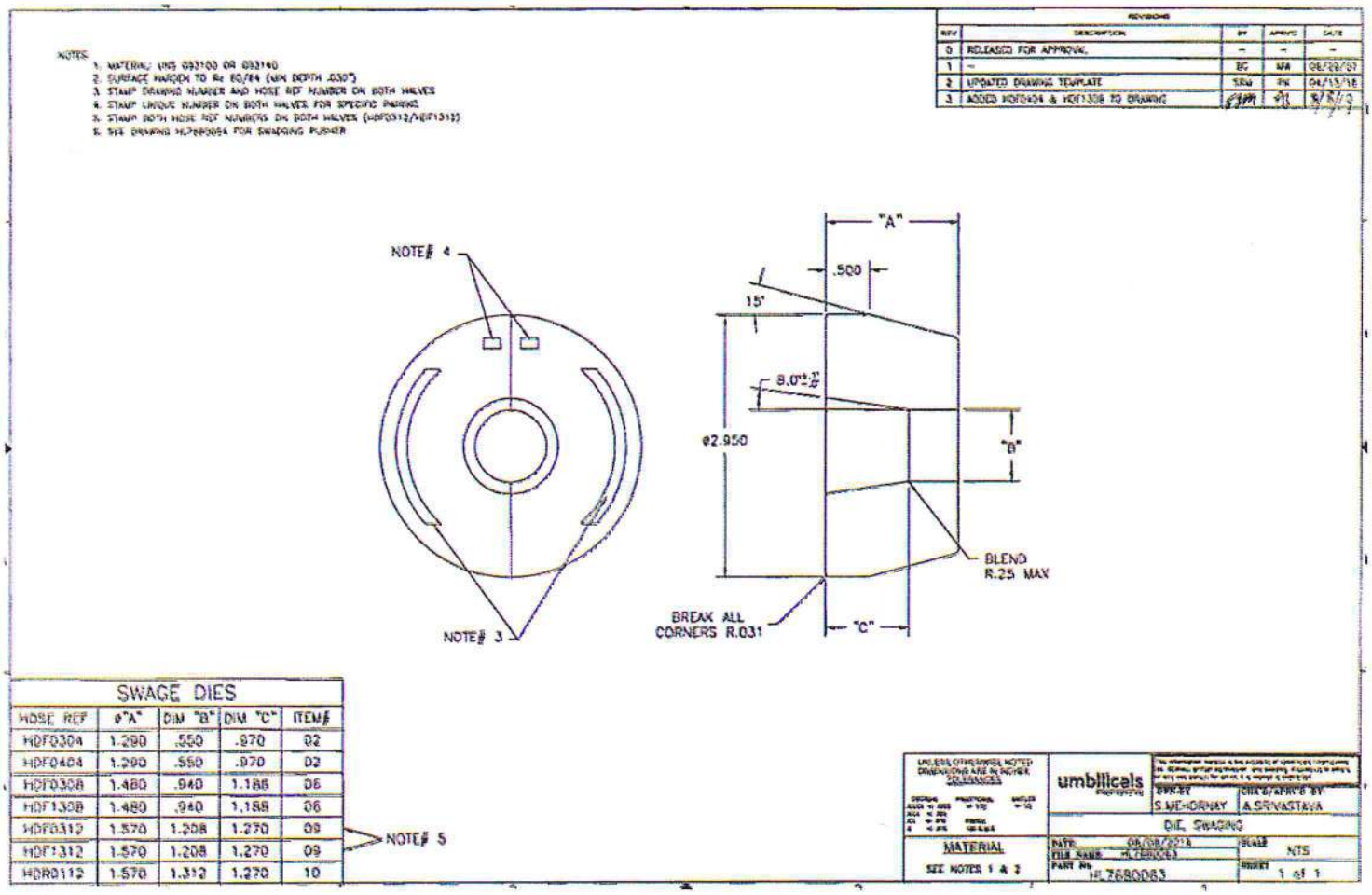
5/8"	-10JIC	HDR0210	FJFSS10810	0.490"	30.50mm
5/8"	-10JIC	HDR0210	FJFSS11010	0.490"	30.50mm
5/8"	-10JIC	HDF0310	FJFSP41010	0.440"	29.80mm
3/4"	-12JIC	HDF0312	FJFSS21212	0.570"	33.30mm
3/4"	-12JIC	HDF0312	FJFSP31212	0.540"	Swage
3/4"	-12JIC	HDF1312	FJFSS21212	0.570"	33.30mm
3/4"	-12JIC	HDF1312	FJFSP31212	0.540"	Swage
3/4"	-12JIC	HDR0112	FJFSS31212	0.570"	34.10mm
3/4"	-12JIC	HDR0112	FJFSP41212	0.540"	Swage

Notes:

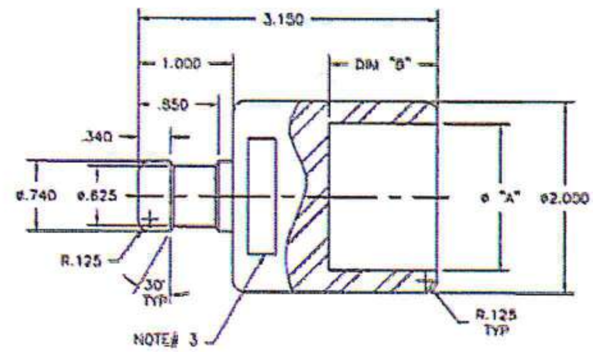
1. Due to the core tube material used in this hose it is not possible to measure a successful swage based on the Ferrule collapse therefore it is necessary to perform the swage based only on the 'Swage Down Dimension'.

2. All hoses must be pressure tested following swaging.

Appendix B –Pusher and Swage Die Reference drawing



NOTES:
1. MATERIAL: UNS C93100 OR C93140
2. SURFACE HARDEN TO Rc 60/64 (MIN DEPTH .030")
3. STAMP WITH UMBILICALS INTERNATIONAL, DRAWING NUMBER AND FITTING REF NUMBER
4. SEE DRAWING HL7680063 FOR SWAGING DIE



SWAGE PUSHER			
FITTING REF	ø"A"	DIM "B"	ITEM#
-04 (1/4")	.750	.540	01
-06 (3/8")	.900	.640	02
-08 (1/2")	1.125	.960	03
-10 (5/8")	1.250	1.060	04
-12 (3/4")	1.540	1.200	05

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES
TOLERANCES

MATERIAL: SEE NOTES 1 & 2

umbilicals international

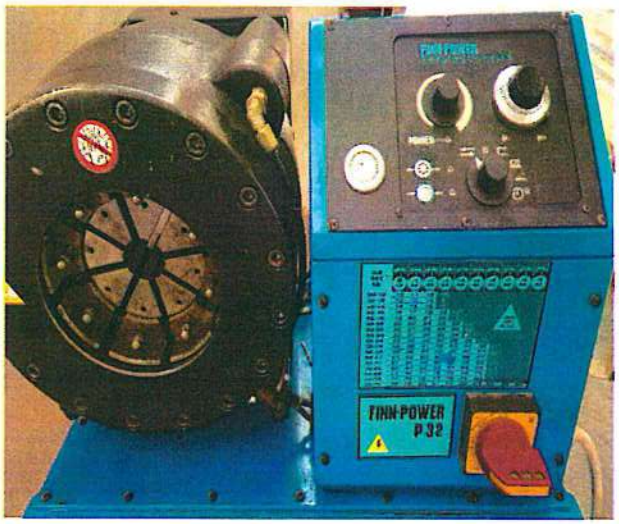
DWN BY: S.MEHONNAY — CHK'D/APPR'D BY: M. IP

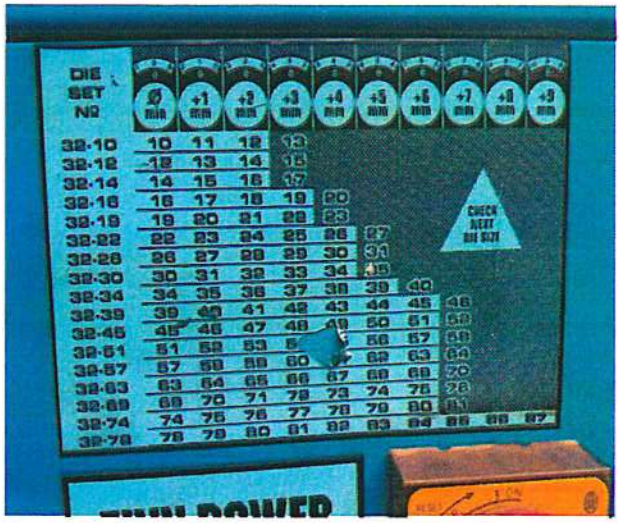
PUSHER, SWAGING

DATE: 04/13/2016 — SCALE: 1:1
FILE NAME: HL7680084
PART No.: HL7680084 — REV.: 1 — SHEET 1 OF 1

Appendix C: 8 Finger Crimpers

FINN-POWER





UNIFLEX-HYRAULIK