

Mandrels, Proofing



1. Scope

This standard covers the requirements for rigid proofing mandrels. This standard applies to the following Seattle City Light (SCL) stock numbers.

| Stock No. | Conduit Trade Size (in) |
|-----------|-------------------------|
| 013294 | 3/4 |
| 013295 | 1 |
| 013296 | 1-1/4 |
| 013297 | 1-1/2 |
| 013298 | 2 |
| 013299 | 2-1/2 |
| 013300 | 3 |
| 013301 | 3-1/2 |
| 013302 | 4 |
| 013303 | 5 |
| 013304 | 6 |

2. Application

Rigid proofing mandrels are used to test for obstructions in an underground conduit run after trench backfill and/or conduit pour is complete.

The mandrel size should be at least as large as the largest cable pulling head (or grip) that could be used within that conduit to ensure cable can be pulled in successfully.

Standard Coordinator
Brett Hanson

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Standards Engineering Supervisor
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Division Director
Bob Risch

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3. Construction

Proofing mandrels corresponding to conduit sizes up to and including 3-1/2 inches shall be constructed per Figure 3a. A stainless steel, 1/8-in aircraft cable shall be run through the center of the mandrel, looped at the ends, and secured with red Loctite compound and a flat washer that does not exceed 80 percent of the diameter of the mandrel.

Proofing mandrels corresponding to conduit sizes 4 inches and larger will be constructed per Figure 3b. At each end of the mandrel, 1/2-in galvanized steel oval eye nuts shall be installed and secured with red Loctite compound to the 1/2-in galvanized rod via a lock washer and flat washer.

Acceptable dimensional mandrel length and diameter tolerance is +0% to -1%. See Table 3. Nominal dimensions in Table 3 are required. Tolerances are only accepted for a slight material defect or equipment limitation that does not cause deviation from the Table 3 dimensions.

Each mandrel shall be marked in a permanent legible fashion with the stock number and date of manufacture. Marking shall appear on the mandrel end face to prevent damage.

Figure 3a. Mandrel with Stainless Steel Cable

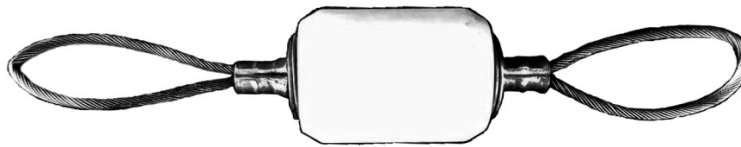


Figure 3b. Mandrel Construction

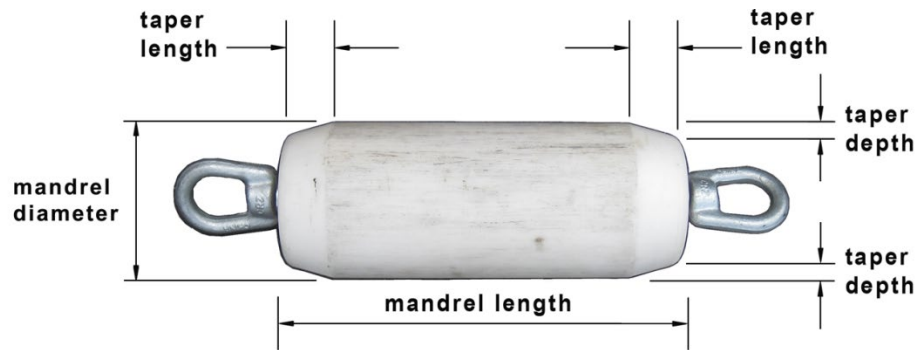


Table 3. Mandrel Dimensions

| Stock No. | Conduit Trade Size (in) | Mandrel Diameter (in) | Mandrel Length (in) | Taper Length (in) | Taper Depth (in) | Material | Figure |
|------------------|--------------------------------|------------------------------|----------------------------|--------------------------|-------------------------|-----------------|---------------|
| 013294 | 3/4 | 0.62 | 1.0 | – | – | Delrin | 3.1 |
| 013295 | 1 | 0.78 | 1.25 | – | – | Delrin | 3.1 |
| 013296 | 1-1/4 | 1.00 | 1.5 | – | – | Delrin | 3.1 |
| 013297 | 1-1/2 | 1.25 | 1.75 | – | – | Delrin | 3.1 |
| 013298 | 2 | 1.62 | 2.25 | – | – | Delrin | 3.1 |
| 013299 | 2-1/2 | 2.00 | 2.75 | – | – | Delrin | 3.1 |
| 013300 | 3 | 2.50 | 3.25 | – | – | Delrin | 3.1 |
| 013301 | 3-1/2 | 3.00 | 3.75 | – | – | Delrin | 3.1 |
| 013302 | 4 | 3.50 | 8.0 | 1.0 | 0.5 | Delrin | 3.2 |
| 013303 | 5 | 4.75 | 12.0 | 1.5 | 0.5 | Delrin | 3.2 |
| 013304 | 6 | 5.50 | 14.0 | 2.0 | 0.7 | Delrin | 3.2 |

4. Pre-Production Approval

The successful bidder shall submit a first prototype to SCL Standards for approval prior to the fabrication of the first production piece. The successful bidder shall submit a first production piece to SCL Standards for approval prior to the fabrication of the balance of the order.

5. Issuance

Stock Unit: EA

6. Approved Manufacturers

Bids may be solicited from any fabricator identified by Civil/Mechanical Engineering or Material Control as being capable.

7. References

SCL Construction Standard U2-11 / NDK-40; “Mandreling and Cleaning of Ducts and Conduits”

Hanson, Brett; SCL Standards Engineer, and subject matter expert and originator of 7645.40

Jerochim, Pete; SCL Electrical Inspector and subject matter expert of 7645.40

Youngs, Rob; SCL Electrical Inspector and subject matter expert of 7645.40