HCS - HES Cabling Systems

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Installation Manual for
HCS High-Capacity Fiber-Optic Rack-Mount Cabinets

Be sure to read and completely understand this procedure before applying product.
Be sure to select the proper HCS product before application.

This manual provides installation manual for the following items:

HCS P/N	Product Description
PFO-07P01-2U	High capacity FO Rack Mount 19" Panel 36/48/72 Fibers
PFO-07P02-2U	High capacity FO Rack Mount 23" Panel 36/48/72 Fibers
PFO-07P03-2U	High capacity FO Rack Mount 19" Panel 72/94/144 Fibers
PFO-07P04-2U	High capacity FO Rack Mount 23" Panel 72/94/144 Fibers
PFO-07P05-3U	High capacity FO Rack Mount 19" Panel 144/192/288 Fibers
PFO-07P06-3U	High capacity FO Rack Mount 23" Panel 144/192/288 Fibers

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1.00 NOMENCLATURE

1. Rack Mount Cabinet Assembly
2. Small Parts Bag (mounting screws, tie wraps, splice holder)
3. Mounting Brackets (2)
4. Universal Coupler Plate (sold separately)
5. Transition Assembly
6. Splice Tray(s)
7. Splice Tray Hold Down Strap
8. Transport Tubes
9. Pigtail Tube Assemblies
10. Studs and Nuts

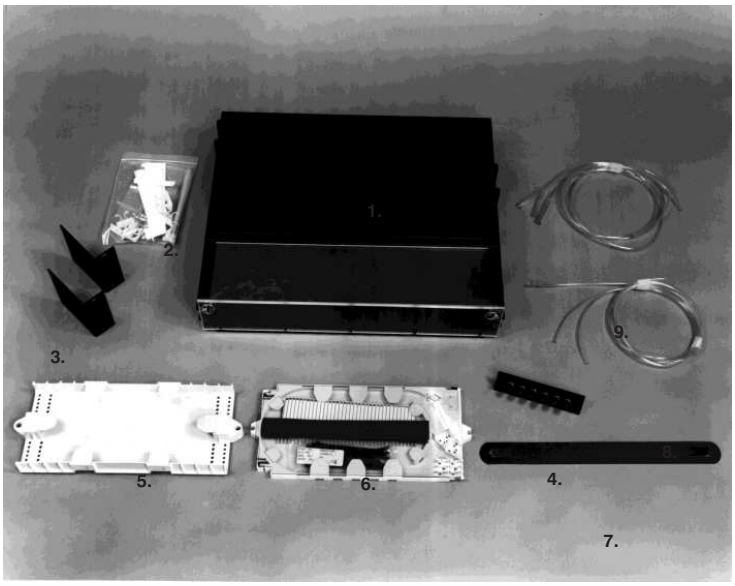

FIGURE 1A - CABINET

2.00 DESCRIPTION

2.01 HCS FO Rack Mount Cabinets are designed to protect and organize optical fiber splices and connectors in a standard equipment rack in the central office, equipment room, and CEV.

2.02 3 sizes of cabinets are available to accommodate from 36 to 288 fiber splices and connectors.

2.03 The Splicing Kits which are purchased separately, provide the Splice Trays and associated components required to splice pigtails (sold separately) to the fibers of the feeder cable. Each Splice Tray accommodates 24 splices.

2.04 The Mounting Brackets allow mounting the cabinets to either 19 or 23 equipment racks.

2.05 Universal Coupler Plates are available with all standard fiber optic connectors (6 connectors per plate) and are ordered separately. (See Section 10.00)

3.00 MOUNTING ON RACK

3.01 Attach the appropriate Mounting Bracket to each side of the cabinet using the screws provided. Shorter brackets are included for mounting to a 19 equipment rack. The longer brackets are used for mounting to a 23 equipment rack.

3.02 Mount the cabinet to the equipment rack at the desired height with the screws provided.

4.00 FIELD TERMINATION APPLICATIONS

4.01 Remove the following minimum length of jacket from the cable:

07P01 & 02: 1.8m
07P03 & 04: 2.0m
07P05 & 06: 2.3m

4.02 Remove the rear cover from the cabinet by turning the 1/4 turn fasteners counterclockwise.

4.03 Slit the grommet in the cable entry at the rear of the cabinet on the side being used for cable entry, and position the cable into the entry.

4.04 Install the L-Bracket Assembly adjacent to the entry being used with the 1/4 bolt, nut, and lock washer provided.

4.05 If required, install a bond connector at the end of the cable bracket and secure it to the L-Bracket Assembly.

4.06 Capture the central strength member or any other strength member into the clip on the L-Bracket Assembly.

4.07 Install the Universal Coupler Plates (purchased separately) in the cabinet bulkhead. Push the locking fasteners at the ends of the Coupler Plates to secure them in place.

4.08 Route the individual jacketed fiber elements around the Fiber Radius Hoops 1 ½ times, for a cable entering the left side of the cabinet, and 1 time for a cable entering the right side, then to the Coupler Plates.
Note: Be sure to maintain a 45 to 50mm bending radius on the individual fiber elements as they go around the top or bottom Radius Hoops and to the Coupler Plates.

4.09 Mark the jacketed fiber elements at a point about 25mm beyond where they contact the bulkhead (this provides additional fiber length for application of the connectors).

4.10 Field install the connectors to the jacketed fiber elements according to your accepted company practices, and the recommendations from the connector supplier.

4.11 Install the connectorized fiber elements to the bushings on the Universal Coupler Plates.

5.00 PIGTAIL/SPLICING APPLICATIONS

5.01 Sections 6.00 through 8.00 detail the steps required where pigtails are used, and spliced into the feeder cable fibers within the cabinet.

5.02 Loosen the nuts, and remove the Fiber Radius Hoops from the inside of the cabinet.

5.03 Screw the 1/4 studs provided with the Splicing Kit into the PEM nuts on the bottom of the cabinet.

5.04 Install the Transition Assembly provided with the Splicing Kit over the 1/4 studs, and secure in place with the 1/4 nuts provided.

6.00 PREPARATION AND ROUTING OF FEEDER CABLE

6.01 Remove a minimum of 2.3m of sheath from the cable, and clean cable according to accepted company practices.

6.02 Remove the rear cover from the cabinet by turning the 1/4-turn fasteners counterclockwise.

6.03 Slit the grommet in the cable entry at the rear of the cabinet on the side being used for cable entry, and position the cable into the entry.

6.04 Lay the buffer tubes or single-tube into the Transition Assembly. For single-tube application, skip to Step 6.10.
Note: The retaining tabs on top of the Transition Assembly are removable to facilitate placement of buffer tubes.

6.05 Mark the buffer tubes at the back wall center-line of the Transition Assembly as shown in Figure 2. (Note that for cable entry into the right side of the cabinet, the buffer tubes are routed against the front of the Transition Assembly and then around to the back wall).

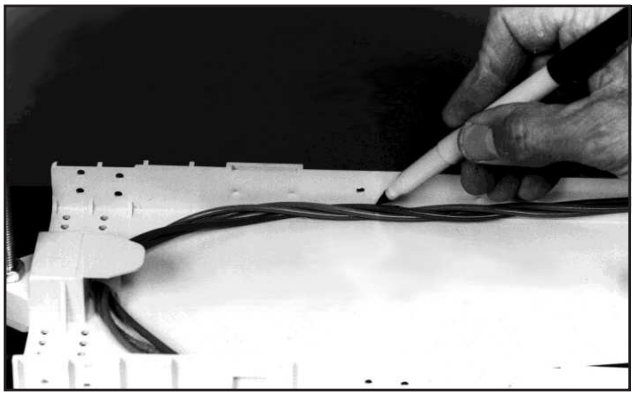

FIGURE 2A- MARK BUFFER TUBES FOR RIGHT SIDE CABLE ENTRY

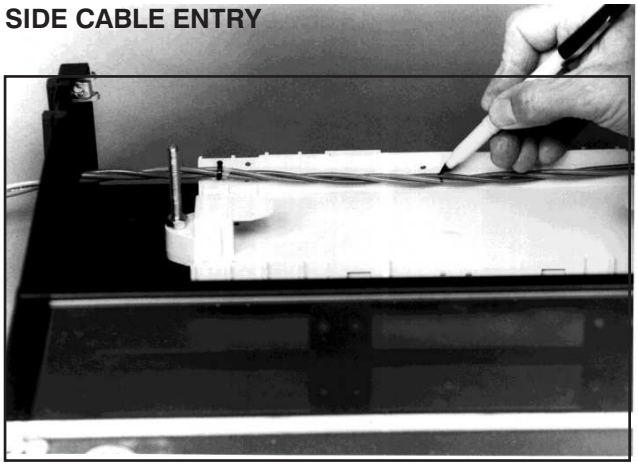

FIGURE 2A- MARK BUFFER TUBES FOR LEFT SIDE CABLE ENTRY

6.06 Starting with one of the buffer tubes, remove the buffer tube up to the mark, and clean the fibers per your accepted company practices.

6.07 Feed the fibers from this buffer tube into one of the Transport Tubes provided with the cabinet. Insert the end of the buffer tube 12mm into the Transport Tube.

6.08 Repeat Steps 6.06 and 6.07 for the remaining buffer tubes.

6.09 Using two of the tie wraps supplied with the Splice Tray(s), secure the buffer tubes and Transport Tubes to the back wall of the Transition Assembly. (Figure 3) Proceed to Step 6.15.

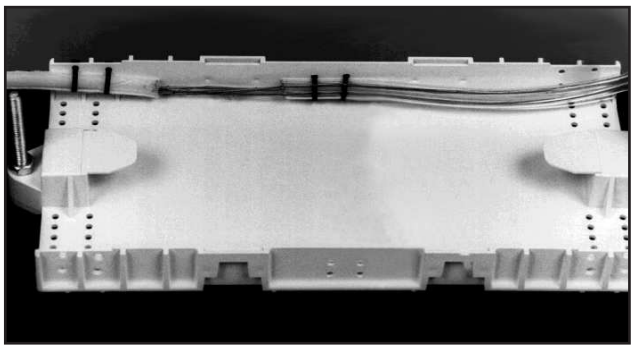

FIGURE 3- SECURE BUFFER TUBES & TRANSPORT TUBES TO TRANSITION ASSEMBLY

6.10 Mark the single-tube at a point 50mm from where it enters the Transition Assembly (for either right or left side cable entry).

6.11 Remove the single-tube and clean the fibers per you accepted company practices. Make sure to maintain the identity of each bundle of twelve fibers.

6.12 Secure the single-tube to the Transition Assembly with the tie wraps provided. Use two sets of the tie down holes in the side of the Transition Assembly.

6.13 Feed each bundle of fibers into one of the Transport Tubes provided with the cabinet so that the end of the Transport Tubes will be located just beyond the center-line of the back wall of the Transition Assembly. (Figure 4)

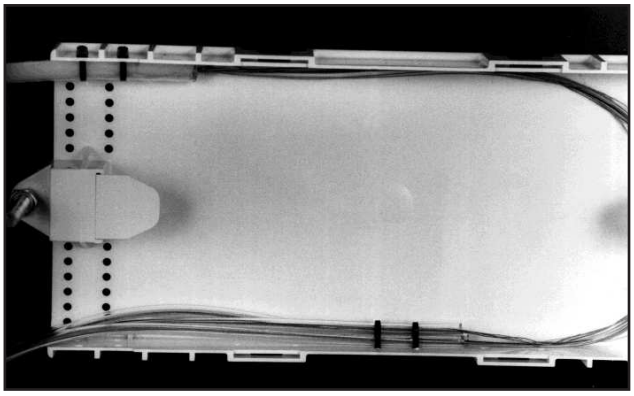

FIGURE 4A - FIBER ROUTING & TRANSPORT TUBE LOCATION FOR RIGHT SIDE CABLE ENTRY

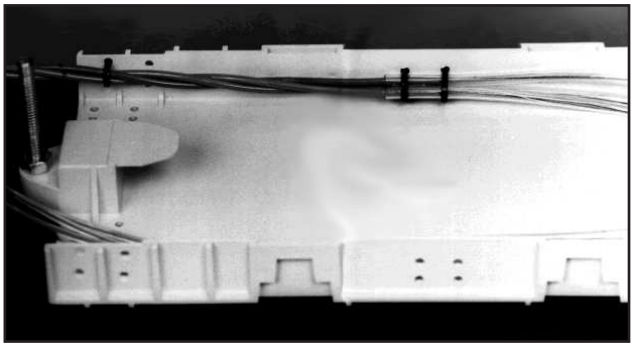

FIGURE 4B - FIBER ROUTING AND TRANSPORT TUBE LOCATION FOR LEFT SIDE CABLE ENTRY

6.14 Secure the Transport Tubes to the back wall of the Transition Assembly with two of the tie wraps provided. Be sure that the fibers are not bent as they enter the Transport Tubes. If necessary, use some of the felt tape provided to secure the fibers to the Transition Assembly.

6.15 Carefully coil the Transport Tubes and bare fibers into the base of the Transition Assembly until a later step in this procedure.

7.00 PIGTAIL PREPARATION & ROUTING

7.01 The required pigtail length for all types of Rack Mount Cabinet is 3m.

7.02 Select one of the Universal Coupler Plates (purchased separately) and install it in one of the locations in the cabinet bulkhead. Push the locking fasteners at the ends of the Coupler Plate to secure it in place.

7.03 Select six pigtails, clean the fiber connector, and connect them to the rear side of the Coupler Plate.

7.04 Route the pigtails along the Transition Assembly toward the right side of the cabinet, while maintaining a smooth bending radius behind the Coupler Plates. (Figure 5)

7.05 Mark the jacket of each of the pigtails at a point 50mm beyond the bending radius as shown in Figure 6.

7.06 Carefully remove the jacket on each pigtail

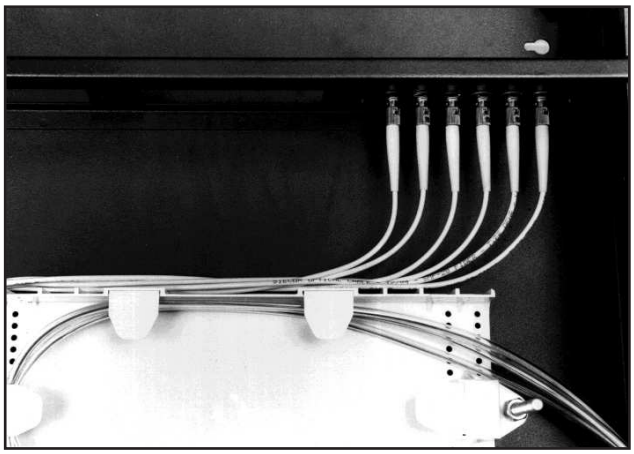

FIGURE 5 - ROUTE THE PIGTAILS

up to the mark. Number or color code the connector strain relief and the 900 micron tight buffer for fiber identification.

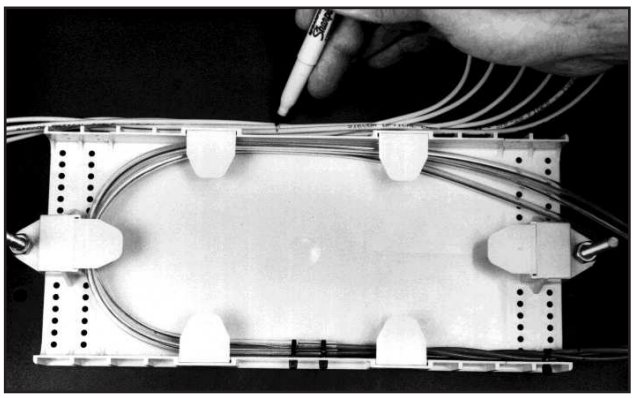

FIGURE 6 - MARK PIGTAILS

Note: HCS has pigtails available with different colored 900 micron tight buffer coating to simplify fiber identification.

7.07 Feed the group of six buffered fibers into the end of one the Pigtail Tube Assemblies with the larger diameter tube section, until the pigtail jackets are within the larger tube about 10 to 12mm. (Figure 7)
Note: Moisten the ends of the pigtail jackets to ease insertion into the tube.

7.08 Repeat Steps 7.05 through 7.07 for each group of pigtails.

8.00 FIBER SPLICING AND ROUTING

FIGURE 7 - INSERT PIGTAILS INTO PIGTAIL TUBE ASSEMBLY

8.01 Route the Transport Tubes with the feeder cable fibers and the Pigtail Tube Assemblies within the Transition Assembly so that they will exit at the front left corner of the Transition Assembly. (Figure 8).

8.02 Use two tie wraps to gently secure the Pigtail Assemblies to the back right side fo the Transition Assembly as shown in Figure 8.

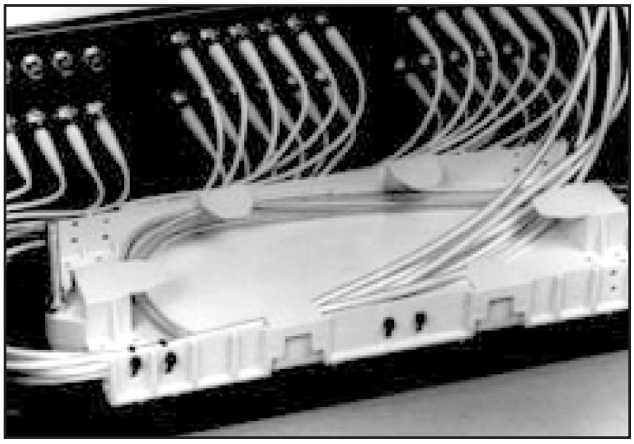

FIGURE 8 - ROUTE TRANSPORT AND PIGTAIL TUBES WITHIN TRANSITION ASSEMBLY

8.03 Place a Splice Tray on the threaded studs over the Transition Assembly.
Note: Install the tie wraps into the Splice Tray tie down holes prior to installing the Splice Tray. (Figure 9)

8.04 Select four Pigtail Assembly Tubes within the wide entry slot of the Splice Trays and the Transport Tubes and two Transport Tubes for installation onto the Splice Tray.

8.05 Lay the Pigtail Assembly Tubes within the

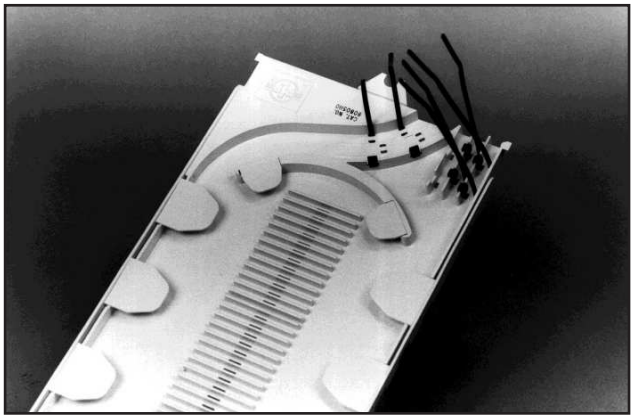

FIGURE 9 - INSTALL TIE WRAPS INTO SPLICE TRAY

wide entry slot of the Splice Trays and the Transport Tubes within the first two narrow slots, and mark the tubes slightly beyond the tie down locations. (Figure 10)

8.06 Carefully cut the tubes at the marks, and remove the excess length.

8.07 Secure the Pigtail Tubes and Transport Tubes to the Splice Tray with the tie wraps. (Figure 11)

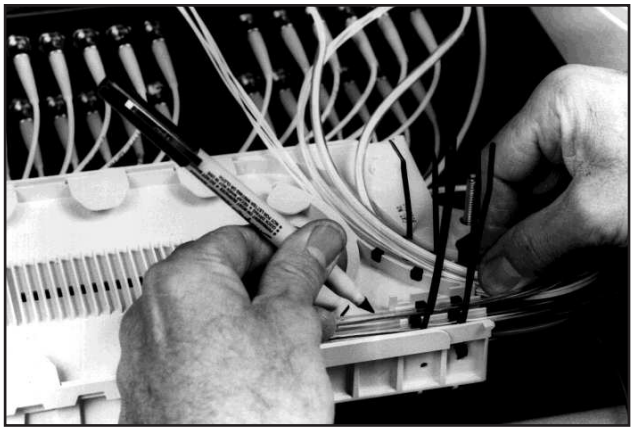

FIGURE 10 - MARK TUBES IN SPLICE TRAY

8.08 Route the Pigtail and Feeder Cable fibers one complete turn around the Splice

Tray and into the splice groove furthest from the entry point of the tubes. (Figure 12)

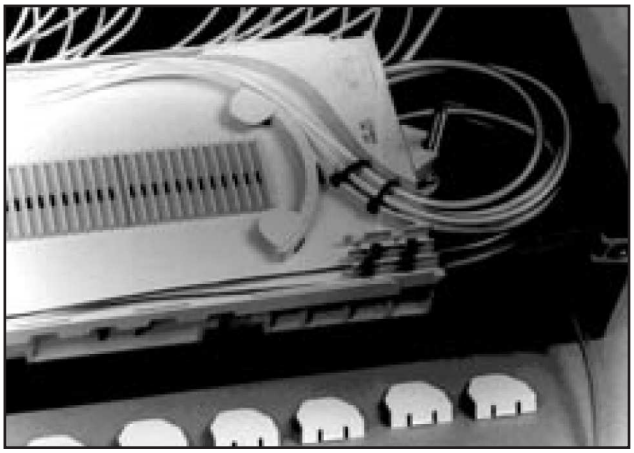

FIGURE 11 - SECURE TUBES TO SPLICE TRAY

Note: Temporarily remove the retaining tabs from the Splice Tray to ease fiber placement.

8.09 Splice Feeder Cable fibers to Pigtail fibers per accepted company practices. Place each splice in a groove, starting from the furthest groove from the tube entry.

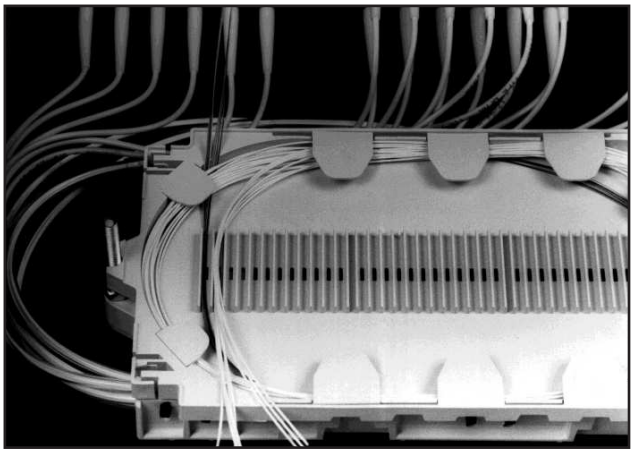

FIGURE 12 - ROUTE FIBERS WITHIN SPLICE TRAY

8.10 Repeat Steps 8.03 through 8.09 for additional Splice Trays.

8.11 Secure Splice Trays in place with Splice Tray Hold Down Strap. (Figure 13)

9.00 JUMPER ROUTING

9.01 Clean the fiber connectors and attach the jumpers to the front side of the Coupler Plates.

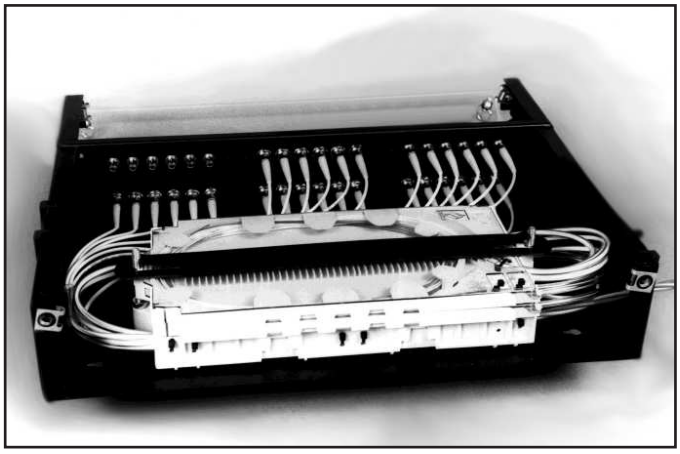

FIGURE 13 - SECURE SPLICE TRAYS WITH SPLICE TRAY HOLD DOWN STRAP

9.02 Gently bend the jumpers toward and through the grommet on either side of the cabinet.

9.03 Lightly secure the jumpers to the tie down post with the tie wraps provided.

9.04 Lightly secure the jumpers to the equipment rack with the tie wraps.

10.00 ACCESSORIES

10.01 All Coupler Plates and Pigtail Assemblies can be found in HCS available for the FIBER OPTICX Rack Mount Cabinets.

11.00 SAFETY CONSIDERATIONS

11.01 This application procedure is not intended to supersede any company construction or safety standards. This procedure is offered only to illustrate safe application for the individual. Failure to follow these procedures may result in personal injury.

11.02 When working in the area of energized lines, extra care should be taken to prevent accidental electrical contact.

11.03 For proper performance and personal safety, be sure to select the proper size HCS Product before application.

11.04 This product is intended for use by trained technicians only. The product **should not be used** by anyone who is not familiar with, and not trained to use it.