

AMP

AMP INCORPORATED
HARRISBURG, PA 17105

CUSTOMER HOTLINE
1 800 722-1111

AMP* AMPLIMITE*
HD-20 SHIELDED
CABLE CLAMP KITS

IS 6609

RELEASED
11-1-88

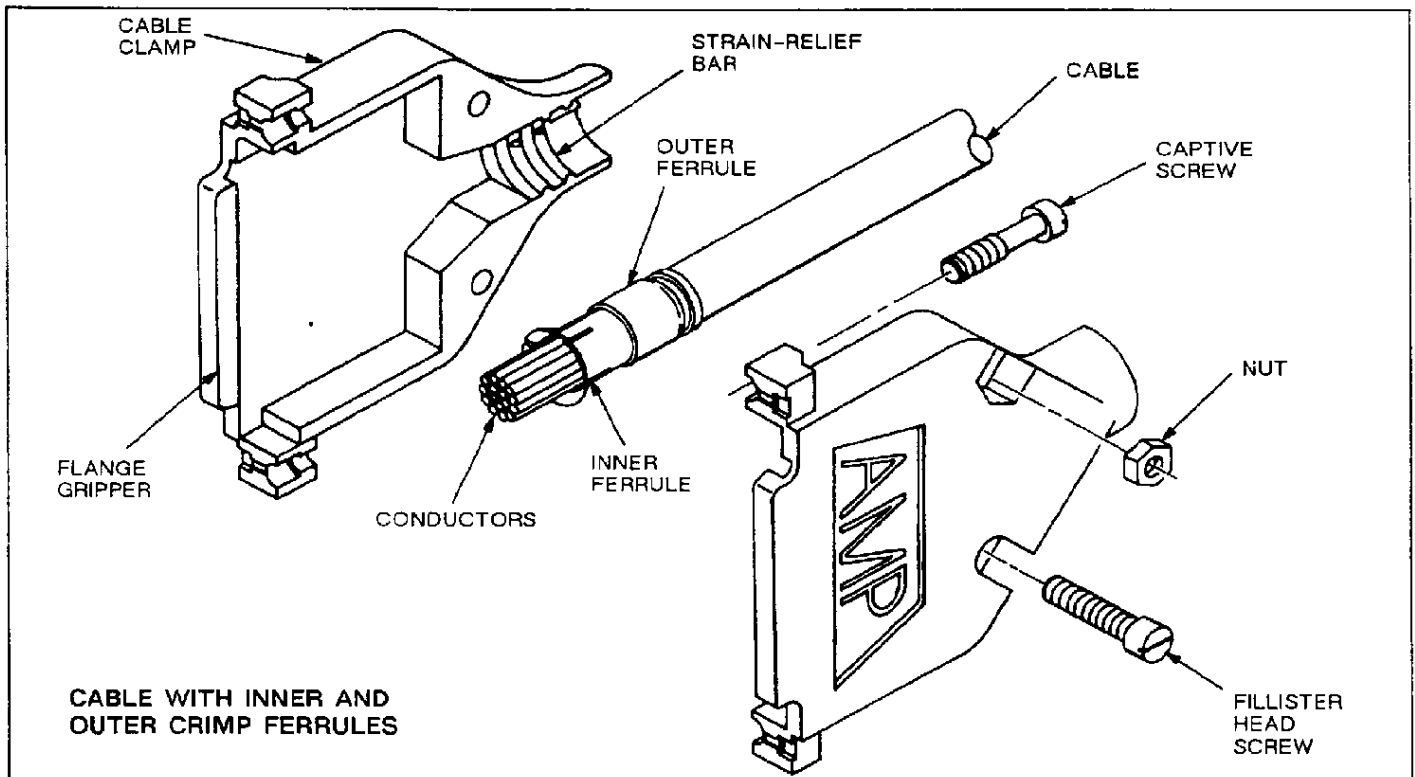


Fig. 1

1. INTRODUCTION

This Instruction Sheet (IS) covers the use of AMPLIMITE HD-20 Shielded Cable Clamp Kits with available ferrules listed in Figures 2 and 8, and grommets listed in Figure 14.

NOTE

All dimensions on this sheet are in inches. Do not scale drawings.

Read these instructions carefully before using cable clamp kits and ferrules.

2. DESCRIPTION (Figure 1)

Each shielded cable clamp kit consists of two symmetrical cable clamps which contain strain-relief bars. Each kit also includes two captive screws, two fillister head screws, and two nuts.

The cable clamps are designed to provide electromagnetic shielding and strain relief for braid- and/or foil-type (with drain wire) shielded cables. The cable clamps may be used on cables fitted with split-ring or crimp ferrules, on cables without ferrules, or on cables fitted with grommets.

Refer to Paragraph 3 when using cable without ferrules, to Paragraphs 5 and 6 for installation of cable clamps on cable with ferrules, and to Paragraph 7 for installation of cable clamps on cable with grommets.

Cable clamps are available in five sizes for AMPLIMITE connectors with corresponding contact positions (9, 15, 25, 37, and 50 for HD-20, and 15, 26, 44, 62 and 78 for HD-22).

Refer to Figures 2 and 8 to determine appropriate cable clamp kit relative to cable diameter, AMPLIMITE connector size, and type of ferrule (if used) for the cable.

Refer to Figure 14 to determine appropriate grommet set and cable clamp kit relative to cable diameter.

CAUTION

If cable diameter is too small to fit properly into strain relief, apply heat-shrinkable tubing before working braid over cable jacket to build up the outside diameter of the cable. The inside diameter of the heat-shrinkable tubing should be no more than twice the outside diameter of the cable. See Figure 3.

SIZE CONNECTOR (HD-20/HD-22)	RECM WIRE RANGE (OD)●	FERRULES		STRAIN RELIEF	
		INNER	OUTER	ZINC DIE CAST	PLATED PLASTIC
1 (9 Posn/15 Posn)	.190-.240	1-745129-8†	745130-8	745171-5	745854-1
		1-745129-6	745130-8	745171-1	745854-3
	.230-.280	3-745129-4	1-745130-6	745171-5	745854-1
		1-745129-7	1-745130-0	745171-5	745854-1
2 (15 Posn/26 Posn)	.190-.240	2-745129-1†	745130-8	1-745172-3	747099-1
		1-745129-8	745130-8	745172-1	747099-3
	.230-.280	3-745129-2	1-745130-6	1-745172-3	747099-1
		2-745129-0	745130-9	1-745172-3	747099-1
	.300-.350	1-745129-7	1-745130-0	745172-1	747099-3
1-745129-9		1-745130-1	1-745172-3	747099-1	
3 (25 Posn/44 Posn)	.190-.240	2-745129-1	745130-8	745173-3	745833-5
		3-745129-2	1-745130-6	745173-3	745833-5
	.230-.280	2-745129-0	745130-9	745173-3	745833-5
		2-745129-4†	745130-9	745173-1	745833-1
	.300-.350	1-745129-9	1-745130-1	745173-3	745833-5
		2-745129-3†	1-745130-1	745173-1	745833-1
	.380-.430	2-745129-2	1-745130-2	745173-1	745833-1
2-745129-2		1-745130-2	745173-1	745833-1	
4 (37 Posn/62 Posn)	.190-.240	2-745129-1	745130-8	745174-4	747100-7
		3-745129-2	1-745130-6	745174-4	747100-7
	.230-.280	2-745129-0	745130-9	745174-4	747100-7
		1-745129-9	1-745130-1	745174-4	747100-7
	.300-.350	2-745129-7†	1-745130-1	745174-1	747100-1
		2-745129-6	1-745130-2	745174-1	746100-1
	.380-.430	2-745129-5	1-745130-3	745174-1	746100-1
2-745129-5		1-745130-3	745174-1	746100-1	
5 (50 Posn/78 Posn)	.190-.240	1-745129-8	745130-8	745175-6	1-747098-1
		2-745129-4	745130-9	745175-4	747089-7
	.230-.280	1-745129-7	1-745130-0	745175-6	1-747089-1
		2-745129-3	1-745130-1	745175-4	747089-7
	.300-.350	2-745129-2	1-745130-2	745175-4	747089-7
		3-745129-0†	1-745130-2	745175-1	747089-1
	.380-.430	2-745129-9	1-745130-3	745175-1	747098-1
		2-745129-8	1-745130-4	745175-1	747098-1
.470-.530	2-745129-8	1-745130-4	745175-1	747098-1	
	2-745129-8	1-745130-4	745175-1	747098-1	

● MAXIMUM CABLE DIAMETER ASSUMES A MINIMUM INSULATION THICKNESS OF .060".

† INDICATES FERRULES WITH REDUCED NECKS.

Fig. 2

3. ATTACHING CABLE CLAMP ASSEMBLY (Figure 3)

A. Braided Shield Cable (Without Ferrule)

- Strip cable jacket from end of conductors. Refer to the chart in Figure 7 for the cable jacket strip length for HD-20 and HD-22 connectors.
- Push braided shield away from conductors to form a bulge at base of outer cable jacket. Work braided shield back over outer jacket. It may be necessary to unweave shield and place strands over outer jacket (strands should be spread evenly over outer jacket).
- Install tape or heat-shrinkable tubing without sealant to secure loose strand ends to cable until cable clamps are installed. The braid should be exposed 9/16 in. between tape or tubing and con-

ductors. See Figure 3. Refer to Instruction Sheet IS 2607 for proper application of tubing. Use an electric heat gun as the heat source.

- Terminate conductors with contacts and insert contacts into rear of connector or terminate to connector per the appropriate document listed in Figure 4.
- Position one half of cable clamp on cable and connector. Ensure that flange of connector is behind flange gripper of clamp and that braided shield of cable is in strain relief grooves of clamp.
- Position the other half of clamp on top of cable and start the two fillister head screws and nuts on the clamps.
- Insert captive screws into mounting holes. Alternately tighten the fillister head screws until the two clamp halves bottom on each other.

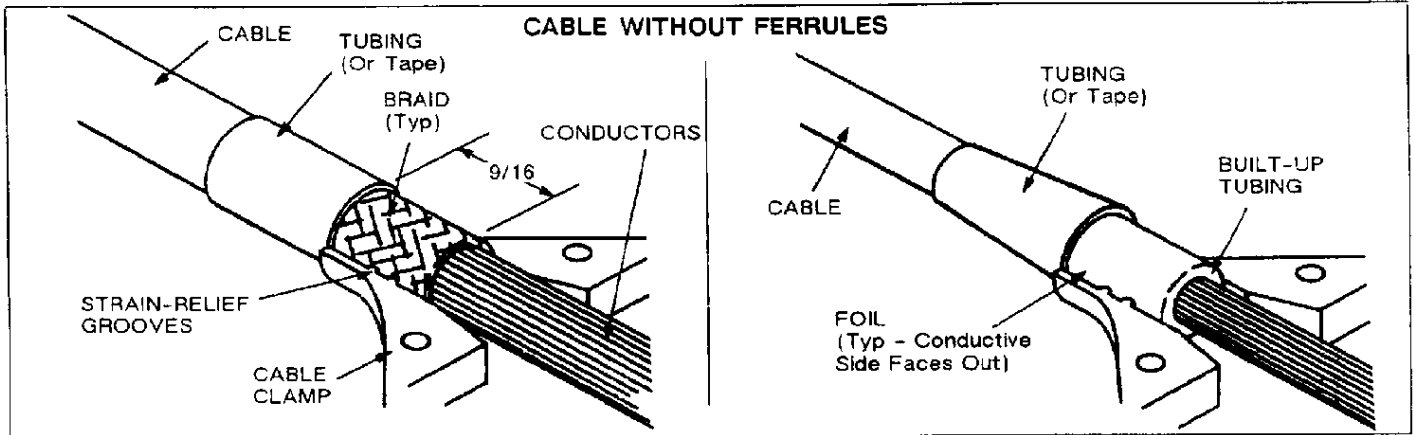


Fig. 3

NOTE

Excess braided shield may be left secured or may be trimmed off directly behind clamps with a sharp shield trimming tool. Take care not to nick or cut conductors. If heat-shrinkable tubing was used to secure braid, do NOT trim the tubing.

B. Foil Shield Cable (Without Ferrule)

1. Strip the cable jacket from end of conductors. Refer to the chart in Figure 7 for the cable jacket strip length for HD-20 connectors.
2. Unwrap foil shield from cable and wrap it around outer jacket. Wrap drain wire around foil. Ensure that conductive side of foil is facing outward.
3. Secure ends of foil and drain wire with tape or heat-shrinkable tubing until clamps are installed. Leave 9/16 in. of foil exposed between tape or tubing and conductors.
4. Terminate conductors with contacts and insert contacts into rear of connector or terminate to connector per the appropriate document listed in Figure 4.

CONNECTOR TYPE	AMP DOCUMENT
HDP-20 Crimp Snap	IS 7514
HDP-20 Solder Cup	IS 9193
HDE-20 All Plastic	IS 6621
HDE-20 Metal Shell	IS 6645
HDP-22	Application Specification 114-10001

Fig. 4

5. Position one half of cable clamp on cable and connector. Ensure that flange of connector is behind flange gripper of clamp and that foil shield

of cable and the drain wire are in strain relief grooves of clamp.

6. Position the other half of the clamp on top of cable and start the two fillister head screws and nuts on the clamps.
7. Insert captive screws into mounting holes.
8. Alternately tighten the fillister head screws until the cable clamp halves bottom on each other.

NOTE

Excess foil may remain secured with tape or may be trimmed directly behind clamp with a sharp trimming tool. Take care not to nick or cut conductors. If heat-shrinkable tubing was used to secure foil, do NOT trim the tubing.

4. LATCHING BLOCKS (Figure 5)

The AMPLIMITE cable clamps may be mounted to a connector-mounted block or a panel-mounted block.

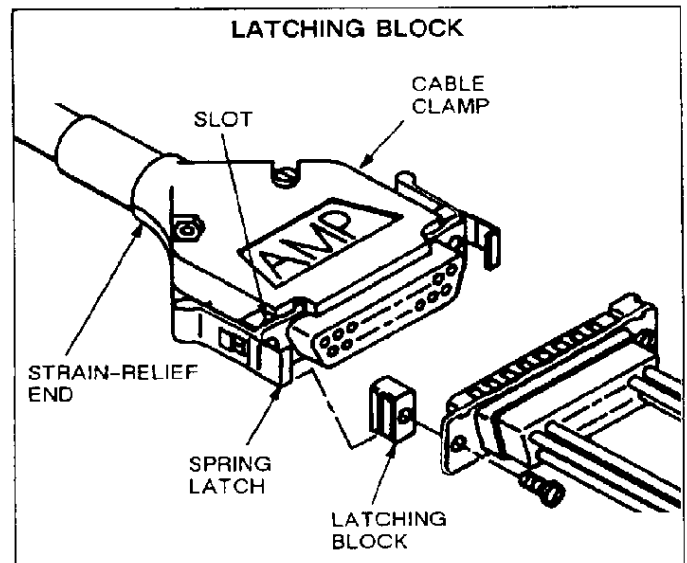


Fig. 5

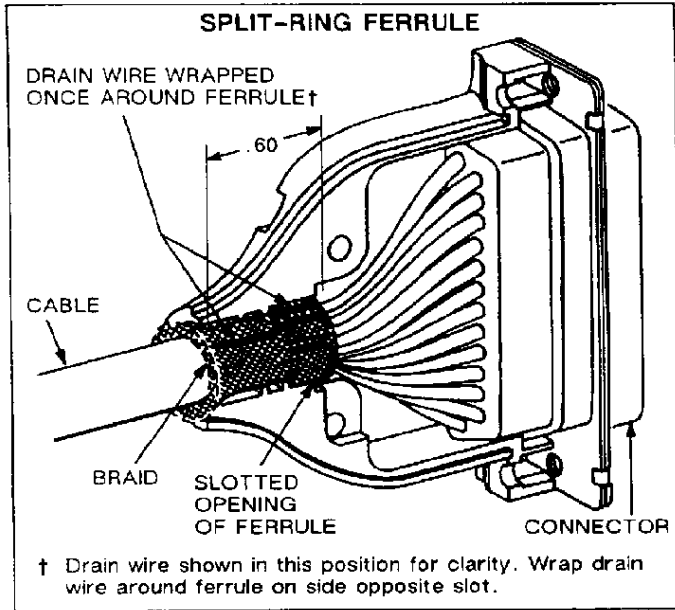


Fig. 6

Cable clamps may be used with latching blocks (208101, 745007, 745245, and 745286) by removing mounting screws and replacing them with spring latches (745255-2). Refer to IS 9130 and to Figure 5 of this document for proper assembly of spring latches.

5. SPLIT RING FERRULE ASSEMBLY (Figure 6)

Refer to the chart in Figure 8 for the proper ferrule for the cable and for the AMPLIMITE connector you are using, and proceed as follows:

1. Cut the cable to the desired length and slide the ferrule onto the cable.
2. Strip cable jacket from end of conductors. Take care not to nick or cut braid. Refer to the chart in Figure 6 for the cable jacket strip length for HD-20 and HD-22 connectors.

CABLE JACKET STRIP LENGTH FOR HD-20/HD-22 CONNECTORS

CONNECTOR STYLE	POSN HD-20/ HD-22	GROMMET/ FERRULE STYLE	STRIP LENGTH DIM.● (Inches)	MASS TERM.●● HAND TOOLING DIM. (Tooling Ident.)	CONNECTOR STYLE	POSN HD-20/ HD-22	GROMMET/ FERRULE STYLE	STRIP LENGTH DIM.● (Inches)	MASS TERM.●● HAND TOOLING DIM. (Tooling Ident.)
HDE-20	9	None/Grommet	1.00-1.50	J	HDP-20/-22	9/15	Crimp Style	1.90-2.10	—
HDE-20	9	Split Ring	1.00-1.50	J	HDP-20/-22	15/26	None/Grommet	1.00-1.50	—
HDE-20	9	Crimp Style	1.90-2.10	F	HDP-20/-22	15/26	Split Ring	1.00-1.50	—
HDE-20	15	None/Grommet	1.00-1.50	J	HDP-20/-22	15/26	Crimp Style	1.90-2.10	—
HDE-20	15	Split Ring	1.00-1.50	J	HDP-20/-22	25/44	None/Grommet	1.10-1.60	—
HDE-20	15	Crimp Style	1.90-2.10	F	HDP-20/-22	25/44	Split Ring	1.10-1.60	—
HDE-20	25	None/Grommet	1.30-1.60	J	HDP-20/-22	25/44	Crimp Style	2.20-2.40	—
HDE-20	25	Split Ring	1.30-1.60	J	HDP-20/-22	37/62	None/Grommet	1.10-1.60	—
HDE-20	25	Crimp Style	1.90-2.10	F	HDP-20/-22	37/62	Split Ring	1.10-1.60	—
HDE-20	37	None/Grommet	1.40-1.70	J	HDP-20/-22	37/62	Crimp Style	2.20-2.40	—
HDE-20	37	Split Ring	1.40-1.70	J	HDP-20/-22	50/78	None/Grommet	1.10-1.60	—
HDE-20	37	Crimp Style	2.20-2.40	F	HDP-20/-22	50/78	Split Ring	1.10-1.60	—
HDP-20/-22	9/15	None/Grommet	1.00-1.50	—	HDP-20/-22	50/78	Crimp Style	2.20-2.40	—
HDP-20/-22	9/15	Split Ring	1.00-1.50	—					

●NOTE: The strip length dimension range is designed to accommodate a variety of cable designs. In order to determine the proper strip length, before beginning production runs, consideration must be given to the flexibility and type of wire, bundling of wire due to circuit arrangement, and other like factors. In any case, the ferrule placement discussed in the assembly procedures must be per Figure 10 for split ring ferrules and per Figure 11 for crimp ferrules.

●●NOTE: Mass termination hand tooling dimension pertains to HDE connectors ONLY.

Fig. 7

SIZE CONNECTOR (HD-20/HD-22)	CABLE RANGE (OD)	SPLIT-RING FERRULE	STRAIN RELIEF 180° CABLE EXIT	
			ZINC DIE CAST	PLATED PLASTIC
1 (9 Posn/15 Posn)	.160-.200	745508-2	745171-2	745854-5
	.210-.240	745508-3	745171-1	745854-3
	.330-.370	745508-6	745171-5	745854-1
2 (15 Posn/26 Posn)	.185-.225	745508-3	745172-3	747099-7
	.240-.300	745508-4	745172-2	747099-5
	.335-.375	745508-6	745172-1	747099-3
	.390-.430	745508-1	745172-3	747099-1
3 (25 Posn/44 Posn)	.240-.280	745508-4	745173-5	745833-9
	.310-.350	745508-5	745173-4	745833-7
	.390-.430	745508-1	745173-3	745833-5
	.440-.480	745508-1	745173-2	745833-3
4 (37 Posn/62 Posn)	.490-.530	745508-9	745173-1	745833-1
	.310-.350	745508-5	745174-5	747100-9
	.390-.430	745508-1	745174-4	747100-7
	.460-.500	745508-8	745174-3	747100-5
5 (50 Posn/78 Posn)	.535-.575	1-745508-0	745174-2	747100-3
	.610-.650	1-745508-1	745174-1	747100-1
	.335-.375	745508-6	745175-6	1-747098-1
	.410-.450	745508-7	745175-5	747098-9
	.485-.525	745508-9	745175-4	747098-7
	.560-.600	1-745508-0	745175-3	747098-5
	.635-.675	1-745508-1	745175-2	747098-3
	.710-.750	1-745508-2	745175-1	747098-1

Fig. 8

3. If using braided cable, fold braid back over cable without splitting or slicing the braid. If using foil cable with a drain wire, cut the foil to the jacket and remove foil. Wrap the drain wire once around the ferrule, making sure that the drain wire is NOT left in the slotted opening in the ferrule. If using cable with both foil and braid, cut foil to jacket and remove foil after folding braid back over jacket. Slide ferrule under braid to end of cable jacket.

4. Trim excess braid or drain wire to approximately .60 in. from end of cable jacket.

5. Terminate conductors with contacts and insert contacts into rear of connector or terminate to connector per the appropriate document listed in Figure 4.

6. Position one half of cable clamp on cable and connector. Ensure that flange of connector is behind flange gripper of clamp and that ferrule is positioned against inner strain relief bar of cable clamp (see Figure 10).

7. Position other half of cable clamp on top of cable and secure with attaching hardware.

6. CRIMP FERRULE ASSEMBLY (Figure 9)

Refer to the chart in Figure 2 for the proper ferrule for the cable and for the AMPLIMITE connector you are using, and proceed as follows:

NOTE

Crimp ferrules are for use with cables with braided shield ONLY. They are not for use with foil shield cable. If a cable with both braid and foil is being used, remove the foil before crimping ferrules.

1. Slide outer ferrule over cable.
2. Strip cable jacket from end of conductors. Be careful not to cut braid. Refer to the chart in Figure 7 for the cable jacket strip length for HD-20 and HD-22 connectors.
3. Cut braid approximately 1/2 in. from end of cable jacket.
4. Flare braid and slide inner ferrule under it. Do NOT unweave braid. Make sure that inner ferrule butts against cable jacket.
5. Slide outer ferrule over inner ferrule.
6. Place the cable assembly into AMP Hand Crimping Tool 543344-1, equipped with Die Assembly 543013-[], if crimping manually. See Instruction Sheet IS 9318, packaged with the die set, for specific crimping instructions. The hand crimping tool is described in IS 9315. If using an applicator in an automatic machine, consult the appropriate applicator instruction (AI) sheet or consult your local AMP representative.
7. Crimp the ferrules and remove crimped assembly from crimping dies. Trim excess braid from between the two ferrules. Take care not to nick or cut conductors.

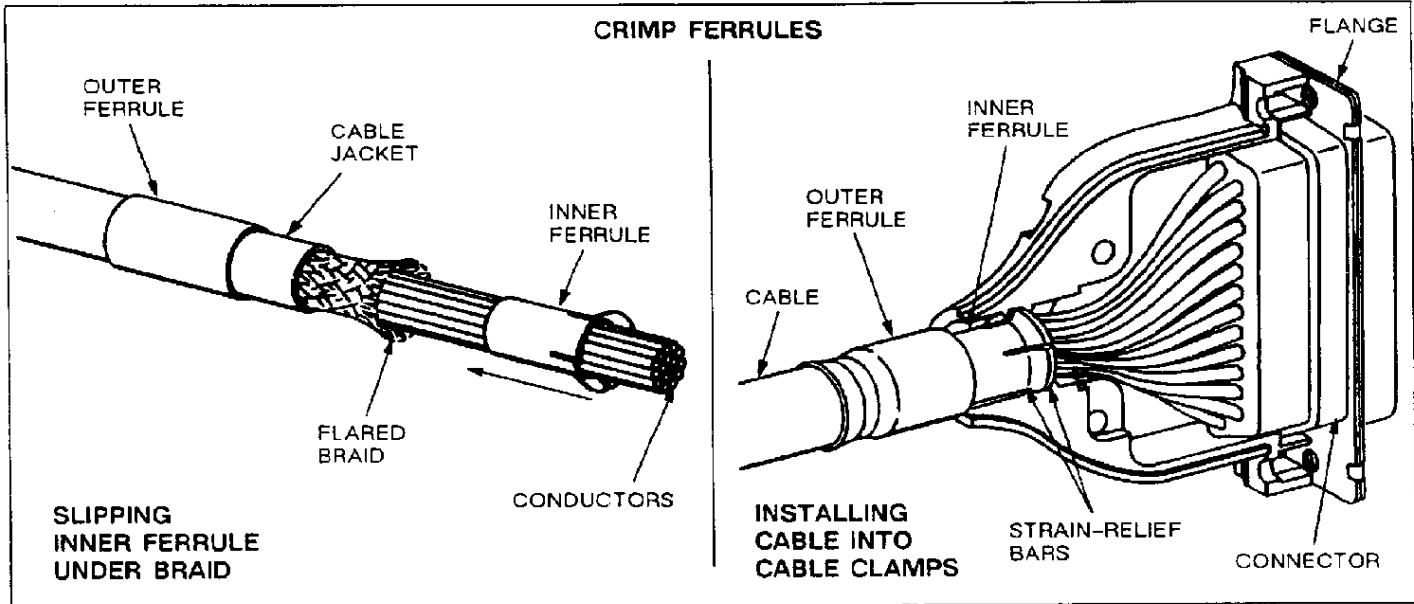


Fig. 9

8. Terminate conductors with contacts and insert contacts into rear of connector or terminate to connector per the appropriate document listed in Figure 4.

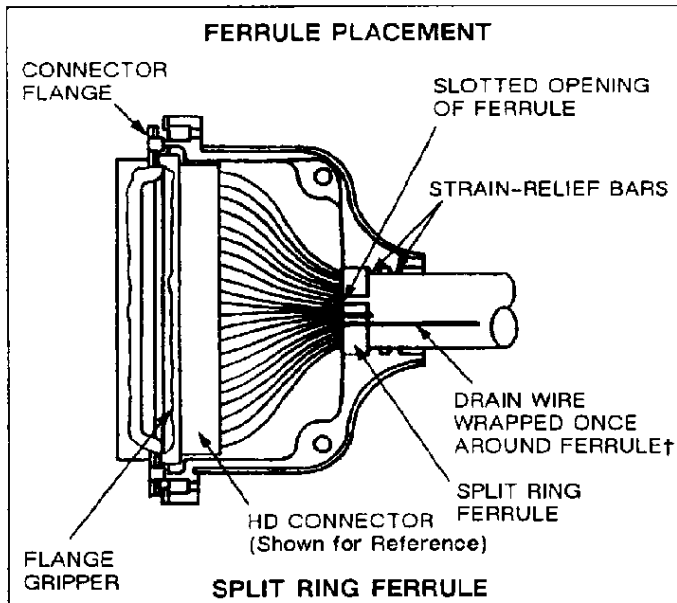
9. Position one half of cable clamp on cable and connector. Ensure that flange of connector is behind flange gripper of clamp and that inner ferrule is positioned between the two strain-relief bars of the clamp (see Figure 11).

10. Position other half of clamp on top of cable and secure with attaching hardware.

7. GROMMET ASSEMBLY (Figure 13)

Refer to the chart in Figure 14 to select the proper cable clamp kit with grommets for the cable you are using and proceed as follows:

1. Cut the cable to the desired length and slide the grommet onto the cable.
2. Strip cable jacket from end of conductors. Take care not to cut foil or braid. Refer to chart in Figure 7 for the cable jacket strip length for HD-20 and HD-22 connectors.
3. If using braided cable, fold braid back over cable without splitting or slicing braid. If using foil



† Drain wire shown in this position for clarity only. Wrap drain wire around ferrule on side opposite slot.

Fig. 10

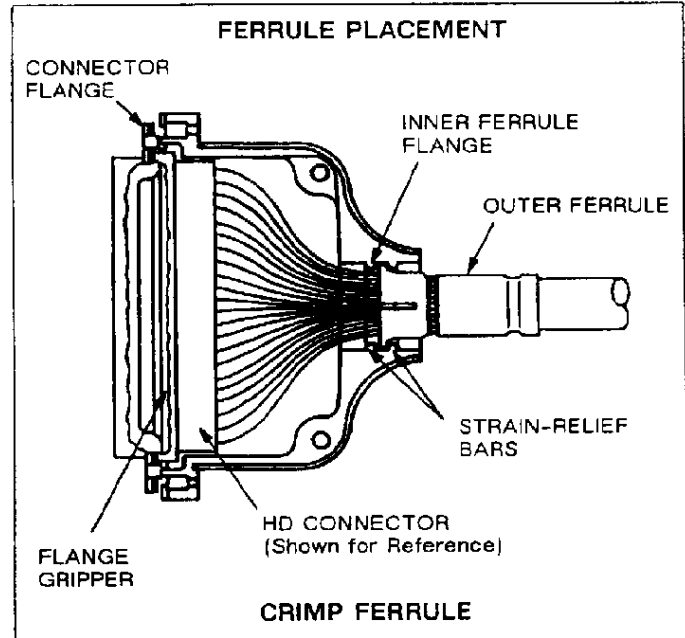


Fig. 11

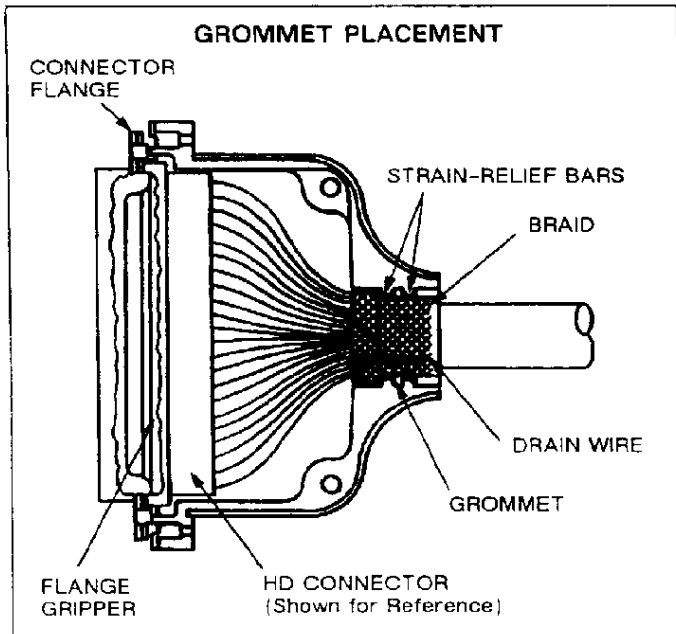


Fig. 12

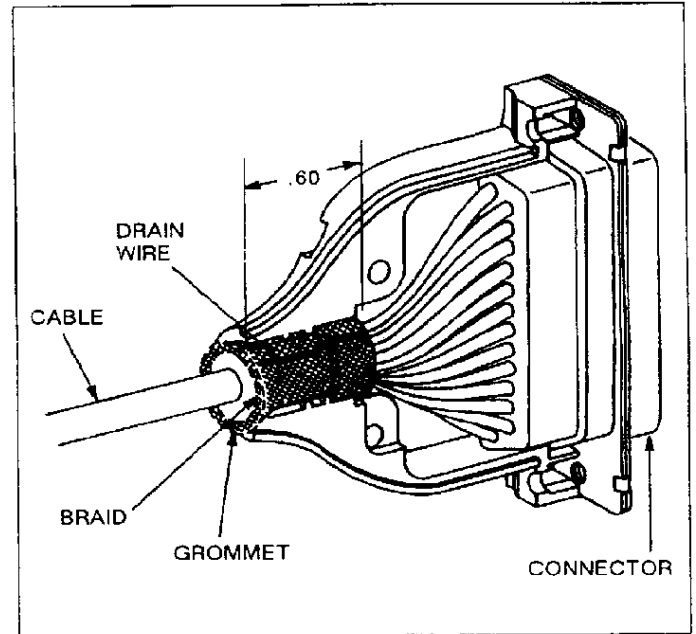


Fig. 13

cable, cut foil to jacket and remove foil. If using cable with both foil and braid, cut foil to jacket and remove foil after folding braid back over jacket.

4. Trim excess braid or drain wire to approximately .60-in. from end of cable jacket.

5. If using cable with braid, slide grommet under braid to end of cable jacket. If using cable with drain wire, slide grommet to end of cable jacket and fold drain wire over grommet.

6. Terminate conductors with contacts and insert contacts into rear of connector or terminate the connector per the appropriate document listed in Figure 4.

7. Position one half of cable clamp on cable and connector. Ensure that flange of connector is behind flange gripper of clamp and that grommet edge is positioned against inner strain relief bar of cable clamp (see Figure 12).

8. Position other half of cable clamp on top of cable and secure with attaching hardware.

CONNECTOR SIZE HD-20/HD-22	CABLE RANGE (OD)	180° STRAIN RELIEF		
		SHIELDED		UNSHIELDED
		ZINC DIE CAST	PLATED PLASTIC	UNPLATED PLASTIC
1 9 Posn/15 Posn	.185-.320	745171-5	745854-1	748678-1
2 15 Posn/26 Posn	.185-.320	745172-1	747099-3	748678-2
3 25 Posn/44 Posn	.190-.470	745173-1	745833-1	748678-3
4 37 Posn/62 Posn	.190-.470	745174-3	747100-5	748678-4
5 50 Posn/78 Posn	.190-.470	745175-4	747098-7	748678-5

Fig. 14