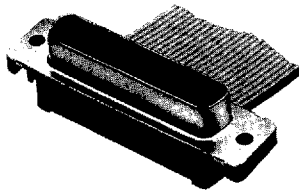
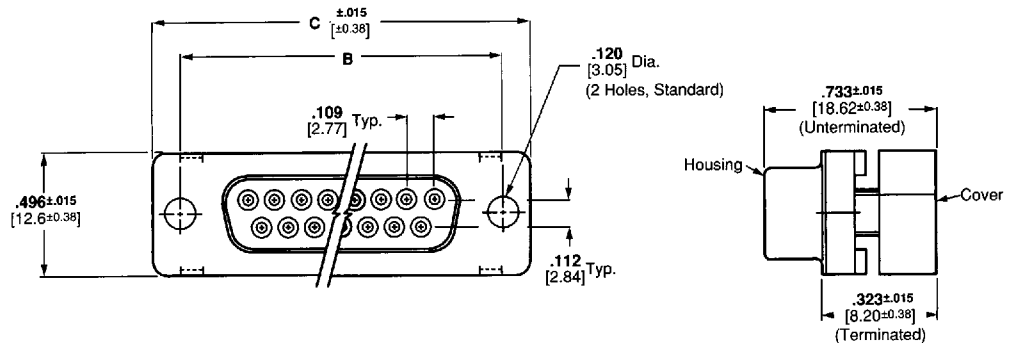


HDF-20 Low Profile Metal-Shell Connectors (for Round Conductor Flat Ribbon Cable) (Continued)

Receptacle Assemblies



Housing and Covers are Preassembled; Cable Stabilizer is Separate.



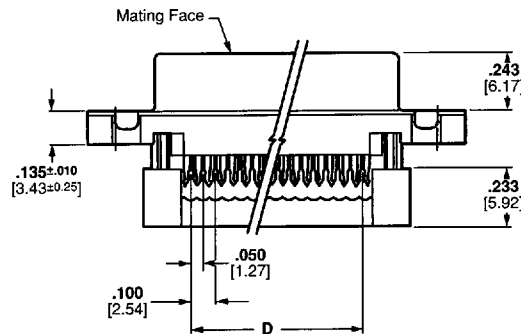
Material and Finish:

Front Shell—Steel, tin plated

Housing, Cover & Cable Stabilizer—Black thermoplastic, 94V-0 rated

Threaded Inserts—Brass, unplated

Socket Contacts—Phosphor bronze, duplex plated .000030 [0.00076] gold on mating end, .000100-.000200 [0.00254-0.00508] bright tin-lead on termination end, with entire contact underplated .000050 [0.00127] nickel



With Optional 4-40 Threaded Inserts

Related Product Data:

Contact Arrangement—page 4

Performance Characteristics—page 5

Mateable Plugs:

HDF-20 Metal-Shell—page 36

HDE—pages 16-29

HDP—pages 40-56

HD-20 Board Mount—pages

111, 112, 120, 121, 124, 125, 127, 128, 130, 132, 134, 137, 138, 139

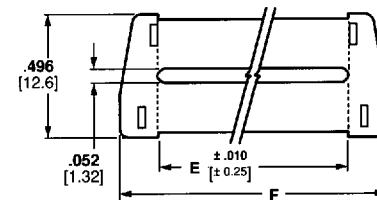
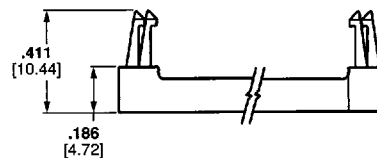
Mating/Panel Mounting—page 38

Ribbon Cable—page 39

Accessories:

Mating Hardware—pages 82-86 & 89-91

Application Tooling—page 39



Optional Cable Stabilizer—90° or 180° Exit

Technical Documents:

Product Specifications—

108-40004 Ribbon Cable, PVC

Insulated, AMP

108-40012 HDF-20 Low Profile Connectors

Application Specifications—

114-40005 Ribbon Cable Connectors

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

No. of Contact Pos. (Shell Size)	Dimensions					Optional Cable Stabilizer Part No.	Receptacle Assembly Part No.	
	B	C	D	E	F		With Standard Mounting Holes	With Threaded Inserts
9 (1)	.984 24.99	1.216 30.89	.400 10.16	.480 12.19	.759 19.28	747275-4	747303-4	747052-4
15 (2)	1.312 33.32	1.541 39.14	.700 17.78	.780 19.81	1.087 27.61	747275-3	747303-3	747052-3
25 (3)	1.852 47.04	2.090 53.09	1.200 30.48	1.280 32.51	1.623 41.22	747275-2	747303-2	747052-2
37 (4)	2.500 63.50	2.732 69.39	1.800 45.72	1.880 47.75	2.275 57.78	747275-1	747303-1	747052-1

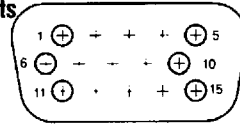
Note: All plug assemblies are supplied with housing and cover preassembled (shown above).

For drawings, technical data or samples, contact your AMP sales engineer or call the AMP Product Information Center: 1-800-522-6752. Dimensions are in inches and millimeters unless specified otherwise. Values in brackets are metric equivalents. Specifications subject to change. Consult AMP Incorporated for latest specifications.

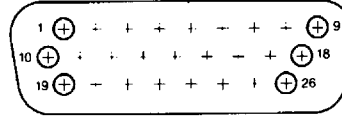
HD-22 and HD-20 Commercial Connectors (AMPLIMITE)

Contact Arrangements

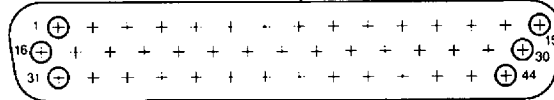
HD-22 Inserts



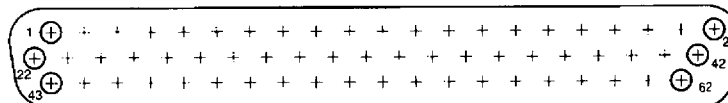
Shell Size 1
(15 Position)



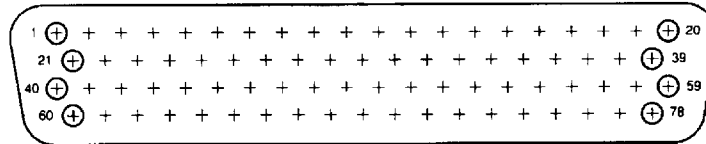
Shell Size 2
(26 Position)



Shell Size 3
(44 Position)

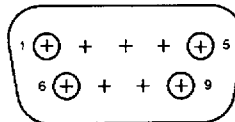


Shell Size 4
(62 Position)

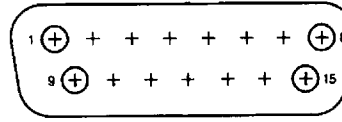


Shell Size 5
(78 Position)

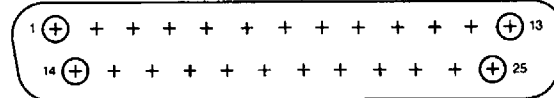
HD-20 Inserts



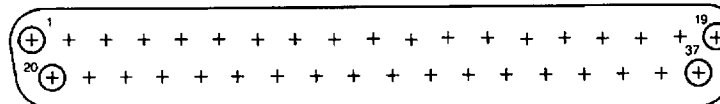
Shell Size 1
(9 Position)



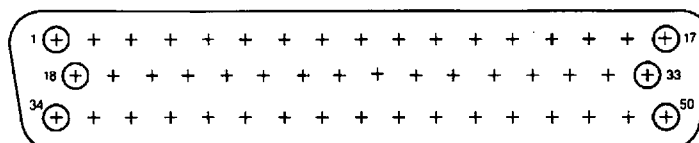
Shell Size 2
(15 Position)



Shell Size 3
(25 Position)

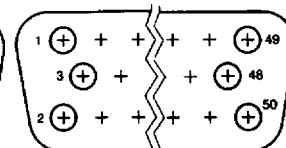


Shell Size 4
(37 Position)



Shell Size 5

(50 Position—This cavity identification numbering does not apply to the 50 position HDF-20 connector, see next illustration.)



Shell Size 5
(50 Position—HDF-20 connector)

Note: Mating face of plug is shown, receptacle is mirror-image.

HD-22 and HD-20 Connectors Performance Characteristics

Cable Connectors

	Connector Type			
	HDP-22	HDE-20	HDF-20	HDP-20
Electrical Characteristics				
Contact Current Rating (One pair of contacts)	22 AWG [0.4mm ²] Wire 5.0 amperes	20 AWG [0.6mm ²] 3 amperes	26 & 28 AWG [0.15 & 0.08mm ²] Stranded and Solid Wire 1.25 amperes	20 AWG [0.6mm ²] 7.5 amperes
Termination Resistance	15 milliohms (max.)	30 milliohms (max.)	25 milliohms (max.)	15 milliohms (max.)
Dielectric Withstanding Voltage	1000 VAC min.	1000 VAC min.	500 VAC min.	1000 VAC min.
Insulation Resistance	5000 megohms min.	5000 megohms min.	5000 megohms min.	5000 megohms min.
Mechanical Characteristics				
Contact Insertion Force	3 lb. max. [13.34 N max.]	N/A	N/A	3 lb. max. [13.34 N max.]
Contact Retention	5 lb. min. [22.24 N min.]	7 lb. min. [31.14 N min.]	N/A	10 lb. min. [44.48 N min.]
Contact Mating Force (Per contact circuit pair)	8 oz. max. [2.22 N max.]	8 oz. max. [2.22 N max.]	12 oz. max. [3.34 N max.]	8 oz. max. [2.22 N max.]
Contact Unmating Force (Per contact circuit pair)	.75 oz. min. [0.209 N min.]	.75 oz. min. [0.209 N min.]	9-37 Position .75 oz. min. [0.209 N min.] 50 Position .40 oz. min. [0.111 N min.]	.75 oz. min. [0.209 N min.]
Tensile Strength	22 AWG—12 lb. [0.4mm ² —53.4 N] 24 AWG—8 lb. [0.2mm ² —35.6 N] 26 AWG—4.5 lb. [0.15mm ² —20.02 N] 28 AWG—2.7 lb. [0.08mm ² —12.01 N]	20 AWG—9.5 lb. [0.6mm ² —42.3 N] 22 AWG—6 lb. [0.4mm ² —26.7 N] 24 AWG—4 lb. [0.2mm ² —17.79 N] 26 AWG—2.5 lb. [0.15mm ² —11.12 N] 28 AWG—2.5 lb. [0.08mm ² —11.12 N] 30 AWG—1 lb. [0.05mm ² —4.45 N]	N/A	20 AWG—20 lb. [0.6mm ² —89 N] 22 AWG—12 lb. [0.4mm ² —53.4 N] 24 AWG—8 lb. [0.2mm ² —35.6 N] 26 AWG—4.5 lb. [0.15mm ² —20.02 N] 28 AWG—2.7 lb. [0.08mm ² —12.01 N]
Durability	.000030 [0.00076] gold—500 cycles Gold Flash— 100 cycles	.000030 [0.00076] gold—500 cycles Gold Flash— 100 cycles	.000030 [0.00076] gold—500 cycles	.000030 [0.00076] gold—500 cycles Gold Flash— 100 cycles
Environmental Characteristics				
Vibration	Random 20 G's rms max.	Random 20 G's rms max.	Random 16.4 G's rms max.	Random 20 G's rms max.
Physical Shock	50 G's Duration 11 ms	50 G's Duration 11 ms	50 G's Duration 11 ms	50 G's Duration 11 ms

Board Mount Connectors

	Connector Type	
	HD-22	HD-20
Electrical Characteristics		
Single Contact Current Rating (30°C Rise) Duration 11 ms	2.0 amperes	18 AWG 6.0 amperes 24 AWG 4.3 amperes 28 AWG 2.9 amperes
Termination Resistance	20 milliohms (max.)	15 milliohms* (max.)
Dielectric Withstanding Voltage	1000 VAC min.	1000 VAC min.**
Insulation Resistance	5000 megohms min.	5000 megohms min.

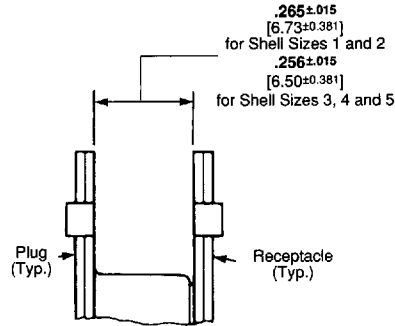
*Stacked Connectors—30 milliohms (max.)

**Stacked Connectors—500 VAC min.

	Connector Type		
	HD-22	HD-20	HD-20
Mechanical Characteristics			
Durability	.000030 [0.00076] gold—500 cycles Gold flash— 100 cycles	.000030 [0.00076] gold—500 cycles Gold flash— 100 cycles	.000030 [0.00076] gold—500 cycles Gold flash— 100 cycles
Connector Mating and Unmating Force (lbs. max. over [N max.])	Size	HD-22 Without Grounding Indents	HD-20 Without Grounding Indents
	1	7.5 [33.4]	4.5 [20.02]
	2	13.0 [57.8]	7.5 [33.4]
	3	22.0 [97.9]	12.5 [55.6]
	4	31.0 [137.9]	18.5 [82.3]
	5	39.0 [173.5]	25.0 [111.2]
			HD-20 With Grounding Indents
			30.0 [133.5]
			33.0 [146.8]
			37.0 [164.6]
			40.0 [177.9]
			44.0 [195.7]

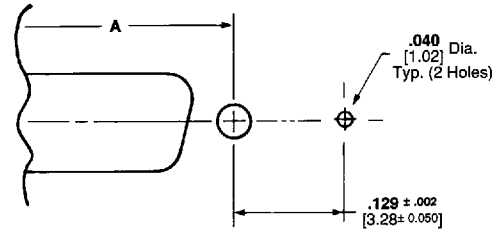
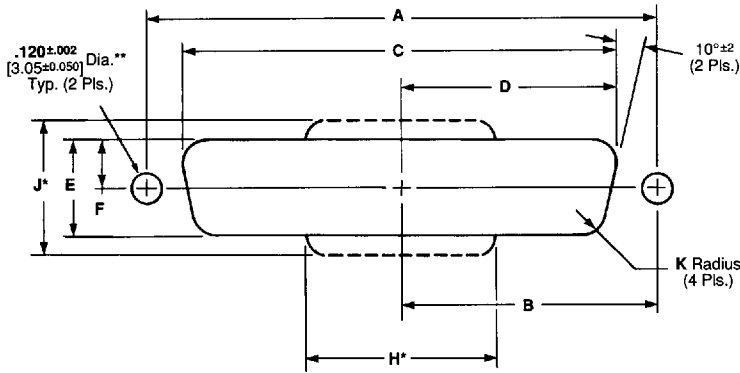
Plug/Receptacle Mating and Panel Mounting Specifications

Plug/Receptacle Mating



The .265 [6.73] dimension is required to assure full mating of connector halves. This dimension must be taken into consideration when determining the method of mounting, panel thickness, etc.

Panel Mounting



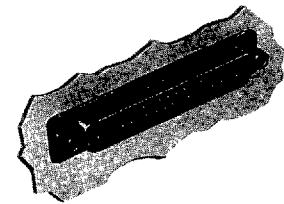
Cutout for Rear Mount and Short Latching Block

Note: Cutouts are for either plug or receptacle, front or rear panel mount.

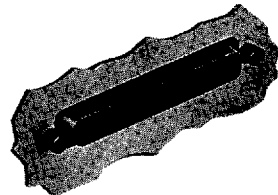
Most plugs and receptacles can be mounted to a panel from either the front or rear, using a variety of accessory hardware. Posted receptacles are rear panel mounted only. Typical examples are shown below.

Shell Size (Pos.)	Mounting Method Front/Rear Panel	Dimensions								
		A	B	C	D	E	F	H*	J*	K
1 (9)	Front	.984 24.99	.492 12.50	.874 22.20	.437 11.10	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	.984 24.99	.492 12.50	.806 20.47	.403 10.24	.449 11.41	.225 5.72	.550 13.97	.750 19.05	.132 3.35
2 (15)	Front	1.312 33.33	.656 16.66	1.202 30.53	.601 15.27	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	1.312 33.33	.656 16.66	1.134 28.80	.567 14.40	.449 11.41	.225 5.72	.730 18.54	.750 19.05	.132 3.35
3 (25)	Front	1.852 47.04	.926 23.52	1.743 44.27	.872 22.15	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	1.852 47.04	.926 23.52	1.674 42.52	.842 21.39	.449 11.41	.225 5.72	1.275 32.39	.750 19.05	.132 3.35
4 (37)	Front	2.500 63.50	1.250 31.75	2.391 60.73	1.196 30.38	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	2.500 63.50	1.250 31.75	2.326 59.08	1.163 29.54	.449 11.41	.225 5.72	1.920 46.05	.750 16.13	.132 3.35
5 (50)	Front	2.406 61.11	1.203 30.56	2.297 58.34	1.149 29.19	.623 15.82	.312 7.93	—	—	.083 2.11
	Rear	2.406 61.11	1.203 30.56	2.218 56.34	1.109 28.17	.555 14.10	.278 7.06	1.753 44.52	.750 19.05	.132 3.35

*Panel cutout configuration with H and J dimensions provides clearance for mounting connectors with cable clamps.
 **This dimension is $.190 \pm .002$ [4.83 ± 0.05] when posted connectors with fixed female screwlocks are rear-panel mounted.



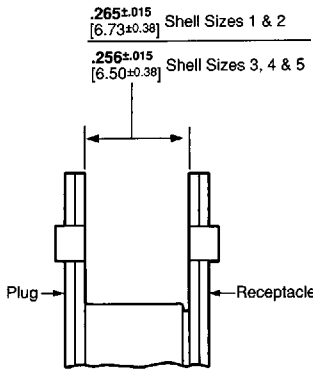
Typical Front-Panel Mounted Subminiature D Plug



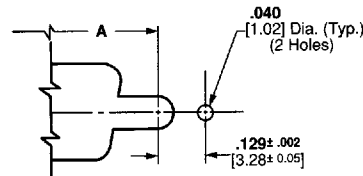
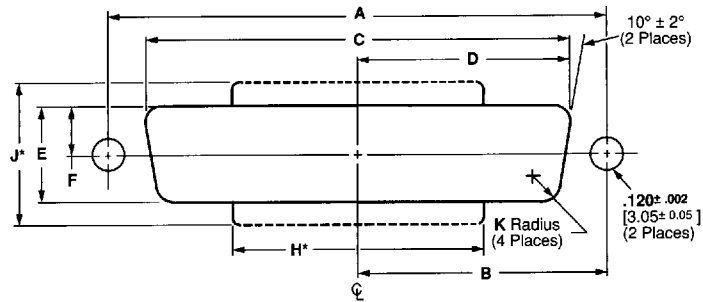
Typical Rear-Panel Mounted Subminiature D Receptacle

HDF-20 Plugs/Receptacles Mating and Panel Mounting Specifications

Plug/Receptacle Mating



Panel Cutouts

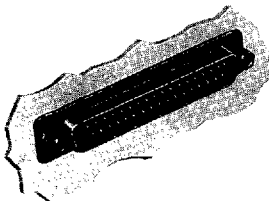


Cutout for Rear Mount
and Short Latching Blocks

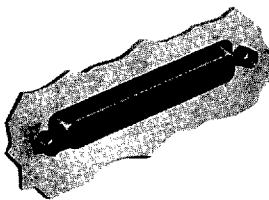
The .265/.256 [6.73/6.50] dimensions are required to assure full mating of connector halves. These dimensions must be taken into consideration when determining the method of mounting, panel thickness, etc.

Panel Mounting

Plugs and receptacles can be mounted to a panel from either the front or rear, using a variety of accessory hardware. Typical examples are shown below.



Typical Front-Panel Mounted
HDF-20 Plug



Typical Rear-Panel Mounted
HDF-20 Plug

Shell Size (No. of Contact Pos.)	Mounting Method Front/Rear Panel	Dimensions								
		A	B	C	D	E	F	H*	J*	K
1 (9)	Front	.984 24.99	.492 12.50	.874 22.20	.437 11.10	.550 13.97	.257 6.53	—	—	.083 2.11
	Rear	—	—	.806 20.45	.403 10.24	.449 11.40	.225 5.82	.300 7.62	.630 16.00	.132 3.35
2 (15)	Front	1.312 33.32	.656 16.66	1.202 30.53	.601 15.27	.550 13.97	.257 6.53	—	—	.083 2.11
	Rear	—	—	1.134 28.80	.567 14.40	.449 11.40	.225 5.82	.300 7.62	.630 16.00	.132 3.35
3 (25)	Front	1.852 47.04	.926 23.52	1.743 44.27	.872 22.15	.550 13.97	.257 6.53	—	—	.083 2.11
	Rear	—	—	1.684 42.52	.842 21.39	.449 11.40	.225 5.82	.300 7.62	.630 16.00	.132 3.35
4 (37)	Front	2.500 63.50	1.250 31.75	2.391 60.73	1.196 30.38	.550 13.97	.257 6.53	—	—	.083 2.11
	Rear	—	—	2.326 59.08	1.163 29.54	.449 11.40	.225 5.82	.300 7.62	.630 16.00	.132 3.35
5 (50)	Rear	2.406 61.11	1.203 30.56	2.218 56.34	1.109 28.17	.555 14.10	.278 7.06	1.718 43.64	.745 18.92	.132 3.35

*Panel cutout configuration with H and J dimensions provides clearance for mounting connectors with cable clamp assemblies.