

Disconnects for Use in High Vibration Applications (Case 1)

Applications:

Equipment that produces high vibrations or is in close proximity to sources of high vibration such as:

- Electrical motors
- Air compressors
- Pumps
- Commercial laundry equipment
- Transportation equipment

Customer Concern:

A manufacturer of commercial vacuum cleaners for coin-operated car washes was having problems with reliability in high vibration environments. This vibration caused disconnects to slip off the male tabs, which caused internal arcing that damaged their controllers, resulting in numerous service complaints for their customers and downtime in the field.

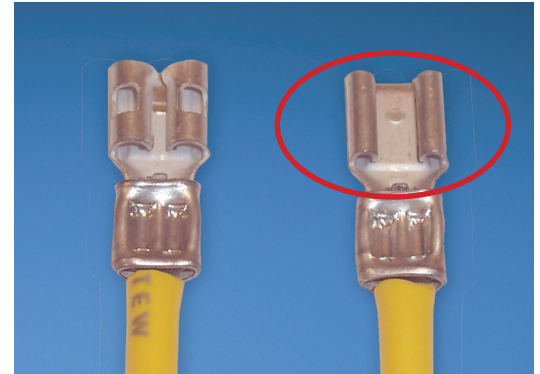
Panduit Solution:

Insulated and Non-Insulated Vibration Resistant Female Disconnects

Panduit developed vibration resistant female disconnect samples for testing in this application. The solution required a higher disconnect withdrawal force to overcome the failures caused by the high vibration. As seen circled in the images on the right, the samples that passed were designed without the curl slots to increase the retention force between the curls of the female disconnect and the male tab. This increased retention force directly increased the frictional force, which ultimately delivers a higher disconnect withdrawal force. The customer evaluation of the new design showed that none of the vibration resistant female disconnects slipped off the male tabs. Customer downtime as a result of disconnects vibrating off of the male tabs has been eliminated since implementation of this product.

Application Considerations:

Additional insertion force is required to properly install the vibration resistant female disconnect onto a male tab 12.4 pounds force (lbf) as compared to a standard female disconnect 7.9 lbf. Additional withdrawal force is also required to remove the vibration resistant female disconnect from a male tab 11.3 lbf versus a standard disconnect 9.9 lbf. Customers should determine if the additional force is acceptable in areas where the connection may require removal for maintenance, repair or modifications.



Standard Non-Insulated Female Disconnect on Left with High Vibration Disconnect on Right



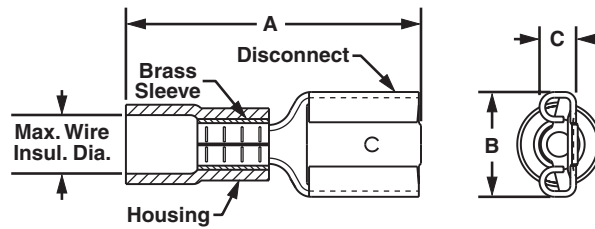
Standard Insulated Female Disconnect on Left with High Vibration Disconnect on Right



Commercial Automobile Vacuum Cleaner Application That Required a Female Disconnect with Increased Retention Force Against High Vibration

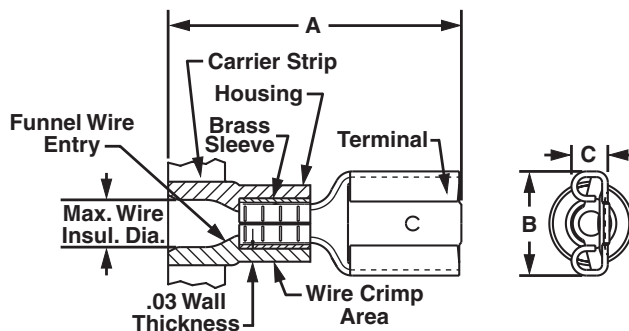
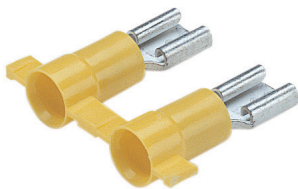
Disconnects for Use in High Vibration Applications

Loose Piece



Part Number	Tab Size In. (mm)	Wire Range AWG (mm ²)	Color	Max. Wire Insul. Dia. In. (mm)	Dimensions In. (mm)			Crimp Tools
					A ±0.03	B ±0.02	C ±0.02	
Non-Insulated								
D10-250C-D	0.250 x .032 (6.4 x 0.8)	12 – 10 (4.0)	—	—	0.72 (18.29)	0.30 (7.62)	0.12 (3.05)	CT-100A, CT-160, CT-200, CT-260, CT-570, CT-1570, CT-2500 w/CT-2570CH
Vinyl Insulated								
DV10-250C-D	0.250 x .032 (6.4 x 0.8)	12 – 10 (4.0)	Yellow	0.229 (5.82)	1.04 (26.42)	0.30 (7.62)	0.12 (3.1)	CT-100A, CT-160, CT-260, CT-460, CT-1550, CT-1551, CT-2500 w/CT-2550CH

Reel-Fed



Tool Chart – Recommended Presses: CP-871 (UC200)	
CA-800/CA9 Applicator Die Inserts	
CD-800-3	CD9-3B

Part Number	Tab Size In. (mm)	Wire Range AWG (mm ²)	Color	Max. Wire Insul. Dia. In. (mm)	Dimensions In. (mm)			CA-800/CA9 Applicator Die Inserts
					A ±0.03	B ±0.02	C ±0.02	
DV10-250C-2K	0.250 0.032 (6.4 x 0.8)	14 – 10 (4.0 – 2.5)	Yellow	0.22 (5.6)	0.95 (24.1)	0.29 (7.4)	0.12 (3.1)	CD-800-3 CD9-3B

Notes:

- 600 V maximum voltage rating for insulated disconnects
194°F (90°C) maximum temperature rating for insulated disconnects
302°F (150°C) maximum temperature rating for non-insulated disconnects
Stranded copper wire only
- Material:
 - Stamping: CDA-260 brass, tin-plated
 - High withdrawal force curl design
 - Housing: Vinyl
- UL 310 Certified
- Dimensions in parenthesis are in mm or mm²
- Wire strip length 9/32^{+1/32}
- Package qty:
 - 2K = 2000 pcs./reel
 - D = 500 pcs.

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