

# Electrical Resistance Of Type HFHB Studs Installed In Copper

UNIFIED	Part Number Tested	Test Strip			Tightening Torque For All Hardware Used To Make Electrical Connections (in. lbs.)	Test Set-up Dimensions (See Fig. 1) (Inches)				Resistance at 10 Amp DC Current $\mu$ ohms		
		Thickness $t$ (inches)	Width $w$ (inches)	Hardness		$h_1$	$h_2$	$l_1$	$l_2$	Tested "As Installed" Average of 10 Samples	After Thermal Cycling (3)	After Mechanical Cycling (4)
HFHB-0420-24	.067	1.00	30 R <sub>B</sub>	21	.500	1.250	1.000	1.750	90.7	94.7	95.8	
HFHB-0518-30*	.095	1.50	45 R <sub>F</sub>	43	.625	1.563	1.250	2.188	68.5	75.1	87.8	
HFHB-0616-32	.095	1.50	45 R <sub>F</sub>	76	.500	1.625	1.500	2.625	41.3	44.6	62.0	

METRIC	Part Number Tested	Test Strip			Tightening Torque For All Hardware Used To Make Electrical Connections (N*m)	Test Set-up Dimensions (See Fig. 1) (mm)				Resistance at 10 Amp DC Current $\mu$ ohms (6)		
		Thickness $t$ (mm)	Width $w$ (mm)	Hardness		$h_1$	$h_2$	$l_1$	$l_2$	Tested "As Installed"	After Thermal Cycling	After Mechanical Cycling
HFHB-M6-40*	1.7	25.4	30 R <sub>B</sub>	2.2	12	30	24	42	93	97	98	
HFHB-M8-50	2.41	38.1	45 R <sub>F</sub>	5.2	10	40	32	56	68	75	88	
HFHB-M10-50	2.41	38.1	45 R <sub>F</sub>	10.4	10	40	40	70	39	42	59	

\* Not a standard length.

**NOTES:**

1. Test strip material for all tests was CDA alloy #110 Electrolytic Tough Pitch Copper.
2. Biddle Instruments Model No. 247000-5, 10 Amp General Purpose Digital Low Resistance Ohmmeter used for all resistance measurements.
3. Thermal cycling consisted of 10 cycles of room temperature to 10°F (-12°C) to 150°F (66°C) and back to room temperature. All test conducted at room temperature.
4. Mechanical cycling consisted of 10 applications of a clearance bushing and mating nut tightened to the max. nut tightening torque followed by 10 applications of a pushout force equal to 75% of pushout strength.
5. All resistance tests conducted with no external force applied.
6. Value shown for metric sizes interpolated from actual test results on unified series parts.

