Adel Clamps

Everything you ever wanted to know but were afraid to ask

by Bob Nuckolls

I've seen some conversation recently concerning "Adel" clamps and their suitability for use around fuel, high temps, etc. I've pulled the specs and will excerpt some of their contents as follows:

The "Adel" clamp is more properly called an MS21919 aircraft clamp. The company named Adel built a goodly portion of the MS21919 clamps back in the 60's (and may still). The term sort of stuck on these devices in spite of the fact that they are now made by dozens of companies.

The full description for these clamps follows the convention MS21919WXXZZ where:

W = "wedge" feature in cushion that helps prevent escape of small wires out of cushion. Virtually all new production of MS21919 clamps below size 50 have the wedge feature...

XX characters have the following significance:

DE = Aluminum band, Ethylene Propylene Cushion (212F)
DF = Aluminum band, Nitrile Cushion (212F)
DG = Aluminum band, Chloroprene Cushion (212F)
CE = Corrosion Resistant Steel band, Ethylene Propylene Cushion (275F)
CF = Corrosion Resistant Steel band, Nitrile Propylene Cushion (200F)
CH = Corrosion Resistant Steel band, Silicone Cushion (400F)
CG = Corrosion Resistant Steel band, Chloroprene Cushion (212F)
CJ = Corrosion Resistant Steel band, Fluorosilicone Cushion (450F)
F = Low Carbon Steel Band, Nitrile Cushion (212F)
G = Low Carbon Steel Band, Chloroprene Cushion (212F)
H = Low Carbon Steel Band, Silicon Cushion (400F)

CAUTION - Clamps with low carbon steel bands are not recommended for new design and most were purged from stocks back in early 80's, however, you never know what might show up in the Fly-Market at OSH so I've included the "heads up" here.

Cushion Application and Color Information:

Ethylene Propylene - for use in areas contaminated with phosphate- ester hydraulic fluid and other synthetic fluids. Excellent ozone resistance., Not resistant to petroleum based fluids. Color shall be solid purple.

Nitrile - for use primarily in fuel immersion and fuel vapors. Good ozone resistance. Not resistant to phosphate-ester based fluids. Not for use on titanium tubing. Color shall be solid yellow.

Chloroprene - for general purpose use in areas contaminated with petroleum based hydraulic fluids and occasional fuel splash. Excellent ozone resistant. Not resistant to phosphate-ester based fluids. Not for use on titanium tubing. Color shall be black with a blue identifier patch.

Silicone - for elevated temperature usage in phosphate-ester based fluid and other synthetic fluid contaminated areas. Unaffected by ozone. Not resistant to petroleum based fluids. Color shall be natural white.

Fluorosilicone - for elevated temperature usage in petroleum based fluid contaminated areas. Unaffected by ozone. Not resistant to phosphate-ester based fluids. Color shall be solid blue.

Silicone - RED now obsolete and used only on the low carbon Steel

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The last characters (ZZ) are digits describing the internal diameter of the closed clamp in 1/16ths of an inch. E.G. an MS21219WDG4 is aluminum strap inside a chloroprene cushion and sized to support 1/4" diameter bundle of wires, tubing, etc.

I note that the spec does not speak to the "red" cushions currently being discussed. I recall seeing a number of clamps with red cushions over the years but quite frankly, I don't know if they were MS21919 or perhaps some other part number.

UPDATE: All of the "reds" have been purged from Raytheon's stocks, couldn't even find one in the junk boxes that I had access to. Mr. Sobek says the one he found does carry the part number MS21919H** which tells us it is indeed the obsolete, low carbon steel version and silicon rubber (not recommended for use where "wet" with hydrocarbons.