

Test and Verification Report on Gripple Hang-Fast Wire Duct Hanger System

“Gripple Hang-Fast Wire Duct Hanger Systems Number 2, 3, and 4 as Acceptable Alternatives for Use with SMACNA HVAC Duct Construction Standards Metal and Flexible, Second Edition, 1995”

The SMACNA Testing & Research Institute (STRI) verifies Gripple Hang-Fast Stranded Galvanized Rope Systems Number 2, 3 and 4 (as submitted and described below) to be acceptable alternatives to the duct hanger systems prescribed in the HVAC Duct Construction Standards (HVAC-DCS), Second Edition 1995, Chapter 4, Tables 4-1 4-1M, 4-2 and 4-2M subject to the following conditions and limitations:

1. Consistent with the HVAC-DCS requirements, upper attachment of the system directly to structures (without another drive transferring the load between the wire and the structure) shall have an allowable load not more than one-fourth of the wire system failure load.
2. Lower attachments, such as illustrated in HVAC-DCS Figure 4-4 shall have a minimum safety factor of two and shall not be used in a manner that would deform the duct shape or cause excessive concentrated loads on ducting. With respect HVAC-DCS Figure 4-4, Gripple Hang-Fast System may be adapted to any of the illustrated support configurations except the two-tier trapeze method in the lower right. The adaptation also applies to the strut channel support in Figure 4-5. With rope support of trapeze bars for oval duct suspensions relative to DCS specification S3.18 is acceptable. Wire rope passed continuously under round and rectangular duct (with both ends attached overhead) is acceptable provided that duct is retained and points of contact with the duct are not overstressed. Use of stress distribution saddles shall be prescribed as necessary.
3. The HVAC-DCS Table 4-1 maximum hanger spacing of 10 feet and Table 4-2 maximum spacing of 12 feet shall be maintained (and decreased as necessary to conform to Gripple #2, #3 and #4 working load limits). Since Chapter 4 of the HVAC-DCS has prescribed uses and limits on duct size for single wire supports and the Gripple Hang-Fast System uses stranded ropes that have larger load capacity, use is not restricted to the HVAC-DCS diametrical limits for single wires.
4. When Gripple, Inc allows its hanger wire to be in a non-vertical orientation, it shall, in accordance with accepted engineering practice, provide users with adjustments to its working loads and, as necessary to conform to manufacturers recommendations, approve the method of transfer of loadings to supporting and supported members. This stipulation shall not be construed as pre-empting any duty of an installer to obtain approval of the support system by an appropriate authority prior to making the installation. The SMACNA HVAC-DCS does not specifically provide for non-vertical hanger systems.
5. Criteria for use of Gripple Hang-Fast systems for support of risers is not included in this verification.

Gripple Hang-Fast North America submitted their Gripple Hang-Fast Wire Duct Hanger Systems Number 2, 3 and 4 which, consisted of:

- A. A “system” with the following components: a zinc coated steel wire rope, a preformed loop created and maintained thereon by a manufacturer supplied and attached ferrule and an attachable loop fixing metal grip, the wire rope complying with British Standards Institution Standard BS302, parts 1 and 2 1987 Edition.
- B. Each system was supplied with suitably matched, compatible load rated components with load rating performance data conducted by an accredited testing laboratory.

Conclusion

The SMACNA Testing and Research Institute conducted comprehensive evaluation of the submittal as an acceptable alternative for use with the SMACNA HVAC Duct Construction Standards Metal and Flexible, Second Edition, 1995. This analysis included: minimum and maximum working loads range that will prevent slip and separation of components of the systems; breaking strength of the wire rope; load test results for rope systems and failure load tests.

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“Gripple Hang-Fast Wire Duct Hanger Systems Number 1 & 5 – Standard Loop, Number 2 & 3 – Toggle and Number 2 & 3 – Threaded Stud-Fast as Acceptable Alternatives for Use with the SMACNA HVAC Duct Construction Standards Metal and Flexible, Second Edition, 1995”.

The SMACNA Testing & Research Institute (STRI) verifies Gripple Hang-Fast #2 & 3 – Threaded Stud-Fast (as tested and described below) to be acceptable alternatives to the duct hanger systems prescribed in the HVAC Duct Construction Standards (HVAC-DCS), Second Edition 1995, Chapter 4, Tables 4-1, 4-1M and 4-2M subject to the following conditions.

1. Consistent with the HVAC-DCS requirements, upper attachment of the system directly to structures (without another drive transferring the load between the wire and the structure) shall have an allowable load not more than one-fourth of the wire system failure load.
2. Lower attachments, such as illustrated in HVAC-DCS Figure 4-4, shall have a minimum safety factor of two and shall not be used in a manner that would deform the duct shape or cause excessive concentrated load on ducting. With respect to HVAC-DCS Figure 4-4, Gripple Hang-Fast system may be adapted to any of the illustrated support configurations except the two-tier trapeze method in the lower right. This adaptation also applies to the strut channel support in Figure 4-5.
Wire rope support of trapeze bars for oval duct suspension relative to DCS specification S3.18 is acceptable. Wire rope passed continuously under round and rectangular duct (with both ends attached overhead) is acceptable provided that duct shape is retained and points of contact with the duct are not overstressed. Use of stress distribution saddles shall be prescribed as necessary.
3. The HVAC-DCS Table 4-1 maximum hanger spacing of 10 feet and Table 4-2 maximum spacing of 12 feet shall be maintained (and decreased as necessary to conform to Gripple #1, #2, #3 and #5 working load limits) Since Chapter 4 of the HVAC-DCS has prescribed uses and limits on duct size for single wire supports and the Gripple Hang-Fast System uses stranded ropes that have larger load capacity, use is not restricted to the HVAC-DCS diametrical limits for single wires.
4. When Gripple, Inc allows its hanger wire to be in a non-vertical orientation, it shall, in accordance with accepted engineering practice, provide users with adjustments to its working loads and, as necessary to conform to manufacturers recommendations, approve the method of transfer of loadings to supporting and supported members. This stipulation shall not be construed as pre-empting any duty of an installer to obtain approval of the support system by an appropriate authority prior to making the installation. The SMACNA HVAC-DCS does not specifically provide for non-vertical hanger systems.
5. Criteria for use of Gripple Hang-Fast systems for support of risers is not included in this verification.

Gripple Hang-Fast North America submitted their Gripple Hang-Fast Wire Duct Hanger Systems Number 1,2, 3 and 5 which, consisted of:

1. A “system” with the following components: a zinc coated steel wire rope, a preformed loop created and maintained thereon by a manufacturer supplied and attached ferrule and an attachable loop fixing metal trip; toggle; threaded stud; the wire rope complying with British Standards Institution Standard BS302, parts 1 and 2 1987 Edition.

Conclusion

The SMACNA Testing and Research Institute conducted comprehensive testing through an accredited testing laboratory (ASTM E8 “Standard Test Methods for Tension Testing of Metallic Materials”, ASTM A370, “Standard Test Methods and Definitions for Mechanical Testing of Steel Products”) and evaluation of the submittal as an acceptable alternative for use with the SMACNA HVAC Duct Construction Standards Metal and Flexible, Second Edition, 1995. This testing and analysis included: minimum and maximum working load ranges tests that will prevent slip and separation of components of the systems; breaking strength of the wire rope; load test for rope systems and failure load tests