



MACLEAN POWER SYSTEMS

A MacLean-Fogg Company

Reliable • Bethea • Continental • Hydrocom • Precision

Application Advisory

Subject: Use of StrandVise® Products in Rope and Cable Challenge Course Applications
From: MacLean Power Systems' Connector Engineering
Date: 27, November 2000

The StrandVise® line of automatic connectors is manufactured and marketed by MacLean Power Systems. These products were first developed in the 1930's to serve the needs of the electric power utility and telecommunications markets. Even today these same customers account for the vast majority of StrandVise® sales.

These utility companies use our StrandVise® products for a variety of applications including securing guying wires and supporting aerial messenger wire. However, each of their StrandVise® applications has a number of important common elements.

- Their StrandVise® installers are well trained and equipped.
- The wire/cable being used is galvanized steel strand that is typically used for guy or messenger applications.
- The tension on the installed wire is significant and generally more than 40% of the rated strength of the cable.
- Once installed and properly tensioned, the StrandVise® is under a near constant, static load.

Over the past few years, we have become extremely concerned about the application of StrandVise® connectors in rope and cable challenge courses. Specifically, we are concerned with the StrandVise® tensioning procedure and the dynamic loads that can occur after installation.

The integrity of any StrandVise® installation is ultimately dependent on the skill and judgement of the installer. Because of the relative lack of skill on the part of the rope course installers, the use of rudimentary tools and the diversity of challenge course applications, it is apparent that the as-installed StrandVise® tension could vary considerably.

This combination of questionable installation tension and the abrupt change in tension that will occur when a course is in use make cable challenge course a risky application for which our products were neither contemplated, designed nor intended. In addition, the potential for damaging a StrandVise® by releasing tension and then reinstalling and re-tensioning the connector a number of times as a challenge course layout is reconfigured makes these applications particularly risky.

We urge you and your organization to discontinue promoting and using StrandVise® connectors for cable challenge courses and to take prompt action to adopt a more suitable cable restraining mechanism in place of the StrandVise® connectors that are now being used without backup devices in these courses.



MACLEAN POWER SYSTEMS

A Maclean-Fogg Company

16, May 2007

Professional Ropes Course Association (PRCA)
6260 E. Riverside Blvd., #104
Rockford, IL 61111 USA

RE: MacLean Power Systems' StrandVise®

Dear Members of the PRCA,

It has become evident in our recent discussions with Mr. Steve Gustafson regarding our "Application Advisory" drafted in 2000 for ACCT and others within the industry that our position was not interpreted correctly. In this notice to the field, we state the following:

"We urge you and your organization to discontinue promoting and using StrandVise® connectors for cable challenge courses and to take prompt action to adopt a more suitable cable restraining mechanism in place of the StrandVise® connectors that are now being used without backup devices in these courses."

The above statement focused on adopting a "more suitable cable restraining mechanism," not suggesting use of the product with a backup system. We do not and did not endorse the use of our product in this application at all, because the StrandVise® product was not designed nor intended for use in the ropes challenge course industry with or without backup devices.

As the PRCA begins to develop standards for the installation and construction of ropes challenge courses, MacLean Power Systems must insist upon the use of the words "SHALL NOT UTILIZE STRANDVISE® CONNECTORS IN ANY ROPES CHALLENGE COURSE DESIGN, CONSTRUCTION OR INSTALLATION."

I hope that this truly clarifies our position regarding the use of our product in this industry, and I appreciate the fact that the PRCA is committed to the development of a standard to regulate the design, construction and installation of ropes challenge courses throughout the United States.

Sincerely,

David A. Dembowski
Manager, New Product Development

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StrandVise® Advisory - May 16, 2007

INDUSTRY ADVISORY StrandVise® Connectors

Introduction:

The most important aspects of proper risk management, conscientious design / construction and the safer operation of ropes challenge courses are the need to follow the applicable regulations, standards and always following the manufacturers' installation specifications, recommendations and limitations for their products. Manufacturers' recommendations are based upon the design, testing, proper installation / assembly and intended use of a product. Courts and regulatory agencies have consistently held that when an item is to be used outside of the accepted parameters of the original design and intent of the product it is incumbent upon the user to secure a written approval from the manufacturer for the deviation and to continue to meet the manufacturer's specific written requirements for the deviation. Failure to do so may relieve the manufacturer of any liability should a failure of the device or related injury occur. In some jurisdictions deviation from the manufacturers' recommendations now constitutes "prima facie" evidence of negligence in a lawsuit. Therefore, in terms of liability should an injury involving equipment or product failure occur, your best defense is in having followed the manufacturer's recommendations. Maclean Power Systems, a Maclean-Fogg Company has stated in a recent May 16, 2007 manufacturer's recommendation letter that their November 2000 Application Advisory drafted for the Association for Challenge Course Technology (ACCT) and others within the industry was not interpreted correctly. The Company states that StrandVise® Connectors are not "designed nor intended for use in the ropes challenge course industry with or without backup devices."

Background:

StrandVise® connectors have long been a cable termination hardware product utilized on many ropes challenge courses and were approved for use when installed in accordance with the construction and installation practices illustrated and described in the current (6th Ed. 2004) and past, Association for Challenge Course Technology Standards, a trade association based voluntary "industry standard". As this was the only written "standard" at the time, it was generally accepted and has been repeatedly presented by the Association as the "authority" on safe ropes challenge course construction.

In April 2007 a Qualified Ropes Challenge Course Professional attempted to purchase StrandVise® devices from a respected challenge course equipment supplier. The Qualified Ropes Challenge Course Professional was informed by the supplier that MacLean Power Systems required that they sign documents agreeing not to sell StrandVise® connectors for use in ropes challenge course applications. The Qualified Ropes Challenge Course Professional contacted the Professional Ropes Course Association (PRCA) for a clarification. As the PRCA is mandated through the ANSI standard development process to contact companies such as MacLean to allow the inclusion of their products' trade names in a standard the PRCA immediately contacted the company to clarify the situation.

Over the years we have all heard of or read reports of StrandVise® connector failures, the most common - cables slippage (the device is not designed for the type of cable commonly used 7x19 GAC), bails cracking and deforming (insufficient tensioning, improper installation), and cables shearing (repetitive force loading of improperly installed/tensioned device, not designed for repetitive force loading). A StrandVise® type device's failure resulting in an injury led to the lawsuit that brought this issue to MacLean Power System's attention. Although this was not their product but a foreign copy they had large legal exposures involved in removing themselves from the case. During the course of the

suit they found that suppliers were still selling their product to the ropes challenge course industry, that they were still in use and that their installation is described in the current “industry standard” document. Discovering that their products are still in use the MacLean – Fogg Company was highly disturbed as they feel that at the time of their November 27, 2000 Application Advisory and after having engaged in numerous conversations with Association for Challenge Course Technology representatives, MacLean had adequately and clearly indicated through the advisory and in the dialogs that their product was not designed nor intended for ropes challenge course usage in any application with or without back up.

The November 27, 2000 Application Advisory from MacLean Power Systems indicated that the recommended use and intent of the StrandVise® connector was for guy and messenger wire applications (typically 1x7 wire rope), under significant tension of generally greater than 40% of the cable’s tensile strength, and under a near constant static load. Representatives from MacLean have stated that they felt that these design considerations alone clearly indicate that the ropes challenge course use of this product was a significant deviation from the recommended usage. Additionally the changing tensions involved in the ropes challenge course constituted a “risky application”. MacLean representatives stated that when the Advisory was sent out, proposed “backup” systems were illustrated and discussed but MacLean responded that the backups suggested by the Association for Challenge Course Technology representatives, to be used in the ropes challenge course industry, were not acceptable as the device was not intended for this use. These same representatives were notified that MacLean Power Systems’ recommendation to promptly discontinue the promotion and use of the StrandVise® connectors and adopt a more suitable cable restraining mechanism would stand as it was.

SEE November 27, 2000 Application Advisory

Present: The PRCA throughout our conversations and communications with MacLean Power Systems has attempted to negotiate a moratorium on MacLean’s Advisory to allow the industry’s courses and non-profits time to effect the replacement of these devices. Although MacLean representatives do understand the difficulties of having to remove their product from ropes challenge courses, they have stated that MacLean does not have the resources available to support a backup system development activity that would allow for the temporary continued use of the product. As the manufacturer carries the sole responsibility for product liability they alone would have to conduct this design and testing process. MacLean Power Systems stated that this would be unreasonable of the industry to expect this considering that the original notification advisory to the industry via the Association for Challenge Course Technology is from November 2000, already a period of almost seven years, and this would be for a product use that exists outside of their industry in an application where they already do not support the use of this product.

The May 16th, 2007, application advisory letter to the PRCA states that MacLean Power Systems does not and did not endorse the use of their StrandVise® connector in the ropes challenge course industry as it was not designed or intended for use in the industry with or without backup devices. MacLean has also insisted that the wording “Shall not utilize StrandVise® connectors in any ropes challenge course design, construction or installation” be incorporated into the existing ANSI BSR/PRCA1-2006ED3-200x, Ropes Challenge Course Installation, Operation, and Training Standard (Draft Standard) published by the American National Standards Institute (2006) in “Standards Action”. MacLean Power Systems has also notified its’ distributors once again that they are not to sell this product for use in ropes challenge course installations.

SEE May 16, 2007 application advisory letter to the PRCA.

Recommendations: Based upon the current MacLean Power Systems application advisory (manufacturer recommendations) all ropes challenge courses with currently installed StrandVise® connectors should endeavor to immediately replace these connectors with other approved cable

termination systems along with any required system backups. Approved cable termination devices include U and J style wire rope clips and copper or zinc plated copper ferrules installed according to the manufacturers' recommendations. Wire rope must be inspected for damage and/or defect by a Competent Person (life safety applications by a Qualified Person) and replaced where necessary.

Non-StrandVise® style cable termination clamping and or camming devices or other products not specifically authorized by the current industry standards should only be used on ropes challenge courses with written documentation from the manufacturer. The manufacturer's documentation must specifically state that the product to be used has been designed, engineered, tested and approved for ropes challenge course application(s). Such documentation must clearly delineate the approved application(s), installation requirements, necessary approved backups (must be consistent with at least the minimum strength requirements of the standards), inspection procedures, hardware and cable (wire rope) compatibility requirements, and working load limits.

All other hardware and equipment should be checked for compliance with the manufacturers' recommendations for installation, maintenance, inspection and replacement. Regardless of the source, all general statements, reports of unofficial testing or installation deviations which conflict with the manufacturers' recommendations, federal regulations or existing recognized National Standards, must be considered suspect, and should be clarified in writing before use. E.g. ACCT 6th Edition voluntary industry standards' references to appropriate wire rope clip nut torque.

ROPES COURSE ADVISORY STRAND VISE

May 27, 2007

To Whom It May Concern:

Recently a Qualified Ropes Challenge Course Professional attempted to purchase StrandVise® devices from a well known challenge course equipment supplier. They were informed by the supplier that MacLean Power Systems had ordered them not to sell these devices for use on ropes courses anymore. This in conjunction with mandated requirements associated with the on-going ANSI Industry Standard resulted in the PRCA immediately contacting MacLean Power Equipment to determine the problem.

MacLean Power Systems had recently been named in a personal injury/product liability suit involving the use of a counterfeit StrandVise® on a ropes course. Discovering that their products are still in use, the MacLean - Fogg Company was highly disturbed as they feel that at the time of their November 27, 2000 Application Advisory they had adequately and clearly indicated that their product was not designed nor intended for ropes challenge course usage in any application with or without back up.

The PRCA has attempted to negotiate a moratorium on MacLean's Advisory to allow courses time to effect replacement of these devices without result. MacLean Power Systems has notified its' distributors again that they are not to sell this product for ropes challenge course installations and has requested that the PRCA notify the challenge course industry not to "utilize StrandVise® connectors in any ropes challenge course design, construction or installation." For further information, including copies of the MacLean Power Systems advisory and letter, visit the Professional Ropes Course Association's web site at www.prcainfo.org.