

Advanced VSR Model 8A System



A-VSR MX-8a Console displays the clear vibration data needed to perform the VSR Process effectively.

Featuring an Allen-Bradley motor drive with external heat sink, NEMA 4 / IP65 rated touchscreen PC with solid state hard drive, the console will supply years of maintenance-free operation.

The system consists of the following components

- MX8a Console
 - o 7.5 HP / 5 kW high-performance servo-drive = tight speed regulation = better stress relief
 - o VSR 5.0.1 software
 - o Digital speed control
 - o Automatic scanning and plotting of VSR Process parameters
 - o 4 digit displays of acceleration, RPM and vibrator power
 - o NEMA 4 / IP65 rated 15" / 380 mm industrial-grade touch-screen PC
 - Windows 7 OS
 - Solid-state hard drive
 - Fanless, produces very little heat
 - o 2 USB jacks, for connection of keyboard (supplied), printer, USB sticks, modem
 - o Electronic motor protection including motor winding temperature display (virtual thermometer, helps operator achieve optimal setups)
 - o No-fade, scratch resistant laser-etched control panel
 - o NEMA 4 / IP 65 enclosure: All connectors and display fully covered for storage / transport
- VS9 Vibrator
 - o 2.0 kW "self-servo" PM AC motor, maintains perfect speed without tach or resolver feedback
 - o Dual mounting flanges w/ hardened inserts (mate with machinist's clamps; thru hole allows bolting)
 - o Temperature sensors in motor, prevent over-temperature usage
 - o Adjustable unbalance over a 20 : 1 range
 - o Weight : 45 lbs / 22 kg.
- Low-noise accelerometer
 - o Accurate within + / - 0.2 percent
 - o Linear to 50 g's
 - o Rugged stainless steel housing with military-grad connector
- Accessories
 - o Accelerometer and motor cables
 - o Accelerometer clamps
 - o Vibrator clamps
 - o Isolation cushions



The Advanced VSR Model 8a comes with a heavy-duty equipment cart that provides all the storage space needed for the system to be stored securely. The cart has six ball-bearing drawers and a locker with shelf that can hold the vibrator and larger items. All can be locked securely, as can the console lid.

On the right side of the cart is a disconnect switch box that contains a three phase circuit breaker, and, on its back (see lower photo) incoming and outgoing power connectors. Incoming power is the lower (inlet); outgoing power, fed to the console, is the upper (outlet).

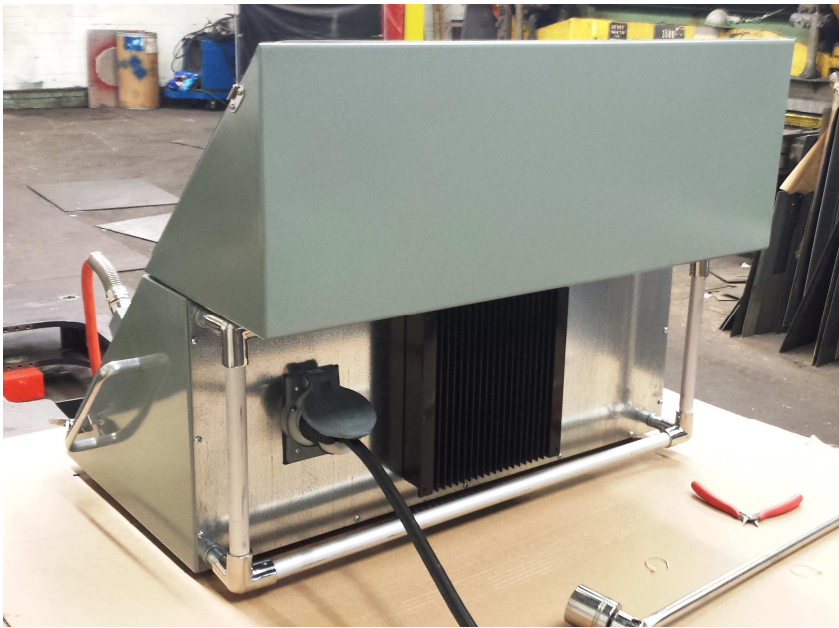
By operating on 3 phase the Allen-Bradley drive in the console can operate at extremely high efficiency, approaching 95%. However, if necessary, the console can be operated on single phase, anywhere in the voltage range of 200 thru 240 VAC.

Note that these connectors are protected by spring-loaded covers, which have foam gasket seals. Below the disconnect box is a 3 kW, 3 phase isolation transformer. The transformer, which has a multiple voltage primary, assures clean, low-noise power be fed to the console.



The console's power inlet is also protected by a spring-loaded cover. Also on the console back is the robust heat sink for the drive, which dissipates more than 85% of the heat generated by the drive. Both the heat sink and power inlet are protected by an aluminum and stainless steel cage, held securely to the back panel of the console, which is galvanized steel. (See photo on next page.) The balance of the enclosure has a high-gloss, powder coat finish.

With these features and elements, the MX8a console will supply many ears of maintenance free performance. Judging by previous designs of Advanced VSR systems, a lifetime of 15 – 20 years can be reasonably expected.



Closer view of powder-coated console enclosure, rear view shows drive heat sink and power inlet, both protected by an aluminum and stainless steel cage. Heat sink dissipates more than 85% of drive generated heat, keeping all electronics (drive, PC, power supply, etc.) subjected to minimal heat stress.

With lid flipped down and power cord disengaged, all connections and displays are covered and sealed. The enclosure prevents dust, particulates, metal particles, oil or moisture from reaching any of the electronics. Back panel is galvanized steel.



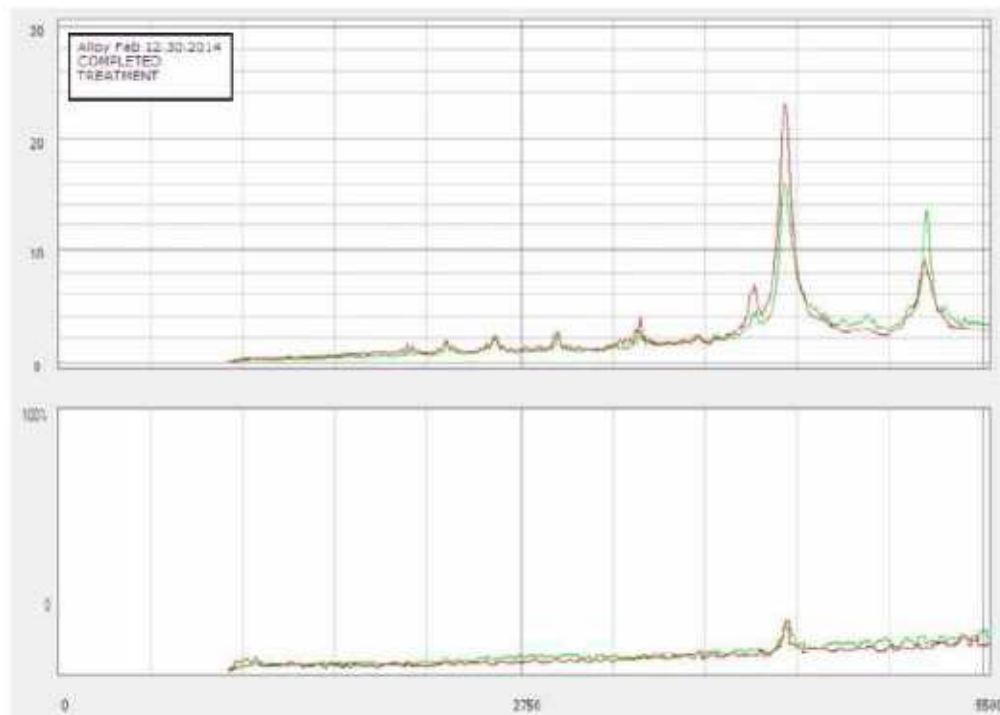
Pre-Treatment Scan shown on left provides the all the information needed by the operator to perform the VSR Process.

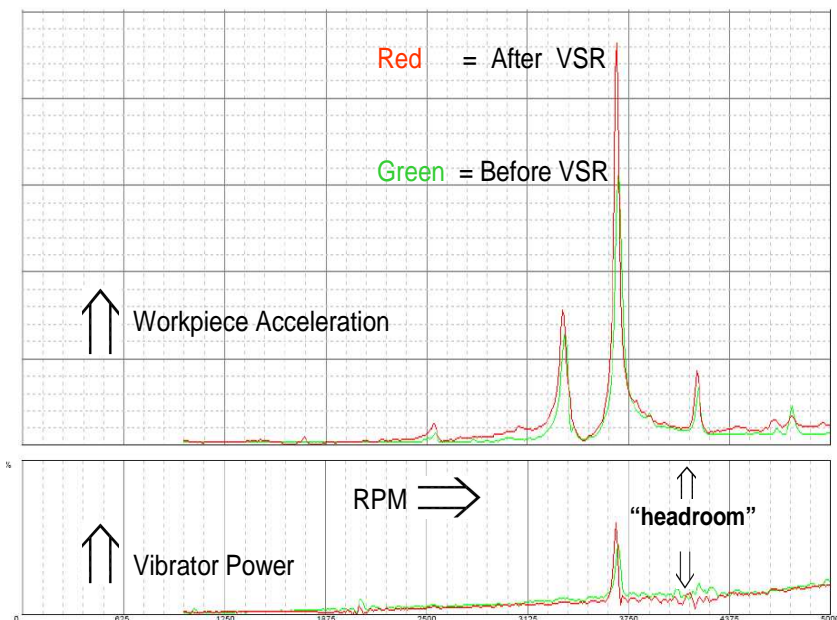
Using the console's digital motor speed controls, the operator can easily tune upon the resonance peaks, and then monitor them as they undergo the changes that accompany stress relief.

These changes occur due to changes in the damping of the workpiece, which is temporarily inflated by the presence of residual stresses.

The final, stable resonance pattern (shown on left) shows the changes that took place. The Pre-Treatment scan is green, the Post-Treatment scan, red.

This document is then tagged (upper left corner) with the workpiece part number, serial number, date and operator ID, and archived as a PDF.



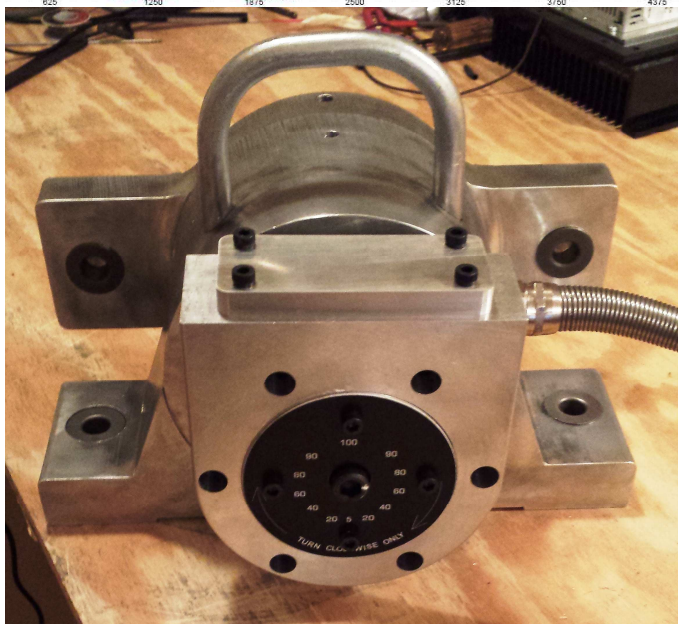


VSR Treatment Chart produced using the VSR 5.0.1 OS. Changes in the original resonance pattern, plotted in **green**, document effective VSR Treatment.

The final, stable resonance pattern is recorded in **red**.

Vibrator power data (lower chart) helps the operator position and adjust the vibrator for best results.

See Vibratory Stress Relief listing in Wikipedia:
http://en.wikipedia.org/wiki/Vibratory_stress_relief
 to see VSR application and work-piece.



The VS9 Vibrator:

- Dual mounting flanges for optimal orientation of vibrator
- 2.0 kW motor
- Variable unbalance over 20:1 range
- 7075 aluminum alloy housing
- "Self-servo-ing" PM sync motor needs no high-maintenance feedback device (resolver or tachometer) to deliver near perfect speed regulation: 0.001%

VSR 8a System Performance Outline

Speed range: 100 – 8000 RPM

Unbalance range: 0.2 - 4.0 in-lbs

Scanning options: Quick (50 RPM / sec)
 Pre- and Post-Treatment (1 – 25 RPM / sec)

VSR OS : 5.0.1

Motor: 2 kW "self-servo" PM AC

VSR Data Storage Formats: PDF (variable res),
 JPEG, BMP

HMI: Industrial Panel PC w/solid-state hard drive
 15" / 380 mm touchscreen PC w/2 USB jacks
 PC OS: Windows 7

Power Requirements, when using equipment cart
 190 – 480 VAC, single or 3 phase
 (Please supply available power details to allow
 selection of appropriate transformer.)

Speed regulation : + / - 0.001% or less



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