(CUSTOMER)
HAAS MAINTENANCE & REPAIR
COURSE OUTLINE

Day 1 - Morning = Lecture Afternoon = Labs

Introduction
Introduction to Factory and Course

Manual Overview
Reading Assignments – VF Service Manual

Basic Machine Operation
Identify the 4 areas of CNC machine failure (Mechanical / Electrical / Applications / Software
Identify the major parts of the VF, EC & SL Series Machines Identify the major assemblies in the control cabinet and list the function of each (Includes System/s Flow)
Trace major signals through the VF EC & SL Series Machines.
Trace the Power-Up sequence / Power Distribution

Hydraulic Counter Balance System
Identify components of counter balance system. Explain operation and servicing & review the related safety procedures
Review where the Z-Axis Servo Motor with a brake is used

ElectroStatic Discharge (ESD)
Review what ESD is and ways to prevent it.

How to Troubleshoot
Review steps for troubleshooting
- Problem Evaluation
- Tips
- Troubleshooting Guide
- Diagnostics (Includes going over diagnostics pages)
- Electrical Diagrams
- Test & Checks (Review Continuity Checks)
- Solution
- Repair / Verify / Demo to Customer / Paper Work

Review the troubleshooting flowcharts for Mills and Lathes
Tools for Troubleshooting
- Vibration Analyzer
- Ball Bar

Review Alarms
Review the alarms and indicate what could cause this problem

Plant Tour/Assemblies
Identify the major components/assemblies on a VMC, HMC & Lathe

Day 2 - Morning = Lecture Afternoon = Labs

Horizontal Pallet Changer

Review the EC400 Pallet Changer
Locate and Identify the Motors, Solenoids and Switches on the EC400 Pallet Changer
Review the M & G codes related to the EC400 Pallet Changer

Preventive Maintenance Scheduling – (Show Where and How to Perform Each)

Control Familiarization

Day 3 - Morning = Lecture Afternoon = Labs

Printed Circuit Boards

Identify the major PCB's in the Control Cabinet and List the function of each, review inputs and outputs, LED's, Switches and Jumpers;

Power Distribution Board
Micro-Processor PCB (Coldfire Processor Included)
Video PCB
Ethernet Video Card
Ethernet, Zip & Hard Drive
LCD HD/ENET/Zip
LCD Monitor Assembly
Serial Keyboard Interface PCB
Input/Output PCB
MOCON PCB
Servo Amplifier

Identify and list the inter-connecting cabling

Haas Vector Drives

Explain the Haas Vector drive system & how to troubleshoot it. (Explain 320V PS)
Explain the Wye / Delta motor configurations (Torque vs RPM)

Lathe Components

Review the Hydraulic Power Unit (Including the Haas Unit), the Hydraulic Tail Stock, Gear Box. Tool Pre-setter & Parts Catcher.
Watch the video on Lathe Live Tooling

Day 4 - Morning = Web & Demos Afternoon = Labs

Web Site

Octavis Vibration Analyzer

Set-Up and Run (Demo)

Ball Bar

Set-Up and Run (Demo)

Day 5 – All Day Labs

(Complete Labs)

Labs

MILL

Completed

- ☐ HOOK-UP 4th AXIS
- ☐ PERFORM AN INSTALLATION
- ☐ PERFORM A BACKLASH MEASUREMENT
- ☐ PERFORM A LUBE PER CYCLE MEASUREMENT

VF-4 *UMBRELLA STYLE TOOL CHANGER / SPINDLE WITH GEARBOX*

Completed

- ☐
  - ➢ REMOVE & REPLACE UMBRELLA TOOL CHANGER CAROUSEL
  - ➢ REMOVE & REPLACE FINGERS & SLIDING DOOR
  - ➢ ADJUST PARAMETER 64
  - ➢ ADJUST SPINDLE ORIENTATION
  - ➢ CHECK & ADJUST TOOL CHANGER FOR TOOL CHANGE OPERATION
  - ➢ VERIFY TOOL CHANGER & SPINDLE OPERATION

VF-2SS *SIDE MOUNT HIGH SPEED TOOL CHANGER / IN-LINE SPINDLE*

Completed

- ☐
  - ➢ PERFORM TOOL CHANGER RESTORE
  - ➢ REMOVE & REPLACE CAROUSEL & POCKETS
  - ➢ REMOVE & REPLACE TOOL CHANGER ARM / SET PARAMETER 64 AND SPINDLE ORIENTATION
  - ➢ VERIFY TOOL CHANGER & SPINDLE OPERATION

EC-400

Completed

- ☐ ADJUST THE PLATTER LIFT SWITCH
- ☐ PERFORM A PALLET CHANGER RESTORE
- ☐ REVIEW A TOOL CHANGER ALIGNMENT (Differences from VF)

HL-2

Completed

- ☐
  - ➢ PERFORM A CRASH RECOVERY
  - ➢ PERFORM AN A-AXIS MOTOR COUPLING ADJUSTMENT

TROUBLESHOOTING PROBLEMS

Completed

- ☐ SHUTTLE IN-OUT
- ☐ SERVO SYSTEM
- ☐ CAROUSEL ROTATION
- ☐ SHUTTLE DRIVE
- ☐ MACHINE POWER-UP

Classroom and lab will be available 2 hours before normal class hours. (0600-0800)

Normal Class Hours are 0800-1630

END USERS
ATTENDING THE HAAS
SERVICE MAINTENANCE & REPAIR COURSE

Eligibility: The end user must have a minimum of 5 Haas Machines. (Any combination of Verticals, Horizontals and Lathes).

Request for Training: All request for training must go through you local HFO

Cost: There is no cost for the class. (The end user is responsible for all the technicians' expenses while attending the class).

Haas Certification: Only HFO and Haas employees can be Haas Certified.

Haas Certified Technicians Only:

- Can repair machines under warranty
- Can load System Software
- Can give you a 90-day warranty on installed parts
- Can order parts from the Haas Factory

End Users: Cannot be Haas Certified. Upon completion of the course they will receive a Certificate of Attendance.