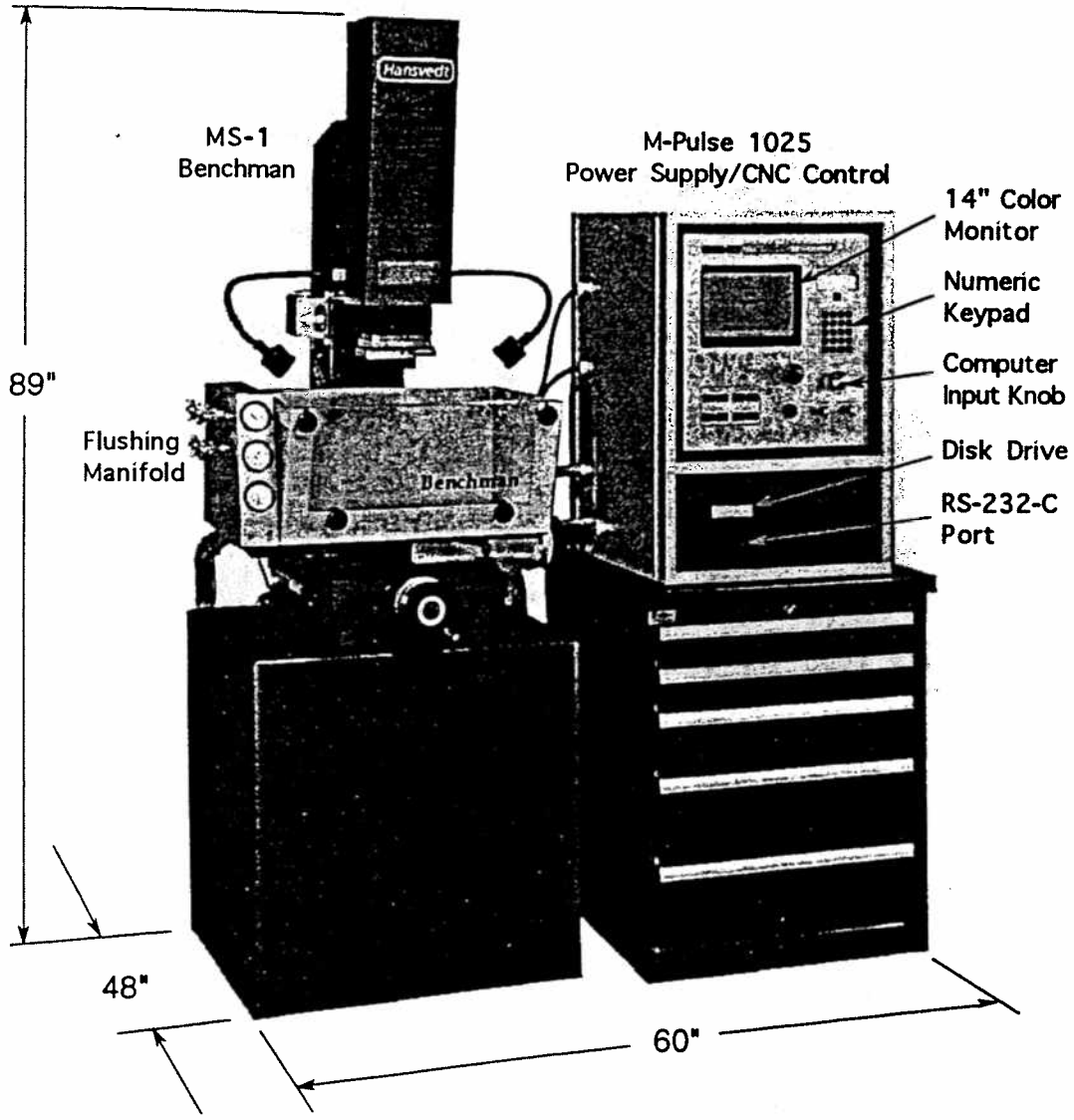
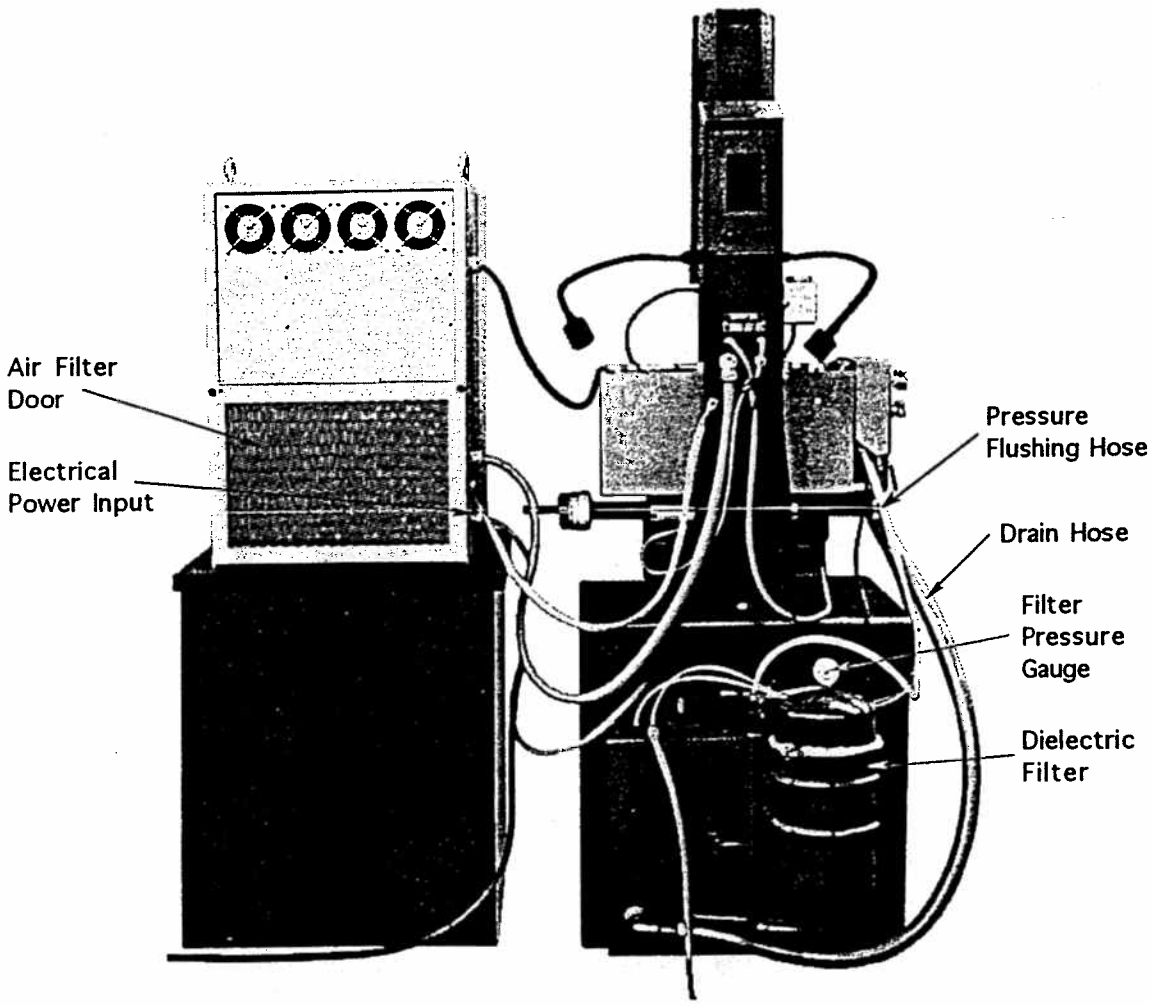
HANSVEDT
MS-1 BENCHMAN/M-PULSE 1025
CNC ELECTRICAL DISCHARGE MACHINE SYSTEM




Air Filter
Door
Electrical
Power Input
Pressure
Flushing Hose
Drain Hose
Filter
Pressure
Gauge
Dielectric
Filter

SPECIFICATIONS

Machine Tool

Positioning table travel	5.5" x 8.4" *(140 x 215mm)*
Worktable size	9" x 14.1" *(228 x 360mm)*
Worktank size	16" x 24" x 11" *(406 x 610 x 280mm)*
Platen-to-table, maximum	15.4" *(391mm)*
Ram travel	8" *(203mm)*
Platen size	4" x 6.4" *(102 x 163mm)*
Max. electrode weight	66 lbs. *(30 kg)**
Max. workpiece weight	220 lbs. *(100 kg)*

Power Supply

Maximum average current	25 amps
Peak current range	.2 to 75 amps
Number of peak current selections	25
Arc duration range	.1 to 1,800 μseconds
%On-time	.1% to 95%
Best surface finish	8 μinch AA

CNC Control

Memory capacity	30 MB
CRT display	14" VGA color *(365mm)*
Digital readout	.3" numbers, .0001" resolution, Z-axis
Input modes	Manual, RS-232, 3.5" disk drive
Output modes	RS-232, 3.5" disk drive
Servo controls	Edge find, Jog, Trace (Z), Z home, Tram, Zero set, Stop return, Line select, Start return
Programmable parameters	Z-cut depth, Peak current, Arc duration, %On-time, Polarity, Gap spacing, Servo speed, Current cut-off, XY prompt, Ram cycle, Flushing, Auto shut-off
Programming codes	Start, Linear, Rapid, Dwell, Pause, Goto, P(power)

Dielectric System

Worktank capacity	18 gal *(68 lit.)*
Reservoir capacity	45 gal *(170 lit.)*
Flushing pressure, adjustable	0-50 psi *(0-350 kPa)*
Vacuum	0-15 in. Hg *(0-52 kPa)*
Filtration	Replaceable 5 micron element

General

Height/width/depth	85" x 72" x 48" *(2,159 x 1,829 x 1,219mm)*
Net weight	1,850 lbs. *(840 kg)*
Color	Maroon and Putty
Power input	230 VAC, 60 Hz, 3 phase

STANDARD EQUIPMENT

- Rugged, cast iron machine tool with a precision V-way antifriction ram, V/flat Turcite lined worktable ways and non-influencing caliper worktable locks, mounted on a rigid steel base.
- Large worktank with clear plastic removable door.
- Ultra sensitive DC servo system with ballscrew drive.
- Dielectric fluid system including reservoir, 5-micron filter and manifold outlets for pressure, suction, pulse flush and worktank bypass.
- Worktank fluid level safety switch.
- Twin high intensity worklights.
- M-Pulse Model 1025, 25-amp power supply/control including:
  - 14" color VGA CRT,
  - 3.5" disk drive,
  - RS-232-C port.
- Lista power supply stand, stationary, 5-drawer, lockable stand provides convenient storage for tooling and electrodes.
- Finish Comparator Scale.
- Owner's manual, floor plan and electrical diagrams.

OPTIONAL EQUIPMENT AND TOOLING

OPTIONAL EQUIPMENT

- **Capacitor Mode.** .2 to 12 MFD, programmable.
- **Dielectric Temperature Control Unit.**
- **Programmable Indexer Control.**
- **XY Interactive Digital Readout.** .0001" resolution.
- **4" Column Riser.**
- **Transformer to Operate at 440V/60/3.**
- **PC Programming Package.**

TOOLING

- **V-Block Electrode Holder,** 1.5" capacity.
- **3R/Hansvedt Adaptor.**
- **3R tooling** is available upon request.

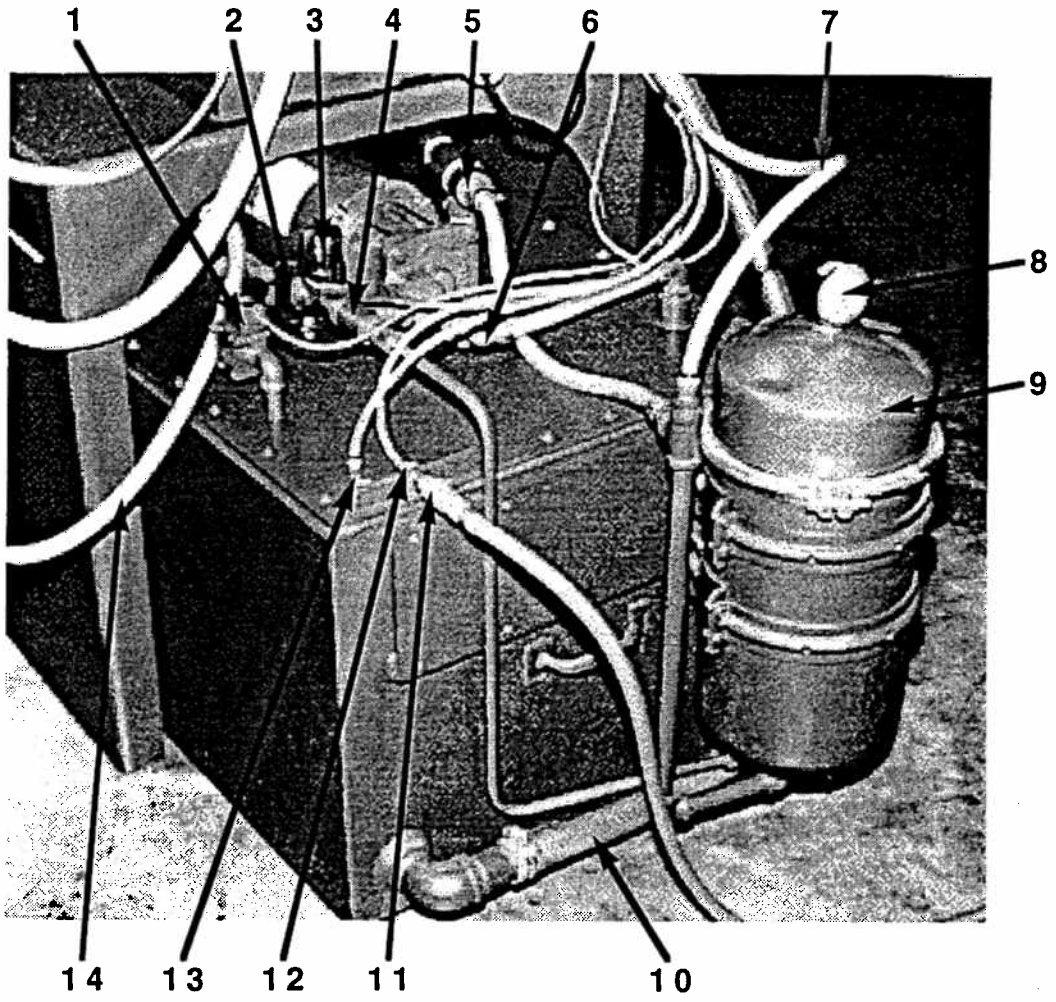
OTHER SELECTIONS

- Solid Crating for Export.
- Wired for other voltages and frequencies.
- Additional Owner's Manual.

DIELECTRIC CONNECTIONS

1. The 1/2" Poly-Flo line from the rear of the machine tool manifold must be connected to the output of the dielectric filter (#7 in photo. This is the coolant pressure line that provides clean dielectric to the worktank through the flushing manifold.

2. Connect the 1.25" ID fill/drain hose (#10 in photo) between the push-on fittings on the dielectric reservoir and the pipe on the lower left side of the worktank. Hose clamps are provided to ensure a secure connection.



1. Exhaust Valve
2. Low Pressure Switch
3. Over-Pressure Switch
4. Pump (Pressure side)
5. Pressure Relief Valve
6. Pump (Suction side)
7. Dielectric Fluid Pressure Line
8. Dielectric Pressure Gauge
9. Dielectric Filter Canister
10. Fill/Drain Hose
11. Shop Air Input
12. Manifold Air Pressure (labeled "F")
13. Manifold Air Return (labeled "G")
14. Dielectric Pump Cable

AIR CONNECTIONS

1. Connect the 1/16" diameter flexible hose from the rear of the manifold to the fitting on the side of the exhaust valve. The exhaust valve (#1 in photo) is located at the top of the dielectric reservoir.

2. Exiting from the rear of the machine tool manifold are two small Poly-Flo lines, "F" & "G": "F" is an air pressure line and "G" is an air line that pressurizes the reservoir. Connect these lines to the fittings on the top rear of the dielectric base (#12 and #13 in photo).

3. Connect a compressed air source (60-90 psi recommended for fast fill) to the dielectric reservoir at location #11 as indicated in the photo. It is recommended that a trap in the input air line be used to collect water and foreign debris.

FILLING WITH DIELECTRIC OIL

1. Position the worktank door on the worktank.

2. Place the HOLD/DRAIN switch in the DRAIN position. The exhaust valve will be opened and will allow the dielectric reservoir to vent air as the oil enters the reservoir. Check that the pet cock on the filter is closed. (Important: shop air must be connected before filling).

3. Fill the worktank with Hansvedt EDM-250 or an equivalent dielectric oil. Although the reservoir capacity is 45 gallons, it is recommended that only 42-44 gallons of dielectric oil be used. The fluid level can be observed in the 1.25" clear fill/drain hose. If the oil level in the reservoir is too high there will be an overspill through the air exhaust valve. If the oil level is too low, air will be forced into the worktank instead of oil when the worktank FILL valve is actuated. Clean dielectric oil may be added simply by pouring it directly into the worktank.

MACHINE LUBRICATION

Actuate the one-shot lubricator when the machine is installed. The table ways, ballscrews and certain bearings require periodic lubrication. Refer to Chapter 5 "Maintenance and Service" for lubrication instructions.

POWER INPUT REQUIREMENTS

Standard electrical components are provided for operation between 195 and 250 Volts A. C., 60 hertz, 3 phase, 4.5 KVA, supplied with four #12 conductors. The primary electrical service for the MS-1 enters via the cord grip fitting at the left rear corner of the power supply/control cabinet. The main circuit breaker switch on the right side of the cabinet includes a lockable cover for machine maintenance.

The power supply/CNC control cabinet contains all of the electrical equipment, including the overload relays for the dielectric pump motors. For operator protection, when the doors of the enclosure are opened, a safety interlock trips a relay next to the circuit breaker inside the cabinet.

A HANSVEDT SERVICE REPRESENTATIVE WILL COMPLETE THE WIRING DURING THE START-UP PROCEDURE.

START-UP AND CHECK-OUT

HANSVEDT WILL PROVIDE A SERVICE REPRESENTATIVE TO START UP THE MACHINE, INCLUDING: (1) FINAL WIRING CONNECTIONS, (2) TRANSFORMER TAP CHECK-OUT, (3) PUMP MOTOR TAP/ROTATION CHECK-OUT, AND (4) POWER-UP TO ALL SYSTEMS.

BEFORE SCHEDULING A SERVICE REPRESENTATIVE, ELECTRICAL SERVICE SHOULD BE BROUGHT TO THE POWER SUPPLY AND THE RESERVOIR SHOULD BE FILLED WITH DIELECTRIC FLUID.

BASIC PRECAUTIONS

1. DO NOT OPERATE THE MACHINE UNATTENDED, unless it is equipped with an approved fire suppression system.
2. Always submerge the cutting gap with a 2 INCH MINIMUM OF DIELECTRIC FLUID.
3. Always set up the workpiece so that the START position of the program is 2 inches below the surface of the dielectric fluid in the worktank.
4. Always position the worktank float switch at the dielectric fluid level mark on the switch cover.
5. Never set the FAULT RETRACT so that the electrode could retract out of the dielectric fluid.
6. In the event of an oil fire actuate the EMERGENCY STOP switch and use carbon dioxide or AFFF to extinguish. DO NOT USE WATER.
7. Be absolutely sure that there are no kinks or obstructions in fluid lines. Kinks or obstructions in the large fill/drain hoses or the flushing lines can cause damage and fluid loss.
8. Do not touch electrode or platen when gap power is on.