Mod#	ECO#	Date Issued	CHANGE	REASON
1	(16) SUPERSEDED ECO 75	5-1-79	Add .1/10V cap.	
2	75	12-14-79	Change capacitor C8 from .1µf to 6.8µf. This is the one added in ECO 16.	In a CS-3 when selecting a 299B, current from the Lamp Select lines couples to the Reset line in the card cage ribbon cable going to the front panel, causing the system to hang up. The 6.8µf cap in place of the .1µf reduces the coupling and eliminates the problem.
3	202 Superceded <248>	4-29-80	Add voltage divider (R1- 470Ω, R2- 10Ω) to +5V regulator on power supply. PCB Test should use 330Ω/10Ω if necessary.	PerSci disk drives require a minimum of +5.00 Volts, max of 5.25V. The divider insures that the voltage does not fall below the 5.00V level, which has been a problem.
4	248	5-13-80	Supercedes ECO 202. Add 5Ω resistance in series with GND lead of +5V regulators (see Diagram). Two 10Ω resistors (stock items) are to be used in assy. Cut GND trace (1), shown in Diagram. Cut GND trace (2). Jump from -5V Reg. Ground plane to GND.	The 5Ω resistor provides the necessary boost to the +5V output and is much easier to retrofit onto the DPS-2 than the divider of ECO 202.
5	451	10-10-80	Add two 1µf/50V mono caps to DPS-2 assembly. Place one of these caps between the input of the 24 volt regulator and ground and place the other between the output of 24V regulator and ground.	The 24V output on some DPS-2's has a tendency to oscillate for several hundred msec's following power on. Excessive current flow during this period will stress the 24V regulator enough to result in a reduction in the MTBF (Mean Time Before Failure) of the 24V supply. The capacitor used should be a fast type of the monolithic ceramic or solid tantalum variety (not an electrolytic type).

Mod#	ECO#	Date Issued	CHANGE	REASON
1	395	8-28-80	Cut pin 3 of the Gnd connections on the DC power connector.	Polarizing key inserted on mating DC power cable connector.

3-3-80

Mod#	ECO#	Date Issued	CHANGE	REASON
1	394	8-28-80	Cut pin 3 of the Gnd connections on both DC power connectors.	Polarizing key inserted on mating DC power cable connector.

3-3-80

Mod#	ECO#	Date Issued	CHANGE	REASON
1	369	8-14-80	Add four 1 MFD caps between +8V and GND. Attach to solder side of board in four places: at slot 1 　　　　　　　slot 7 　　　　　　　slot 14 　　　　　　& slot 21 (Affects all previous Rev's also.)	The addition of the caps reduces high frequency bus noise (> 10 MHz), improving overall system reliability.

Mod#	ECO#	Date Issued	CHANGE	REASON
1	549	1-22-81	On CRT connector board, replace C283 .001 µf 2000 WVDC with .02 µf 720 WVDC min. cap. Part no. 004-0093.	With only .001µf present between chassis ground and signal ground, the magnetic flux induced signal from the high voltage section is not being completely shunted to signal ground and is being coupled, in part, to the incoming video signal. This causes very noticeable 'ringing' on the left and right sides of the monitor's screen.

3-3-80

Mod#	ECO#	Date Issued	CHANGE	REASON
1**	584	2-2-81	On Read/Write board #310101 only: Remove capacitor C60 (near 2B pin 6, 7, & 8)	On drives with Read/Write board #310101 there is a possibility for the R/W clock to have unwanted jitter. This will cause the data written to have jitter, and will result in CRC errors on every sector.
2**	585	2-2-81	On Read/Write board #310101 only: Remove the R/W board from the board set and remove diode CR14 and resistor R49 (2KΩ); both devices are near the center of the board. Replace CR14 with a 30 guage wire.	It is possible to erase data on the highest number head (hd.#2 on 7710) of the cylinder last accessed, on a power cycle with certain power supplies.
3**	586	2-2-81	For all IMI drives with auto carriage lock feature, ie. serial numbers 5504, 5506, 5513, 5579, 5585, and greater than serial #5587: Turn the drive on its side and remove the four screws that hold the motor cover on. Remove motor cover. Put a jumper across CR2 on the motor control board #310051. This will allow the motor to keep the 24V line long enough after power down to retract the carriage. Put the motor cover and four screws back on the drive and the drive is ready.	Carriage not retracting fully on powering down.
4**	611	2-18-81	For Servo board #310176 only: 1) Replace R43 (a 4.2K resistor near pin 7 of 4D) with a 2K resistor, P/N 001-0054. 2) Replace R26 (a 30.1 K resistor near pin 3-8 of 5D) with 26.7 K resistor 1/8 Watt 1%, P/N 001-0196.	When the drive is operating at elevated temperatures, there is a possibility of the head losing control and running into the crash stop during a seek to cylinder zero. Symptom: The drive may have intermittent re-zero problems after a reset.

Mod#	ECO#	Date Issued	CHANGE	REASON
5 (Per. as well)	655	3-9-81	On drives with Auto Carriage Lock only (#5587 < Serial Number < #7100): Replace PROM A12 (330092A) on the micrologic card with PROM (330092B). *IMI will be now shipping the new PROM. This needs to be implemented on all drives already in the field.	IMI introduced a new PROM on their drives with the auto carriage lock. This PROM does not release 'CMD ACK' if 'CMD STROBE' is driven low for more than one second causing the drive to remain 'busy' all the time. On reset, the PIO outputs are tristated and 'CMD STROBE' is driven low through an inverter. Typical reset time is a second or more causing the drive to remain 'busy' and generate an 0502 error.

Mod#	ECO#	Date Issued	CHANGE	REASON
1	178	4-2-80	Stop Block. The drives now being received from Tandon have an adjustable head stop. Drives which do not have this stop installed should be cleaned out of the peripherals area & stockroom by April 28. After this date stop blocks should be installed in all Tandons coming out of peripherals & customer repairs.	Without this stop, the head can go beyond track zero and the software not recover from this situation.
2	338	7-19-80	Replace plastic write-protect switch lever with nylon lever on all Tandons in peripherals & repairs. Use Loctite Super Bond 416 to hold in place.	The plastic levers are not reliable in the field.

3-3-80

*Revisions pertain to
the main PCB of the
drive.

Mod#	ECO#	Date Issued	CHANGE	REASON
1	102 super-ceded ECO 213	2-9-80	Add 100mfd/10V Tantalum capacitor from base of Q1 to GND (or across R31) on main logic board. Effective through main PCB Rev. J/M.	If the heads are centered over a track on power up the firmware in the drive responds to a spike on TRØØ causing the drive to think it's on track zero and not restore. Adding the cap lowers the rise time on Q2 and eliminates the spike on TRØØ. (This problem will cause error 3C when selecting a drive in RDOS.
2	167 super-ceded ECO 214	3-28-80	Change R96 to 1.2K, per ECO 214 resistor and add a 680Ω resistor from the top end of R97 to the +5V supply at IC39-14 on main electronic PCB. Effective through Rev. J/M.	To increase hysteresis at the detent comparator which will increase reliability of track counting by 8748 microprocessor and thus reduce seek errors.
3	168 super-ceded ECO 215	3-28-80	Add a 100K resistor in parallel with R136 (10K) on main PerSci electronic PCB. Effective through Rev. J.	To increase write current to overcome overwrite problems which lead to read and read after write errors.
4	175 518	4-2-80 12-10-80	Select modification: Cut trace between select points 11 & 12. Solder one jumper pin each into select points 1, 2, 11, & 12. Add jumper between select points 11 & 12 to designate drive A/B, or between points 1 & 2 to designate drive C/D. For Rev.R boards, use jumper pins as installed by Persci.	Necessary to give C/D designation option
5	213	4-24-80	ECO 102 superceded for those drives later than Rev. J/M. 100 mfd cap no longer necessary.	Changes made by PerSci in their drives correct the problem. (See ECO 213 and attached Field Change Bulletin No. 2).

Mod#	ECO#	Date Issued	CHANGE	REASON
6	214	4-24-80	ECO 167 corrected and superceded. R96 must be 1.2K. But addition of this and the 680Ω resistor in no longer necessary in-house for drives later than Rev.J/M.	Changes made by PerSci in their drives.
7	215	4-24-80	ECO 168 superceded, for drives later than Rev. J. The 100K resistor in parallel with R136 is no longer necessary.	Changes made by PerSci- R136, 137, & 138 values.

Mod#	ECO#	Date Issued	CHANGE	REASON
1	102 super-ceded ECO 213	2-9-80	Add 100 mfd 10V Tantalum capacitor from base of Q1 to GND (or across R31) on main logic board. Effective through main PCB Rev. J/M.	It the Heads are centered over a track on power up the Firmware in the drive responds to a spike on $\overline{TR00}$ causing the drive to think it's on track zero and not restore. Adding the cap. lowers the rise time on Q2 and eliminates the spike on $\overline{TR00}$. (This problem will cause error 3C when selecting a drive in RDOS).
2	104	2-6-80	Add .022 mfd cap across each of the two eject switches in the front of drive chassis.	To reduce coupling between the drive activity lights lines and the remote eject lines.
3	167 super-ceded ECO 214	3-28-80	Change R96 to 1.2K (per ECO 214) resistor and add a 680Ω resistor from the top end of R97 to +5V supply at IC39-14 on main electronic PCB on PerSci 299B. Effective through Rev. J/M.	To increase hysteresis at the detent comparator which will increase reliability of track counting by 8748 microprocessor and thus reduce seek errors.
4	168 super-ceded ECO 215	3-28-80	Add a 100K resistor in parallel with R136 (10K) on main PerSci electronic PCB Effective through Rev. J.	To increase write current to overcome overwrite problems which lead to read and read after write errors.
5	175	4-2-80	Select modification: Cut trace between select points 11 & 12 Solder one jumper pin each into select points 1, 2, 11, & 12. Add jumper between select points 11 & 12 to designate drive A/B, and between points 1 & 2 to designate drive C/D.	Without this modification, the drive could not be designated C/D.
	518	12-10-80	For ≥ Rev. R boards, use jumper pins as installed by Persci.	

Mod#	ECO#	Date Issued	CHANGE	REASON
6	176	4-2-80	PerSci 299B's used in CS-3's only: Remove front bezel. Remove front drive activity lights.	There is not enough clearance to leave on the front bezel when mounting in a system three. The lights on the drive are redundant and increase the load on the activity light devices.
7	177	4-2-80	Eject mod., for all PerSci 299B's: On the bottom of the main PCB on the PerSci drive connect the following wires from the Cromemco remote eject cable to the given pins on J4: Signal Wire Pin B Lamp Red 9 A Lamp Brown 13 Eject B Yellow 16 Eject A Orange 24&26	Without this change the front eject switches on the CS-3 would not work.
8	213	4-24-80	ECO 102 superceded for those drives later than Rev. J/M. 100 mfd cap no longer necessary.	Changes made by PerSci in their drives correct the problem. (See ECO 213 and attached Field Change Bulletin No. 2).
9	214	4-24-80	ECO 167 corrected & superceded. R96 must be 1.2K. But addition of this and the 680Ω resistor is no longer necessary in-house for drives later than Rev.J/M.	Changes made by PerSci in their drives.
10	215	4-24-80	ECO 168 superceded, for drives later than Rev. J. 100K resistor in parallel with R136 is no longer necessary.	Changes made by PerSci- R136, 137, & 138 values.

Mod#	ECO#	Date Issued	CHANGE	REASON
11	216	4-24-80	ADD: 1. 1 mfd/100V cap between J3-1 and J3-7. *(Should be on by PerSci ≥ Rev. J/N). 2. 510 pf/100V cap between J3-1 and signal ground plane (J3-7 ⌐). *(Put on by PerSci ≥ Rev.J). Cromemco is cutting trace between chassis GND and signal GND at pt. A on main PCB. *(Not done by PerSci)	To separate chassis and signal ground, to prevent system ground loop problems. The 510 pf cap is for high frequency shunt to chassis GND, and the 1 mfd paper cap is for low frequency shunt to chassis GND.
12	298 super-ceded ECO 446	6-23-80	Install jumper pins on the PerSci 299 Tested & Unmodified, rather than on the Tested & Modified.	Changing the drive select on a PFD requires cutting a trace and soldering a jumper in the field.
13	423	9-16-80	Add a 10 Megohm resistor between signal ground & earth ground, J3-7 & J3-1. (Across C98-see diagram in ECO).	The capacitor between the grounds can accumulate a high voltage which damages the terminal and 16FDC. It needs a bleeder resistor.
	443	10-7-80	Install on system PerSci's only, not necessary for PFD PerSci's.	PerSci's used in PFD do not have connection cut between signal & earth GND.
14	444	10-7-80	Install 6.8µf/10V capacitors on the eject switches in parallel with the 0.022µf ceramics. The positive end is down on the left side (facing PerSci) and up on the right hand side.	On some drives, it the eject button is released at just the right time, the eject motor will stop before it pushes the diskette out. The eject button then has no effect.
15	446	10-8-80	ECO 298 superceded; ECO 175 to apply to both PerSci assy's (CS-3 & PFD). i.e. Augat jumper pins to be on both.	The PerSci 299 Tested & Unmodified was eliminated as a subordinate assy to the Tested & Modified. It is being reinstated as a parallel assembly. (Thus, there is now a PerSci CS-3 and a PerSci PFD).

Mod#	ECO#	Date Issued	CHANGE	REASON
1	544	1-16-81	Cut connection between R1 (+8V) pad and Groundplane.	The pad connecting R1 to the +8V supply is shorted to the groundplane.

3-3-80