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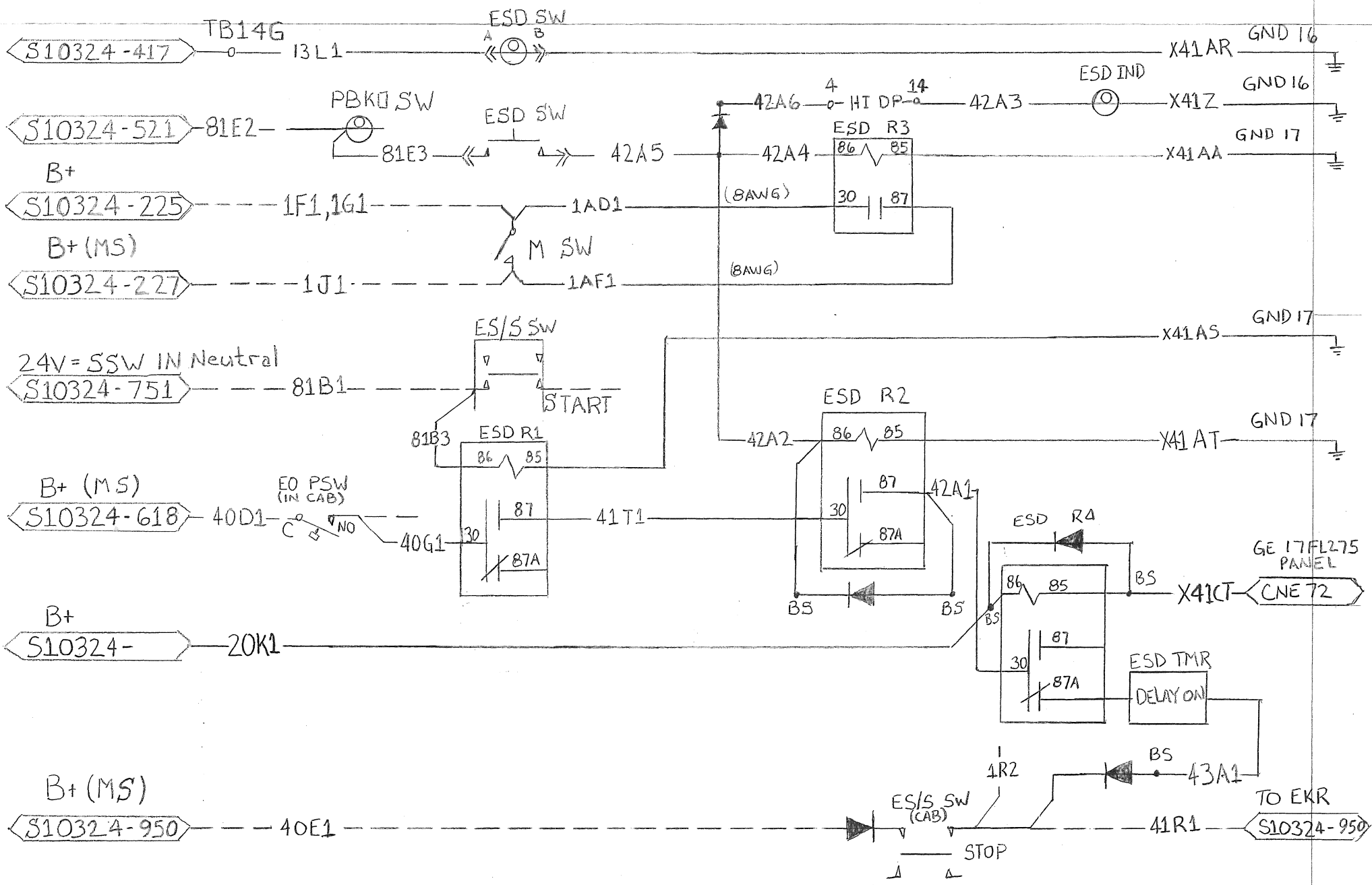

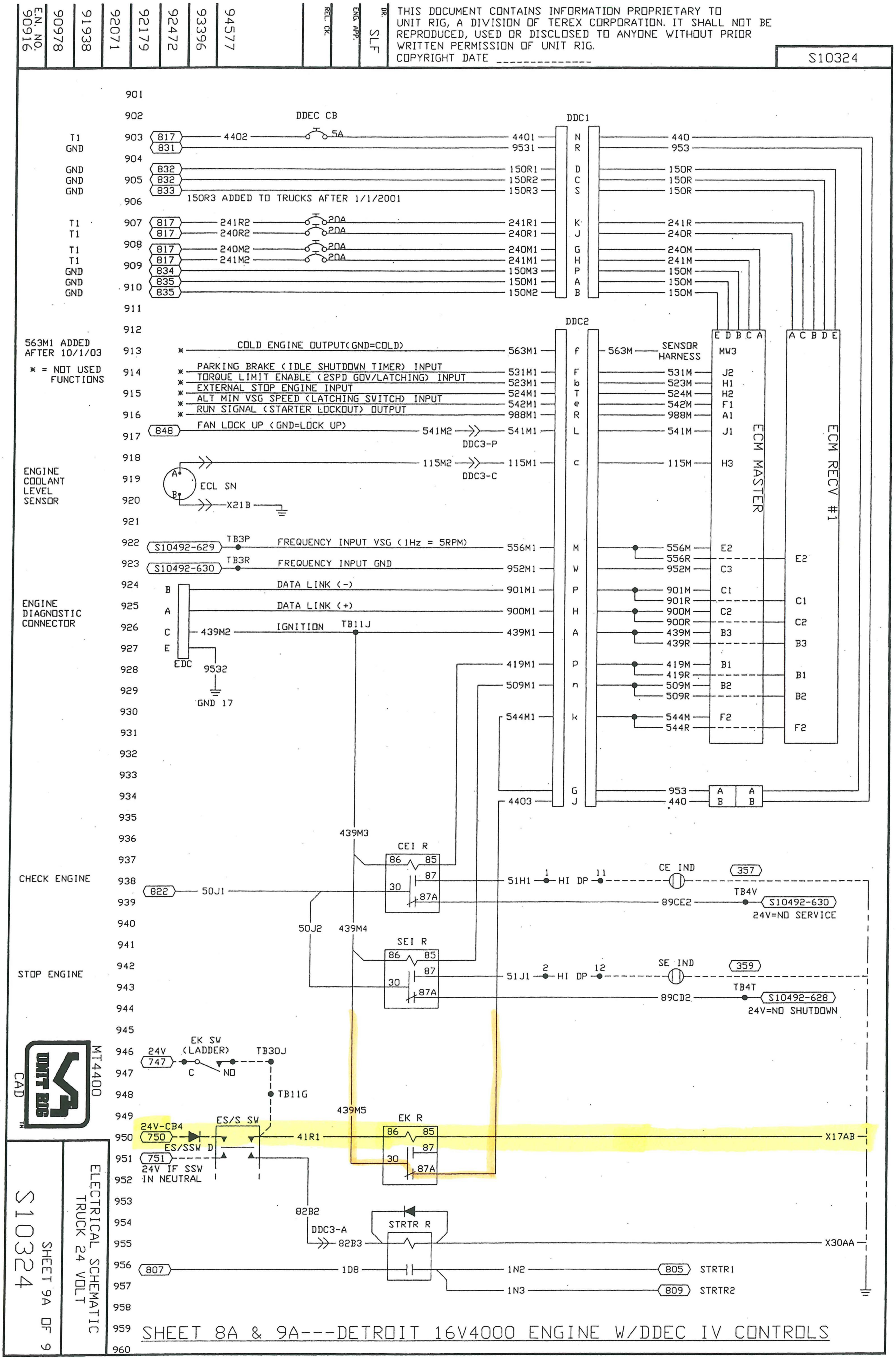
E.N. NO. 90916
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REL. CK.
ENG APP.
DR. SLF
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COPYRIGHT DATE ______________
S10324
DDEC CB
5A
DDC1
150R3 ADDED TO TRUCKS AFTER 1/1/2001
DDC2
563M1 ADDED AFTER 10/1/03
* = NOT USED FUNCTIONS
COLD ENGINE OUTPUT(GND=COLD)
PARKING BRAKE (IDLE SHUTDOWN TIMER) INPUT
TORQUE LIMIT ENABLE (2SPD GOV/LATCHING) INPUT
EXTERNAL STOP ENGINE INPUT
ALT MIN VSG SPEED (LATCHING SWITCH) INPUT
RUN SIGNAL (STARTER LOCKOUT) OUTPUT
FAN LOCK UP (GND=LOCK UP)
SENSOR HARNESS
ECM MASTER
ECM RECV #1
ENGINE COOLANT LEVEL SENSOR
ECL SN
FREQUENCY INPUT VSG (1Hz = 5RPM)
FREQUENCY INPUT GND
ENGINE DIAGNOSTIC CONNECTOR
DATA LINK (-)
DATA LINK (+)
IGNITION
EDC
GND 17
CHECK ENGINE
CEI R
CE IND
HI DP
24V=NO SERVICE
STOP ENGINE
SEI R
SE IND
24V=NO SHUTDOWN
EK SW (LADDER)
24V-CB4
ES/S SW
ES/SSW D
24V IF SSW IN NEUTRAL
EK R
STRTR R
STRTR1
STRTR2
UNIT RIG
MT4400
CAD
ELECTRICAL SCHEMATIC TRUCK 24 VOLT
SHEET 9A OF 9
S10324
SHEET 8A & 9A---DETROIT 16V4000 ENGINE W/DDEC IV CONTROLS

E.N. NO. 90916	90978	91938	92071	92179	92472	93396	94577	REL. CK.	ENG. APP.	DR. SLF

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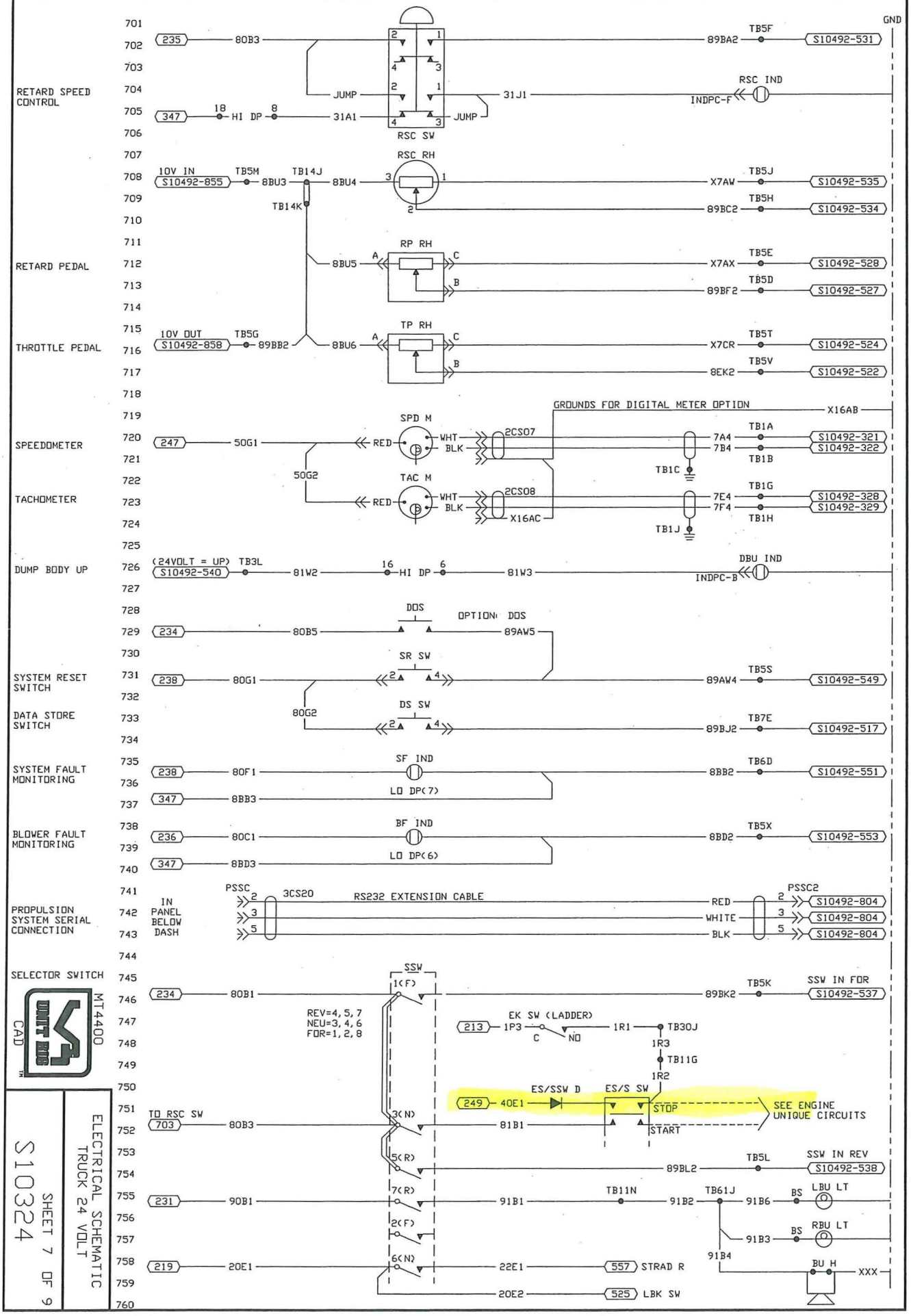

ELECTRICAL SCHEMATIC
TRUCK 24 VOLT

SHEET 7 OF 9

S10324

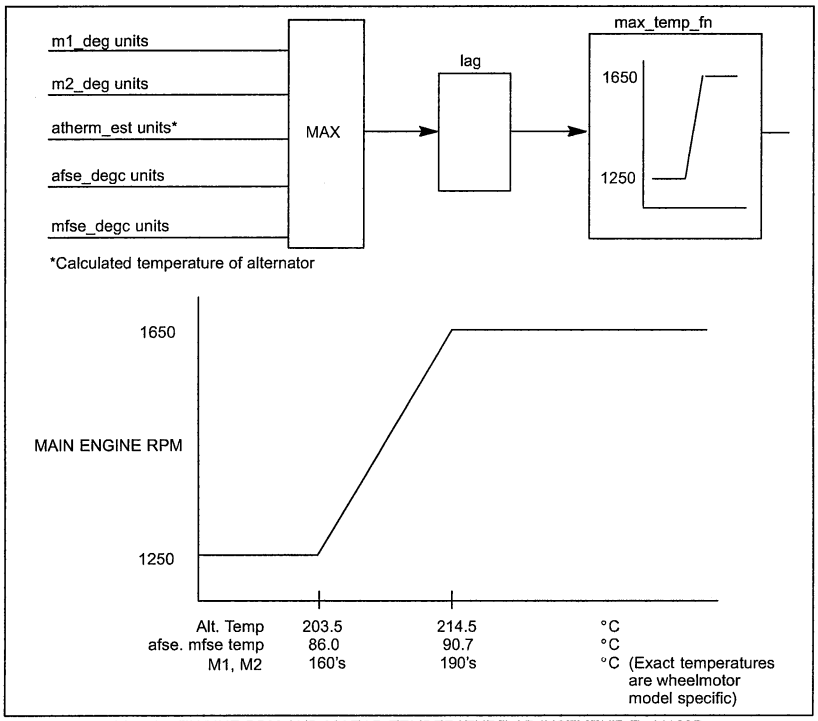

FIG. 42. ENGINE RPM AND MOTOR TEMPERATURE ADJUSTMENT. E–41189B.

ENGINE RPM AND MOTOR TEMPERATURE ADJUST

For Statex III trucks with the OEM option ***GE engine control*** enabled, engine rpm adjustment due to thermal measurements of the Motorized Wheels, the static exciters, and the calculation of the alternator temperature is shown in Fig. 42.

Each temperature signal is scaled to a value which will permit direct comparison. The maximum value is then put through a "filter" with a 1.4 second time constant to bypass the need for hysteresis in the speed versus "max temp" function.

The output of the function is used to set the minimum engine rpm that the control system will command in the engine rpm "locked" mode and retarding. "Lock" occurs after the engine is held above 1250 rpm for a delay time and the truck is commanded into the coast state.

58 104

84026F

	ITM	QTY	UM	COMPONENT	DESCRIPTION
	1	2		10122	NUT-HEX(6-32 NC)
	2	12		1021686	TERMINAL, ELECTRIC 18-14 AWG
	3	2		12867	NUT-HEX, 10-32
	4	2		16378	SCREW, MACH, RHD, 10-32NF X 3/4 GR 2
	5	2		16749	TERM. -ELEC. #8: 10
	6	2		17173	TERM. ELEC. #8: 3/8
	7	4		20691	TERMINAL-BUTT SPLICE 22-16 AWG
	8	13		20707	TERMINAL-RING TONGUE #10 HOLE, 18 AWG
	9	6		20708	TERMINAL-FEMALE TAB 1/4" WIDE, 22-18 AWG
	10	2		22048	WASHER, FL#10 (SAE) X .437 OD
	11	4		25487	DIODE-SILICON 3 AMP CAPACITY
	12	2		25650	SCREW, MACH, RHD, 6-32NC X 5/8 GR 2
	13	2		29537	WASHER, LK, HELICAL, #10 X .334 OD
	14	10	FT	28625	CABLE POWER #8 AWG
	15	60	FT	53398	CABLE-20GA SING. /WIRE
	16	3		53898	RELAY, SPDT 24V
	17	1		55038	SHELL, CONNECTOR
	18	4		55039	TERMINAL, 3/16 SPADE
	19	1		55720-	MODULE, TIMING
	20	1		55962	RELAY-POWER, 24VOLT
	21	3		56274	TERMINAL, SPADE TONGUE #6 STUD 22-16AWG
	22	1		83338B	SW-INT'L SYM(DWG A-K) ROCKER SWITCH-MOM ON/ OFF/SPST
	23	1		83339V	LENS, RKR SW(DWG A-Z) TIMER
S	24	1		83340A	LIGHT-IND (83340A-Z) WITH AMBER FILTER
	25	1		84784B	CARD, IND (DWG A-Z) TIMER

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REL. CK.

91769
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E.N. NO.

TEREX MINING

ENGINE SHUTDOWN DELAY ASSEMBLY

SHEET 2 OF 2
84026F

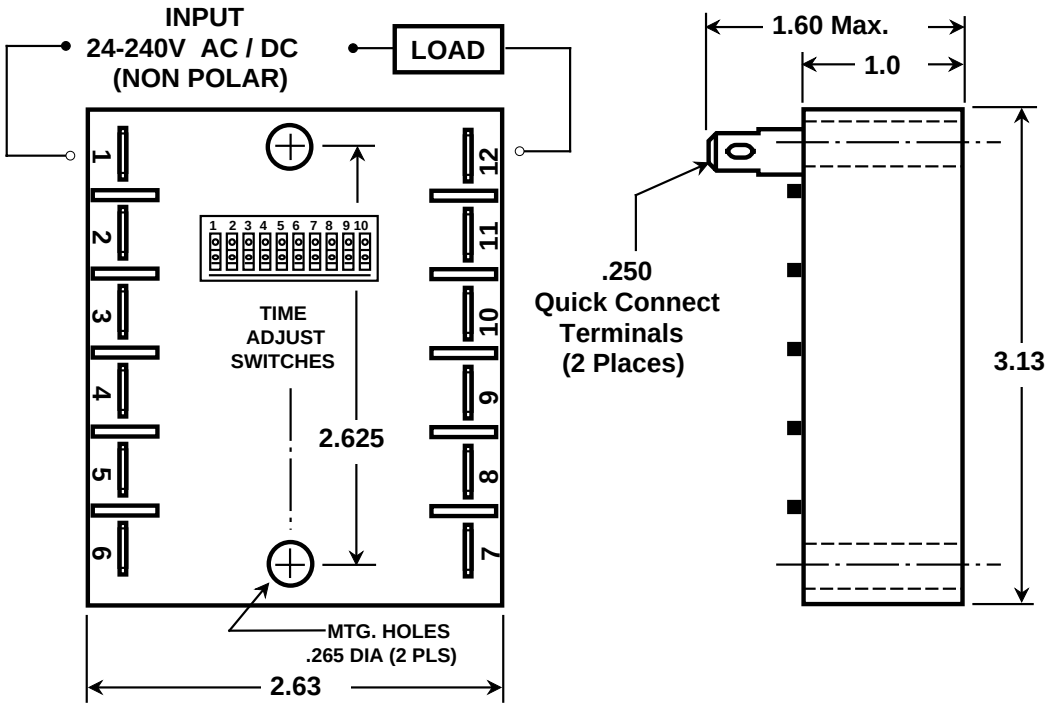
Solid State Timers and Controllers

P438USA

Power Universal Switch Adjustable Time Capsule ®

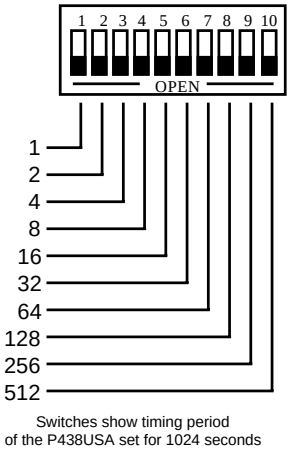
The Model P438USA is a higher powered version of the most popular of all Artisan Controls Corporation Time Capsule ® devices, the model 438USA. By merely connecting the two terminals in series with any load circuit drawing between ten milliamperes and three amperes operating from any voltage between 24 volts and 240 volts AC or DC, the P438USA turns that load circuit into a delay on make timing circuit. Set the 10 DIP switches to the required delay, and apply operating voltage. When the operating voltage is applied, a small amount of current will flow through the load and the timer (leakage current). At the end of the delay period, the model P438USA turns ON and full load current is permitted to flow.

Mechanical & Wiring . . . . . .

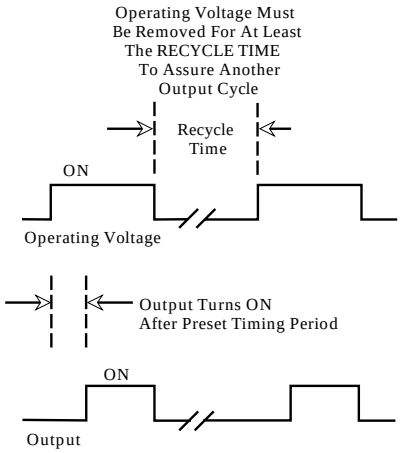


How The DIP Switches Work . . . . . Timing Diagram . . . . . .

Switch #1 will add 1 second to the timing period when open. Switch #2 will add 2 seconds to the timing period when open. Switch #3 will add 4 seconds to the timing period when open. Switch #4 will add 8 seconds to the timing period when open. This binary progression permits delay periods ranging from 1 second to 1024 seconds in 1 second increments. The switch values are doubled (2 - 2048 seconds) for the model 438USA-1 .



Switches show timing period of the P438USA set for 1024 seconds



Tel: 201-428-1770 • Fax: 201-428-1426 • Toll Free: 800-457-4950

Artisan Controls Corporation, 5 Eastmans Road, Suite 100, Parsippany, New Jersey 07054, USA

Solid State Timers and Controllers

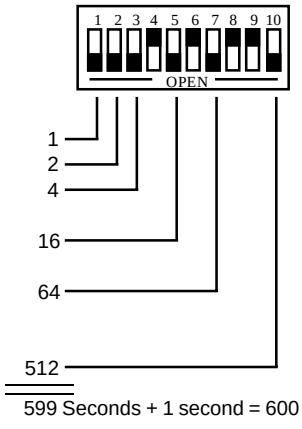
Specifications

Operating Voltage:	24 to 240 Volts AC 50/60 Hz or DC.
Timing Mode:	Delay-On-Make, External load energizes after preset timing period as set by the 10 DIP switches.
Timing Range:	Digital timing is DIP switch programmable from 1 to 1024 seconds, or 2 - 2048 depending on model. See *Ordering Information*.
Timing Adjustment:	From 1 second (All Closed) to 1024 seconds (All Open) in 1 second increments for the P438USA and from 2 seconds (All Closed) to 2048 seconds (All Open) in 2 second increments for the P438USA-1.
Programmable Timing Tolerance:	±10%
Timing Variation:	±15% worst case at any combination of operating voltage and temperature.
Repeatability Of Timing Period:	±1% nominal.
Recycle Time:	50 milliseconds if output is ON, 200 milliseconds during a timing cycle while output is OFF.
Output Rating:	10 milliamperes to 3 amperes inductive with inrush current to 50 amperes for 8 milliseconds.
Output Voltage Drop in "ON" State:	4 volts maximum.
Leakage Current in "OFF" State:	0.6 mA @ 24V, 1.8 mA @48V, 5.4 mA @120V, 11.4 mA @ 240V.
Transient Protection:	Maximum transient voltage protection is 6000 volts as delivered through a source resistance of 30 ohms with a maximum duration of 8.3 milliseconds.
Operating Temperature:	-20˚C to +85˚C
Humidity:	95% condensing
Terminations:	Two (2) .25 Faston type.
Data Sheet Revision Date:	May 3, 1995

Setting The DIP Switches For A Delay Of 600 seconds (P438USA)

To illustrate the setting of the DIP switches, assume that a 1200 second delay period is to be programmed by the 10 DIP switches on the model P438USA. In order to achieve the 600 seconds we must add an additional 599 seconds to the initial minimum delay of 1 second. Begin with all DIP switches closed. Now open switch #10 and subtract its value of 512 seconds from the 599, the result is 87. Move down to the next lower DIP switch and repeat the process. However, switch #9 (256 seconds) is greater than the 87 seconds, so return switch #9 to the closed position and move down to the next lower switch #8. Switch #8 (128 seconds) is still greater than the 87 seconds, so return switch #8 to the closed position and move down to the next lower switch #7. Switch #7 (64 seconds) is now subtracted from the 87 resulting in 23 seconds remaining. Leave switch #7 in the open position and move down to switch #6. Switch #6 (32 seconds) is again greater than the 23 seconds, so return switch #6 to the closed position and move down to the next lower switch #5. Switch #5 (16 seconds) is now subtracted from the 23 resulting in 7 seconds remaining. Leave switch #5 in the open position and move down to switch #4. Switch #4 (8 seconds) is again greater than the 7 seconds, so return switch #4 to the closed position and move down to the next lower switch #3. Continue this procedure with switches #3, #2, and #1, which will all be moved to the open position. This technique will work for any time from 1 to 1024 seconds.

For the model P438USA-1 double all switch values.



Ordering Information

Part Number	Time Range	Operating Voltage
P438USA	1 - 1024 Seconds	24V - 240V AC or DC
P438USA-1	2 - 2048 Seconds	24V - 240V AC or DC

Tel: 201-428-1770 • Fax: 201-428-1426 • Toll Free: 800-457-4950

Artisan Controls Corporation, 5 Eastmans Road, Suite 100, Parsippany, New Jersey 07054, USA

TOLERANCES: UNLESS OTHERWISE SPECIFIED

DECIMAL	FRACTIONAL	ANGULAR
.XXX ± .010	± 1/8	± 1/2°
.XX ± .03		
.X ± .1		

5720

SPECIFICATIONS

ARTISAN P/N: 438USA

MANUFACTURER: ARTISAN CONTROLS CORPORATION, 111 CANFIELD AVE, BLDG B15-18, RANDOLPH, NJ 07869

OPERATING VOLTAGE: 19 TO 288 VOLTS AC 50/60 HZ OR DC

TIMING MODE: DELAY-ON-MAKE, EXTERNAL LOAD ENERGIES AFTER PRESET TIMING PERIOD AS SET BY 10 DIP SWITCHES

TIMING RANGE: DIGITAL TIMING IS DIP SWITCH PROGRAMMABLE FROM 1 TO 1024 SEC.

TIMING ADJUSTMENT: FROM 1 SEC.(ALL CLOSED) TO 1024 SEC.(ALL OPEN) IN 1 SEC. INCREMENTS

PROGRAMMABLE TIMING TOLERANCE.: ±10%

TIMING VARIATION: ±15% WORST CASE AT ANY COMBINATION OF OPERATING VOLTAGE AND TEMPERATURE

REPEATABILITY OF TIMING PERIOD: ±1% NOMINAL

RECYCLE TIME: 50 MILLISECONDS IF OUTPUT IS ON. 200 MILLISECONDS DURING A TIMING CYCLE WHILE OUTPUT IS OFF.

OUTPUT RATING: 10 MILLIAMPERES TO 1 AMPERE INDUCTIVE WITH INRUSH CURRENT TO 25 AMPERES FOR 8 MILLISECONDS.

OUTPUT VOLTAGE DROP IN "ON" STATE: 4 VOLTS MAXIMUM.

LEAKAGE CURRENT IN "OFF" STATE: 0.6 mA @ 24V, 1.3 mA @48V, 5.4 mA @120V, 11.4 mA @240V.

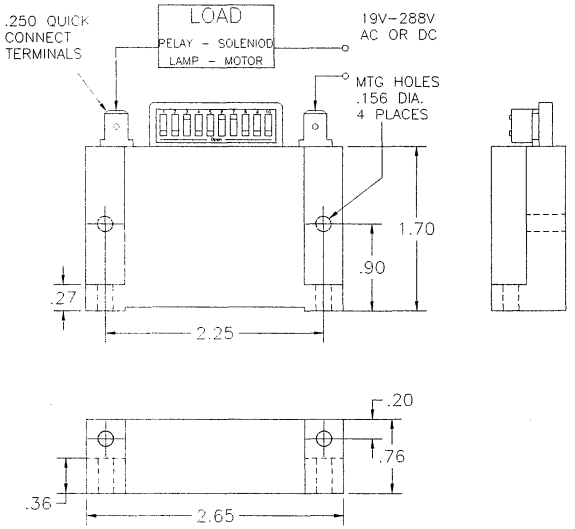
TRANSIENT PROTECTION: MAXIMUM TRANSIENT VOLTAGE PROTECTION IS 6000 V AS DELIEVED THROUGH A SOURCE RESISTANCE OF 30 OHMS WITH A MAX DURATION OF 8.3 MILLISECONDS..

OPERATING TEMP.: -20°C TO +85°C

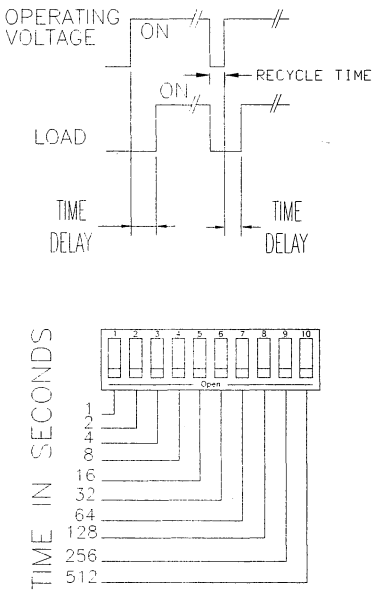
HUMIDITY: 95% CONDENSING

TERMINATIONS: TWO(2) .25 FASTON TYPE

MECHANICAL AND WIRING



TIMING DIAGRAM



CHG	EN. NO.	DATE	DESCRIPTION		VEHICLE	S.N.
RED	95327	06/07	RELEASED DWG FOR P/N			
■	88859	05/95	RELEASE	84232A		

MODULE, TIMING

DR C. TOWERY

ENG APP WOOD

REL CK DORROUGH

TEREX | UNIT RIG

SIZE 1

DATE: 07/19/07

SHEET 1 OF 1

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