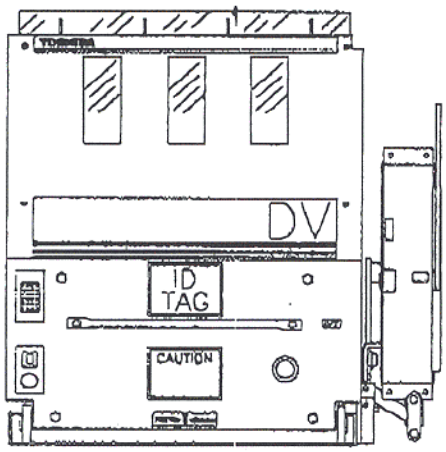
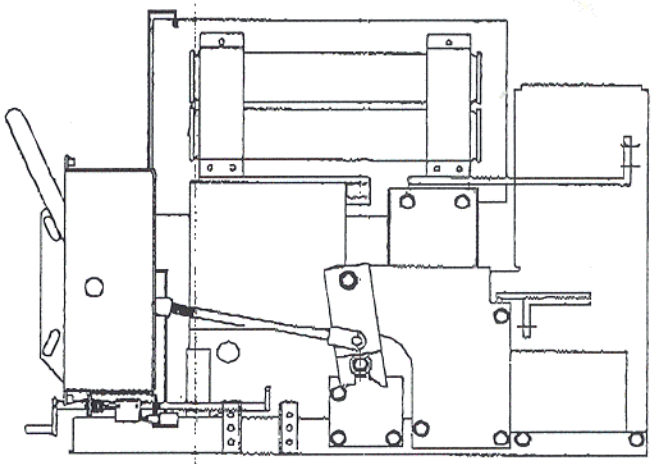
TOSHIBA

TOSHIBA INTERNATIONAL CORPORATION

POWER APPARATUS AND CONTROLS DIVISION

HOUSTON, TEXAS U.S.A.





TYPE DF & DV DRAWOUT UNITS
USER MANUAL

Written By:	TIC / Houston
Edited By:	S. Horton Moreno TIC / Houston Engineered Products Division
Checked By:	Roger Blankenheim TIC / Houston Engineered Products Division
Date:	15 June 1988 (Revised 18 May 1989)

CONTENTS

- PREFACE -

TIC/Houston prepared this User Manual to familiarize the user with the application and function of the drawout unit. TIC/Houston designed the Drawout Starter to control Medium Voltage AC Motors, Transformers, and Capacitors. Only Authorized and Qualified Personnel should install, operate, or maintain this unit.

These instructions do not cover all details, combinations, or variations of the equipment, storage, or installation. You must follow safety practices during operation of this equipment.

TIC/Houston strongly recommends that you read this manual in its entirety before installing.

TIC/Houston believes that the reliability and ease of use of this Manual will speed up user installation and start-up time. As a result, you will find further uses for this and other TIC/Houston products.

Thank you for buying TIC/Houston.

IMPORTANT

Unqualified personnel should not use this manual as a training tool.

— NOTE —

Authorized and Qualified Personnel —

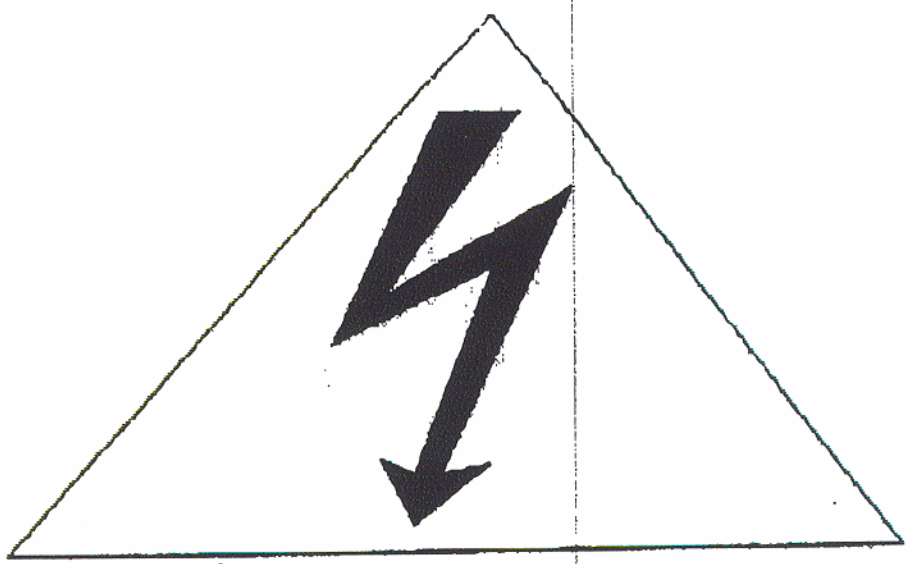
A qualified person is one who is familiar with the installation, construction or operation of the equipment and the hazards involved. In addition, he has the following qualifications:

- **trained and authorized** to de-energize, clear, ground, and tag circuits and equipment by set safety practices.

- **trained** in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, flash clothing, etc., by set safety practices.

- **trained** in giving first aid.

This manual does not relieve the user of responsibility to use sound practices in application, installation, operation and maintenance of this equipment. Personnel safety precautions are also the responsibility of the user. Should a conflict arise between the general information contained in this publication and the contents of drawings or supplementary material or both supplied with your equipment, the latter shall take precedence. TIC/Houston reserves the right to make changes or add improvements at any time without notice or liability.



D A N G E R

HAZARDOUS VOLTAGE WILL CAUSE

SHOCK, BURN, OR DEATH

DISCONNECT AND LOCKOUT ALL POWER

SOURCES BEFORE WORKING ON THIS

EQUIPMENT

THIS EQUIPMENT SHOULD BE INSTALLED AND MAINTAINED BY QUALIFIED PERSONNEL ONLY IN ACCORDANCE WITH RECOGNIZED SAFETY STANDARDS AND APPLICABLE ELECTRICAL OR BUILDING CODES. THE MANUFACTURER IS NOT RESPONSIBLE FOR DAMAGES OR INJURIES RESULTING FROM IMPROPER INSTALLATION OR USE.

Fig. 1

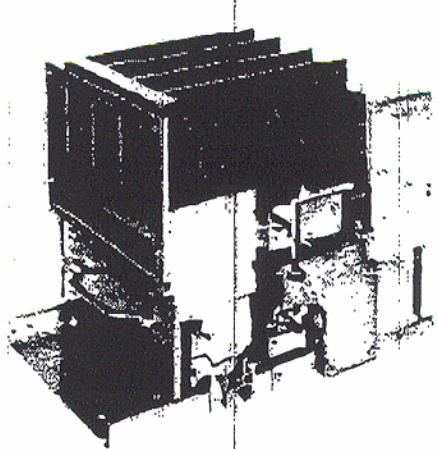
INSPECTION – Upon receipt of the Drawout Starter Unit make an immediate inspection for any damage which may have occurred during shipment.

a. Examine unit for missing or broken parts, free movement, or dirt.

b. Examine insulating parts for cracks or breakage.

c. Examine all wire and cable connections, re-tighten if necessary.

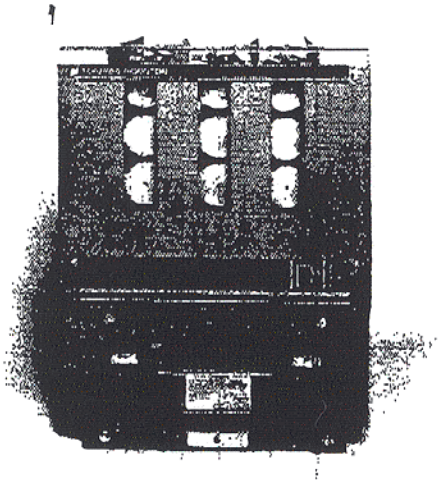
d. Closely examine the fuse clips. Completely insert fuses and tighten all bolts.

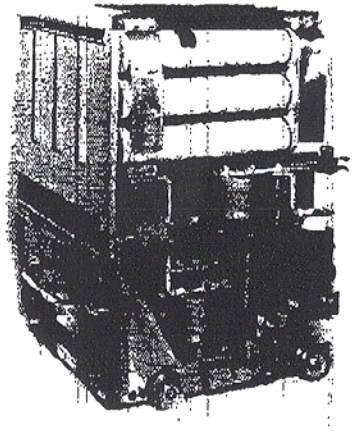


TYPES OF UNITS AVAILABLE

DF - Drawout Fuse *
DV - Drawout Vacuum Contactor *

DF
DRAWOUT
FUSE TYPE - This unit consists of drawout fuses (single, double, or triple barrel - with mechanical interlocks.





DV
DRAWOUT VACUUM
CONTACTOR TYPE

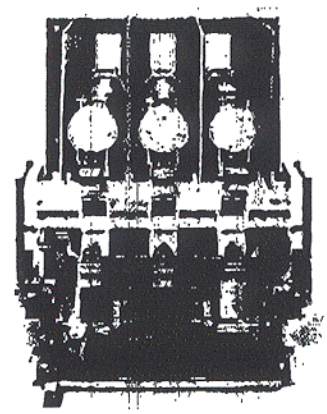
- This unit consists of a drawout (movable) contactor -400A with:

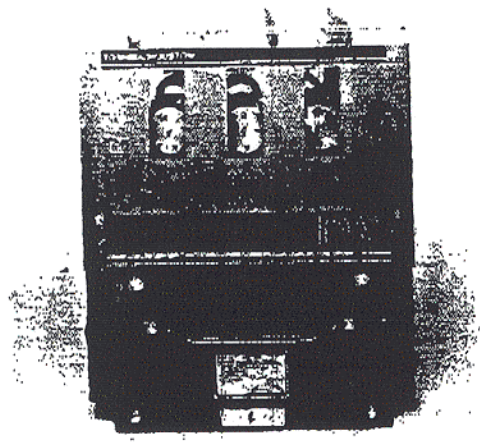
  power fuse clips

  up to two control transformers
  (with primary and secondary fuse/breaker)

  secondary (control) socket block
  (with electrical and mechanical interlocks)

  vacuum contactor (VCTT)





RATING (DRAWOUT CONTACTOR)

RATED INSULATION VOLTAGE	7200V
RATED OPERATIONAL VOLTAGE	5000V (6600V MAX.)
RATED OPERATIONAL CURRENT	400A
INTERRUPTING RATING(SYM.)	250MVA (2400V) 400MVA (4160V) 520MVA(6000V) 570MVA (6600V)
AMBIENT TEMPERATURE	-5 - 40°C (Enclosure not to exceed 55°C)
ALTITUDE	1000M or Below
RELATIVE HUMIDITY	45 - 85 %
CPT RATING	300VA, 400VA, 600VA or 800VA (As required)
CONTROL FUSE/BREAKER RATING	250V - 5A

WEIGHT:

DRAWOUT UNIT (1 BARREL)	134 LBS.
DRAWOUT UNIT (2 BARREL)	161 LBS.
DRAWOUT FUSE (2 BARREL)	142 LBS.
DRAWOUT FUSE (3 BARREL)	164 LBS.
FIXED PORTION	45 LBS.

PRIOR TO PUTTING THE STARTER INTO SERVICE, BECOME FAMILIAR WITH THE MECHANICAL INTERLOCKS.

INTERLOCKS

Electrical Interlocks *
Mechanical Interlocks *

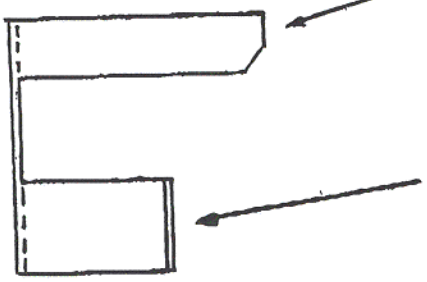
ELECTRICAL INTERLOCKS - LS1 - Location: Lower right rear of moveable unit

Purpose: Position switch, closed in test or run position

LS2 - Location: Underside of mechanical operator (Racking Handle) assembly

Purpose: Not meant to open VCTT, but to ensure that it has been opened

MECHANICAL INTERLOCKS - Close and securely latch the door before racking the moveable unit to the connected position.



Releases interlock in the operator mechanism, permitting racking of unit to the connected position.

Locks door in closed position while racked in the connected position.

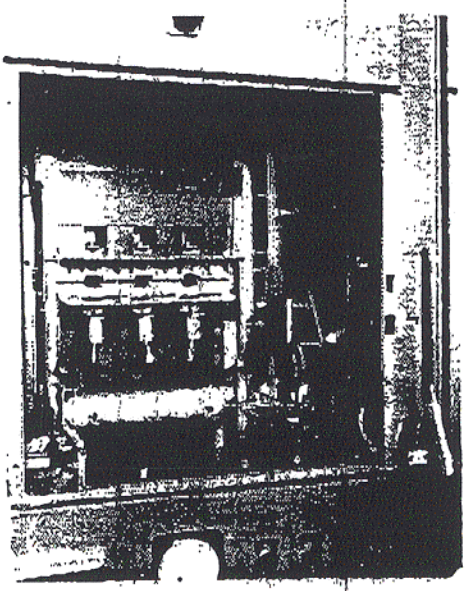
(Located On Drawout Door)

- Do not rack the movable unit into the "test position" unless the contactor has been de-energized. Turn the "release Lever" near the bottom of the operator mechanism handle to unlock the moveable unit.

- If the Shutter Barrier does not open to allow stabs to connect, the operator unit will stop, so as not to damage the shutter barrier. At this point do not continue applying force to the handle of the operator mechanism. Return to the "test position," open door, remove unit and inspect shutter assembly for obstructions or damage.

WARNING

HAZARDOUS VOLTAGE
CAN CAUSE ELECTRICAL SHOCK
AND BURNS.
DISCONNECT POWER BEFORE PROCEEDING
WITH ANY WORK ON THIS EQUIPMENT.



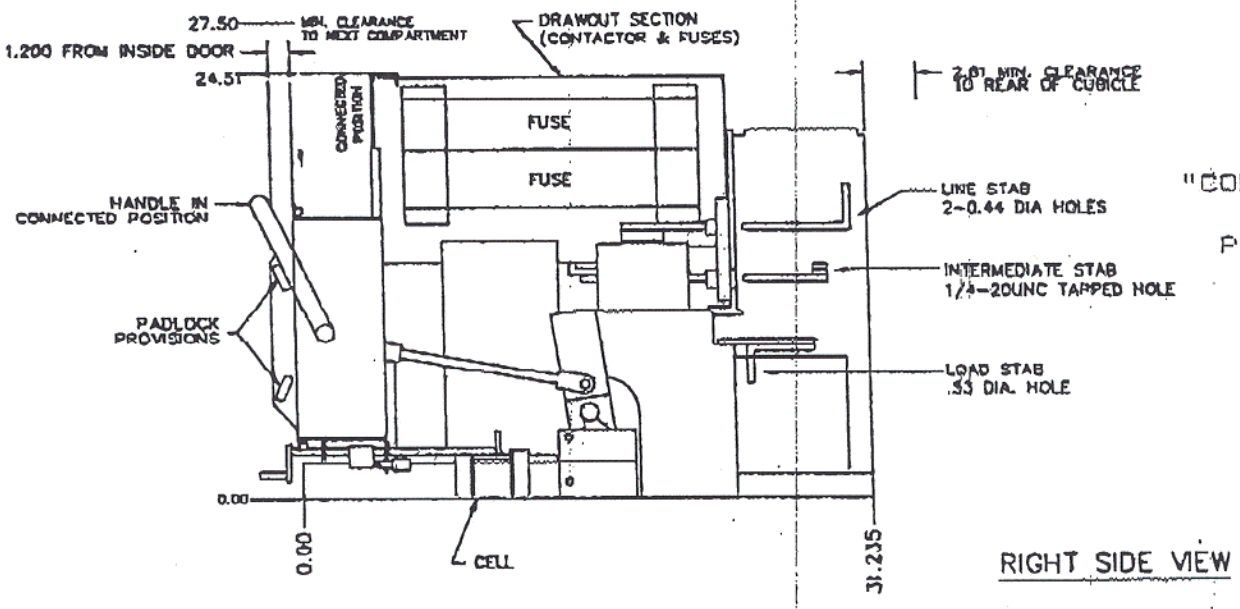
- The Mechanical Interlock locks the contactor in place if closed in test or connected positions. Also prevents contactor closure during motion between both positions.

DRAWOUT OPERATION

Drawout Positions *
Drawout Operation *

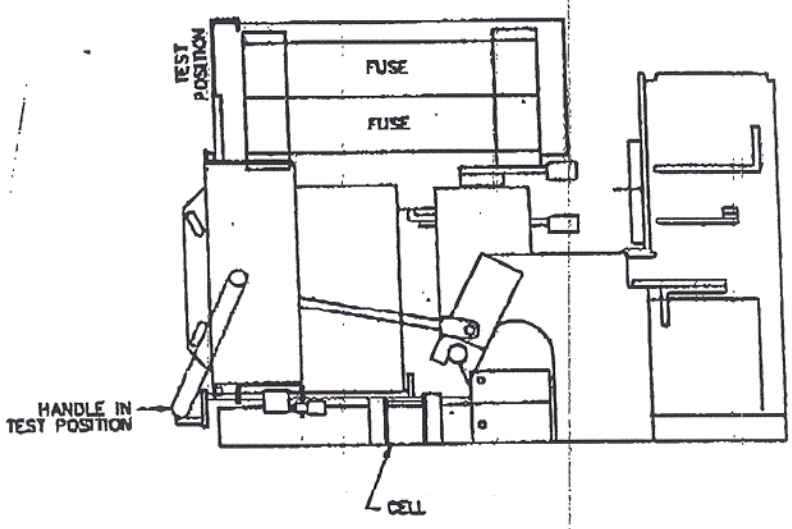
DRAWOUT POSITIONS - These units have two positions, "Connected" and "Test" (Disconnected).

The moving truck locks at each position by a complete interlocking mechanism.



"CONNECTED" POSITION

RIGHT SIDE VIEW



DIS-CONNECTED "TEST" POSITION

RIGHT SIDE VIEW

DRAWOUT OPERATION

- Performed the drawout operation from the exterior of the enclosure with the drawout door closed by the operating handle. The cell has a shutter to isolate the moving truck automatically from the line side terminals of the fixed portion.

- Drawout Operation - (From "Connected" to "Test" positions)

  a. Confirm that VCTT is OFF.

  b. Rotate lock lever counter-clockwise until it stops.

  c. Pull the operating handle down-ward releasing the lever when handle is at the mid-travel position.

- Insert Operation - (From "Test" to "Connected" positions)

  a. Close and latch M.V. compartment door.

  b. Pull handle up-ward until it reaches its highest position.

  NOTE: Move the handle as quickly and smoothly as possible.

- Removal of movable portion - (From "Test" position)

CAUTION: DO NOT FORCE THE RACKING MECHANISM.

Draw the unit out carefully. Take necessary precautions not to drop unit when taking it out of the panel.

  a. Remove wheel stop (located by front left wheel).

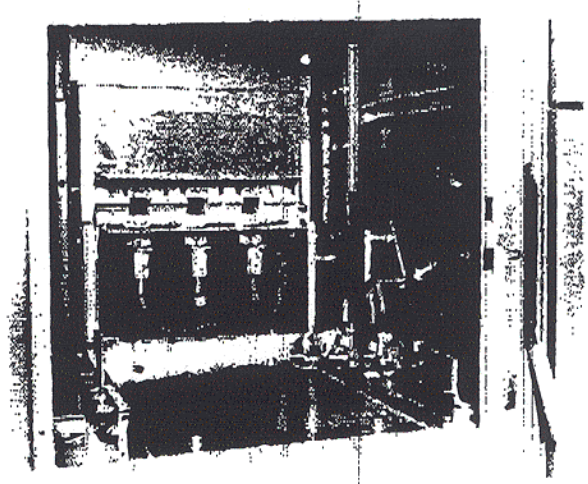
  b. Install extension rail and secure with bolt on left side.

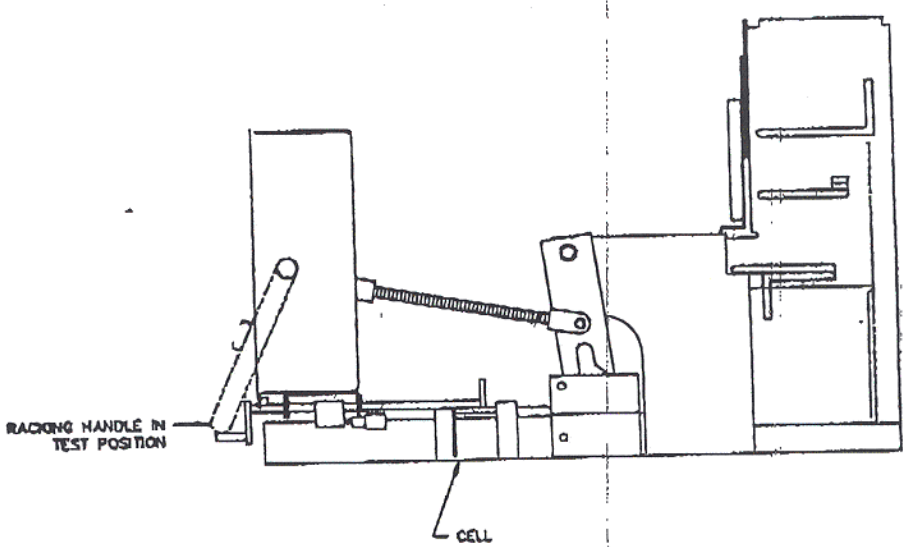
  c. Turn release lever counter-clockwise.

  d. Pull unit carefully onto extension rail, lifting the moving portion slightly for complete removal.

CELL – The Cell houses the main power bus stabs, the shutter mechanism, and various mechanical interlocks. The Cell also provides structural support for the handle mechanism.

a. The position of the contactor directly controlls the shutter mechanism.

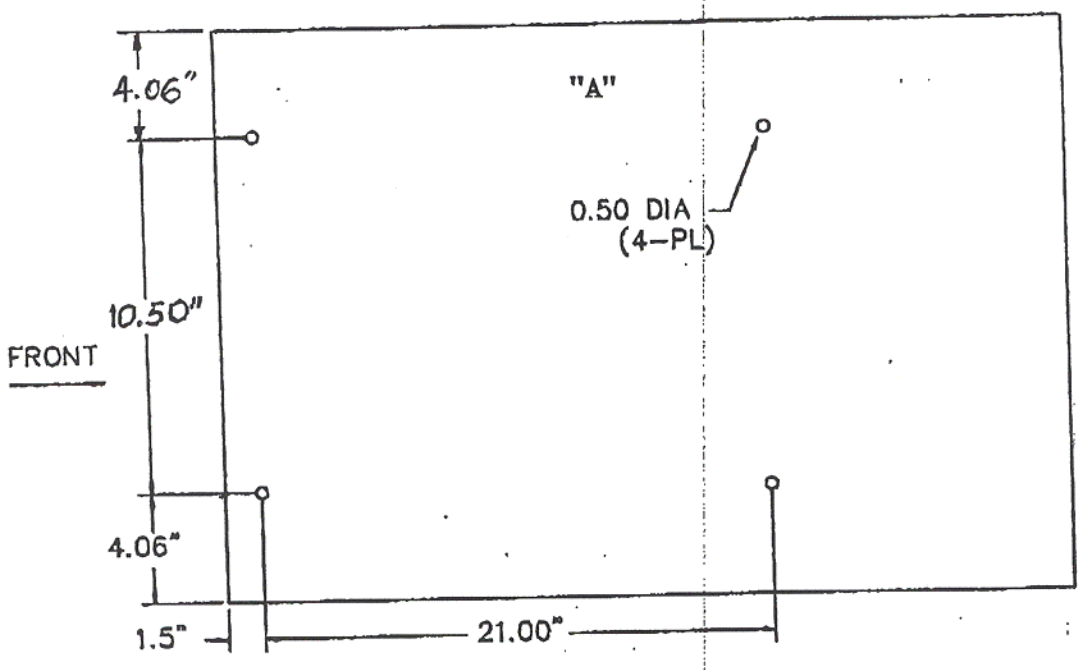




RIGHT SIDE VIEW

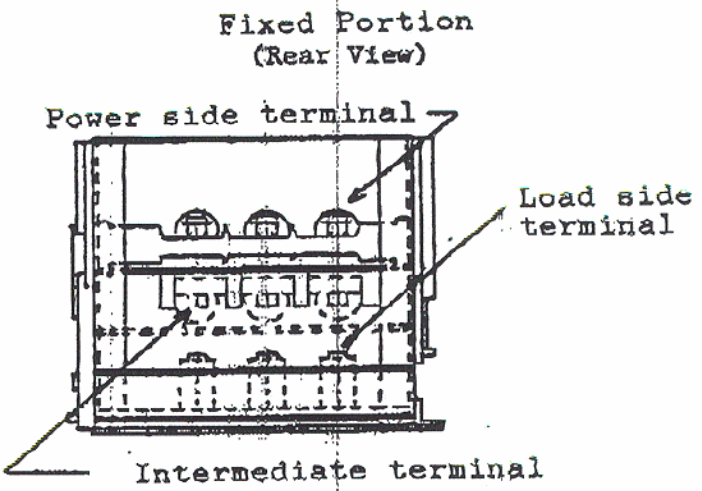
- Installation

Install by securing it at the four "A" marked locations shown in the following illustration. The installation surface must be on a level plane. If surface is not level, adjust with shims or spacers.



- Main Circuit Wiring

Connect the main circuit wiring to the line side and load side terminals with 3/8" bolts. If providing intermediate terminals, connect the wiring to them with the 1/4-20 bolts provided. Take care to connect cables in proper phase rotation.



WARNING

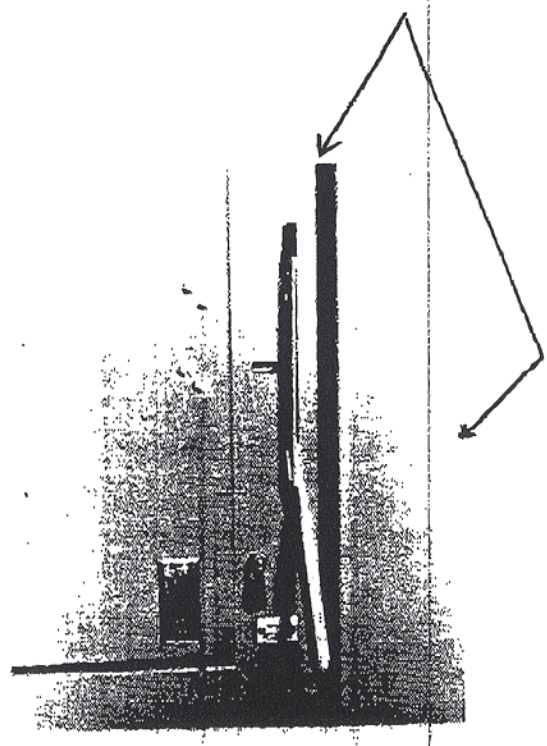
**HAZARDOUS VOLTAGE
CAN CAUSE ELECTRICAL SHOCK
AND BURNS.
DISCONNECT POWER BEFORE PROCEEDING
WITH ANY WORK ON THIS EQUIPMENT.**

Current photo not available

The connector housing and pins will ship together as standard accessories.

Connect the control wire to the pin with the standard tool - "CERTI-CRIMP," manufactured by AMP Inc. for AMP Pin No. 66602-1

These units have provision for a padlock on the handle mechanism. Padlocking can be done for either test or connected position.



MAINTENANCE & INSPECTION

- Set up a regular maintenance schedule to receive better service and reliability from your drawout unit. Inspect the drawout unit at least once a year, or more often if necessary. Plant operating and local conditions will dictate the frequency of inspection required.

WARNING

**HAZARDOUS VOLTAGE
CAN CAUSE ELECTRICAL SHOCK
AND BURNS.
DISCONNECT POWER BEFORE PROCEEDING
WITH ANY WORK ON THIS EQUIPMENT.**

Keep a permanent record of all maintenance work. The degree of detail depends on the operating conditions. This record will be a valuable reference for later maintenance work and equipment operation. The record should include reports of tests made, the condition of equipment, the repairs or replacements, and adjustments that you make.

CAUTION: This manual covers equipment selected for a specific application. Only thoroughly trained qualified persons with an understanding of the hazards which could arise should install this equipment. Do not substitute this manual for adequate training and experience in safety procedures for this type of equipment.

MAINTENANCE & INSPECTION

WARNING

**HAZARDOUS VOLTAGE
CAN CAUSE ELECTRICAL SHOCK
AND BURNS.
DISCONNECT POWER BEFORE PROCEEDING
WITH ANY WORK ON THIS EQUIPMENT.**

a. Examine unit for broken parts, free movement, rusting or corrosion, dirt and excessive wear.

b. Examine insulating parts for cracks or breakage. If you find any evidence of arcing, clean or replace the parts. Make sure you maintain the dielectric strength of the affected parts.

c. Examine all wire and cable connections, re-tighten if necessary. If dis-coloration of cable or wire insulation is clear, replace the damaged wire or cable.

d. Closely examine the fuse clips. Completely insert the fuses and tighten all bolts. Dis-assemble and clean or replace discolored, corroded, or pitted joints or ends on the drawout unit or cell. Lubricate the line and load stabs twice a year with Toshiba 87 grease or equal. Do not apply the grease on insulators or barriers. APPLY GREASE ONLY ON STABS.

RENEWAL PARTS

Ordering Information *

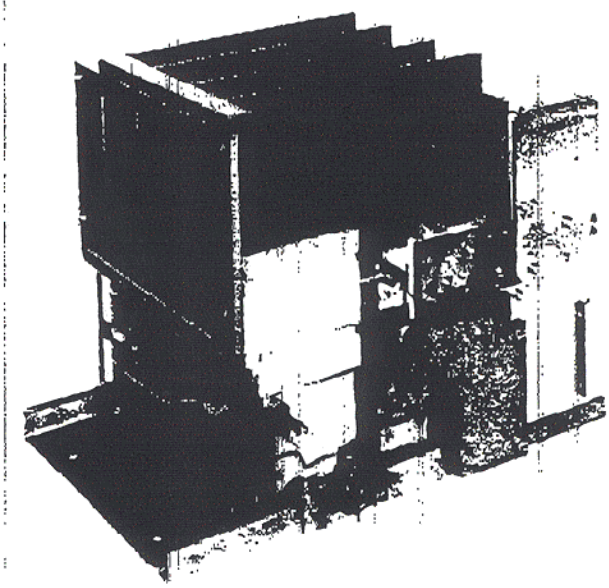
- Renewal parts should be order from TIC/Houston (713) 466-0277.

PART NUMBER		DESCRIPTION
PC18580P312 #3		MICROSWITCH LS1 & LS2
PC17650P005		CIRCUIT BREAKER, 5A
PC17650P006		CIRCUIT BREAKER, 7A
LCVDOSTAB1		LINE SIDE STAB - 400A (MOVEABLE) D/P VCTT
LCVDOSTAB2		INTERMEDIATE STAB - 400A (MOVEABLE) D/O VCTT
LCVDOSTAB3		LOAD SIDE STAB - 400A (MOVEABLE) D/O VCTT
PC18595P030		LINE SIDE STAB - 400A (STAT.) D/O VCTT
PC18595P031		INTERMEDIATE STAB - 400A (STAT.) D/O VCTT
PC18595P032		LOAD SIDE STAB - 400A (STAT.) D/O VCTT
LCVDOCELL1		DRAWOUT CELL 400A
LVCDOCELL2		DRAWOUT CELL FOR D/O FUSE
LCVDOFUSE1	*	DRAWOUT FUSE ASSEMBLY D - SINGLE
LCVDOFUSE2	*	DRAWOUT FUSE ASSEMBLY DD
LCVDOFUSE3	*	DRAWOUT FUSE ASSEMBLY DDD
PC75801P021		SEC. PLUG ON MOVEABLE PORTION AMP # 207305-1 (BROWN)
PC75801P020		SEC. PLUG ON STAT. PORTION AMP # 207304-1 (BROWN)
PC75801P009		INSERT PIN FOR MOVEABLE SEC. PLUG AMP # 66602-1
PC75801P010		INSERT PIN FOR STAT. SEC. PLUG AMP # 66601-1
LCVDOPLUG1 (BLACK) LCVDOPLUG2 (BROWN)		D/O UNIT SECONDARY PLUG ASSEMBLY
PC18595P116		FUSE CLIP SIZE D
PC18595P117		FUSE CLIP SIZE DD
PC18595P123		FUSE CLIP SIZE DDD
PC18595P083		FUSE BARRIER SINGLE BARREL INBOARD 2 Per Unit
PC18595P002		FUSE BARRIER SINGLE BARREL OUTBOARD 2 Per Unit
PC18595P001		FUSE BARRIER DOUBLE BARREL INBOARD 2 Per Unit
PC18595P000		FUSE BARRIER DOUBLE BARREL OUTBOARD 2 Per Unit
PC18595P627		FUSE BARRIER TRIPLE BARREL 4 Per Unit
PC18595P154		EXTENSION RAIL
PC18595P499		B7 GREASE

* Fuses Not Included With Drawout Cell.

CONTACTORS

Medium Voltage - Vacuum Drawout Units



Drawout Elements:

- Line and load spring-loaded power stabs
- Main fuse clips (Fuses not included)
- Vacuum contactor
- PT/CPT with primary fuses
- Complete electrical and mechanical interlock system
- Dead front with fuse viewing window

Stationary Portion:

- Line and load rear connected power stabs
- Line shutter/barrier
- Drawout element support and positioning tray
- Complete electrical and mechanical interlocking and operating system
- Simple four bolt location and hold down system
- Provisions for maintenance extension rail

■ Specifications

Type DV high-voltage combination starter units.

Rated Operational Voltage		(kV)	2.2 - 2.5	4.0 - 5.0
Continuous Current		(A)	400	400
Rated Interrupting Current (kA)	With Fuse		40	40
	Without Fuse		7.0	7.0
Withstand Voltage			AC 16kV/BIL 45kV (Except between the contacts)	AC 22kV/BIL 60kV (Except between the contacts)
Control Voltage (V)	Continuous Excitation		AC 115/120V - 50/60 Hz (PT secondary voltage)	
	Instantaneous Excitation (with latch mechanism)		DC 24/32/48/120/125 (Shunt trip)	
Connection			Main circuit: Automatic connection Control circuit: Manual plug connection	
Weight lb (Approx.)	Moving Portion		200	200
	Total		315	315
Application (Max. Capacity)	Motor	(HP)	1750	3000
	Transformer	(kVA)	1500	3000
	Condenser	(kVA)	1500	2000
Applicable Standard			NEMA ICS2-324	
Dimensions (inches) H x W x D			24.51 x 22.00 x 31.77	

■ Drawout Unit Pricing

	CATALOG NO.	LIST PRICE*
Non-Latched Type	DV-____ ____ CM	$6,700
	DV-____ ____ SM	7,000
	DV-____ ____ DM	7,200
Latched Type	DV-____ ____ CL	$6,700
	DV-____ ____ SL	7,000
	DV-____ ____ DL	7,200

* Price includes one CPT/PT.
No price deduction for no CPT/PT.

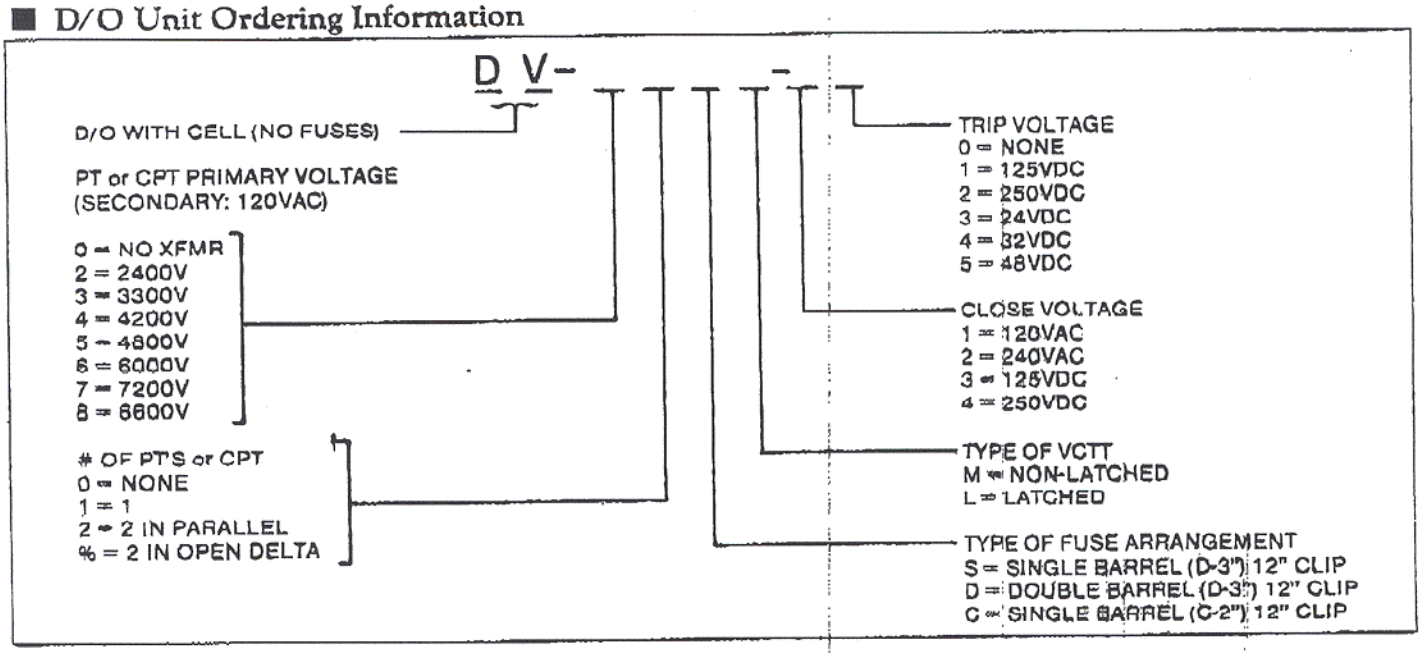
■ Factory Installed Modifications

DESCRIPTION	LIST PRICE (ea)
Add Second Potential Transformer/CPT	
2400/120VAC-100VA/500VA	$820
3300/110VAC-100VA/450VA	$860
4200/120VAC-100VA/500VA	$860
4800/120VAC-100VA/450VA	$860
6000/109VAC-100VA/300VA	$860
6600/109VAC-100VA/300VA	$860

CONTACTORS

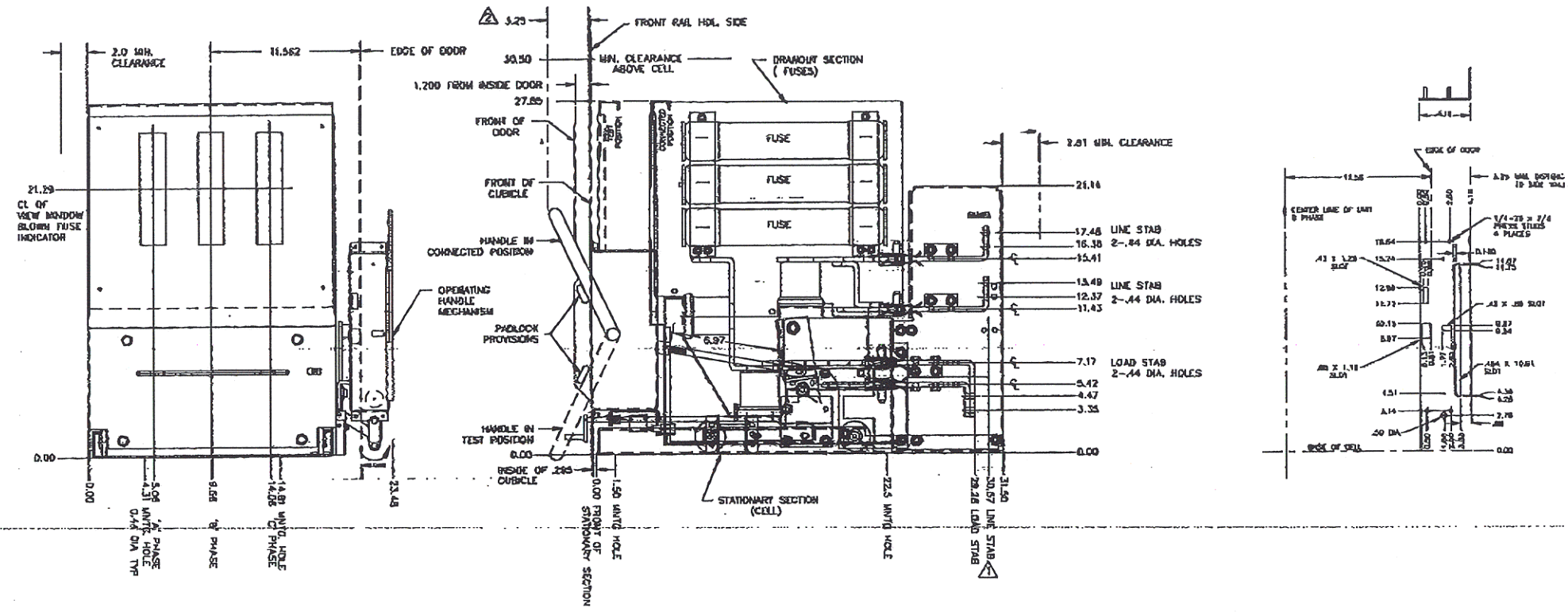
Medium Voltage - Type DV Vacuum Drawout Units

■ D/O Unit Ordering Information



■ Accessories / Miscellaneous

ITEM	CATALOG NUMBER	LIST PRICE
OPERATING HANDLE & MECHANISM	LCVDOLOCK1	$ 700
POTENTIAL TRANSFORMER (Low Profile with Primary Fuses)		
2400 / 120VAC 500VA	GCVDV24PT&FU	775
3300 / 110VAC 450VA	GCVDV33PT&FU	775
4200 / 120VAC 500VA	GCVDV42PT&FU	825
4800 / 120VAC 450VA	GCVDV48PT&FU	825
6000 / 109VAC 300VA	Consult Factory	825
6600 / 110VAC 300VA	GCVDV66PT&FU	825
EXTENSION RAIL	LCVDORAIL1	360
INTERMEDIATE STAB KIT	GCVDOSTABKIT	700
LUBRICATING GREASE (B7 Grease)	4Z9G0375G001	15
LIFTER (for Installation & Removal of Movable Portion)	LCVDOTHLIFT1	6,000
DRAWOUT CELL - Stationary Portion Only (minus Contactor/PT-movable portion and operating handle & mechanism)		
For Single or Double Barrel Fuses	LCVDOCELL1	2,000
For Triple Barrel Fuses	LCVDOCELL2	2,200
DRAWOUT FUSE ASSEMBLY - (Includes operating handle & mechanism) (Fuses not included)		
For Single Barrel Fuses	LCDF-OS	4,000
For Double Barrel Fuses	LCDF-OD	4,200
For Triple Barrel Fuses	LCDF-OT	4,500
For Non-Fused with Shorting Ears	LCDF-OO	—



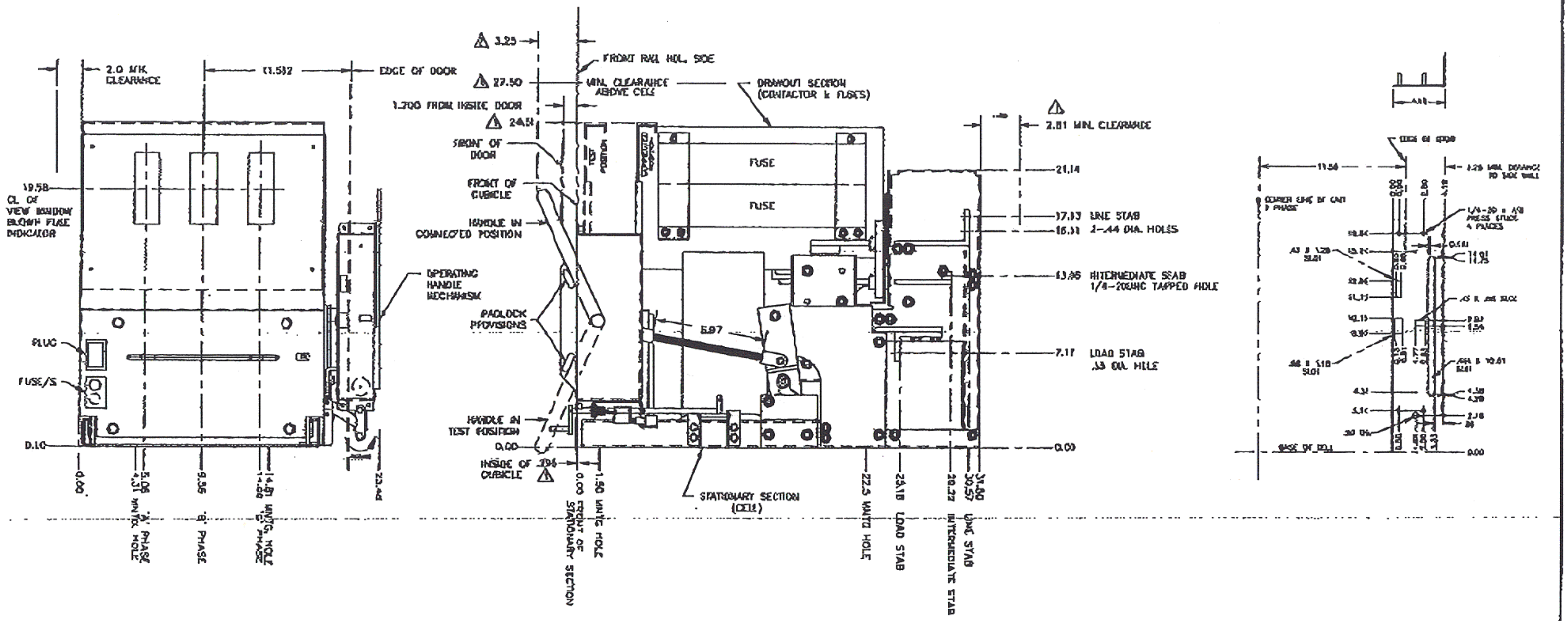
FRONT VIEW

RIGHT SIDE VIEW

FRONT CUTOUT

2 NOTE: LINE & LOAD STABS - .375 X 1.25 COPPER BUS

					TOSHIBA	TITLE: OUTLINE AND MOUNTING DRAWOUT UNIT TYPE DF (DRAWOUT FUSE)	SHEET 2	ISSUE 1.0
						CUSTOMER:	JOB NUMBER:	DRAWING NUMBER VE0DCE02



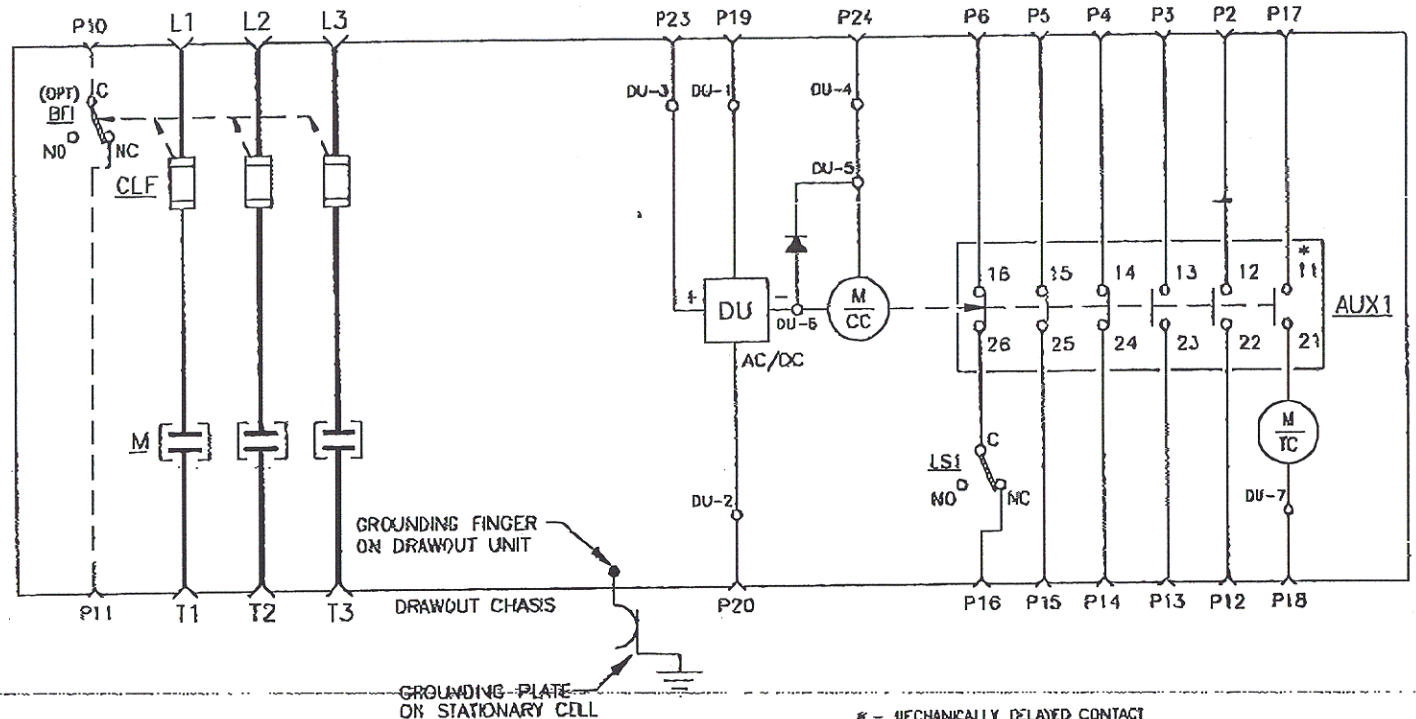
FRONT VIEW

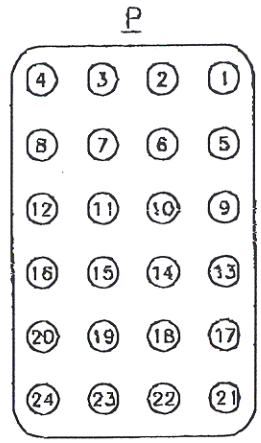
RIGHT SIDE VIEW

FRONT CUTOUT

NOTE:
LINE & LOAD STABS - .375 X 1.25 COPPER BUS

TOSHIBA	OUTLINE AND MOUNTING DRAWOUT UNIT TYPE DV (HCV-5HA)
Scale: 1.0=4.0	Sheet: 2
Drawing number: VID0CED1	





REAR VIEW

PLUG MOUNTED ON FRONT OF DRAWOUT UNIT

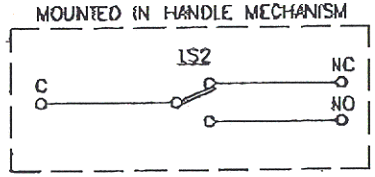
PLUG: AMP #207304-1 (PC75801P020)
SOCKET: AMP #66601-1 (PC75801P010)

* - MECHANICALLY DELAYED CONTACT WITH MAGNETIC BLOWOUT

NOTES

1 - LS1 IS CLOSED IN TEST OR CONNECTED POSITIONS
2 - LS2 IS ACTIVATED DURING RACKING MOTION OF DRAWOUT
3 - ALL WIRES ARE #18 AWM UNLESS OTHERWISE NOTED

MOUNTED IN HANDLE MECHANISM



MARK	DESCRIPTION
AUX1	AUXILIARY SWITCH No. 1
BFI	BLOWN FUSE INDICATOR - OPTIONAL
CLF	CURRENT LIMITING FUSE
DU	DRIVE UNIT
LS1,2	LIMIT SWITCHES
M	HIGH VOLTAGE CONTACTOR
MCC	CLOSING COIL OF CONTACTOR
MTC	TRIP COIL OF CONTACTOR
P	PLUG

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2	04/19/94	DELETE NOTE 4	BB	LC	AL
1	03/31/92	CHG SS TO ARM & ADD "BFI"	DC	CW	AL
0	09/19/91	FIRST ISSUE	LVB	AL	CH

TITLE:
SCHEMATIC & WIRING DIAGRAM
M.V. DRAWOUT UNIT DV LATCHED SERIES (NO PT'S)

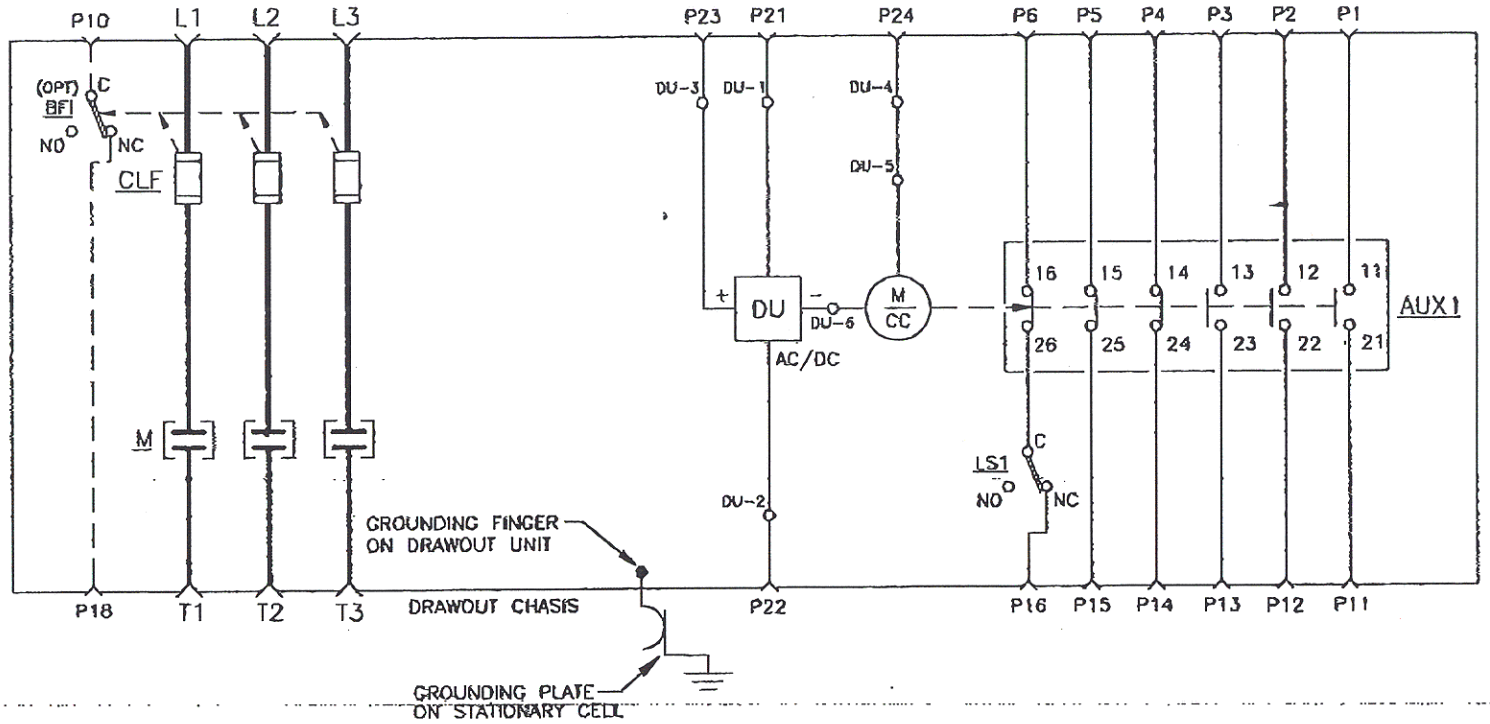
CUSTOMER:

JOB NUMBER:

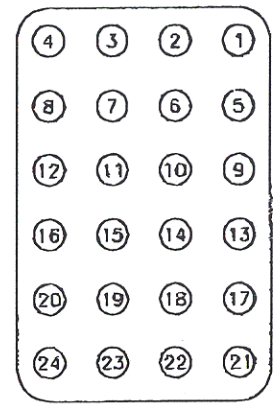
REVISION: 2

SCALE: 1.0=1.0

DRAWING NUMBER: V900KS08



P



REAR VIEW

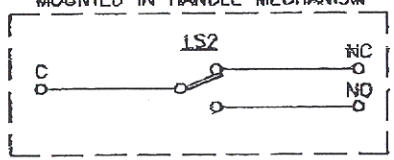
PLUG MOUNTED ON FRONT OF DRAWOUT UNIT

PLUG: AMP #207304-1 (PC75801P020)
SOCKET: AMP #66601-1 (PC75801P010)

NOTES

1 – LS1 IS CLOSED IN TEST OR CONNECTED POSITIONS
2 – LS2 IS ACTIVATED DURING RACKING MOTION OF DRAWOUT
3 – ALL WIRES ARE #18 AWM UNLESS OTHERWISE NOTED

MOUNTED IN HANDLE MECHANISM



MARK	DESCRIPTION
AUX1	AUXILIARY SWITCH No.1
BFI	BLOWN FUSE INDICATOR – OPTIONAL
CLF	CURRENT LIMITING FUSE
DU	DRIVE UNIT
LS1,2	LIMIT SWITCHES
M	HIGH VOLTAGE CONTACTOR
MCC	CLOSING COIL OF CONTACTOR
P	PLUG

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2	04/18/94	DELETE NOTE 4	BB	DC	AL
1	03/31/92	CHG SYS TO AWM & ADD "BFI"	DC	GW	AL
0	09/19/91	FIRST ISSUE	LVK	AL	AL

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MADE IN HOUSTON, TEXAS U.S.A.

TITLE:
SCHEMATIC & WIRING DIAGRAM
M.V. DRAWOUT UNIT DV SERIES (NO PT'S)

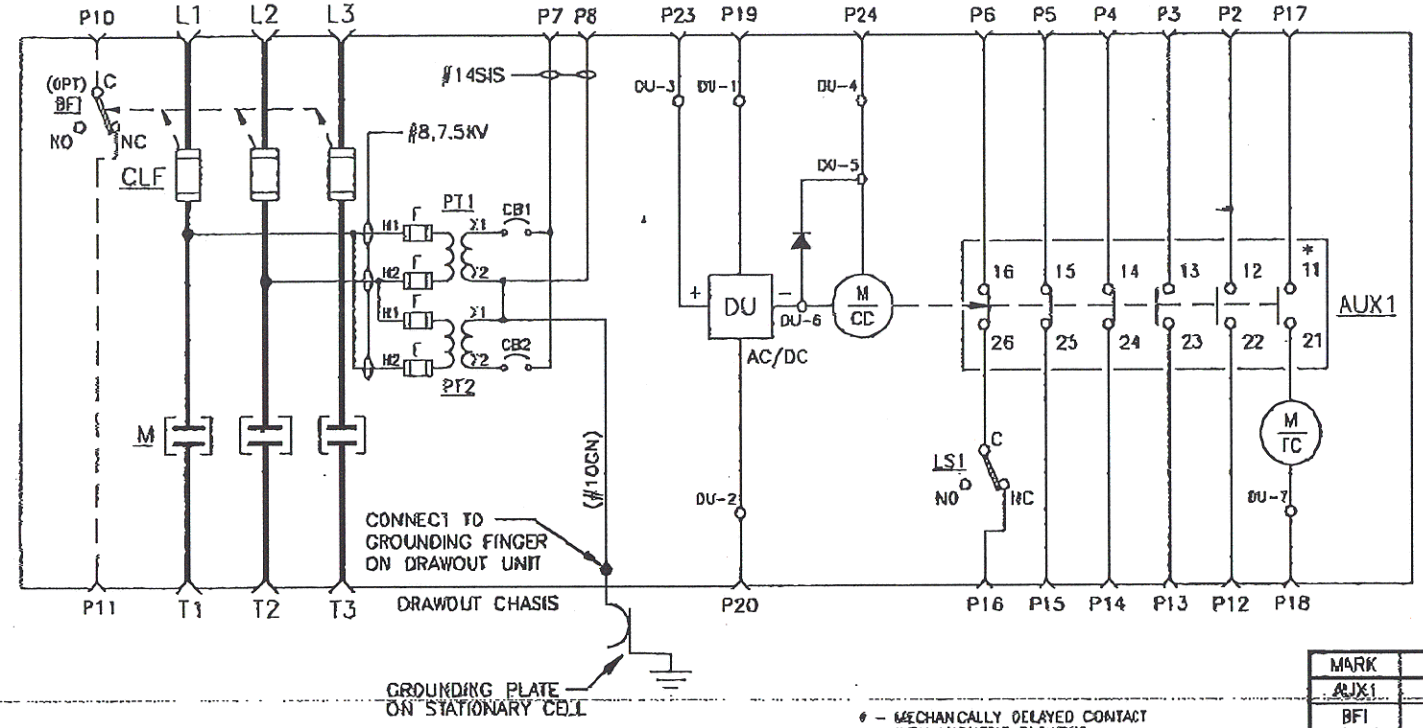
CUSTOMER:

JOB NUMBER:

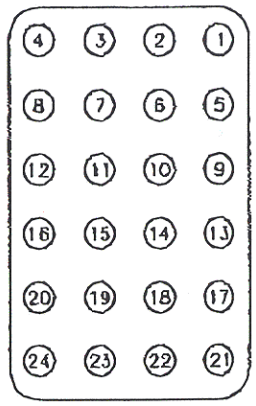
REVISION: 2

SCALE: 1.0=1.0

DRAWING NUMBER: V900KS07



P



REAR VIEW

PLUG MOUNTED ON FRONT OF DRAWOUT UNIT

PLUG: AMP #207304-1 (PC75801P020)
SOCKET: AMP #66801-1 (PC75801PD10)

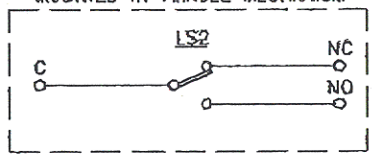
* – MECHANICALLY DELAYED CONTACT WITH MAGNETIC BLOWOUT

MARK	DESCRIPTION
AUX1	AUXILIARY SWITCH No.1
BFI	BLOWN FUSE INDICATOR – OPTIONAL
CB1,2	CIRCUIT BREAKER
CLF	CURRENT LIMITING FUSE
DU	DRIVE UNIT
F	PT PRIMARY FUSE
LS1,2	LIMIT SWITCHES
M	HIGH VOLTAGE CONTACTOR
MCC	CLOSING COIL OF CONTACTOR
MTC	TRIP COIL OF CONTACTOR
P	PLUG
PT1,2	POTENTIAL TRANSFORMER

NOTES

1 – LS1 IS CLOSED IN TEST OR CONNECTED POSITIONS
2 – LS2 IS ACTIVATED DURING RACKING MOTION OF DRAWOUT
3 – ALL WIRES ARE #18 AWM UNLESS OTHERWISE NOTED

MOUNTED IN HANDLE MECHANISM



REV	DATE	DESCRIPTION	BY	CHK	APPR
K	04/19/94	CHG #8 CABLE FROM 5 TO 7.5KV	BB	DC	AL
J	03/31/92	CHG NS TO AWM & ADD "BFI"	DC	DW	AL
2	08/02/93	ADD "CB2"	LVH	AL	AL
1	08/02/93	CHG "T1" TO "CB1"	LVH	AL	AL
0	12/06/88	FIRST ISSUE	LVH	AL	CH

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TITLE: SCHEMATIC & WIRING DIAGRAM
M.V. DRAWOUT UNIT DV LATCHED SERIES
(WITH 2-PARALLELED PT'S)

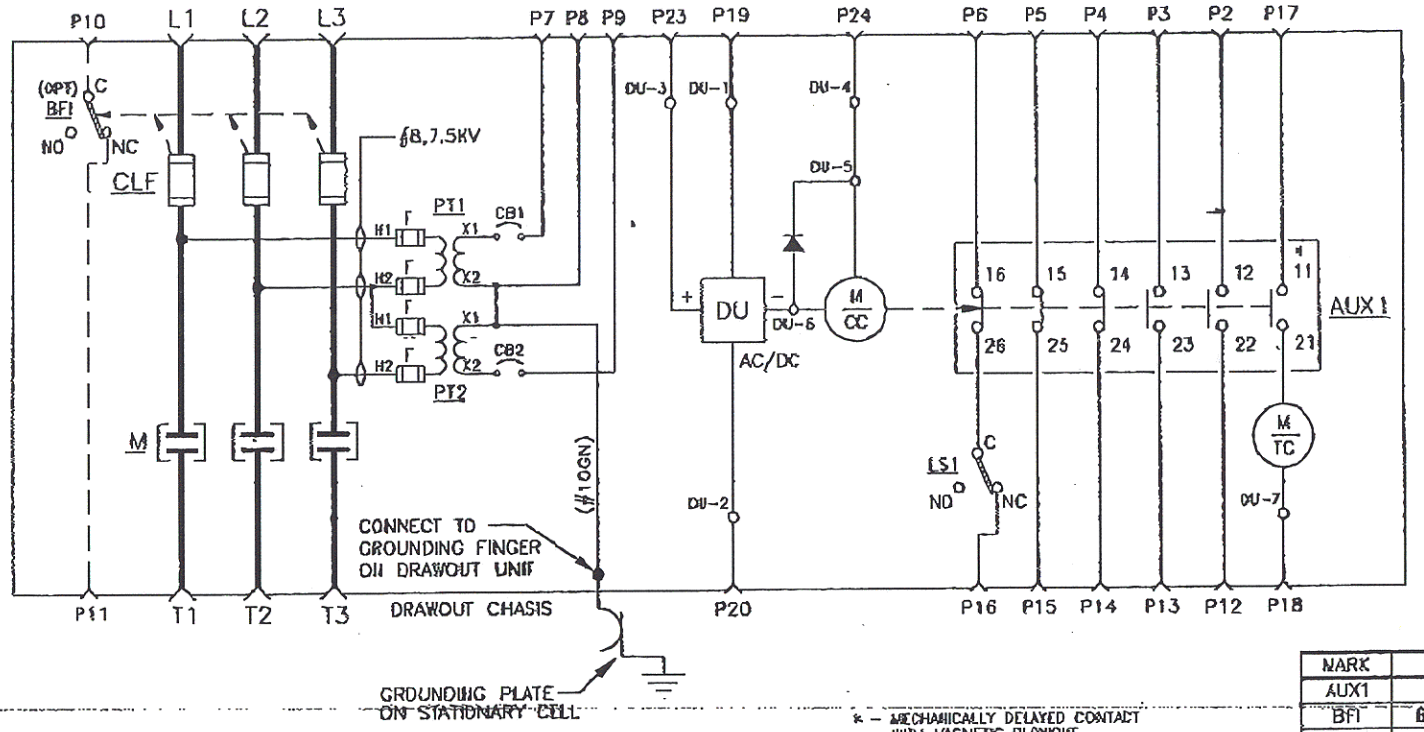
CUSTOMER:

JOB NUMBER

REVISION: 4

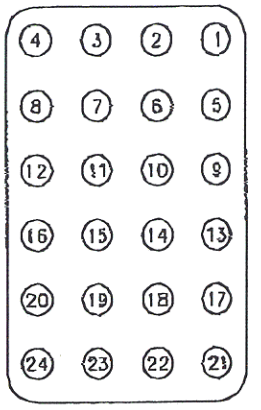
SCALE: 1.0=1.0

DRAWING NUMBER: V900KS06



* – MECHANICALLY DELAYED CONTACT WITH MAGNETIC BLOWOUT

P



REAR VIEW

PLUG MOUNTED ON FRONT OF DRAWOUT UNIT

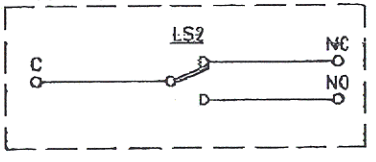
PLUG: AMP #207304-1 (PC75801P020)
SOCKET: AMP #66601-1 (PC75801P010)

MARK	DESCRIPTION
AUX1	AUXILIARY SWITCH No.1
BFI	BLOWN FUSE INDICATOR - OPTIONAL
CB1,2	CIRCUIT BREAKER
CLF	CURRENT LIMITING FUSE
DU	DRIVE UNIT
F	PT PRIMARY FUSE
LS1,2	LIMIT SWITCHES
M	HIGH VOLTAGE CONTACTOR
MCC	CLOSING COIL OF CONTACTOR
MTC	TRIP COIL OF CONTACTOR
P	PLUG
PT1,2	POTENTIAL TRANSFORMER

NOTES

1 – LS1 IS CLOSED IN TEST OR CONNECTED POSITIONS
2 – LS2 IS ACTIVATED DURING RACKING MOTION OF DRAWOUT
3 – ALL WIRES ARE #18 AWM UNLESS OTHERWISE NOTED

MOUNTED IN HANDLE MECHANISM



REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3	04/19/94	CHG #8 CABLE FROM 5 TO 7.5KV	BB	DC	AL
2	03/31/92	CHG #8 TO AWM A ADD "BFI"	DC	CW	AL
1	08/02/90	CHG "F1" TO "CB1/CB2"	LVH	AL	AL
0	12/06/88	FIRST ISSUE	LVH	AL	GH

TITLE: SCHEMATIC & WIRING DIAGRAM
M.V. DRAWOUT UNIT DV LATCHED SERIES
(WITH 2-OPEN DELTA CONNECTED PT'S)

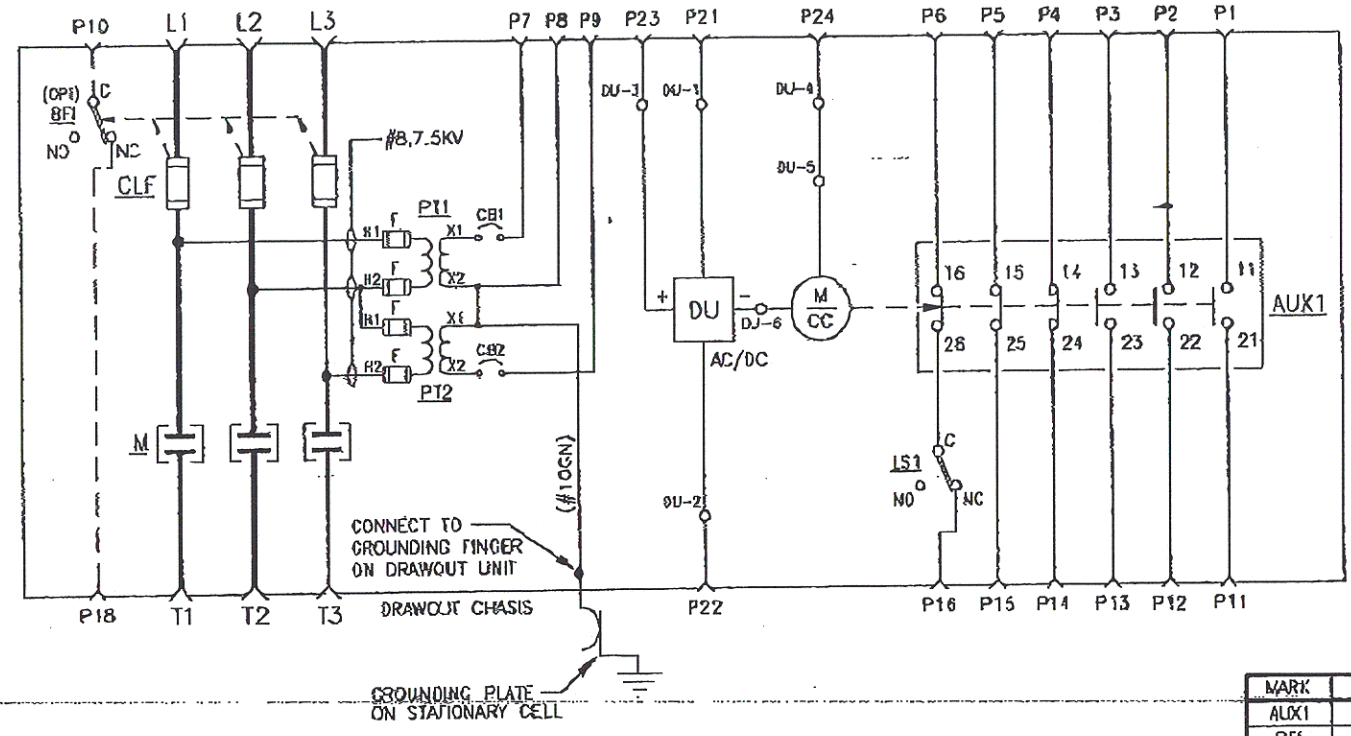
CUSTOMER:

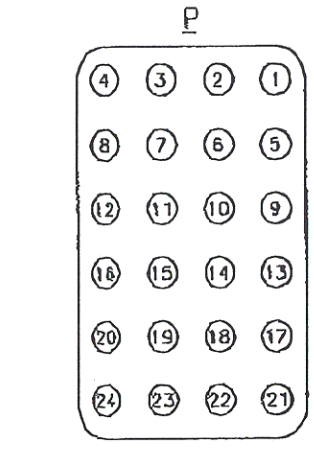
JOB NUMBER:

REVISION: 3

SCALE: 1.0=1.0

DRAWING NUMBER: V900KS05





REAR VIEW

PLUG MOUNTED ON FRONT OF DRAWOUT UNIT

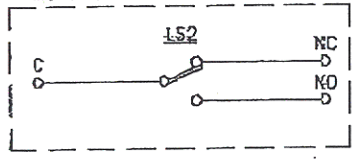
PLUG: AMP #207304-1 (PC75B01PD20)
SOCKET: AMP #66601-1 (PC75B01PD10)

MARK	DESCRIPTION
AUX1	AUXILIARY SWITCH No.1
BFI	BLOWN FUSE INDICATOR - OPTIONAL
CB1,2	CIRCUIT BREAKER
CLF	CURRENT LIMITING FUSE
DU	DRIVE UNIT
F	PT PRIMARY FUSE
LS1,2	LIMIT SWITCHES
M	HIGH VOLTAGE CONTACTOR
MCC	CLOSING COIL OF CONTACTOR
P	PLUG
PT1,2	POTENTIAL TRANSFORMER

NOTES

1 - LS1 IS CLOSED IN TEST OR CONNECTED POSITIONS
2 - LS2 IS ACTIVATED DURING RACKING MOTION OF DRAWOUT
3 - ALL WIRES ARE #18 AWM UNLESS OTHERWISE NOTED

MOUNTED ON HANDLE MECHANISM



REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3	04/11/94	CHG #8 CABLE FROM 5 TO 7.5KV	BB	DC	AL
2	03/31/92	CHG "5G" TO AWM & ADD "BFI"	BC	CAP	AL
1	08/09/90	CHG "F1" TO "CB1,2"	LMH	AL	AL
0	12/06/88	FIRST ISSUE	LMH	AL	GK

TITLE: SCHEMATIC & WIRING DIAGRAM
M.V. DRAWOUT UNIT DV SERIES
(WITH 2-OPEN DELTA CONNECTED PT'S)

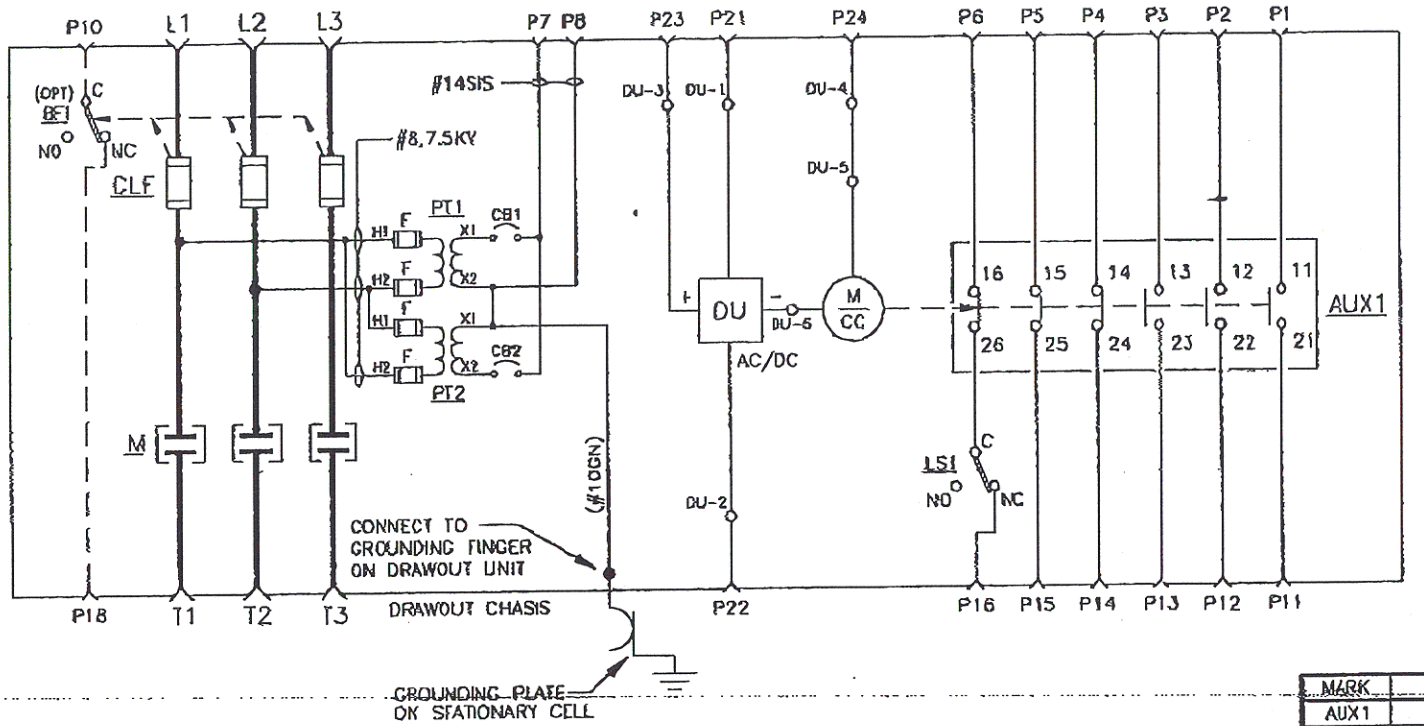
CUSTOMER:

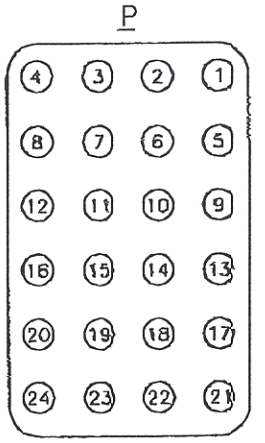
JOB NUMBER:

REVISION: 3

SCALE: 1.0=1.0

DRAWING NUMBER: V900KS04





REAR VIEW

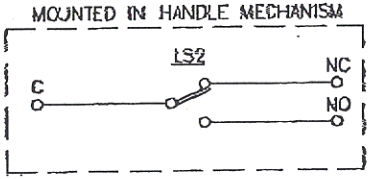
PLUG MOUNTED ON FRONT OF DRAWOUT UNIT

PLUG: AMP #207304-1 (PC75801P020)
SOCKET: AMP #66601-1 (PC75801P010)

NOTES

1 – LS1 IS CLOSED IN TEST OR CONNECTED POSITIONS
2 – LS2 IS ACTIVATED DURING RACKING MOTION OF DRAWOUT
3 – ALL WIRES ARE #18 AWM UNLESS OTHERWISE NOTED

MOUNTED IN HANDLE MECHANISM



MARK	DESCRIPTION
AUX1	AUXILIARY SWITCH No.1
BFI	BLOWN FUSE INDICATOR – OPTIONAL
CB1,2	CIRCUIT BREAKER
CLF	CURRENT LIMITING FUSE
DU	DRIVE UNIT
F	PT PRIMARY FUSE
LS1,2	LIMIT SWITCHES
M	HIGH VOLTAGE CONTACTOR
MCC	CLOSING COIL OF CONTACTOR
P	PLUG
PT1,2	POTENTIAL TRANSFORMER

REV	DATE	DESCRIPTION	BY	CHK	APPR
5	04/19/94	CHG #8 CABLE FROM 5 TO 7.5KV	BB	DC	AL
4	03/30/93	CHG 9S TO XWH & ADD "BFI"	DC	CW	AL
3	08/12/91	ADD "CB2"	LVH	AL	AL
2	08/02/90	CHG "T1" TO "CB1"	LVH	AL	AL
1	01/28/89	REVISED	LVH	AL	AL
0	12/06/88	FIRST ISSUE	LVH	AL	CH

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TITLE:
SCHEMATIC & WIRING DIAGRAM
M.V. DRAWOUT UNIT DV SERIES (WITH 2-PARALLELED PT'S)

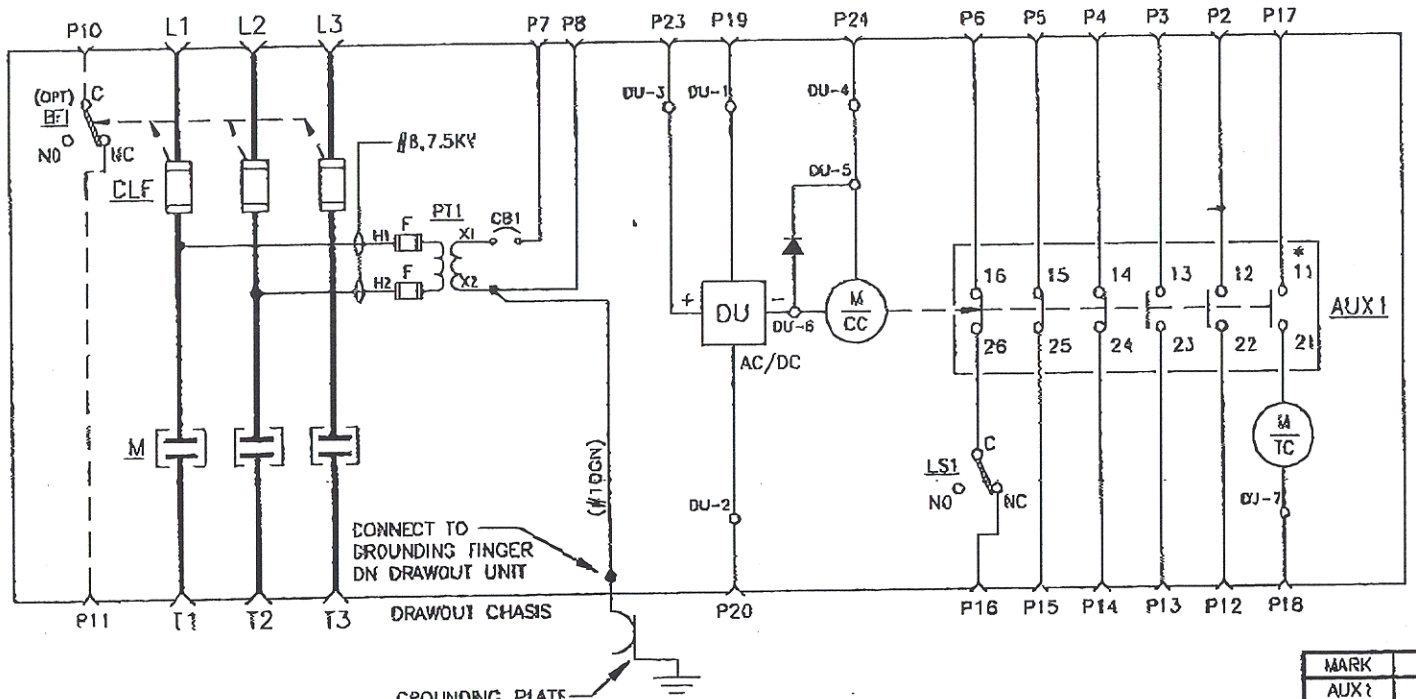
CUSTOMER:

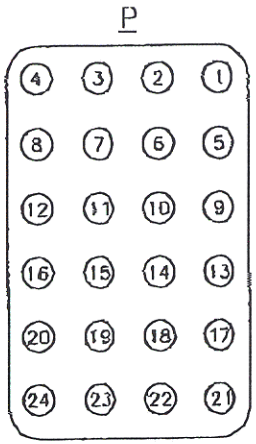
JOB NUMBER:

REVISION: 5

SCALE: 1.0 = 1.0

DRAWING NUMBER: V900KS03





REAR VIEW

PLUG MOUNTED ON FRONT OF DRAWOUT UNIT

PLUG: AMP #207304-1 (PC75801P020)
SOCKET: AMP #66601-1 (PC75801P010)

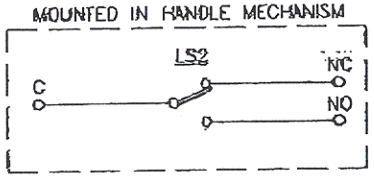
* – MECHANICALLY DELAYED CONTACT WITH MAGNETIC BLOWOUT

MARK	DESCRIPTION
AUX1	AUXILIARY SWITCH No.1
BFI	BLOWN FUSE INDICATOR – OPTIONAL
CB1	CIRCUIT BREAKER
CLF	CURRENT LIMITING FUSE
DU	DRIVE UNIT
F	PT PRIMARY FUSE
LS1,2	LIMIT SWITCHES
M	HIGH VOLTAGE CONTACTOR
MCC	CLOSING COIL OF CONTACTOR
MTC	TRIP COIL OF CONTACTOR
P	PLUG
PT1	POTENTIAL TRANSFORMER

NOTES

1 – LS1 IS CLOSED IN TEST OR CONNECTED POSITIONS
2 – LS2 IS ACTIVATED DURING RACKING MOTION OF DRAWOUT
3 – ALL WIRES ARE #18 AWG UNLESS OTHERWISE NOTED

MOUNTED IN HANDLE MECHANISM



REV	DATE	DESCRIPTION	BY	CHK	APPR
5	04/19/94	CHG #8 CABLE FROM 5 TO 7.5KV	BB	DC	AL
4	03/30/92	CHG SIS TO AWM & ADD "BFI"	DC	RW	AL
3	08/02/90	CHG "FT" TO "CB1"	LVH	AL	AL
2	03/08/89	REVISED	LVH	AL	AL
1	01/26/89	REVISED	LVH	AL	AL
0	12/06/88	FIRST ISSUE	LVH	AL	CH

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TITLE:
SCHEMATIC & WIRING DIAGRAM
M.V. DRAWOUT UNIT DV LATCHED SERIES (WITH 1-PT)

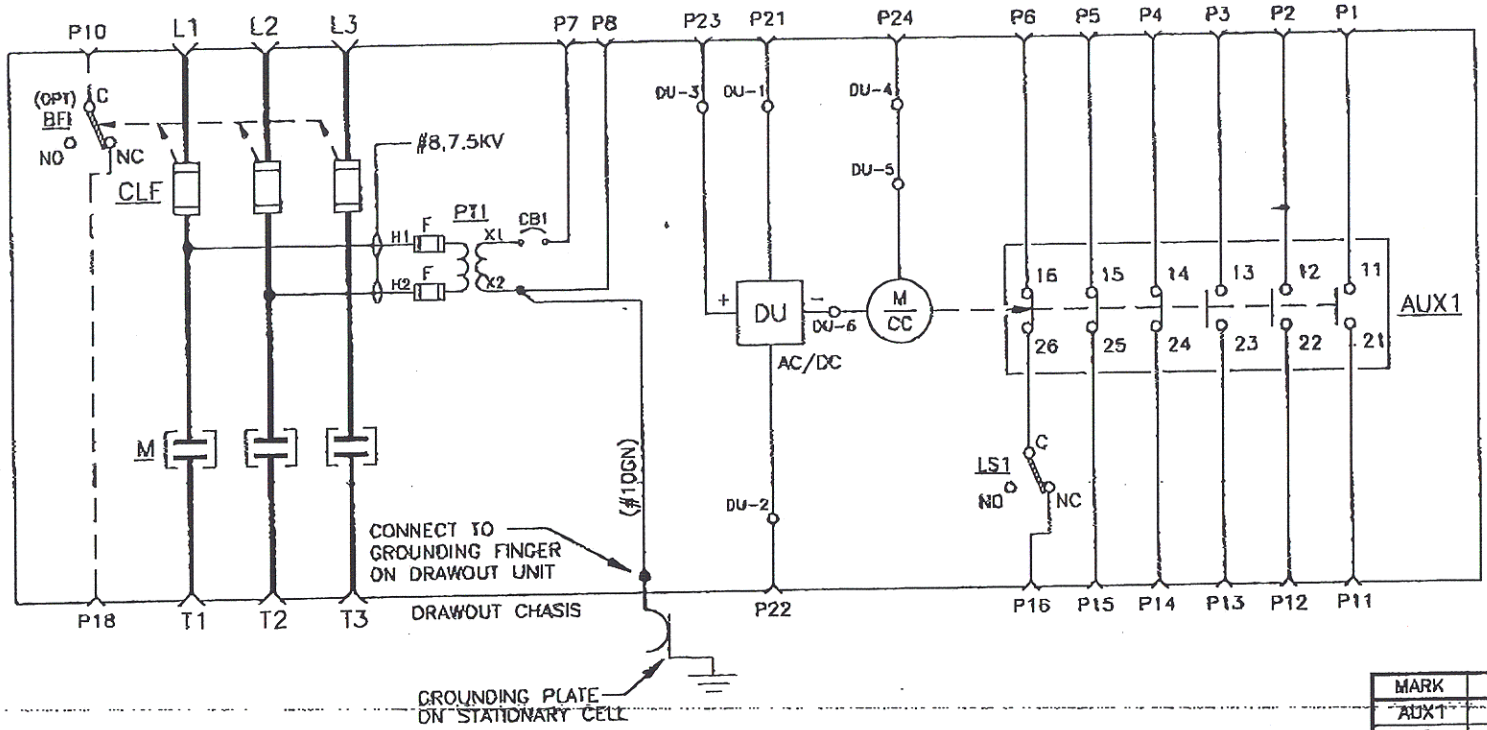
CUSTOMER:

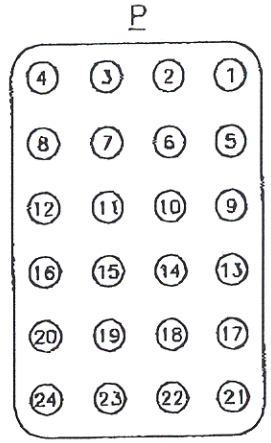
JOB NUMBER:

REVISION: 5

SCALE: 1.0=1.0

DRAWING NUMBER: V900KS02





REAR VIEW

PLUG MOUNTED ON FRONT OF DRAWOUT UNIT

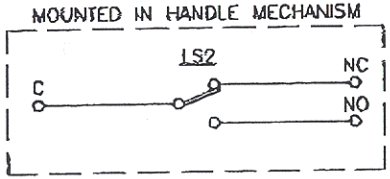
PLUG: AMP #207304-1 (PC75801P020)
SOCKET: AMP #66601-1 (PC75801P010)

MARK	DESCRIPTION
AUX1	AUXILIARY SWITCH No. 1
BFI	BLOWN FUSE INDICATOR – OPTIONAL
CB1	CIRCUIT BREAKER
CLF	CURRENT LIMITING FUSE
DU	DRIVE UNIT
F	PT PRIMARY FUSE
LS1,2	LIMIT SWITCHES
M	HIGH VOLTAGE CONTACTOR
MCC	CLOSING COIL OF CONTACTOR
P	PLUG
PT1	POTENTIAL TRANSFORMER

NOTES

1 – LS1 IS CLOSED IN TEST OR CONNECTED POSITIONS
2 – LS2 IS ACTIVATED DURING RACKING MOTION OF DRAWOUT
3 – ALL WIRES ARE #18 AWM UNLESS OTHERWISE NOTED

MOUNTED IN HANDLE MECHANISM



REV	DATE	DESCRIPTION	BY	CHK	APPR
5	04/19/94	CHG #8 CABLE FROM 5 TO 7.5KV	BB	DC	AL
4	03/30/92	CHG SIS 10 AWM & ADD "BFI"	DC	GW	AL
3	08/02/90	CHG "F1" TO "CB1"	LVH	AL	AL
2	03/06/89	REVISED	LVH	AL	AL
1	01/26/89	REVISED	LVH	AL	AL
0	12/06/88	FIRST ISSUE	LVH	AL	GH

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TITLE:
SCHEMATIC & WIRING DIAGRAM
M.V. DRAWOUT UNIT DV SERIES (WITH 1-PT)

CUSTOMER:

JOB NUMBER:

REVISION: 5

SCALE: 1.0=1.0

DRAWING NUMBER: V900KS01