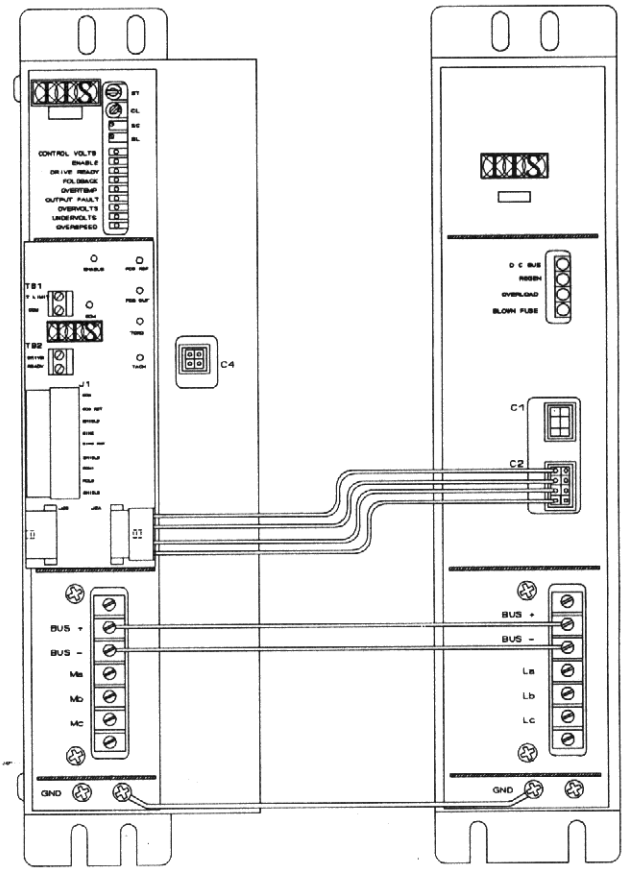
IB-16B001

MOTION CONTROL SYSTEM, MDPAK6 APRIL 1994



MDPAK6
MOTION DEVICES
USER'S GUIDE

INDUSTRIAL INDEXING SYSTEMS, Inc.

Revision - A
Approved By: WEJ 5/18/94

ER-6014

ERRATA SHEET, IB-16B001 JUNE 2000

Date	Rev.	ECN No.	DR	CHK	CHK
11/12/92	A	ECN-92-303 (See Note 1)	MFE	EB	
04/26/93	B	ECN-93-102 (See Note 2)	EB	EB	
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04/14/94	D	ECN-94-099 (See Note 4)	KY	WES	
04/21/94	E	ECN-94-102 (See Note 5)	KY	EB	
07/11/94	F	ECN-94-111 (See Note 6)	EB	RB	
12/15/94	H	ECN-94-314 (See Note 7)	EB		
01/10/95	J	ECN-95-001 (See Note 8)	KY		
10/09/95	K	ECN-95-224 (See Note 9)	RK		
08/20/96	L	ECN-96-207 (See Note 10)			
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Notes:

1) Section 2, page 2-5, dated NOVEMBER 1992, supersedes SEPTEMBER 1992. Page 2-13 is added to Section 2. Added drawing C-220YYY to Appendix I.
2) Appendix I, added C-672YYY cable drawing.
3) Appendix F, added Drive Setup SU-048005.
4) Appendix F, added Drive Setup SU-048026.
5) Appendix F, added Drive Setup SU-048002.
6) Appendix F, added Drive Setup SU-048033.
7) Appendix F, added Drive Setup SU-048031.
8) Amended Appendices B,C,D & F for the addition of MDPAK6-7000.
9) Section 3, dated OCTOBER 1995, supersedes APRIL 1994.
10) Appendix F, revised SU-048001 to Rev. C.
11) Appendix I, revised C-200YYY drawing to Rev. F.

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INTRODUCTION

The Industrial Indexing Systems Series 6 Motion Devices are a group of brushless motor/drive packages and power supply packages especially suited for indexing and positioning applications in which high torque-to-inertia ratios, high peak horsepower, and rapid acceleration/deceleration rates are required.

This manual describes proper installation, operation, and troubleshooting procedures for the Series 6 Motion Devices. These devices include the motors and drives which make up the Motor/Drive Packages and the power supplies which make up the Power Supply Packages.

For completeness, this manual also includes some information on controllers and cables which are used with the Series 6 Motion Devices. However, these items are not part of the motor/drive packages or power supply packages and must be specified separately. Connecting cables can be specified with any desired length (although there are some limits on communication and feedback cable lengths) or with just connectors and no cable for user assembly.

The manual assumes no prior knowledge of Industrial Indexing System equipment. It does assume knowledge of proper mechanical, electrical, and electronic maintenance and safety procedures. Information in this manual is subject to change without prior notification.

The manual uses a variety of highlighted blocks to emphasize important information. Always pay careful attention to this information. The types of highlighted blocks used are:

WARNING

USED TO ALERT THE READER TO ACTIONS OR CONDITIONS WHICH MIGHT PRESENT HAZARDS OR CAUSE INJURY TO PERSONNEL.

CAUTION

USED TO ALERT THE READER TO ACTIONS WHICH MIGHT CAUSE LOSS OF MATERIALS OR DAMAGE TO EQUIPMENT.

NOTE

Used to identify unusual or unexpected conditions or to point out the need for alternate procedures. It is also used for emphasis when a CAUTION or WARNING is not required.

Industrial Indexing Systems fully supports all equipment it manufactures and supplies. If there are any problems with this equipment or if assistance is required for installation or operation, contact our Integrated Technical Services Department.

Assistance and training is available in our factory, for a fee. In addition, Industrial Indexing Systems can custom configure Series 6 Motion Devices for O.E.M. applications.

SECTION 1 – DESCRIPTION

The Industrial Indexing Systems Series 6 Motion Devices are a group of brushless motor assemblies, drive packages, and power supply packages especially suited for indexing and positioning applications in which high torque-to-inertia ratios, high peak horsepower, and rapid acceleration/deceleration rates are required. The motors and drives are used in conjunction with a closed-loop controller to accurately control the position of the motor shaft.

1.1 INDEXING DRIVE SYSTEM OVERVIEW

An indexing drive system (or indexing system) may be used in a variety of applications where accurate movement or positioning is required. A basic single-axis system consists of eight main components as illustrated in **Figure 1.1**.

1. Input Device: The input device provides data to the controller. It is the interface between the operator (or system computer or programmable logic controller) and the indexing system. In a given system, there may actually be several input devices.

2. Controller: The controller receives data from the input device and issues commands to the drive. It also accepts information from the feedback device (after it is converted by the drive). The programming and settings of the controller determine what types of commands are issued to the drive in response to the data inputs and feedback.

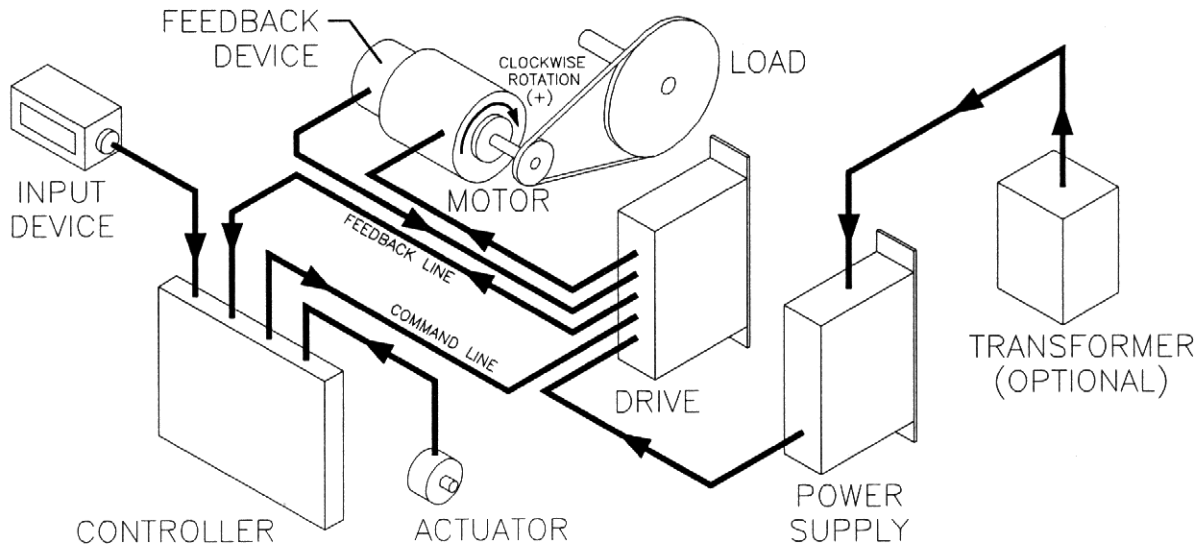


Figure 1.1 - Basic Indexing System

3. Actuator: The actuator supplies the signal which causes the controller to initiate the specified sequences. It may be a separate device or part of a computer program from the Input Device.

4. Power Supply: The power supply converts AC input power into DC power and conditions this secondary power so it can be used by the drive.

5. Transformer: The transformer converts prime supply voltage into the required input voltage for the power supply.

6. Drive: The drive (also called a servo-amplifier) amplifies a low voltage velocity command signal from the controller into the necessary voltage and current to cause the motor shaft to rotate. The amount of power and polarity (positive or negative) of the voltage supplied to the motor is determined by the command signals from the controller.

7. Motor: The motor is the device being controlled by the indexing system. The system controls the amount and speed of motor shaft rotation.

8. Load: The load is the object of the motion. It absorbs the work energy of the motor.

9. Feedback Device: The feedback device (always a resolver with the Series 6 Motion Devices) monitors the position of the motor shaft and sends this information to the drive where it is converted into quadrature encoder pulses which are then sent to the controller.

The objective of the indexing system is to accurately control the position and speed of rotation of a motor shaft at any given time. This control may be used to move the load a specific distance (index) or to a specific location (position). It also may be used to move the load in a pattern duplicating the motion that would be produced by the action of a mechanical cam, remembering that motion can occur in both clockwise and counterclockwise directions.

The components of the basic indexing drive system form two information loops. The position loop (refer to **Figure 1.2**) is a closed-loop which consists of the controller, drive, motor, and feedback device. The controller continually compares motor position, derived from the feedback pulses received from the drive, with the desired position calculated within the controller. Any difference between calculated position and actual position results in a corrective command signal being sent to the drive. The drive then corrects motor position by adjusting its velocity loop. The objective of the position loop is to keep the actual position equal to the commanded position.

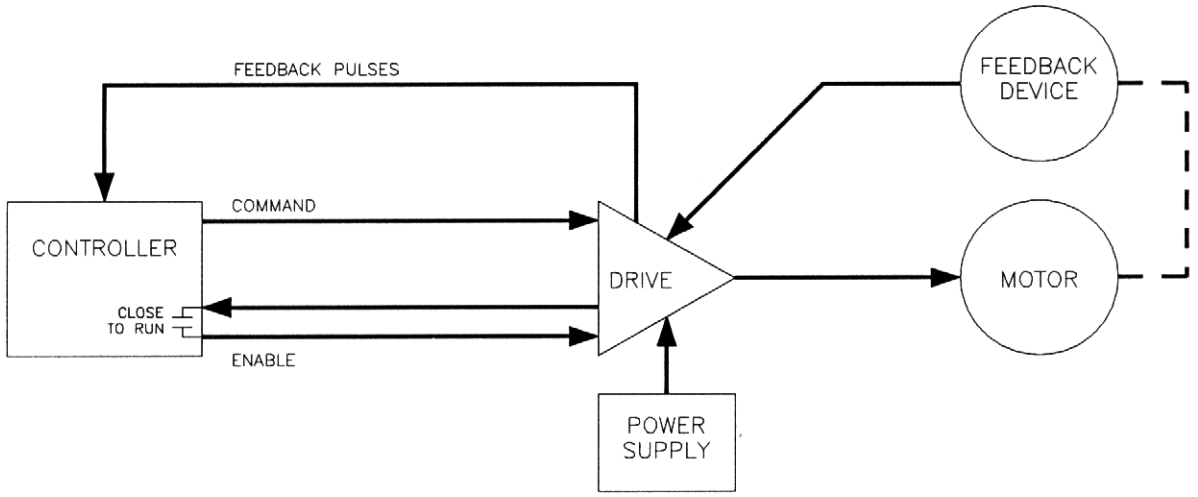


Figure 1.2 - Position Loop

The velocity loop (refer to **Figure 1.3**) is also a closed-loop system. The drive continually compares motor velocity, derived from the feedback device, with the magnitude of the command signal generated by the controller. Any difference causes the drive to alter the current to the motor, which in turn changes the motor velocity. The objective of the velocity loop is to keep actual velocity equal to commanded velocity.

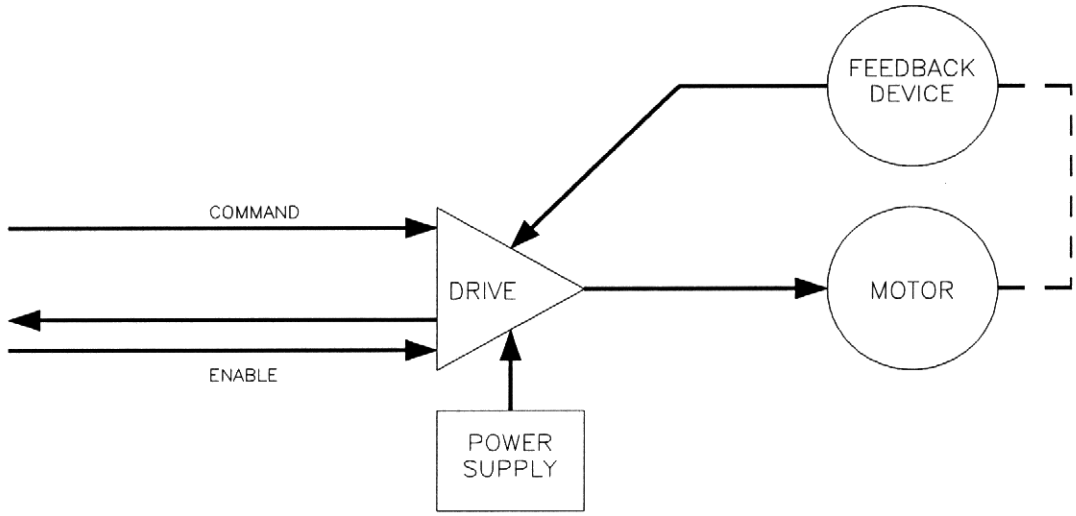


Figure 1.3 - Velocity Loop

The position loop and velocity loop are independent loops, but the controller uses the velocity loop to achieve movement to the desired position. When data is received by the controller specifying a movement, the controller calculates the time required to accelerate to maximum speed and to decelerate from maximum speed. It then calculates the time at maximum speed necessary to complete the movement. This information is then transmitted to the drive by the controller.

NOTES

1.2 MOTION DEVICES

The motion device components of the indexing drive system discussed in this manual include the drives, motors, and power supplies. Transformers are recommended, but are not supplied as part of the Power Supply Package. External regeneration resistors are not required by the 12-amp and 20-amp Series 6 Power Supply Packages.

1.2.1 PRE-ENGINEERED MOTOR/DRIVE PACKAGES

The combination of a specific drive and motor assembly (motor plus feedback device) is designated as a Motor/Drive Package (MDPAK™). The power supply assembly is designated as a Power Supply Package (PWRPAK™). Each of these packages has been pre-engineered and pre-tested to offer system-level performances. The components of each package are selected to work properly with each other at the rated performance levels and the Motor/Drive Packages and Power Supply Packages of a specific series are selected to work properly with each other.

NOTE

Each motor/drive package in this manual belongs to the MDPAK6 series. Each power supply package belongs to the PWRPAK6 series.

Selection of a PWRPAK or MDPAK depends on the system requirements of number of axes, speed, torque, peak torque, horsepower, and physical size. The specifications for all Series 6 motion devices are contained in the appendices to this manual. Refer to **Paragraph 1.2.2** for details on reading these specifications.

1.2.2 ORDER/SHIPPING CORRELATION

When an order is placed with Industrial Indexing Systems, Inc., the motion devices are specified as an MDPAK and a PWRPAK, with the appropriate numerical designations. However, when the units are shipped, the individual components are specified — rather than the package designations — to make sure that all items are supplied properly. If several MDPAKs and PWRPAKs are ordered, there will be similar components in the shipment with no cross reference as to which Motor/Drive Package or Power Supply Package they belong to. To avoid confusion and potential error when the units are assembled by the customer, **Appendix B** and **Appendix G** of this manual include specifications for all Series 6 Motor/Drive Packages and Power Supply Packages currently supplied by Industrial Indexing Systems, Inc. **Appendix D** has Bills of Materials for each Motor/Drive Package along with the operating motor torque curve for the package. Similarly, the appendices for each of the other motion devices series manuals contain complete Bills of Materials and specifications for those series.

Figure 1.4 shows a sample Bill of Material for a Series 6 MDPAK™. It includes the motor assembly part number and the drive part number for that MDPAK. It also shows the instruction manual number for the motion devices series. **Appendix C** contains a detailed drawing of each motor assembly including dimensions and connectors. **Appendix E** contains drawings with dimensions and electrical connections for each of the MDPAK6 drives.

LIST OF MATERIALS	
DESCRIPTION	MDPAK6 PART NUMBER
CONTROLLER	BSD6-300/03-1039
MOTOR ASSY	BLM-1039
MANUAL	IB-16B001

Figure 1.4
Sample MDPAK™ Bill of Materials

The part number for a Series 6 PWRPAK™ includes just the power supply and the instruction manual number for the motion devices series. Although a Series 6 PWRPAK only contains one component power supply, the same power supply can be used for different combinations of drives. Therefore, to maintain consistency with other Industrial Indexing Systems' motion devices series, the PWRPAK definition is assigned to the power supply.

1.3 COMPONENTS

The Series 6 Motor/Drive Packages and Power Supply Packages are based on the use of brushless motors with resolvers as feedback devices. Each drive is matched to the motor for the specific MDPAK™ application. Each drive is used with only one motor assembly. Each power supply can be used with one or more drives, depending on the load requirements of the drives and the maximum allowable axes for the power supply. The power supply is electrically connected to the drive by a 300 VDC power bus cable, a DC power (control signal) cable, and a ground wire. When one power supply is used with multiple axis drives, the drives are daisy-chained to each other with additional power, control, and ground cables (refer to **Figure 1.5**).

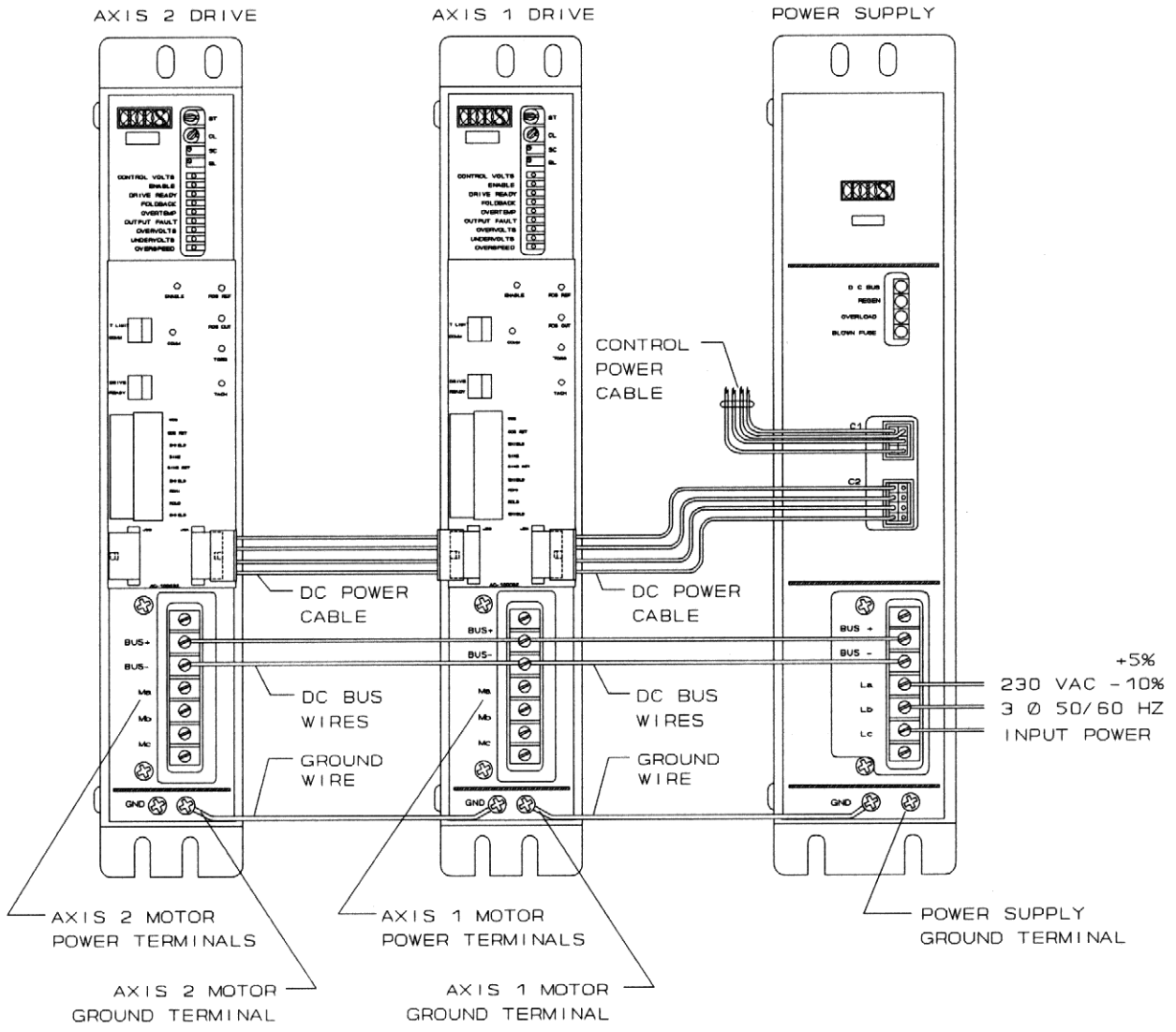


Figure 1.5 - Multiple Drives Connected To Single Power Supply

1.3.1 MOTOR/DRIVE PACKAGE (MDPAK™)

The Motor/Drive Package consists of the motor assembly and drive. Specifications and dimensions for each of the Series 6 motor assemblies and drives are contained in **Appendix B** and **Appendix E** respectively. Torque curves for the Motor/Drive Packages are contained in **Appendix D**. The resolvers — used as feedback devices — are an integral part of the motor assembly.

1.3.1.1 Motor Assemblies

Appendix C contains the drawings, with dimensions and wiring connections, for each of the motor assemblies used in the Series 6 Motor/Drive Packages. **Figure 1.6** shows a representative illustration and the typical location of the components which will need to be accessed during installation or operation of the motor assembly.

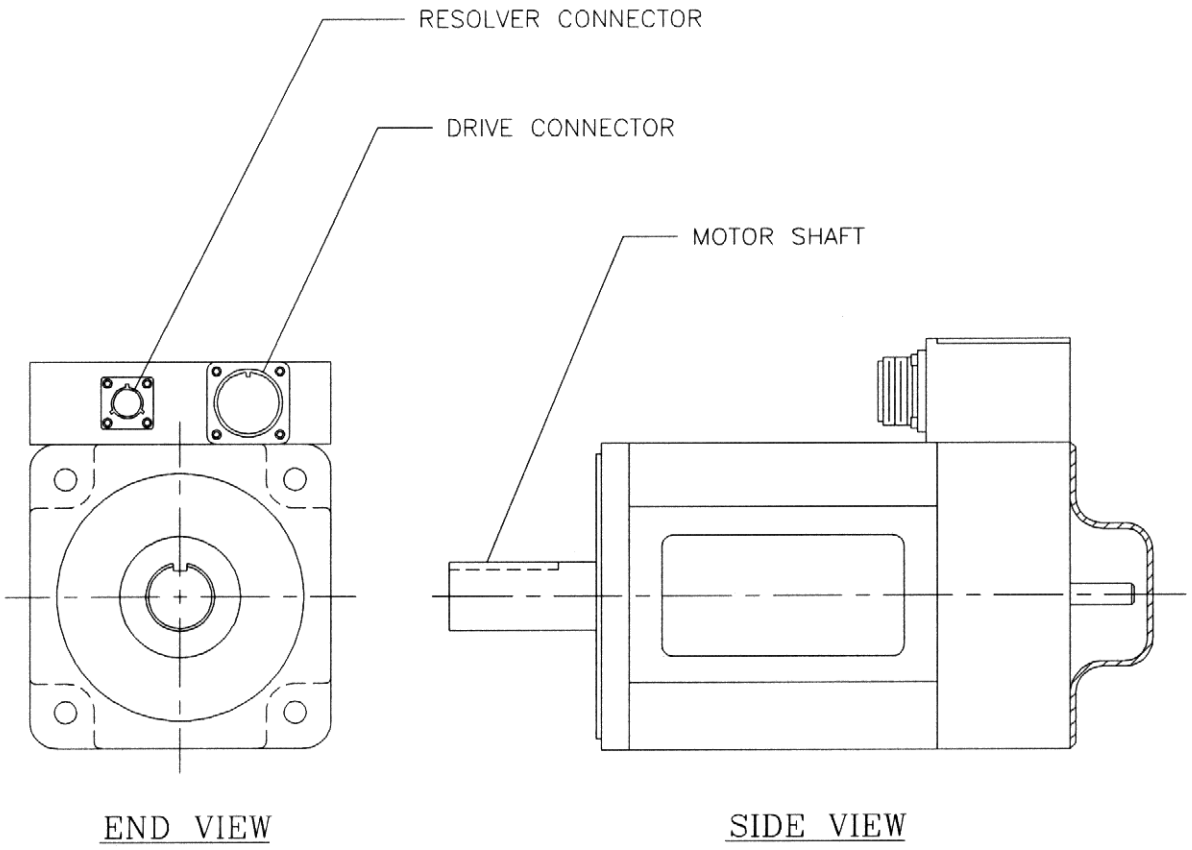


Figure 1.6 - Typical Brushless Motor

Drive Connector: The drive connector is used for the power cable from the drive to the motor. Two of the pins in this connector also provide the circuit from the internal motor overload thermostat to the drive. This thermostat should be wired in series with the drive system safety circuit to shut down the system in the event of an over-temperature condition.

Resolver Connector: This connector is used for the resolver cable from the drive.

1.3.1.2 Drives

The drive converts the signals from the controller and the power from the power supply into useable energy to rotate the motor shaft. It also converts the resolver position signals into quadrature encoder-type pulses for use by the indexing system controller. (Refer to the controller instruction manual for additional information on the use of these encoder pulses by the controller.)

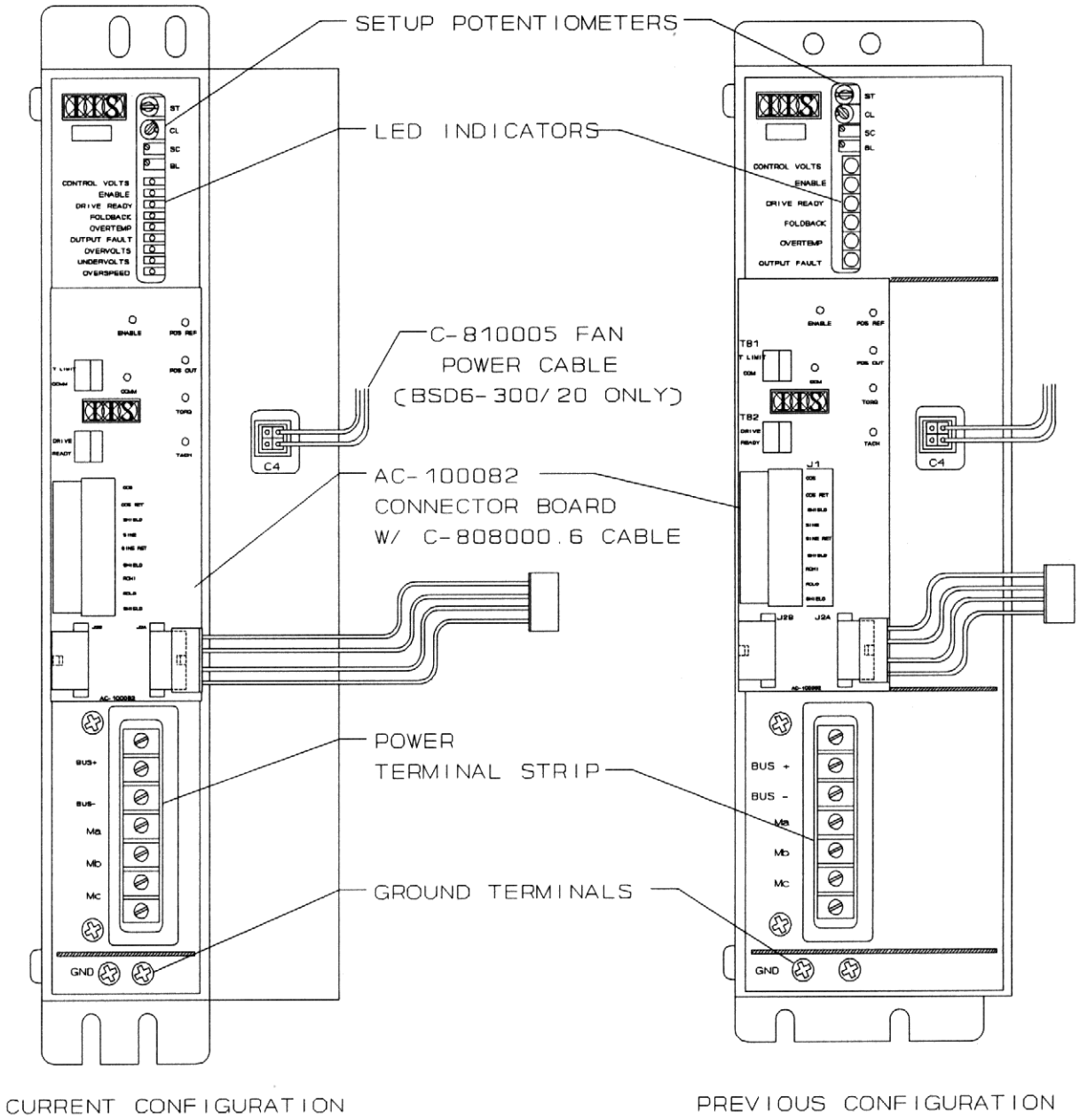


Figure 1.7 - Drive Components

Most of the necessary connection, operating, and adjustment components are accessed from the exterior of the drive. However, access to some components requires removal of the side cover. **Figure 1.7** shows the front view of a typical drive. (**Appendix E** contains drawings for the drives used with Series 6 Motor/Drive Packages.)

WARNING

HIGH VOLTAGES MAY BE PRESENT IN THE DRIVE EVEN WITH THE POWER DISCONNECTED. USE EXTREME CAUTION WHEN ACCESSING THE INTERIOR OF THE DRIVE.

1. Setup Potentiometers: (Refer to **Figure 1.8**.) Used to tune the Motor/Drive Package for optimum performance. Refer to **"Section 3 - Controls and Operation"** for instructions on the use of these potentiometers.

2. LED Indicators: (Refer to **Figure 1.8**.) Used to indicate the operating and error conditions of the drive. Refer to **"Section 3 - Controls and Operation"** for details on the various indicating LEDs.

3. C-810005 Fan Power Cable: Supplies power for drive cooling fan. Only drive BSD6-300/20 has a cooling fan (and power cable).

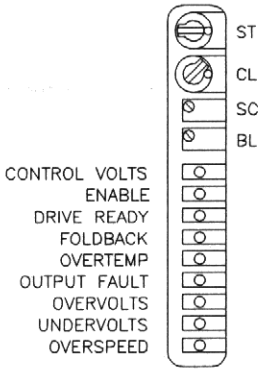


Figure 1.8
Potentiometers and LED Indicators Current Configuration

4. AC-100082 Connector Board: (Refer to **Figure 1.9**.) This circuit board plugs into the various edge connectors on the drive circuit boards to provide convenient cable connectors, wire terminals, and test points at the front of the drive.

   a. Test Points: Six terminals are provided to access monitoring points on the drive circuit boards without having to open the drive. (Refer to **"Section 3 - Controls and Operations"** for explanations on the use of these test points.

   b. TB1 (Torque Limit Terminals): Allow the customer to establish torque limits for the drive below the maximum torque rating of the drive (refer to **"Section 2 - Installation"**.)

   c. TB2 (DRIVE READY Relay Terminals): Provide access to an internal relay which provides a contact closure indicating the drive is ready to run.

   d. J1: Used for connection to the cable from the resolver.

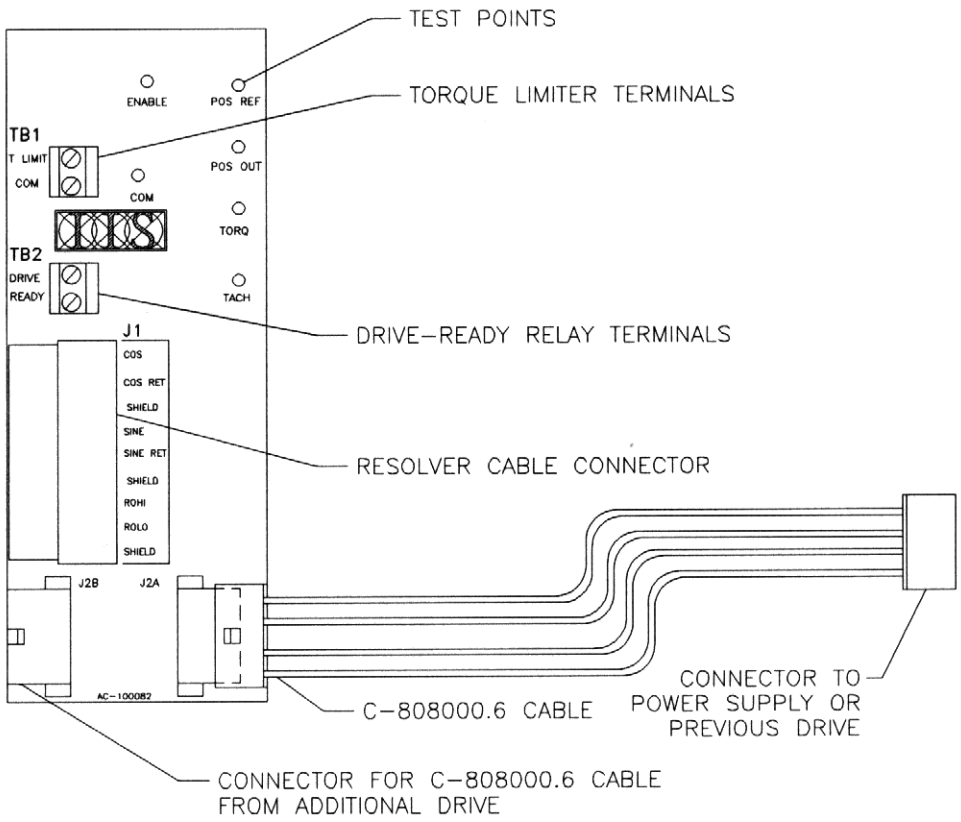


Figure 1.9 - AC-100082 Connector Board

e. J2A: Connector for integrally attached C-808000.6 cable. This cable attaches to either the power supply or the previous drive and carries unregulated DC control power from the power supply to the drives.

f. J2B: Connector for C-808000.6 cable from additional drives.

5. Power Terminal Strip: (Refer to **Figure 1.10**.) Provides terminals for DC Bus power for carrying unregulated 300 VDC power from the power supply and for power to the motor. (Refer to **"Section 2 - Installation"** for instructions on using these terminals.)

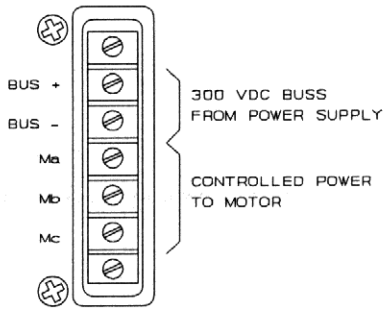


Figure 1.10
Drive Terminal Strip

6. Ground Terminals: Connection points for earth and electrical grounds. (Refer to **"Section 2 - Installation"** for instructions on making proper grounding connections.)

CAUTION

THE SERIES 6 MOTION DEVICES MUST BE PROPERLY GROUNDED ACCORDING TO THE INSTRUCTIONS IN THIS MANUAL. IMPROPER GROUNDING COULD RESULT IN DAMAGE TO THE DEVICES.

7. Motor Pack Personality Card: (Refer to **Figure 1.11 & 1.12.**) Preset at the factory to configure drive.

8. INT-420A or INT-420 Interface Board: (Refer to **Figure 1.11 & 1.12.**) Integrated circuit board in the drive which provides communication with the controller and LED pulse status indicators. This board has a connector which accepts a 20-pin plug on the circuit board beneath the INT-420. It is held to this circuit board by three screws. (Refer to **"Section 2 - Installation"** for information on cable attachments to the connectors on this board. Refer to **"Section 4 - Maintenance"** for instructions on removing the INT-420A or the INT-420 for access to Terminal block TB84 on the circuit board below.)

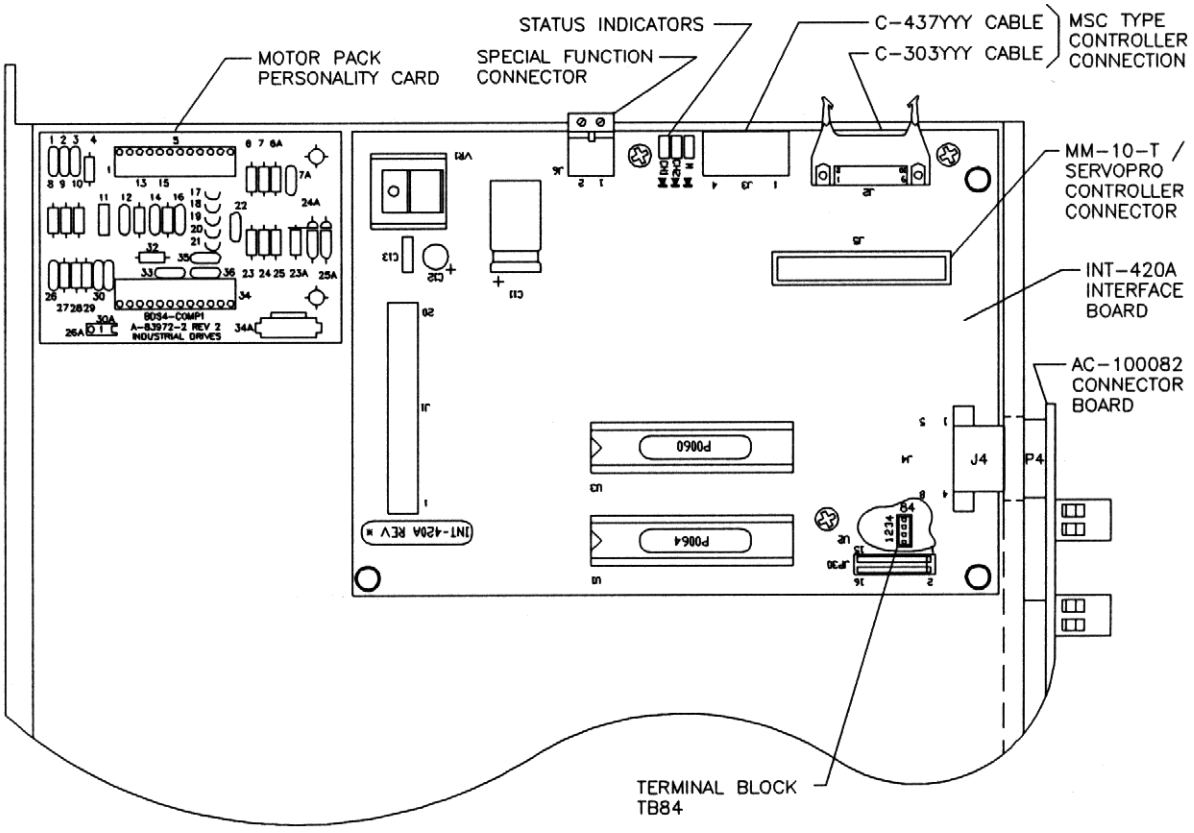


Figure 1.11 - Drive: Partial Side View (Cover Removed) Current Configuration

a. J2: Connector for C-303yyy encoder cable from MSC-type controller.

b. J3: Connector for C-437yyy command cable from MSC-type controller.

c. J5: Connector for C-305yyy encoder cable from MM-10-T or ServoPro controllers.

d. J6: Special Function Connector (on INT-420A only) for I/O cable from DC output module of an MSC-type controller.

e. Status Indicators: These three LEDs — one for each pulse stream — indicate the status of the encoder pulses by illuminating once per pulse.

9. TB84: Access to terminals on this terminal block are required for resolver zeroing procedures. These procedures are only required if the resolver on a motor has been replaced (refer to **"Section 4 - Maintenance"**). All factory shipped motor/resolver assemblies are zeroed at the factory.

10. Fan (Not Shown): An internal fan is supplied only on the BSD6-300/20 series of drives, largest of the Series 6 drives. The fan supplies a cooling air flow over the drive electronic components to prevent build up of excess heat in the drive enclosure.

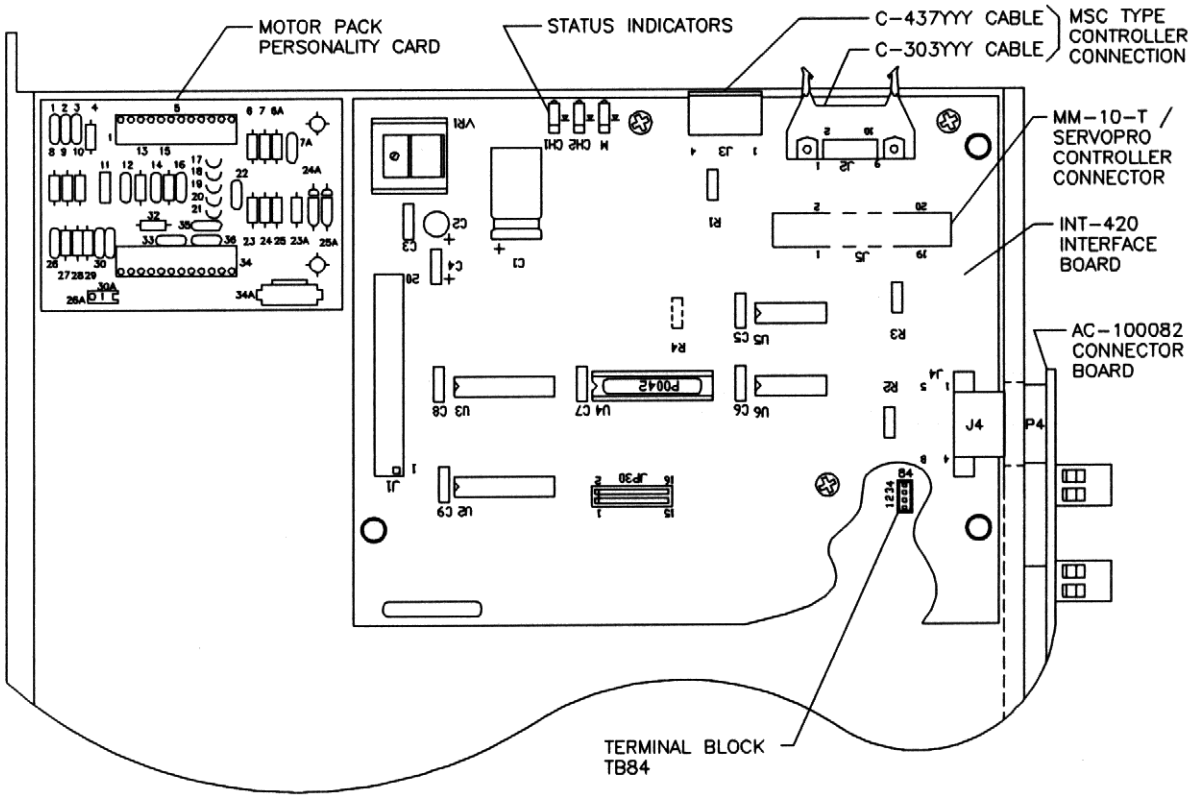


Figure 1.12 - Drive: Partial Side View (Cover Removed)
Previous Configuration

1.3.2 POWER SUPPLY PACKAGE (PWRPAK™)

The Power Supply Package consists of only the power supply. (Optional Transformers, **Appendix K**, and external regeneration resistors are available, but not required, in Series 6 PWRPAKs.) The power supply converts the 230 VAC input power to 300 VDC unregulated output power for use by the drive. The Series 6 PWRPAKs use a 12-amp and a 20-amp power supply. The choice of power supply depends on the size and number of drives in the system.

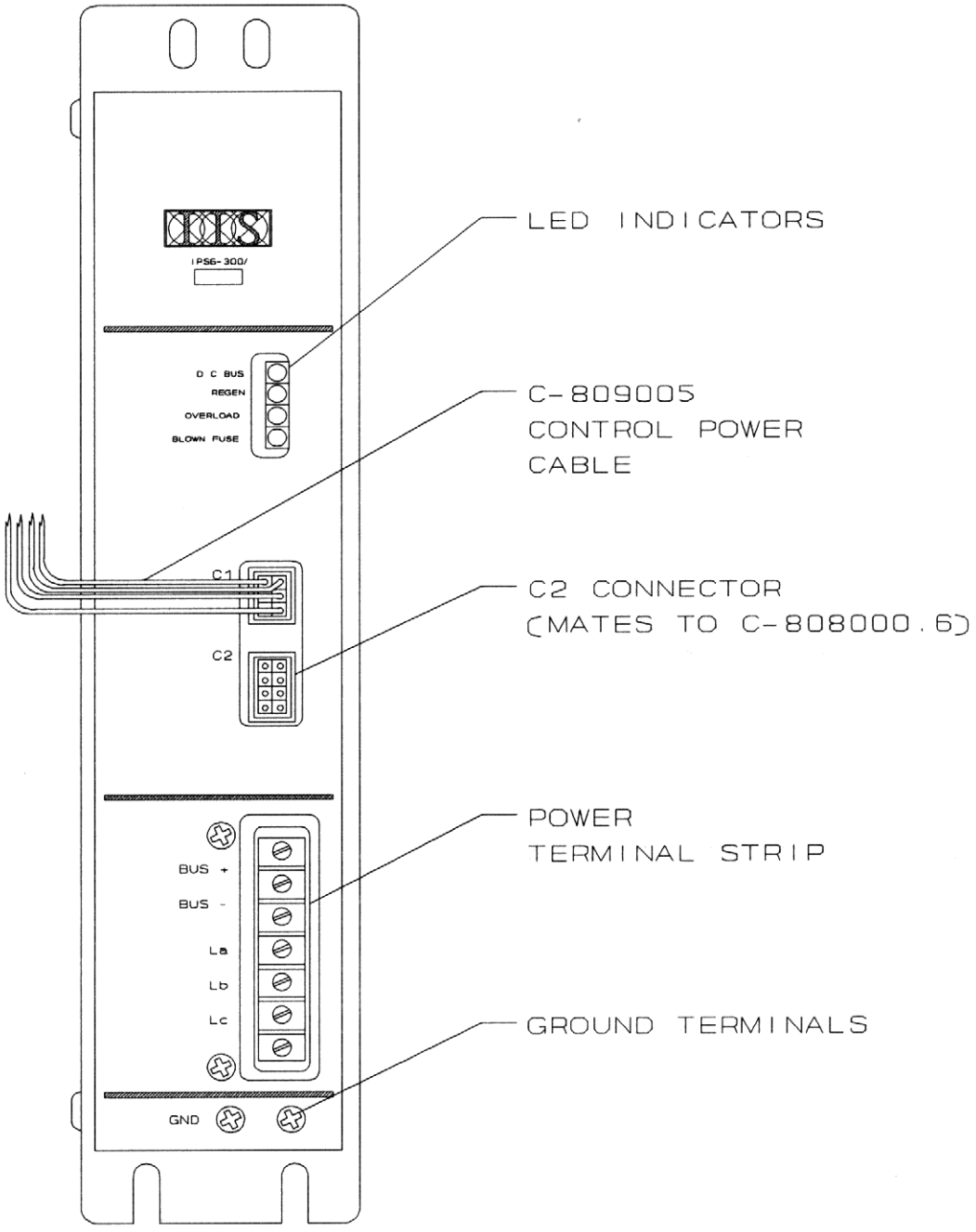


Figure 1.13 - Power Supply Components

1. LED Indicators: (Refer to **Figure 1.13** and **Figure 1.14**.) Used to indicate the operating and error conditions of the power supply. Refer to **"Section 3 - Controls and Operation"** for details on the various indicating LEDs.

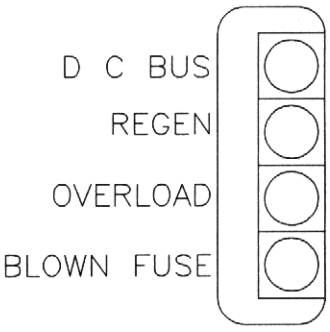


Figure 1.14
Power Supply Indicating LEDs

2. C-809005: Integral control power cable. This cable carries the 115 VAC control voltage from the customer's control circuit. It also supplies the connection to the internal FAULT relay which is to be incorporated in the control safety circuit (refer to **"Section 2 - Installation"**).

3. C2: Connector for C-808000.6 cable from first drive. This connector carries the DC unregulated control voltage for the drives. This DC control voltage passes from the power supply to the first drive. It is then passed to succeeding drives over their C-808000.6 cables which are daisy-chained from the first drive.

4. Power Terminal Strip: (Refer to **Figure 1.15**.) Provides terminals for incoming 230 VAC power and for DC Bus power for carrying unregulated 300 VDC power to the drives. (Refer to **"Section 2 - Installation"** for instructions on using these terminals.)

5. Ground Terminals: Connection points for earth and electrical grounds. (Refer to **"Section 2 - Installation"** for instructions on making proper grounding connections.)

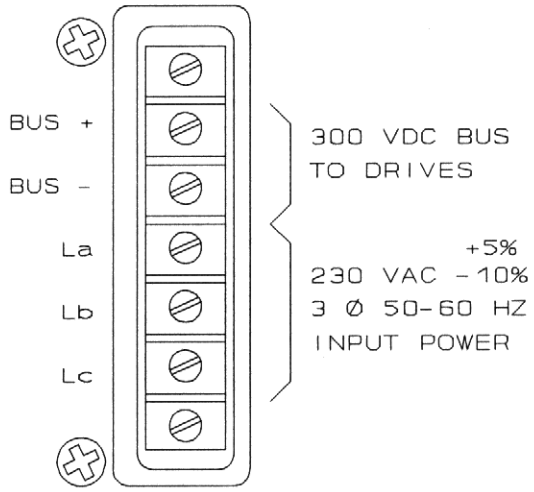


Figure 1.15
Power Supply Terminal Strip

CAUTION

THE SERIES 6 MOTION DEVICES MUST BE PROPERLY GROUNDED ACCORDING TO THE INSTRUCTIONS IN THIS MANUAL. IMPROPER GROUNDING COULD RESULT IN DAMAGE TO THE DEVICES.

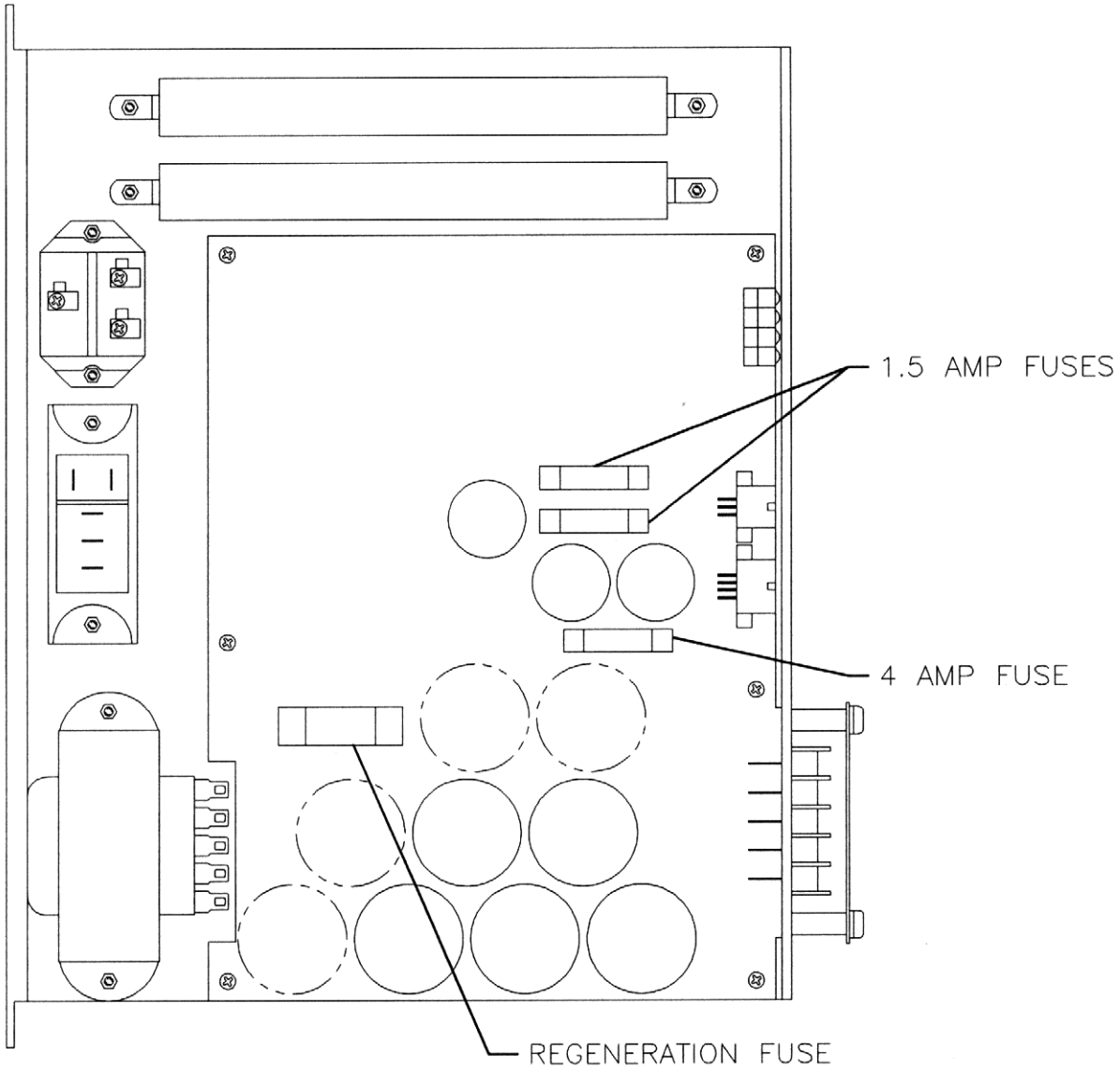


Figure 1.16 - Power Supply Fuse Locations

6. Regeneration Fuse: This 600 VAC fuse protects the internal regeneration resistor and power supply from excessive currents during regeneration (energy dissipation) cycles. The IPS6-300/12 power supply uses a 5-amp fuse (part number KLK-5A or equivalent). The IPS6-300/20 power supply uses a 6-amp fuse (part number KLK-6A or equivalent).

7. 1.5-Amp Fuse: These two fuses protect the 18 VDC control-voltage circuit (part number MDL-1.5 or equivalent).

8. 4-Amp Fuse: This fuse protects the 10 VDC control-voltage circuit (part number MDL-4 or equivalent).

1.4 SPECIFICATIONS

Most specifications for the various motion devices are contained in the appropriate appendices at the end of this manual. This section includes some general information and an explanation of how to read the MDPAK™ and PWRPAK™ specifications in the appendices.

NOTE

Any MDPAK™ or PWRPAK™ specification data shown in this section should be considered as reference only. Refer to Appendix B and Appendix G for current information specifications on each of the Motor/Drive packages and Power Supply Packages respectively.

AMBIENT OPERATING TEMPERATURE: 0-55°C (130°F)
(Derate drives 2% per °C from 45°C to 55°C; derate power supplies 1% per °C from 45°C to 55°C.)

SWITCHING FREQUENCY: 10.0 KHz

WEIGHT:

BSD6-300/3	Drive	6.5 lbs.
BSD6-300/6	Drive	7.5 lbs.
BSD6-300/10	Drive	10.5 lbs.
BSD6-300/20	Drive	14.5 lbs.
IPS6-300/12	Power Supply	10.5 lbs.
IPS6-300/20	Power Supply	12.0 lbs.

DRIVE CURRENT RATINGS:

BSD-300/3	Continuous:	3.0 A rms/phase
	Peak (2.0 sec.):	6.0 A rms/phase
BSD-300/6	Continuous:	6.0 A rms/phase
	Peak (2.0 sec.):	12.0 A rms/phase
BSD-300/10	Continuous:	10.0 A rms/phase
	Peak (2.0 sec.):	12.0 A rms/phase
BSD-300/20 (Fan Cooled)	Continuous:	20.0 A rms/phase
	Peak (2.0 sec.):	40.0 A rms/phase

POWER SUPPLY INPUT POWER: 230 VAC rms (L-L) 3-Phase (+5%/-10%)
120 VAC rms Control Voltage (±10%)

POWER SUPPLY OUTPUT POWER:

IPS6-300/12	300 VDC unregulated 12.0 A power supply bus
IPS6-300/20	300 VDC unregulated 20.0 A power supply bus

SECTION 2 – INSTALLATION

The various components which make up the Series 6 Motor/Drive Packages and Power Supply Packages may be supplied as loose components, as assembled systems, or as a combination of each. This manual assumes that all components have been supplied as individual, unmounted components.

2.1 MOUNTING

CAUTION

ALL MDPAK™ AND PWRPAK™ COMPONENTS MUST BE MOUNTED IN ENCLOSURES WHICH ARE SUITABLE TO PROTECT THE COMPONENTS FROM THE SURROUNDING ENVIRONMENT. THERE MUST BE ADEQUATE VOLUME TO PREVENT OVERHEATING.

2.1.1 POWER SUPPLY AND DRIVES

The drives are mounted directly to the left of the power supply in accordance with spacing requirements. Each drive is connected to the power supply or the preceding drive by two bus wires which carry the 300 VDC power to the drive, a grounding wire, and the C-808000.6 DC control voltage cable. Therefore, the mounting depends on the number of drives which connect to the power supply. Mounting dimensions for the drives are shown in **Appendix E**. Mounting dimensions for the power supplies are shown in **Appendix H**. Installation drawings for the drive and power supply combinations are shown in **Figure 2.3, 2.4 or 2.5 and Appendix J**.

Each drive or power supply must by separated from any adjoining units by a space of 1.26" (32 mm) minimum to 1.57" (40 mm) maximum. Allow at least 1" (25 mm) clearance around the units for air flow. Additional space may be desired for ease of access and wiring.

NOTE

For component mounting spacings outside the limits indicated, special connecting cables are required. Contact Industrial Indexing Systems for assistance with special applications.

Each drive or power supply is mounted to a flat surface or enclosure by three or four 1/4" or 7 mm bolts. (Mounting hole layouts for each of the drives and power supplies are shown in **Figure 2.1 & Figure 2.2**.) The drives and power supplies must be mounted vertically so the front panels are positioned as shown in **Figure 2.3, 2.4 and 2.5** and in the installation drawings in **Appendix J**.

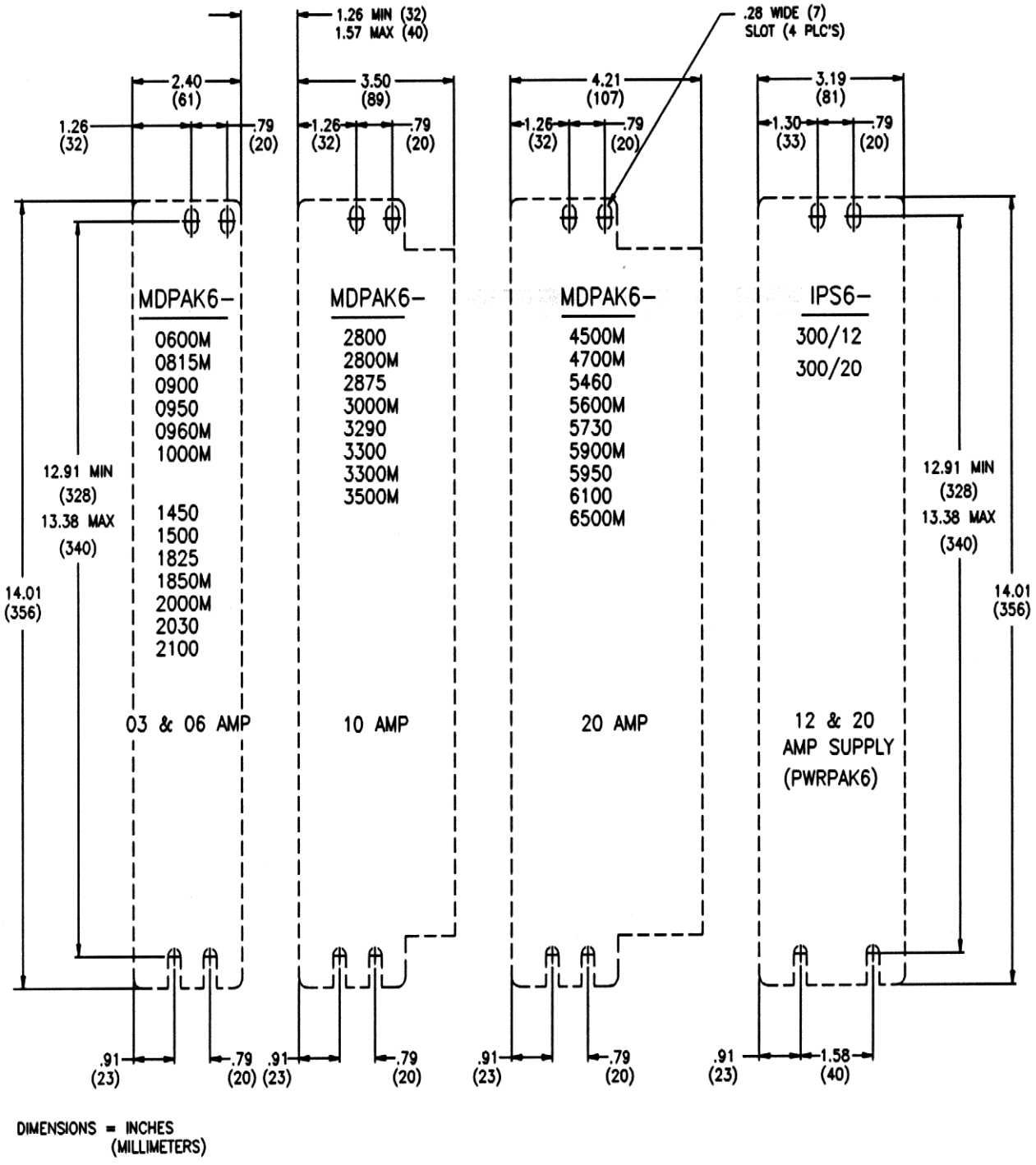


Figure 2.1 - Drive and Power Supply Mounting Hole Layouts (Current Configuration)

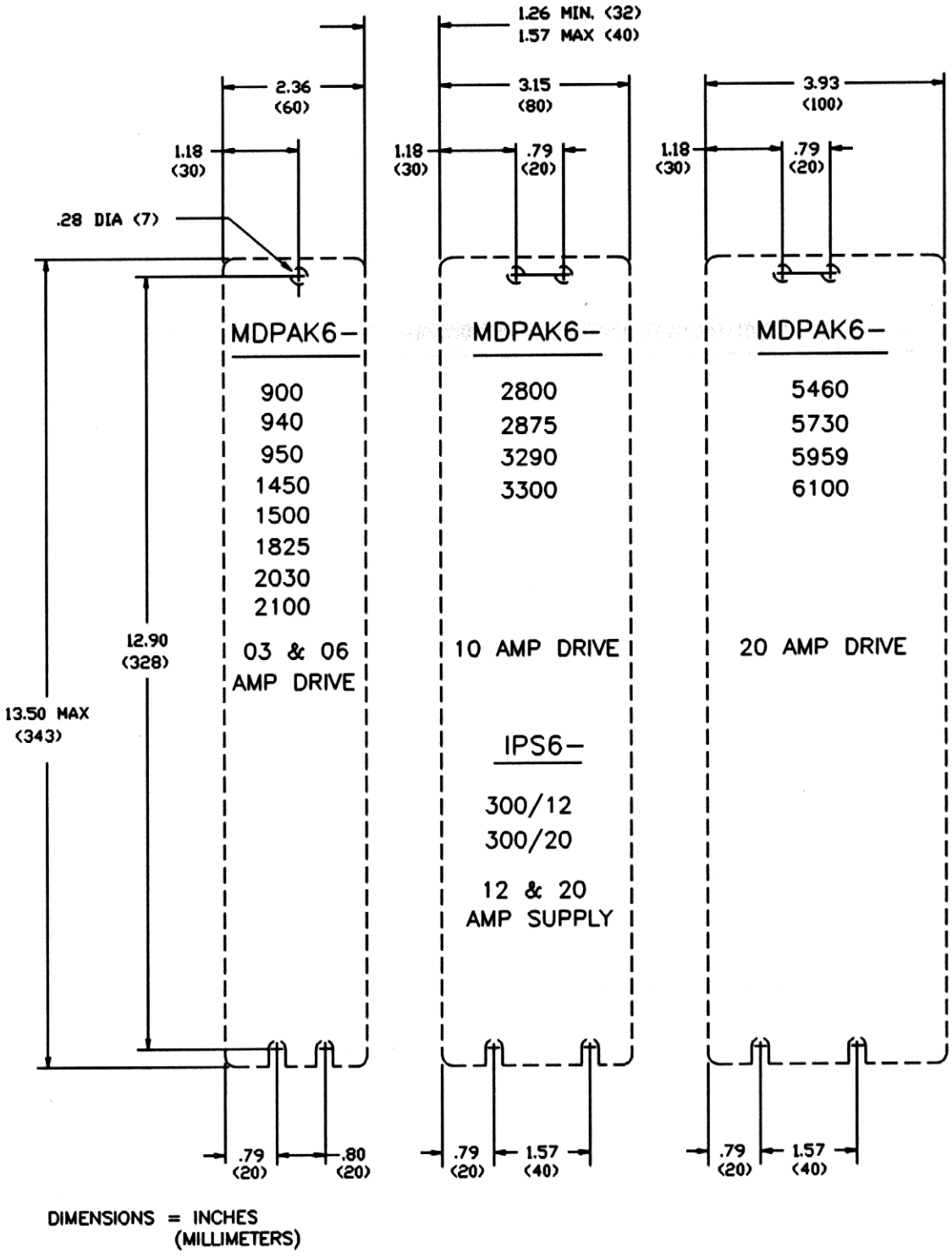


Figure 2.2 - Drive and Power Supply Mounting Hole layouts (Previous Configuration)

1. Determine the mounting dimensions for each power supply and drive. (Refer to **Figure 2.1** and **Appendix J** for mounting dimensions of Series 6 drives and power supplies.) All drives must be located in a single line with the power supply. As viewed from the front, the power supply must be mounted to the right of all drives. Contact Industrial Indexing Systems for assistance with special applications.

2. Lay out the mounting locations of the power supply and all drives. (A typical installation drawing is shown in **Figures 2.3, 2.4 and 2.5**.)

3. Provide the appropriate holes and hardware to mount the drives and power supply. Make sure the support is adequate for the total weight of the components.

WARNING

IF A DRIVE WAS PREVIOUSLY ENERGIZED, IT IS POSSIBLE THAT THERE IS HIGH VOLTAGE PRESENT AT THE BUS TERMINALS, EVEN WITH THE DRIVE DISCONNECTED. USE CAUTION WHEN HANDLING THE DRIVES.

4. Mount the power supply and each of the drives. Make sure each unit is securely attached and adequately supported.

2.1.2 MOTOR

Motor mounting will depend on the application and the system being indexed. All Series 6 brushless motors are designed for front face mounting. Mounting dimensions are given in **Appendix D**.

CAUTION

WHEN MOUNTING MOTORS, MAKE SURE THE MOTOR IS PROPERLY ALIGNED. IT MUST BE MOUNTED SQUARELY SO THE FACE IS FLUSH AGAINST THE MOUNTING SURFACE. THE SHAFT MUST NOT BE TWISTED OR BOUND IN ANY WAY. THE SYSTEM MUST NOT SUBJECT THE MOTOR TO IMPACT LOADS. COMPLETE SYSTEM INSTALLATION, WIRING, AND TESTING BEFORE THE LOAD IS ATTACHED TO THE MOTOR SHAFT.

1. Lay out the mounting holes for the motor.

2. Attach the motor to the desired mount. Do not attach the motor to the load until all electrical work and testing are complete.

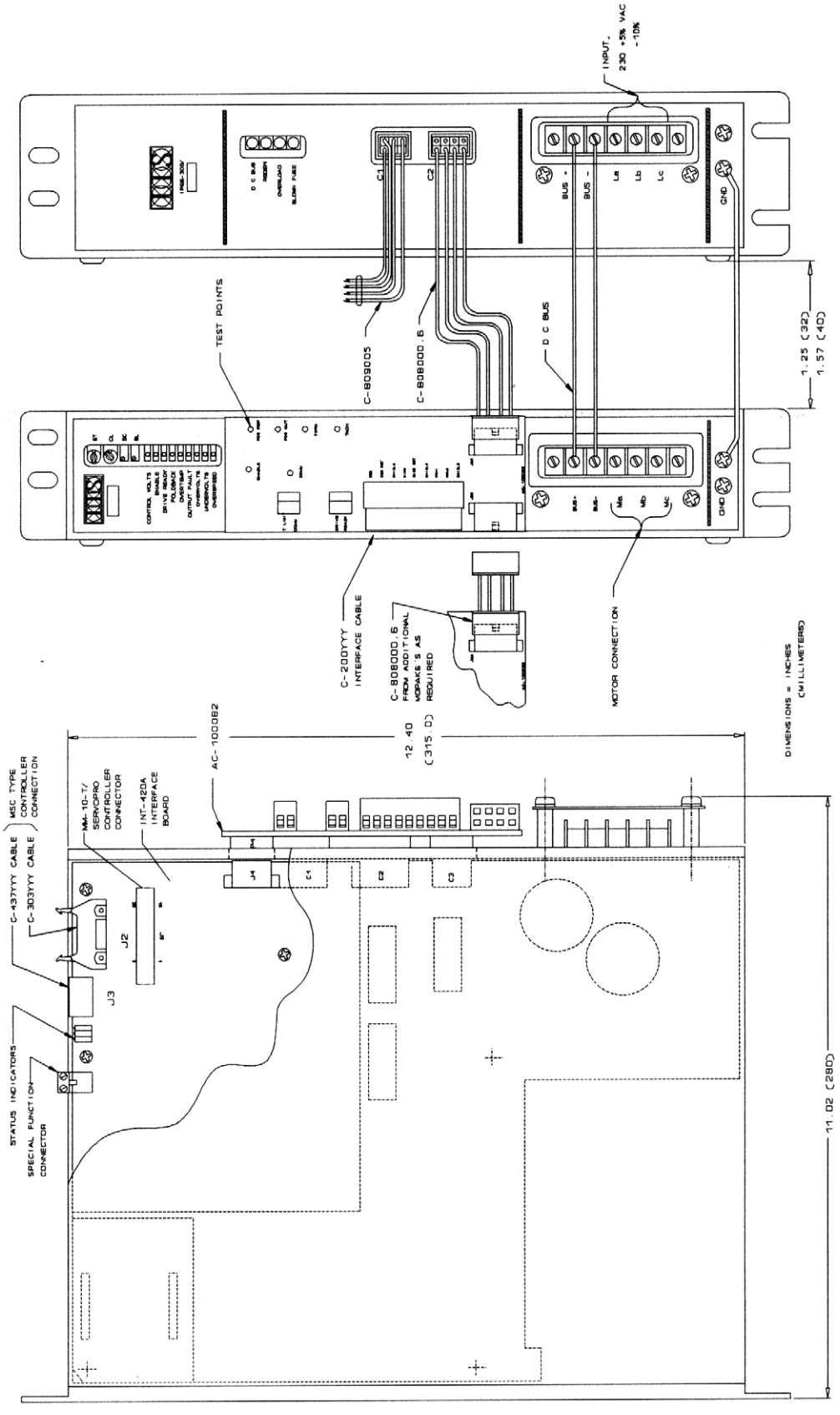


Figure 2.3 - Typical Installation Drawing for 03 or 06 Amp BSD6 Drives

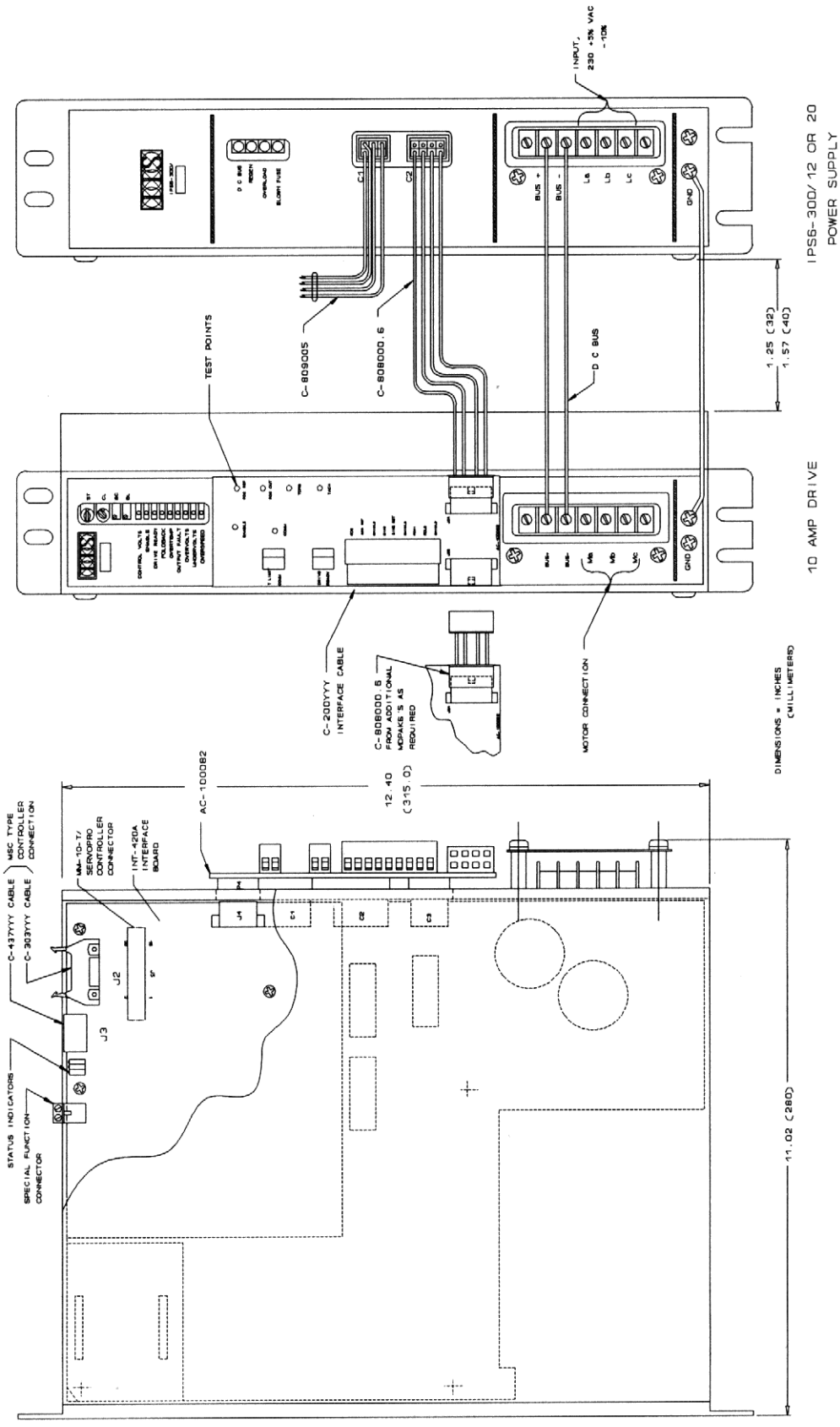


Figure 2.4 - Typical Installation Drawing for 10 Amp BSD6 Drive

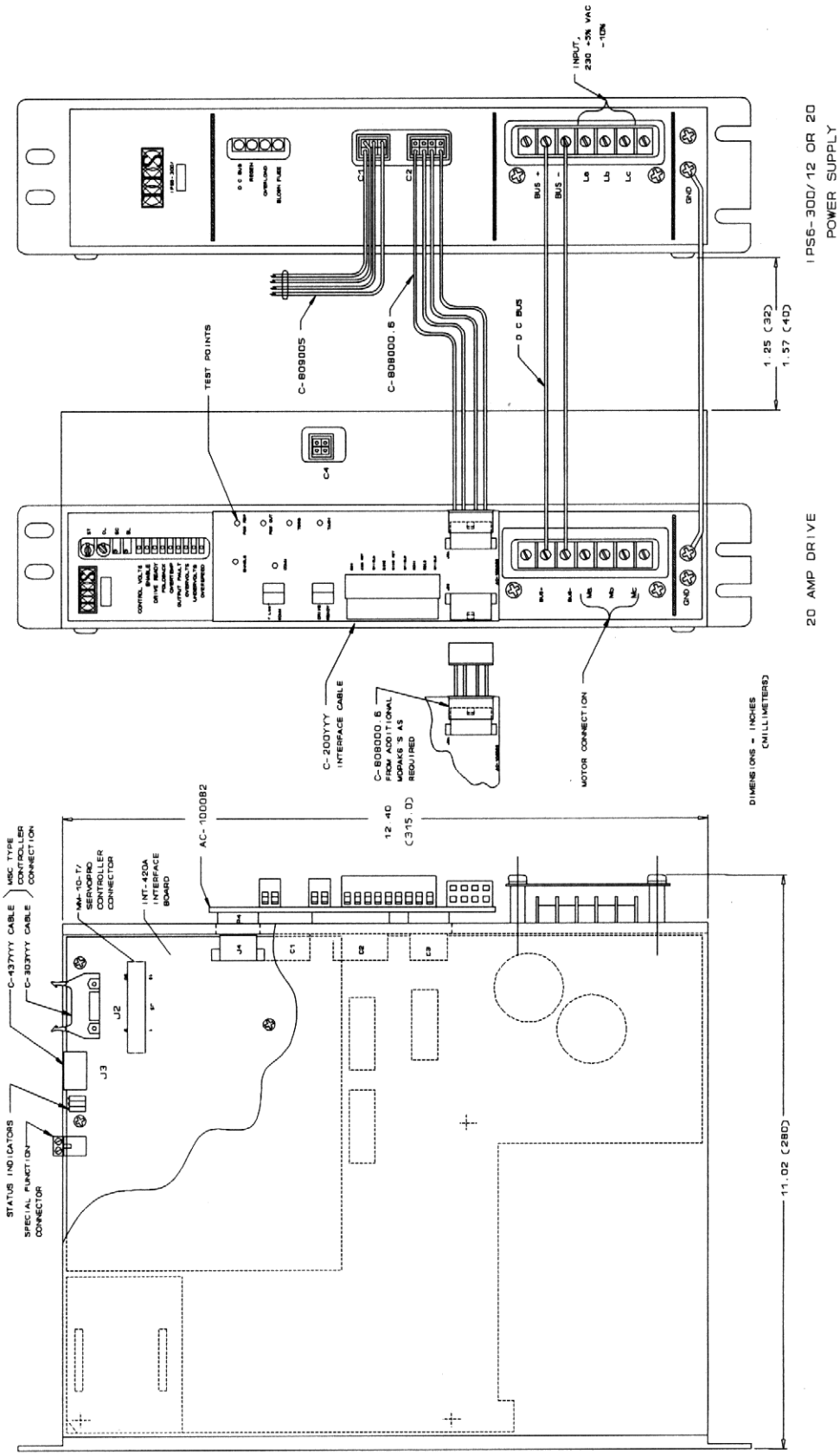


Figure 2.5 - Typical Installation Drawing for 20 Amp BSD6 Drive

2.2 ELECTRICAL CONNECTIONS

WARNING

DO NOT TURN ON ANY POWER TO THE SYSTEM UNTIL ALL ELECTRICAL CONNECTIONS HAVE BEEN COMPLETED.

The Series 6 Motor/Drive Packages and Power Supply Packages are frequently installed as a part of a larger electrical control system. The indexing system may utilize a variety of controllers. Therefore, the electrical connections discussed in this section cannot cover all possible variations of system wiring and will be restricted to the electrical connections between the MDPAK™ and PWRPAK™. Pertinent information for other necessary connections is provided, but specific connections are not shown. Refer to the individual controller instruction manuals for additional information.

Figure 2.6 and **Figure 2.7** show typical system component interconnections. Terminal identities are given where they tend to be the same on all Series 6 components. They are blank where the terminal identity varies from component to component. In all cases, terminal identities included on any system drawings or documentation supersede any terminal identities included in this manual.

The cable numbers in **Figure 2.6** and **Figure 2.7** are for specific Industrial Indexing Systems' cables used with Series 6 components. (The 'yyy' which makes up the last three places of the cable number is the length of the cable in feet.) Drawings for each of these cables are contained in **Appendix I**. Please note when C-303YYY (see Appendix I) exceeds 5 feet in length, use alternate cable configuration in **Figure 2.12**.

NOTE

Twist all AC leads to minimize random electrical signals and noise. Avoid running signal leads in close proximity to power leads, motor stator leads, or other sources of electromagnetic noise (shields are recommended). Minimize lead lengths as much as possible. Provide adequate stress relief for cables.

2.2.1 POWER SUPPLY CONNECTIONS

1. Connect the bus wires from the first drive to the power supply. If multiple drives are used, connect the bus wires between each pair of drives.

2. Plug the connector on the end of the C-808000.6 cable from the first drive into the mating connector on the power supply. If multiple drives are used, connect the C-808000.6 cable from each succeeding drive into the mating connector on the previous drive. Make sure all connectors are properly seated.

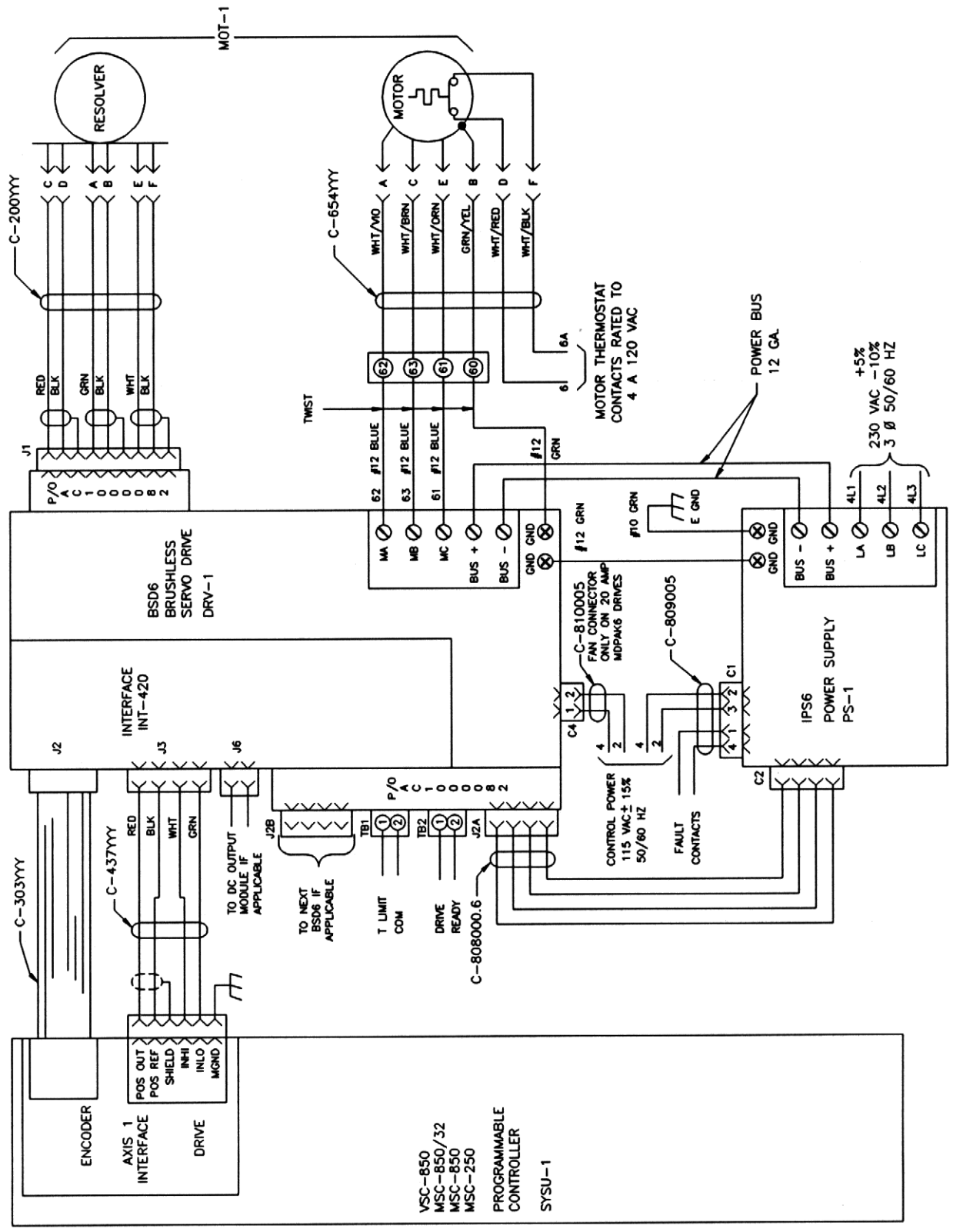


Figure 2.6 - Indexing System Interconnections With MSC-type Controller

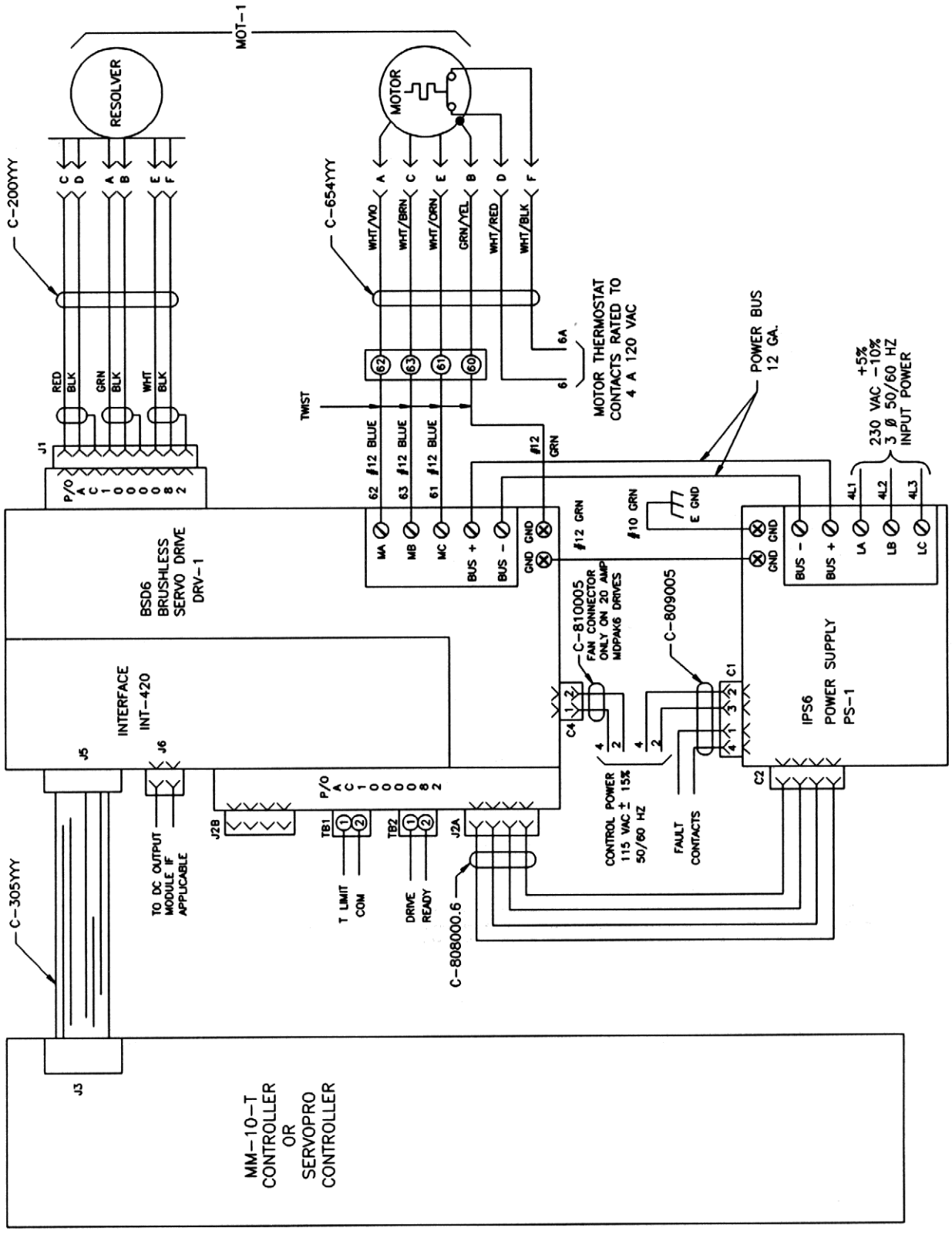


Figure 2.7 - Indexing System Interconnections With MM-10-T Controller

3. Connect the C-809005 cable from the connector on the power supply to the control circuit. Make sure the connector is properly seated

   a. Terminals 1 and 4 connect to the control safety circuit to provide a normally open set of contacts that close when control power is applied and open in a system fault condition. Connect the other end of the white/red/blue wires in the cable in series with the other contacts in the system safety circuit.

   b. Terminals 2 and 3 supply 115 VAC control power to the power supply. Connect the red and white wires in the cable to the appropriate location in the control circuit.

NOTE

Refer to the complete interconnection schematic diagram (Figures 2.6 and 2.7) supplied with the Series 6 Motion Devices.

NOTE

Although a transformer is not required with the Series 6 PWRPAKs, it is recommended that the input power be supplied from an isolation transformer.

4. Connect the 230 VAC supply power to terminals LA, LB, and LC on the power supply terminal block. Twist all AC wires to reduce signal noise.

2.2.2 DRIVE CONNECTIONS

NOTE

There is one drive and motor assembly for each axis of the indexing system. Therefore, the instructions in this section must be repeated for each drive and motor assembly.

NOTE

There must be no more than 100' (30 M) of cable between the drive and the motor.

1. For MSC-type controllers, attach the command cable (C-437yyy) from the controller to the drive. Make sure both connectors are properly seated.

2. For MSC-type controllers, attach the encoder cable (C-303yyy) from the controller to the drive.

3. For MM-10-T or ServoPro controllers, attach the encoder cable (C-305yyy) from the connector J5 on the INT-420A board on the controller to the drive. Make sure both connectors are properly seated. (Pinouts for connector J5 are shown in **Figure 2.8**.)

4. Attach the resolver cable (C-200yyy) from the drive to the motor resolver connector. Make sure both connectors are properly seated.

PIN	DESCRIPTION
1	POS OUT HI
2	POS OUT LO
3	ENCODER: CHANNEL 1 HI
4	ENCODER: CHANNEL 1 LO
5	ENCODER: CHANNEL 2 LO
6	ENCODER: CHANNEL 2 HI
7	MARKER HI
8	MARKER LO
9	DIGITAL GND
10	N/C
11	DIGITAL GND
12	N/C
13	DIGITAL GND
14	N/C
15	INHI
16	INLO
17	N/C
18	OUTPUT FAULT/OVER TEMP
19	N/C
20	N/C

Figure 2.8
Connector J5 Pinouts

Motor cable C-654yyy has a connector at the motor end only. The other end should be wired to a terminal strip to allow the proper distribution of the wires from the motor. Four of the wires carry the three-phase power and ground from the drive to the motor. The other two wires are for the connection of the motor thermal overload to the system safety circuit.

NOTE

Motor cable C-654yyy is a specially twisted cable specific to Industrial Indexing Systems MDPAK™s and should not be replaced with anything other than this specific cable.

5. Provide a six-terminal terminal strip for connection of the motor cable.

WARNING

THE MOTOR POWER WIRES MUST BE CONNECTED TO THE PROPER TERMINALS AS SHOWN ON THE INTERCONNECTION DRAWINGS (SEE FIGURES 2.6 & 2.7). INCORRECT MOTOR/RESOLVER PHASING CAN CAUSE ERRATIC OPERATION, RUNAWAY MOTOR CONDITIONS, AND POSSIBLE INJURY OR SYSTEM DAMAGE.

6. Connect terminals MA, MB, and MC on the drive to the terminal strip using #12 blue wires. Twist the wires with the ground wire which will be connected to the power supply (refer to **Paragraph 2.2.3**).

7. Attach the six wires from the non-connector end of the motor cable (C-654yyy) to the terminal strip. Make sure they are attached to the proper terminals (refer to **Figure 2.6 and Figure 2.7**).

8. Attach the connector-end of the motor cable (C-654yyy) to the motor connector.

9. Only drive BSD6-300/20 has a fan. For this drive, connect the red and white wires in the fan power cable (C-810005) to the appropriate location in the control circuit.

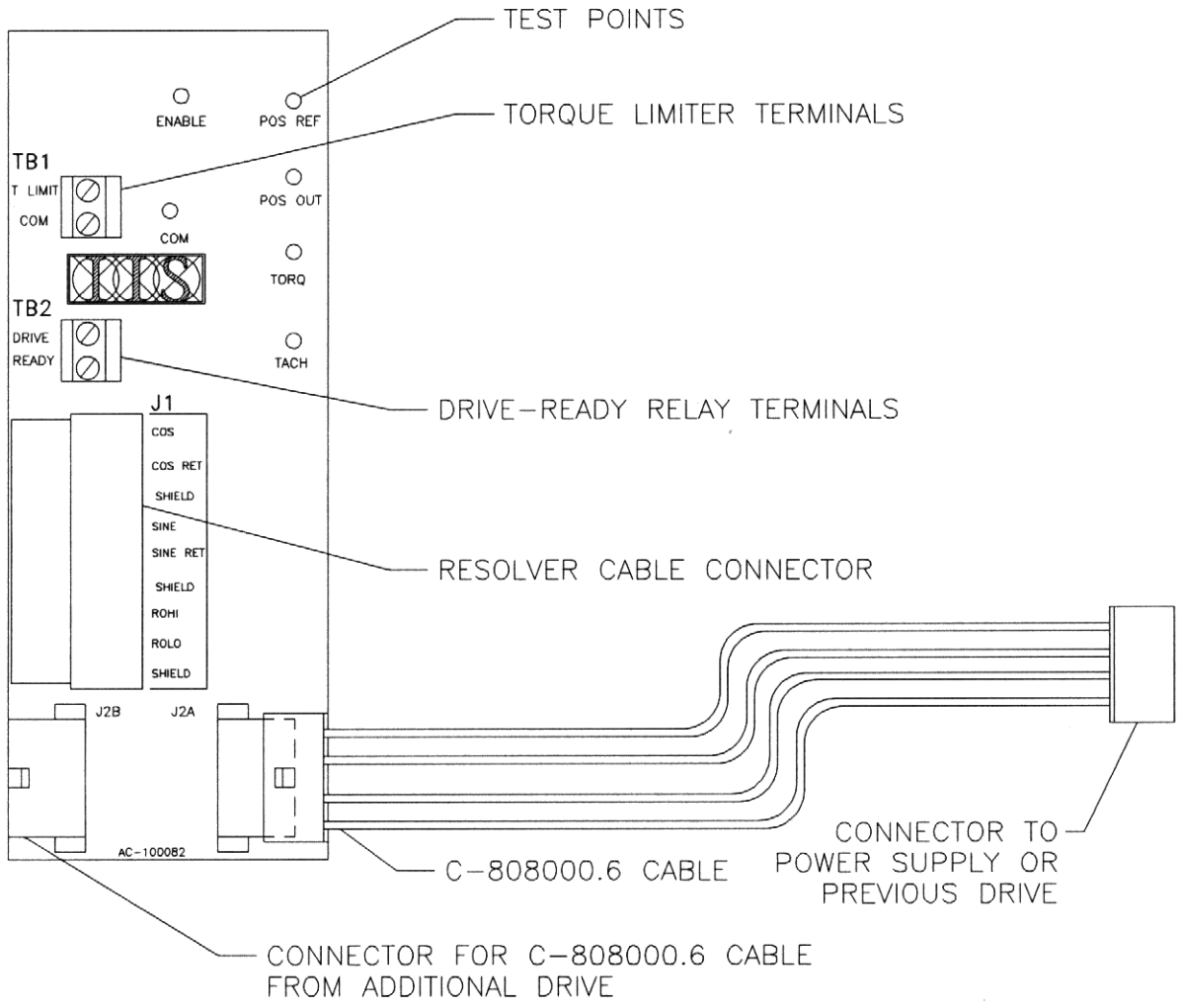


Figure 2.9 - AC-100082 Connector Board

Terminal blocks TB1 and TB2 on connector board AC-100082 (refer to **Figure 2.9**) provide optional connections which may or may not be used in the indexing system. TB1 provides a torque limiting function which can be used to cause a fault in the drive system if the load on the drive exceeds a specific level (less than the peak torque level of the drive). TB2 provides access to the DRIVE-READY relay contacts.

10. If desired, set the torque limit of the drive to a lower level than the drive's peak torque.

    a. Connect an 8.6K ohm resister between the T LIMIT and COM terminals of TB1 to limit the torque to 75% of peak torque.

OR

    b. Connect a 3.3K ohm resister between the T LIMIT and COM terminals of TB1 to limit the torque to 50% of peak torque.

OR

CAUTION

DO NOT MAKE THIS INPUT NEGATIVE OR THE DRIVE COULD BE DAMAGED.

c. Connect a positive DC voltage to the T LIMIT terminal between 0 VDC and 7.5 VDC which corresponds to torque limits of 7.5% of peak torque to 100% of peak torque, respectively. Between these values, the torque limit is directly proportional to the input voltage.

11. If desired, connect the DRIVE-READY terminals of TB2 to the appropriate locations in the control circuit.

The drives are set up at the factory to send a line count of 1024 (4096 encoder pulses) per resolver revolution to the controller. This count can be altered as required by changing the jumper positions on jumper block JP30 (refer to **Figure 2.10 or Figure 2.11**).

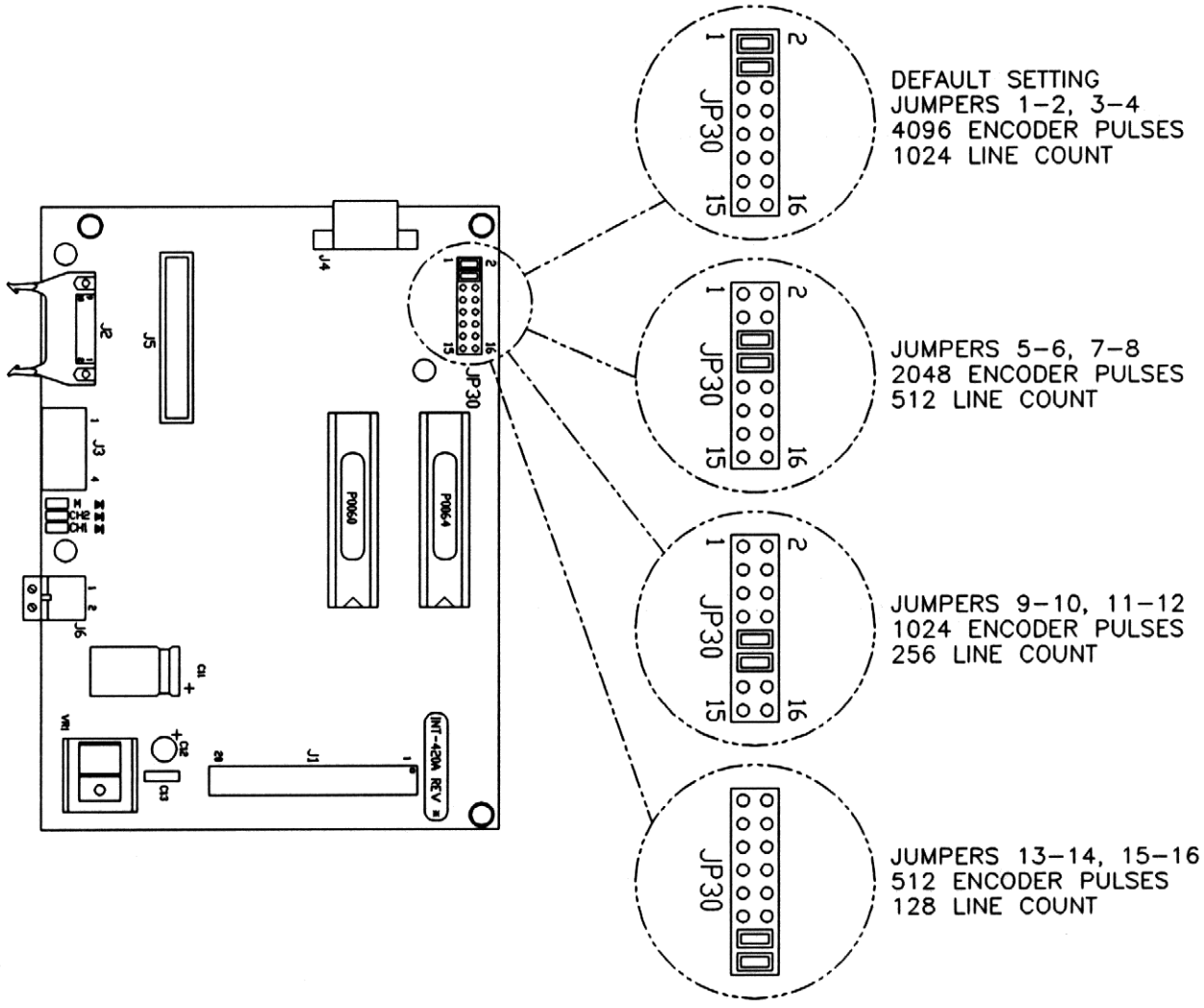


Figure 2.10 - INT-420A Jumper Settings for Selecting Encoder Pulses (Current Configuration)

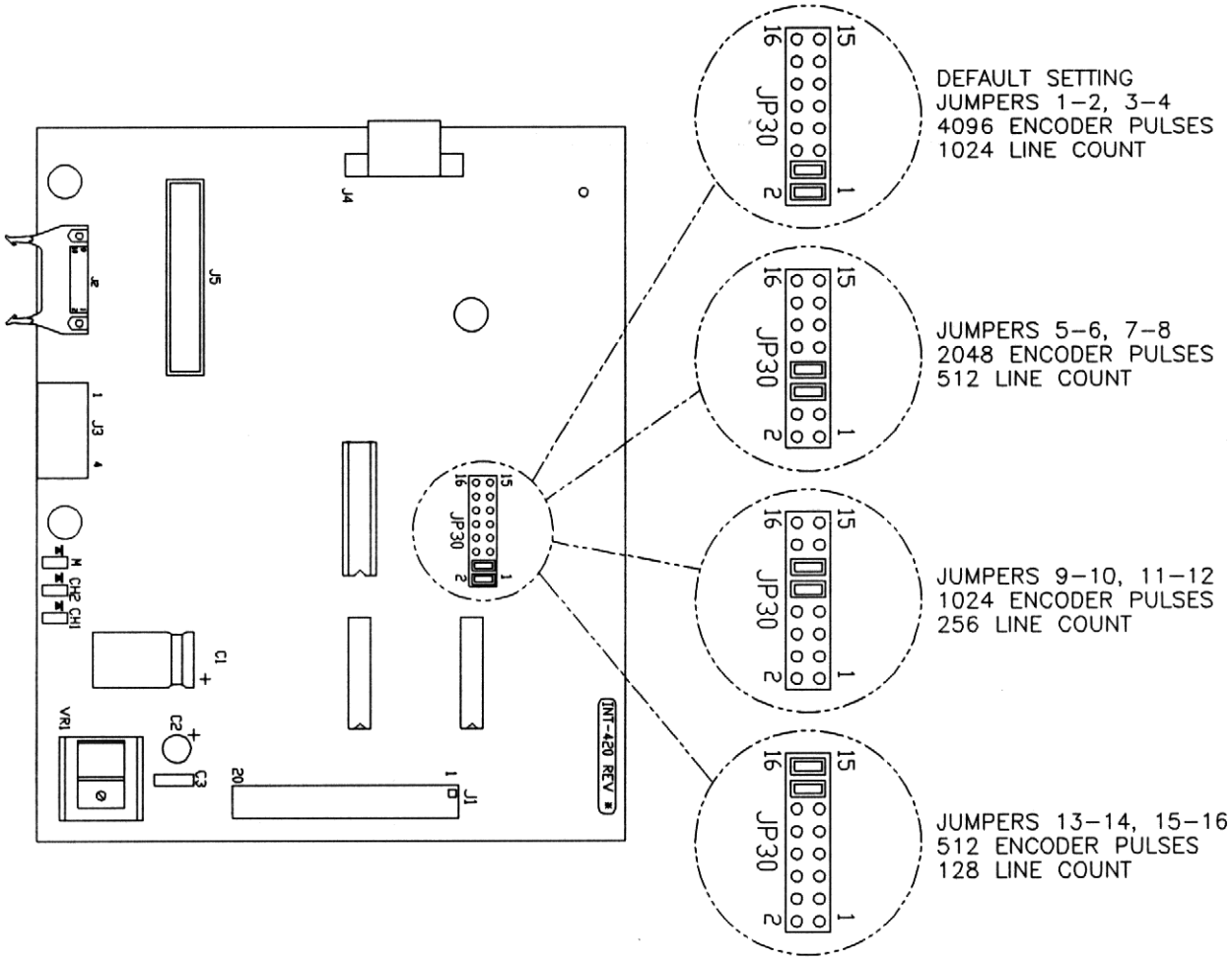


Figure 2.11 - INT-420 Jumper Settings for Selecting Encoder Pulses (Previous Configuration)

12. If desired, change the line count per resolver revolution to the controller by changing the jumpers on jumper block JP30 as indicated. (Place jumpers between positions shown; all other positions must be open.)

2.2.3 GROUND CONNECTIONS

CAUTION

THE SERIES 6 MOTION DEVICES REQUIRE VERY SPECIFIC GROUNDING CONNECTIONS. CAREFULLY FOLLOW ALL PROCEDURES IN THIS SECTION BEFORE ATTEMPTING TO OPERATE THE INDEXING SYSTEM.

1. Connect one GND terminal on the drive to the terminal strip used for the drive end of motor cable C-654yyy (refer to **Paragraph 2.2.2**) using #12 green wire.

2. Connect the other GND terminal of the drive to one GND terminal on the power supply using #12 or larger green wire.

3. If multiple drives are used in the system, connect the second GND terminal of each drive to the same GND terminal of the preceding drive so all cabinets (including the power supply) are grounded in a direct daisy-chain arrangement.

4. Provide an electrical-ground terminal strip for grounding of all related systems.

5. Connect the electrical-ground terminal strip to electrical ground using cable sized for the entire load.

6. Connect the second GND terminal from the power supply to the electrical-ground terminal strip using #12 green wire.

7. Provide a shield ground terminal strip (also called an MSC terminal strip) close to the system controllers. (Refer to the controller instruction manual for additional details.)

NOTE

All shielding from the resolver and command cables to the controllers are connected to ground through internal connections in the controller. Refer to the appropriate controller instruction manual.

8. Connect the ground wire from the controller end of command cable C-437yyy to the shield ground terminal strip.

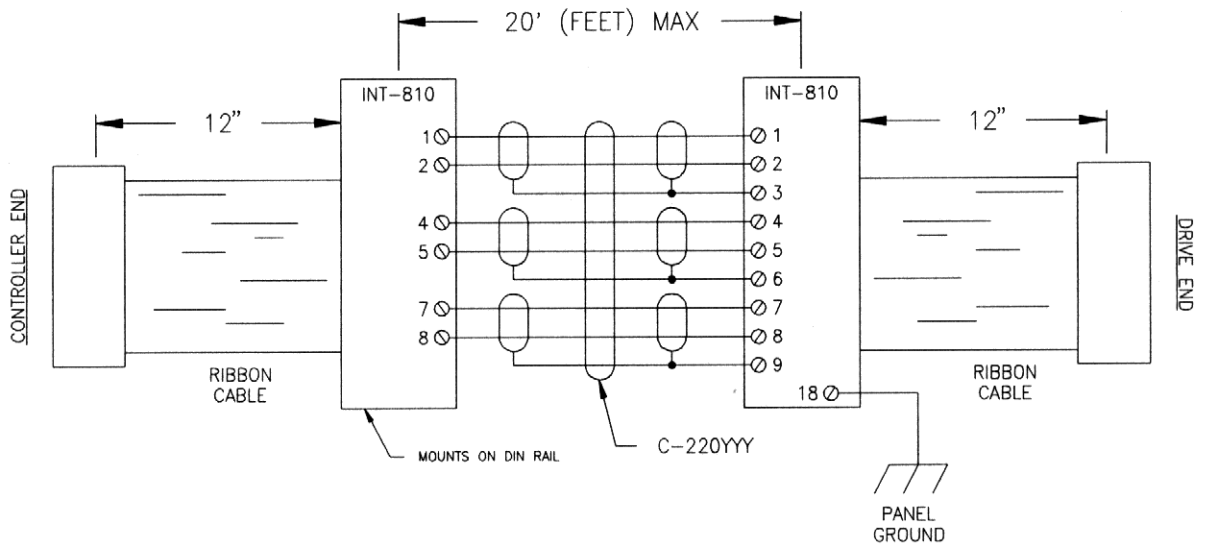
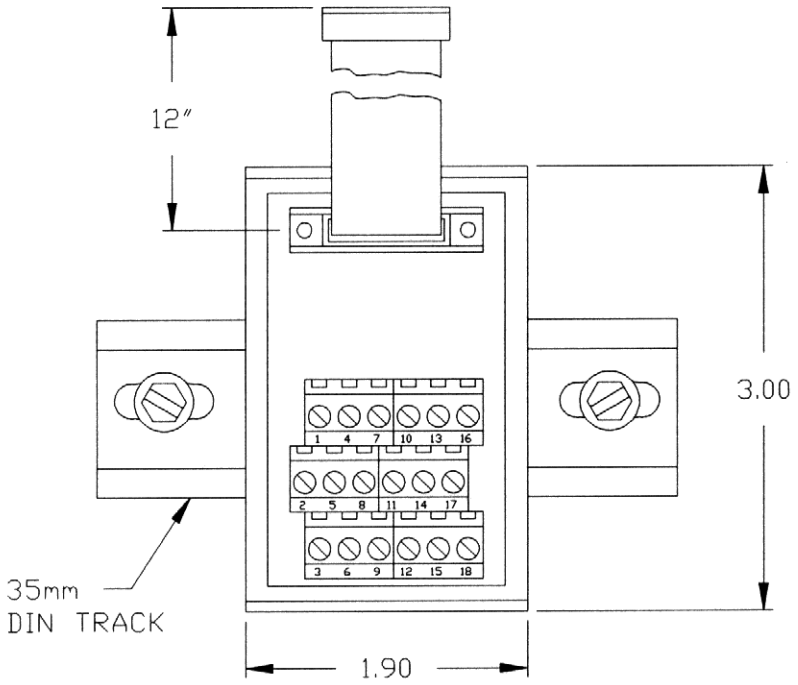


Figure 2.12 - C-220YYY Connections

(Use in place of C-303YYY when C-303YYY exceeds 5 feet in length)



INT-810 Pin Connections and Dimensions

NOTES

SECTION 3 – CONTROLS AND OPERATION

NOTE

The majority of system controls for an indexing system come from the controller and/or serial communications devices. Refer to the appropriate instruction manual for additional control information relating to the overall indexing system.

3.1 INPUTS AND OUTPUTS

The visual LED outputs from the drive and power supply are located on the front of the component cabinets (refer to **Figure 3.1**). The test points on the AC-100082 connector board on the front of the drive provide access to internal electronics monitoring points. These LEDs and test points supply operating and troubleshooting status information to the system operator. Their functions are described in this section. Additional information on use of the test points for specific system troubleshooting tests is included in **"Section 4 - Maintenance"**.

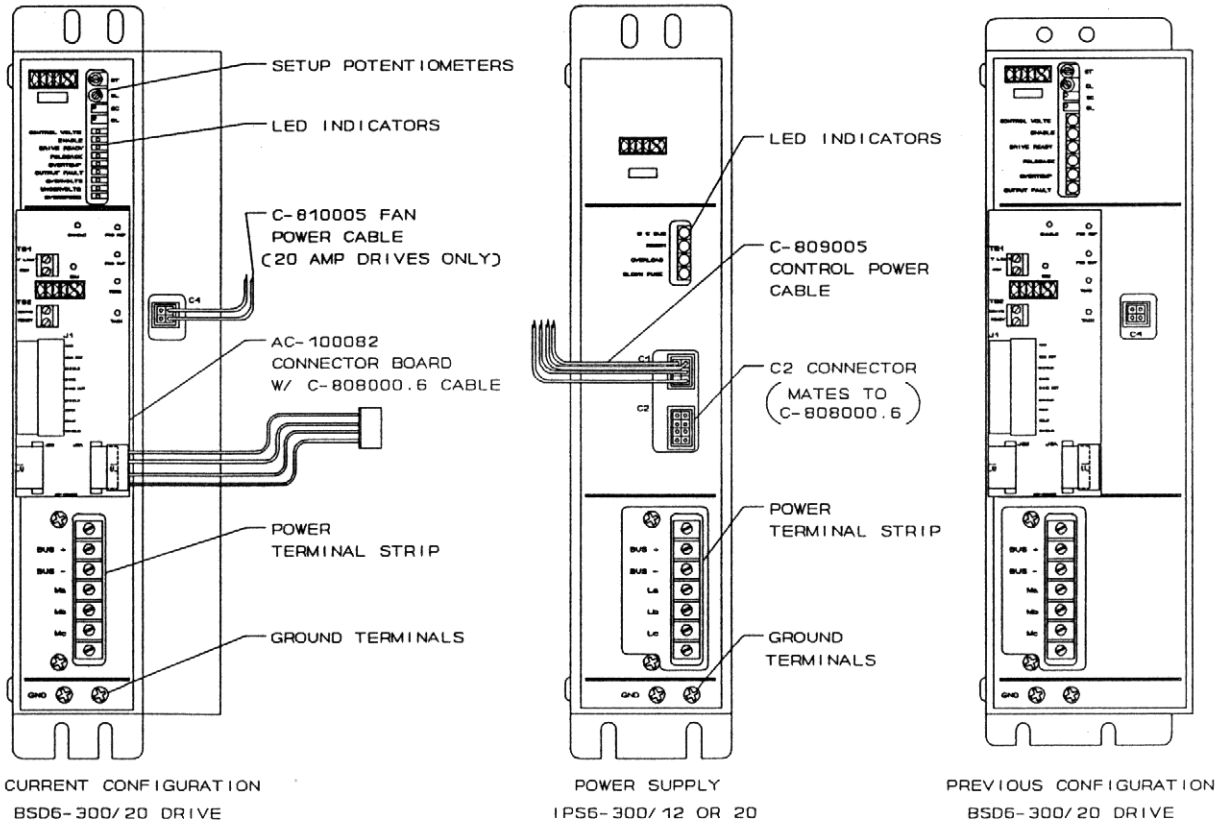


Figure 3.1 - Drive and Power Supply Components

3.1.1 POWER SUPPLY INDICATORS

DC BUS: This green indicating lamp on the power supply (refer to **Figure 3.2**) illuminates whenever power is present to the 300 VDC bus. This will be true whenever input power is applied to the power supply. It will also remain on for a minute or two after input power is removed while the capacitors used to filter the voltage are discharged.

WARNING

NEVER TOUCH THE BUS WIRES OR TERMINALS WHEN THE POWER INDICATOR ON THE POWER SUPPLY IS ILLUMINATED.

REGENeration: This amber indicating LED on the power supply illuminates whenever the regeneration resistor circuit is active, indicating that the power supply is draining excess energy from the system through the regeneration resistor.

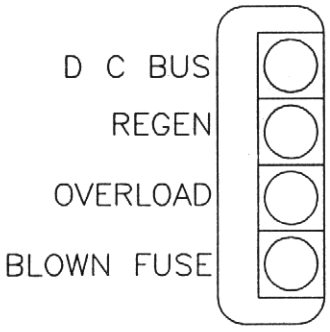


Figure 3.2
Power Supply
LED Indicators

OVERLOAD: This red indicating LED illuminates when there is excessively high DC bus voltage due to excessively high main AC line input voltage. It may also indicate an overload in the internal regeneration circuit.

BLOWN FUSE: This red indicating LED illuminates if the regeneration fuse is blown. If blown, the fuse must be replaced by an identical — or equivalent — 600 VAC fuse. The IPS6-300/12 power supply uses a 5 amp fuse (part number KLK-5A or equivalent). The IPS6-300/20 power supply uses a 6 amp fuse (part number KLK-6A or equivalent).

3.1.2 DRIVE INDICATORS

The drive status indicators are six LEDs which display operating and error conditions of the drive (refer to **Figure 3.3**). Fault indicators latch ON and must be reset by cycling the system power. To reset, turn system power to OFF, wait 10 seconds, and turn system power ON. If the error persists, refer to **"Section 4 - Maintenance"**. The LEDs illuminate as follows:

CONTROL VOLTS: This green LED illuminates approximately one second after all power is applied to the drive indicating that the Control AC line input voltage is applied.

ENABLE: This green LED is the drive's response to an enable command. It indicates that Enable input circuit is closed and the drive is enabled. It is always on during normal operation.

DRIVE READY: This green LED will illuminate as soon as the drive is ready to be enabled, indicating that there are no faults. It will remain illuminated unless a fault occurs.

FOLDBACK: This red LED illuminates to indicate the motor's RMS (Root Mean Squared) torque has exceeded the continuous rating of the drive. It is an indication that the motor peak torque is remaining at a high level too long or the duty cycle is too severe (peak torque is only allowed for up to 2.0 seconds).

The LED indicates that the peak torque of the drive is being automatically reduced to the RMS continuous rating. Once the torque rating is reduced, the FOLDBACK circuit resets and the LED turns off. This LED acts as an indicator only.

OVERTEMP: (Latching fault indicator.) This red LED indicates drive heat-sink maximum temperature has been exceeded. The drive will be latched in the inhibit mode.

OUTPUT FAULT: (Latching fault indicator.) This red LED illuminates to indicate a system fault. If all power is applied, the enable input circuit is pulled low (to common), and the Output Fault signal also becomes logic low, a fault will be indicated. The drive will be latched in the inhibit mode indicating an over-current.

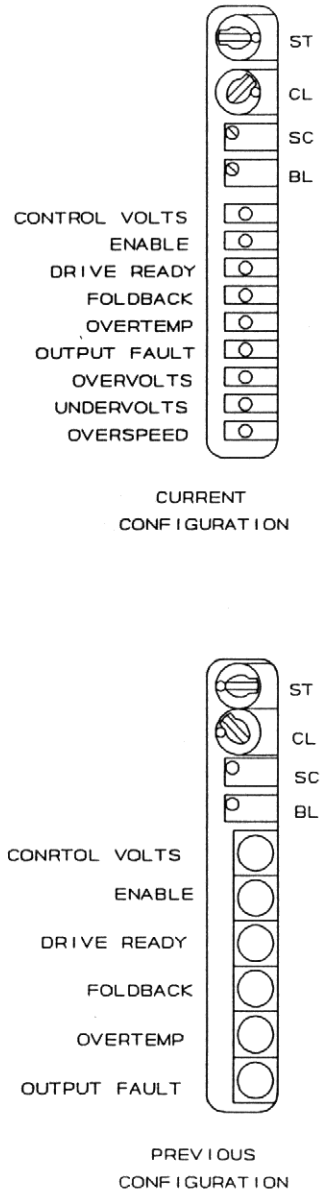


Figure 3.3
Drive LED Indicators

OVERVOLTS: (Latching fault indicator.) This red LED indicates an excessive main DC bus voltage. The drive will be latched in the Inhibit mode.

UNDERVOLTS: This red LED illuminates when the main DC bus voltage is insufficient or absent. The drive will be in the Inhibit mode, but not latched.

OVERSPEED: (Latching fault indicator.) This red LED indicates that the motor has exceeded top speed, or that there is a problem with the resolver cable. The drive will be latched in the Inhibit mode.

3.1.3 TEST POINTS

The test point outputs are a series of six terminals on the AC-100082 connector board which provide external information from the drive (refer to **Figure 3.4**). This information can be used by digital or analog monitoring equipment depending on the output terminals used.

ENABLE: This test point allows the drive to be manually enabled. When this test point is connected to the COM test point, the drive will be enabled. When the connection is removed, the drive will return to the inhibited mode.

COM: Electrical Common.

POS REF: This test point provides access to the actual voltage common for the POS OUT signal.

POS OUT: The POSition OUTput test point provides access to the voltage representing the actual following error of the system. This signal can vary from -8 VDC to +8 VDC measured from POS REF.

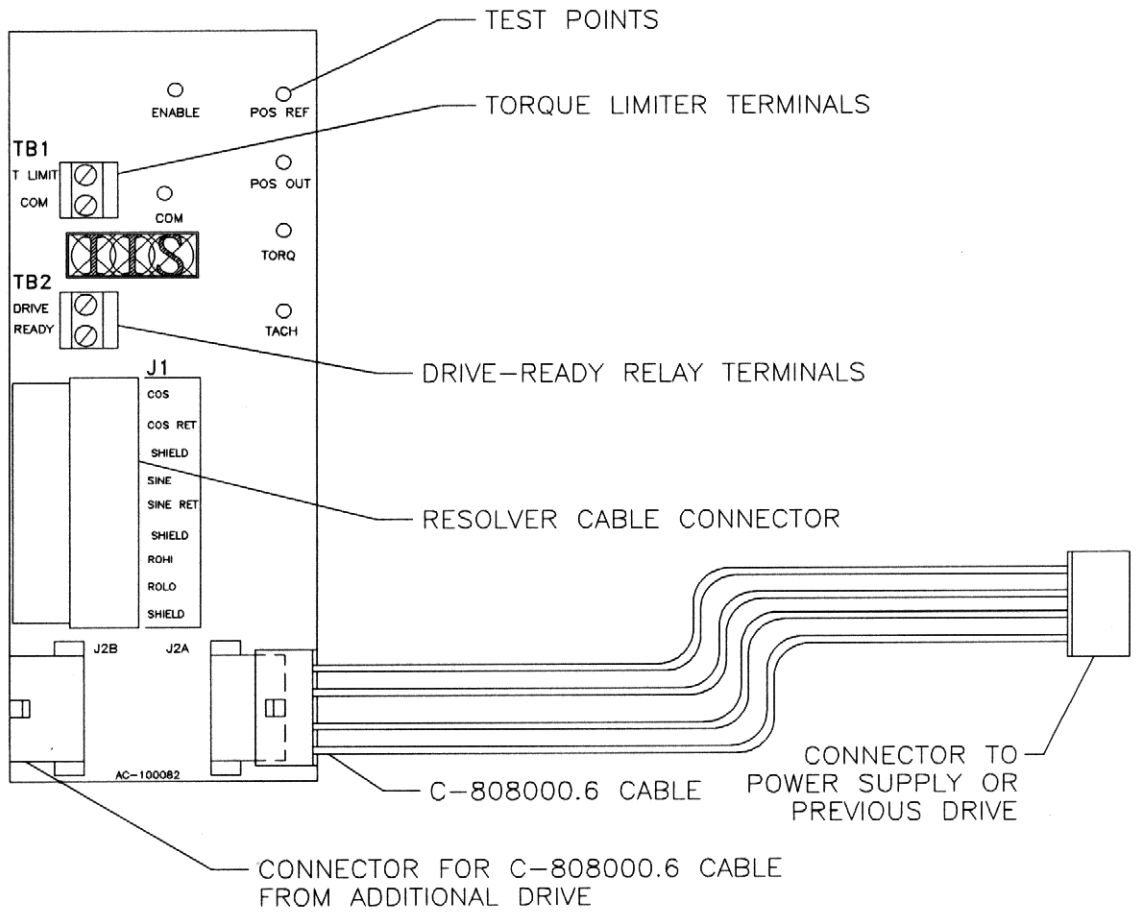


Figure 3.4 - AC-100082 Connector Board

TORQ: This test point provides an analog output signal which is proportional to the torque being delivered to the motor by the drive. This signal can be measured on a DC voltmeter, oscilloscope, or similar instrument calibrated in torque. It is limited to a maximum of 8 VDC which is equal to the peak torque of the drive (which is also the peak torque of the MDPAK™ specification). The value of the torque will vary as a result of motor acceleration, motor and load inertia, and system friction. (Refer to **"Appendix B - MDPAK™ Specifications** and **"Appendix D - Motor Torque Curves"** for peak torque ratings of the Series 6 Motor/Drive Packages.)

Torque = (TORQ Test Point DC Voltage Reading)/(8 Volts) × (Peak Drive Torque)]

TACH: This test point provides an analog output signal which is proportional to the speed of the motor. This signal can be measured on a DC voltmeter, oscilloscope, or similar instrument calibrated in RPM. It is limited to a maximum of 8 VDC which is equal to the maximum speed of the motor. The TACH test point provides a location for checking output voltage versus motor speed. As the system controller requests various speeds from the motor, the output voltage at the test point will vary from 0 to 8 VDC while the motor speed varies from 0 to maximum speed. (Refer to **"Appendix B - MDPAK™ Specifications** and **"Appendix D - Motor Torque Curves"** for the speed ratings of the Series 6 Motor/Drive Packages.)

[Speed = (TACH Test Point DC Voltage Reading)/(8 Volts) × (Maximum Motor Speed)]

Figure 3.5 shows a typical velocity curve for an indexing motor. The motor accelerates, travels for a period at a steady speed, decelerates to zero, and remains at rest for a period. This cycle repeats many times.

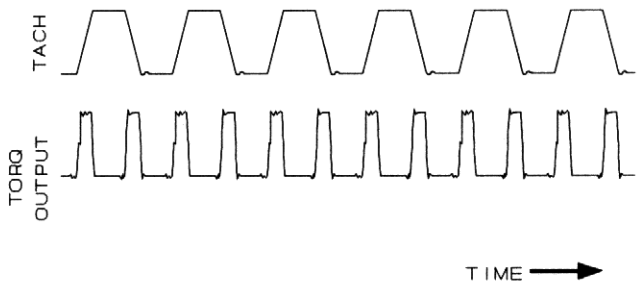


Figure 3.5
TORQ and TACH Test Point Outputs

The TORQ voltage will follow the velocity. During acceleration periods, the TORQ voltage will increase, indicating a greater current demand. During steady state motion and zero-velocity periods, the TORQ voltage is at zero, indicating minimal current draw.During deceleration periods, the TORQ voltage is negative, indicating that the drive is absorbing excess current from the system.

NOTE

The TORQ test point is a rectified test point. This means that although the motor current does indeed go negative during deceleration periods, the test point only shows positive voltages. This test point is best utilized in conjunction with a tach or position test point so that periods of deceleration can be associated with the appropriate TORQ waveform.

3.1.4 INT-420A SPECIAL FUNCTION INPUT

The 2-pin connector, J6, on the INT-420A can be wired to a 10-55v DC output module in MSC, VSC, MM-10-T or ServoPro type controllers as illustracted in **Figure 3.6**.

This connector allows access to the special function input of the INT-420A. Activating this input, via the DC output module, causes the INT-420 to generate a synthesized encoder pulse train equal to the one-turn absolute resolver position sensed from the resolver's R/D converter. This allows the controller to match its position counter with that of the acutal motor position within one turn, without actually moving the motor.

NOTE

This input must always remain off except when using the appropriate macrolanguage command(s).

In addition, the drive must not be enabled and the motor shaft must be stationary just prior to and during input activation or an erroneous position at the controller will result.

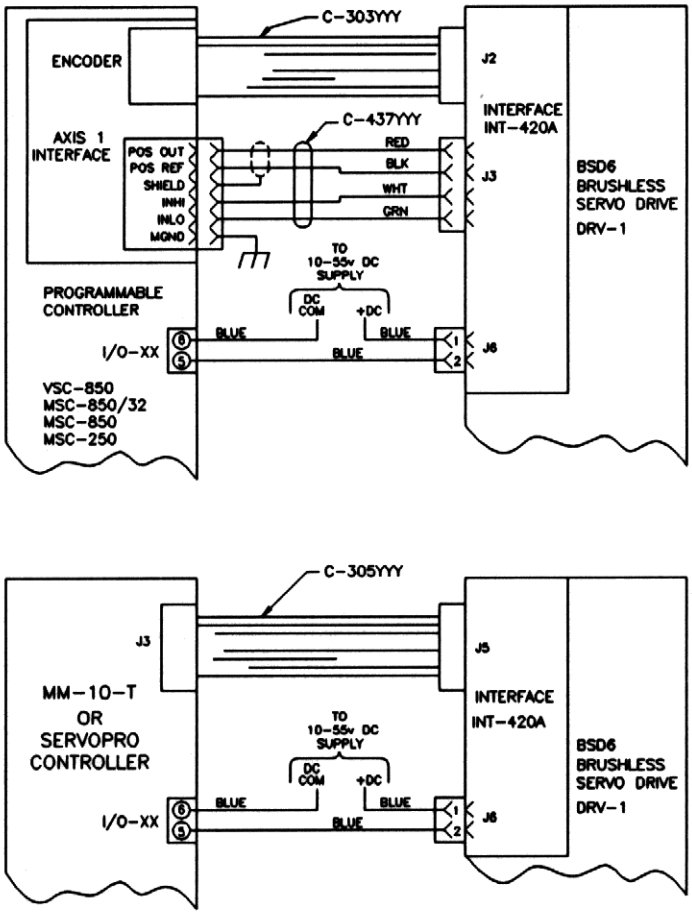


Figure 3.6 - INT-420A Special Function Input

3.2 DRIVE SETUP

NOTE

All drives are factory set. This information is for reference only.

Setup sheets for each of the drives can be found in **Appendix F. Figure 3.7** shows a typical setup drawing with the adjustment potentiometer settings specified.

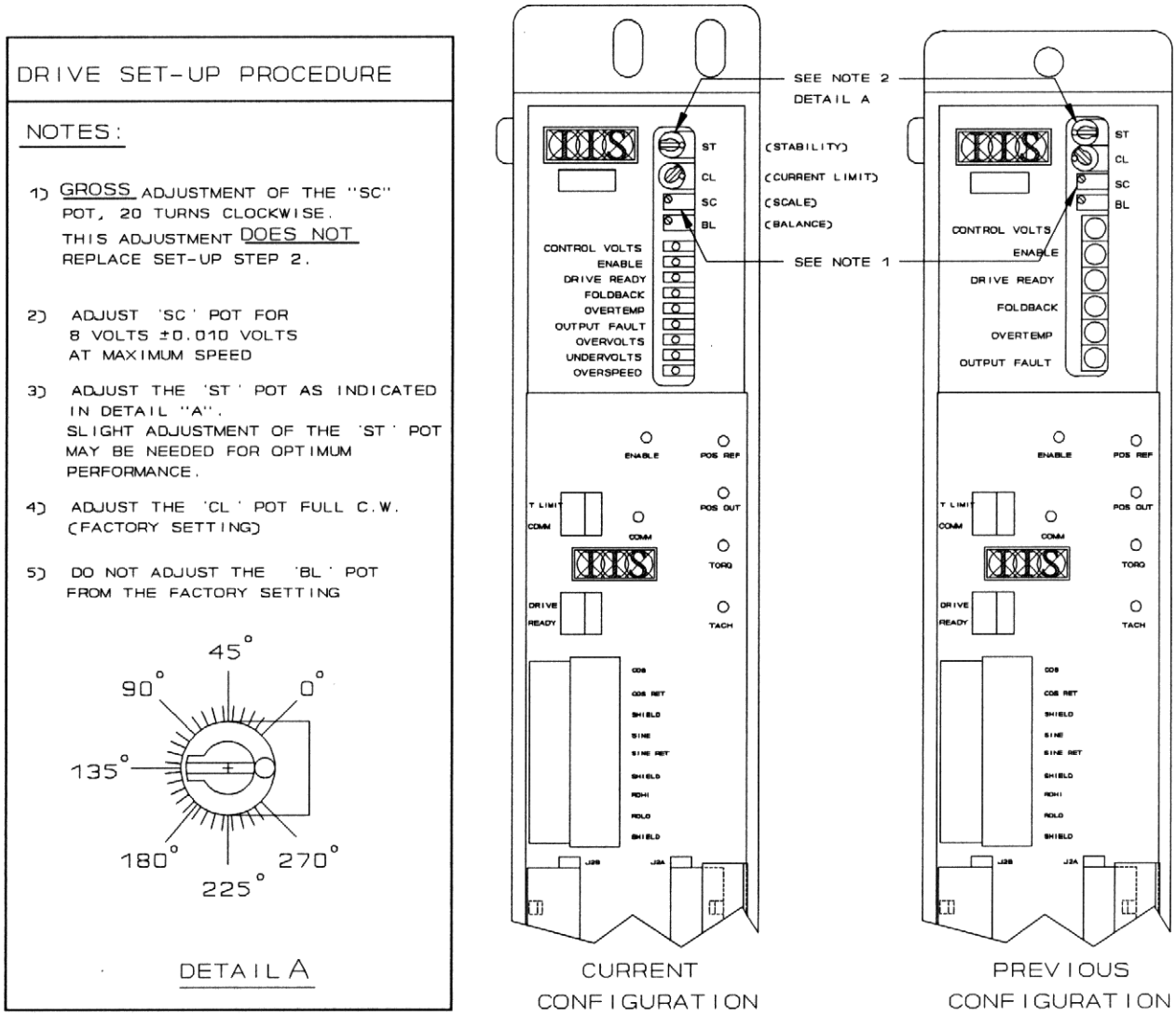


Figure 3.7 - Typical Drive Setup

CAUTION

THE BL (BALANCE) POTENTIOMETER IS SET AT THE FACTORY AND SHOULD NOT BE ADJUSTED.

1. Set the CL (Current Limit) potentiometer to the full clockwise position.

2. Set the SC (SCale) potentiometer for the specified voltage reading at the TACH test point when the motor is set to maximum speed. (Refer to the specific setup drawing in **Appendix F** for the proper voltage and maximum speed.)

3. Adjust the ST (Stability) potentiometer to the position indicated on the setup drawing.

   a. Monitor the TACH and TORQ test points relative to COM.

   b. Apply a step input (rapid) command signal.

   c. While accelerating and decelerating the motor at approximately 25% of maximum speed, observe the wave forms at the test points and watch for any indications of instability (such as ringing).

   d. Make minor corrections to the ST potentiometer relative to the indicated set point to achieve maximum stability.

NOTES

SECTION 4 – MAINTENANCE

The Industrial Indexing Systems Series 6 Motor/Drive Packages and Power Supply Packages are designed to provide reliable service with minimum down time and maintenance. In case of failure, the system is designed for replacement of an entire component.

It is recommended that an inventory of spare parts be maintained for the system.

4.1 TROUBLESHOOTING

WARNING

DISCONNECT ALL ELECTRICAL POWER AND FOLLOW PROPER LOCKOUT PROCEDURES BEFORE MAKING ANY ADJUSTMENTS OR REPAIRS.

This section is designed to assist trained personnel in identifying and correcting system malfunctions. A prerequisite to the use of this troubleshooting guide is a thorough knowledge of the motion devices as explained in this manual. When a problem occurs, first read the appropriate sections of this manual to make sure that the components are installed properly and are being operated correctly. Follow the checks included in this manual, in sequence.

NOTE

Any indexing system also involves the system controller and any associated peripheral devices which will also affect the system performance. Refer to the instruction manuals for those components for additional troubleshooting information.

4.1.1 SYSTEM TEST/VELOCITY LOOP

WARNING

THIS TEST CAUSES THE MOTOR TO TURN. MAKE SURE THAT THE MECHANICAL LOAD IS DISCONNECTED, OR WILL ACCEPT MOVEMENT IN BOTH DIRECTIONS WITHOUT DAMAGE TO THE EQUIPMENT, AND THAT ALL PERSONNEL ARE CLEAR BEFORE STARTING THIS TEST.

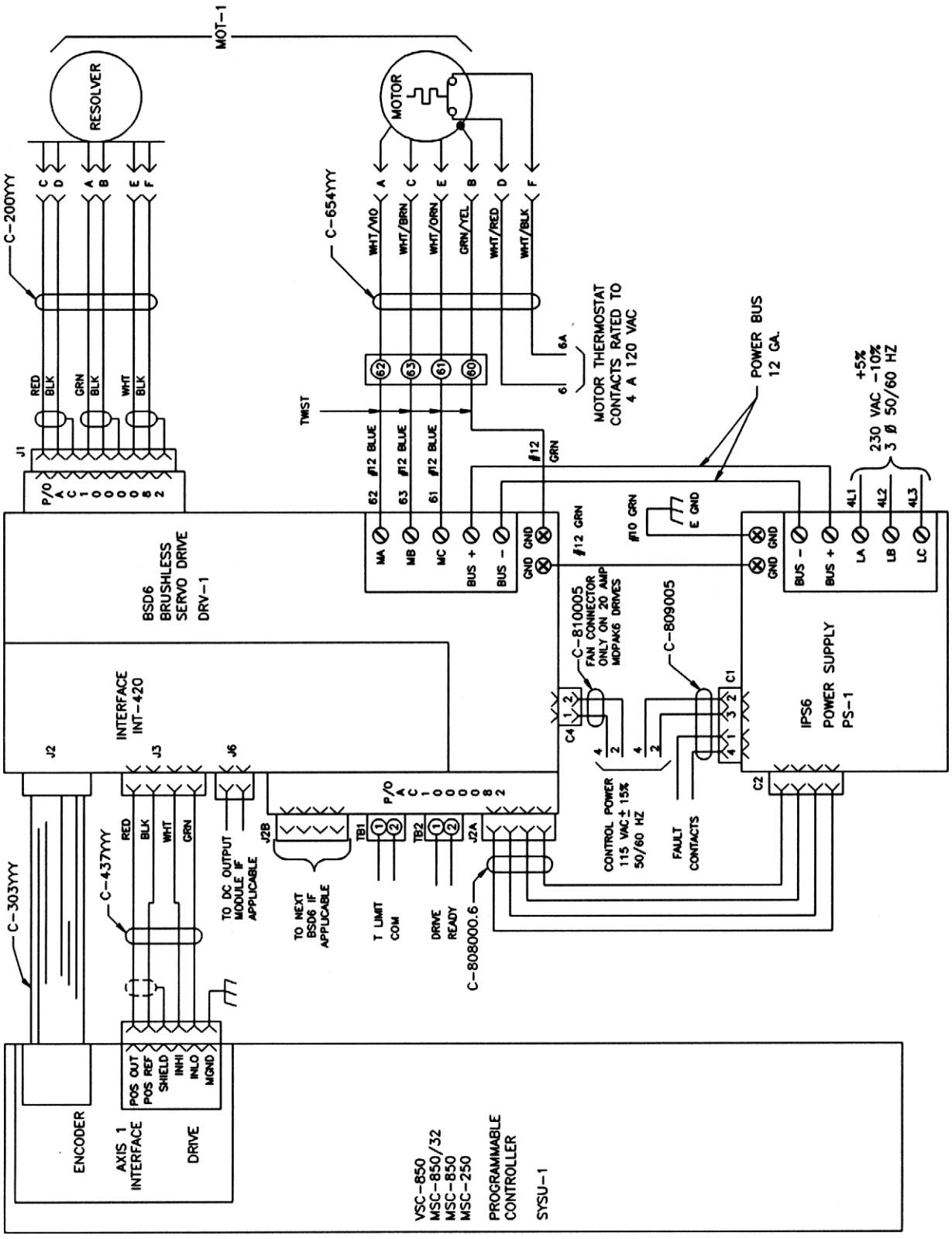


Figure 4.1 - Typical System Interconnection Circuit

The velocity loop test removes the controller from the loop for the purpose of testing the motor assembly, drive, and power supply. In this test, the drive is manually enabled and a velocity command voltage is applied to the drive by means of a Volt Ohm Meter (V.O.M.) command input.

1. Remove system power.

2. Remove the 6-pin connector at the controller end of command cable C-437yyy (refer to **Figure 4.1**).

3. Using a short jumper wire, temporarily short together the INHI (green wire) and INLO (white wire) terminals on the 6-pin connector. This step causes the drive (amplifier) to turn "On" manually.

4. Apply system power. The motor should be stationary and should resist any attempt to turn the motor shaft.

> **NOTE**
>
> **Since this is a feedback system, there will always be some slight drift to the motor shaft when it is tested in this manner. However, the motor will not be free to be turned by hand.**

5. Set a V.O.M. for use as an ohmmeter using the R × 1 resistance scale.

6. Connect the positive meter lead to the POS OUT (red wire) connector terminal and the negative meter lead to the GND (black wire) connector terminal. This applies voltage (approximately 0.5 volts) into the drive input acting as a velocity command. The motor should accelerate sharply to a controlled speed in a counterclockwise direction and decelerate sharply when either meter lead is removed.

7. Reverse the meter leads to the POS OUT and GND connector terminals. This changes polarity of the velocity command. The motor should accelerate sharply to a controlled speed in a clockwise direction and decelerate sharply when either meter lead is removed.

8. If all tests pass, the velocity loop is functioning correctly.

9. Remove all temporary jumpers, replace all disconnected wires, and connect the drive connector to the controller.

Items to check if test fails:

a. Troubleshooting of velocity loop at other end of cable or at test points of AC-100082.
b. Power supply voltages.
c. Motor armature wiring and polarity.
d. Reference Voltages (refer to the Controller Instruction Manual).

4.1.2 SUPPLEMENTAL SYSTEM CHECKS

1. If this is an initial installation, check all installation procedures to make sure they have been followed properly.

2. Check to make sure 115 VAC power is being supplied to the system controller and all system power supplies. Check to make sure power plugs, if present, are securely inserted in their respective sockets and electrical disconnects are turned on. Check all fuses.

3. Check the Drive Status Indicators to make sure there are no fault indicators illuminated. Correct any indicated problems and reset the fault by turning the drive power OFF and then ON again and enabling the drive.

4. Check for loose or broken wires.

If the motor is not responding smoothly, the type of problem can indicate the area of the problem. Use the following guides for directing system checks.

MOTOR DOES NOT RUN

a. Check that there is power on the 300 VDC bus terminals. (The green DC BUS LED on the power supply should be illuminated.)

b. Check the Drive Status Indicators to make sure there are no fault indicators illuminated. Correct any indicated problems and reset the fault by turning the drive power OFF and then ON again and enabling the drive.

c. Check that the 115 VAC control power is properly connected.

d. With all power off, check all fuses and motor over-temperature switch.

e. With all power off, check all resolver, motor, and command cable connections to make sure they are secure.

MOTOR RUNS ERRATICALLY OR IS UNSTABLE

a. With all power off, check all resolver, motor, and command cable connections to make sure they are secure.

b. Check to make sure the brushless motor is correctly phased. (Refer to **"Section 2 - Installation"**.)

c. Check to make sure the motor loading has not changed. Looking for possible binding or jamming in the system.

MOTOR HAS LITTLE OR NO TORQUE

a. Check to make sure resolver signals are present. Check reference signals from the controller and return signals. (Refer to **"Section 4.1.6 - Resolver Test"**.)

b. Check the Drive Status Indicators to make sure there are no fault indicators illuminated. Correct any indicated problems and reset the fault by turning the drive power OFF and then ON again.

c. Check to make sure all power voltages are present.

d. Check to make sure the resolver is properly zeroed (refer to **Section 4.2**).

e. Check connections to the T LIMIT terminals. Resistance or voltage applied to these terminals will reduce the maximum system torque.

4.1.3 POWER CHECKS

1. Check the voltages at the primary input terminals on the power supply. The voltage must be 207 VAC to 242 VAC between any two phases. It must not drop below 200 VAC under full load.

2. Check the voltage at the 115 VAC input terminals. It must be 95 VAC to 132 VAC.

3. With power off, check the 115 VAC fuse.

4. With power off and dissipated, check the regeneration resistor fuse on the power supply.

4.1.4 MOTOR CHECKS

A brushless motor has no brushes or tachometer feedback. It is, therefore, difficult to determine if a motor has failed using only a V.O.M. Use the following checks to verify the motor condition.

1. Remove all system electrical power.

2. Remove the motor connector from the motor.

3. Check the resistance of all connector points. All points — except "D" — should have a resistance to ground greater than 10,000 ohms.

4. Check the motor cable for possible short circuits or broken (open) wires.

5. Check the resistance of terminals MA, MB, and MC on the drive. These points should have a resistance to ground greater than 10,000 ohms. These points should be checked with both polarities of the V.O.M. If the test fails, replace the drive.

6. Short all phases of the winding and rotate the motor shaft by hand. There should be a firm, smooth movement of the shaft. If this test fails, it may indicate a shorted or open winding.

7. Open all phases of the winding and rotate the motor shaft by hand. The movement should be easier than in Step 6, but the motor shaft should still move smoothly. If this test fails, it again may indicate a shorted or open winding.

4.1.5 POSITION LOOP TEST

The position loop test is used to verify that the controller and feedback device (resolver) are functioning properly. The controller and feedback device are placed in a condition where the feedback-device signals are fed back to the controller. As the feedback device is rotated, a corresponding voltage can be measured at the test points on the controller. Refer to the instructions in the controller instruction manual.

4.1.6 RESOLVER TEST

The resolver test is used to verify the presence of a 7.0 KHz, 4.25 ±0.21 VAC reference signal generated on the BSD6 board to drive the resolver. It is also used to verify the two return signals from the resolver to the BSD6.

WARNING

THE FOLLOWING VOLTAGE MEASUREMENTS MUST BE MADE ON THE RESOLVER CONNECTOR WHILE THE SYSTEM IS OPERATING.

1. Connect an AC volt meter across the ROHI and ROLO terminals of the resolver connector. Voltage should read 4.25 VAC ±0.21 VAC. This voltage should not vary when the motor shaft is turned. This is the resolver reference signal that drives the resolver.

2. If the voltage is okay, go to Step 3. If the voltage is low, disconnect the resolver connector at the motor and re-measure the voltage. If the voltage is still low, replace the BSD6. If the voltage drops when a resolver is connected but is correct when the resolver is disconnected, check the resolver cable for possible shorts. If the problem still exists, replace the motor assembly.

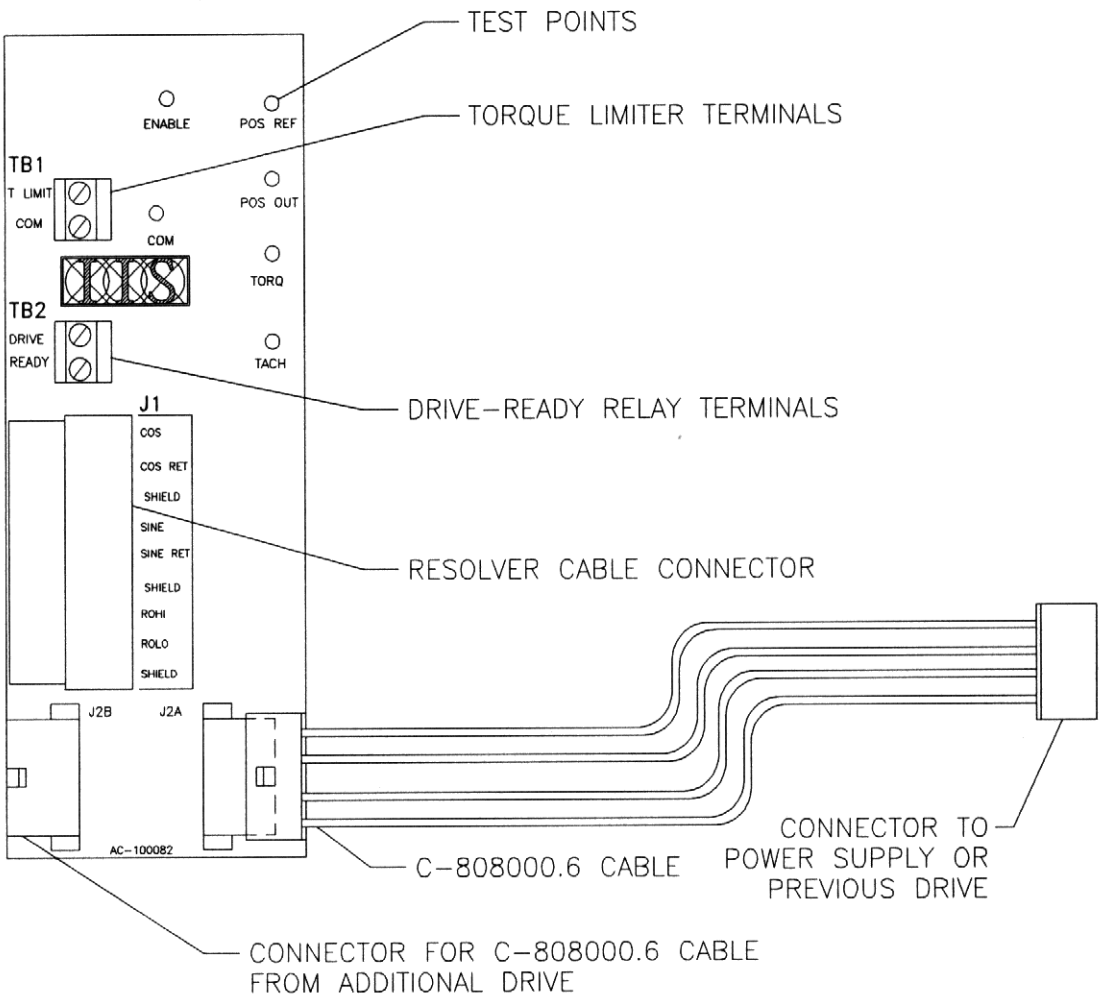


Figure 4.2 - AC-100082 Connector Board

3. Connect an AC volt meter to the SINE and SINE RET terminals on the resolver connector. As the motor shaft is turned, the voltage should vary from 2.0 VAC ±0.1 VAC to less than 0.2 VAC ±0.1 VAC.

4. Connect an AC volt meter to the COS and COS RET terminals on the resolver connector. As the motor shaft is turned, the voltage should vary from 2.0 VAC ±0.1 VAC to less than 0.2 VAC ±0.1 VAC.

Items to check if test fails:

a. Be sure that resolver connector is secure.
b. Check the cable for shorts.
c. Check the cable for breaks.

4.1.7 INT-420A or INT-420 ENCODER OUTPUT TEST

To make sure the INT-420A or INT-420 Board is operating properly:

1. Apply power to the BSD6 Drive

2. Rotate the motor by hand, slowly.

RESULT: **The channel 1 and channel 2 encoder pulse LEDs should flash at the same rate, but not at the same time. The "M" encoder pulse LED should flash once per revolution.**

Items to check if test fails:

a. Check that drive power is on.
b. Be sure that resolver connector is secure.
c. Check the cable for shorts.
d. Check the cable for breaks.
e. If not previously tested, check the resolver following the instructions in **"Section 4.1.6 - Resolver Test"**.

4.2 MOTOR RESOLVER ZEROING

The motor resolver coupled to the end of the motor is aligned to a specific angle for the electronic commutation of motor current. It is adjusted at the factory and should not require further adjustment. If adjustment is necessary, follow the procedures in this section. Make sure it is necessary before proceeding with adjustment of the resolver.

WARNING

THE PROCEDURES REQUIRED TO ZERO THE RESOLVER CAUSE THE MOTOR TO MOVE. DISCONNECT THE MOTOR FROM ITS LOAD PRIOR TO STARTING THESE PROCEDURES AND SECURE IT SO THE CASE CANNOT ROTATE. THE MOTOR MUST BE TOTALLY FREE OF ANY LOADING FOR THESE PROCEDURES.

1. Make sure all wiring connections are correct.
2. Remove system power.

WARNING

MAKE SURE THE DC BUS INDICATOR IS OFF, INDICATING THAT THE CAPACITORS HAVE BEEN DISCHARGED, BEFORE ATTEMPTING TO REMOVE THE DRIVE COVER. AVOID TOUCHING THE 300 VDC BUS TERMINALS OR WIRES.

NOTE

If the side cover of the drive is obstructed, it may be necessary to remove the drive from the control panel to gain access to the drive cover and the internal components.

3. Remove the side cover of the drive to expose the INT-420A or INT-420 interface board.

NOTE

The INT-420A or INT-420 circuit board is attached to a 20-pin connector on the board below it and is also attached to a connector on AC-100082.

4. Remove the INT-420A or INT-420 circuit board to gain access to terminal block TB84 which is located beneath the board.

   a. Remove the three screws that hold the INT-420A or INT-420 board in position (refer to **Figure 4.3**).

   b. Gently pull the bottom of the INT-420A or INT-420 board out until it clears the pin connector (J1) at the bottom of the board.

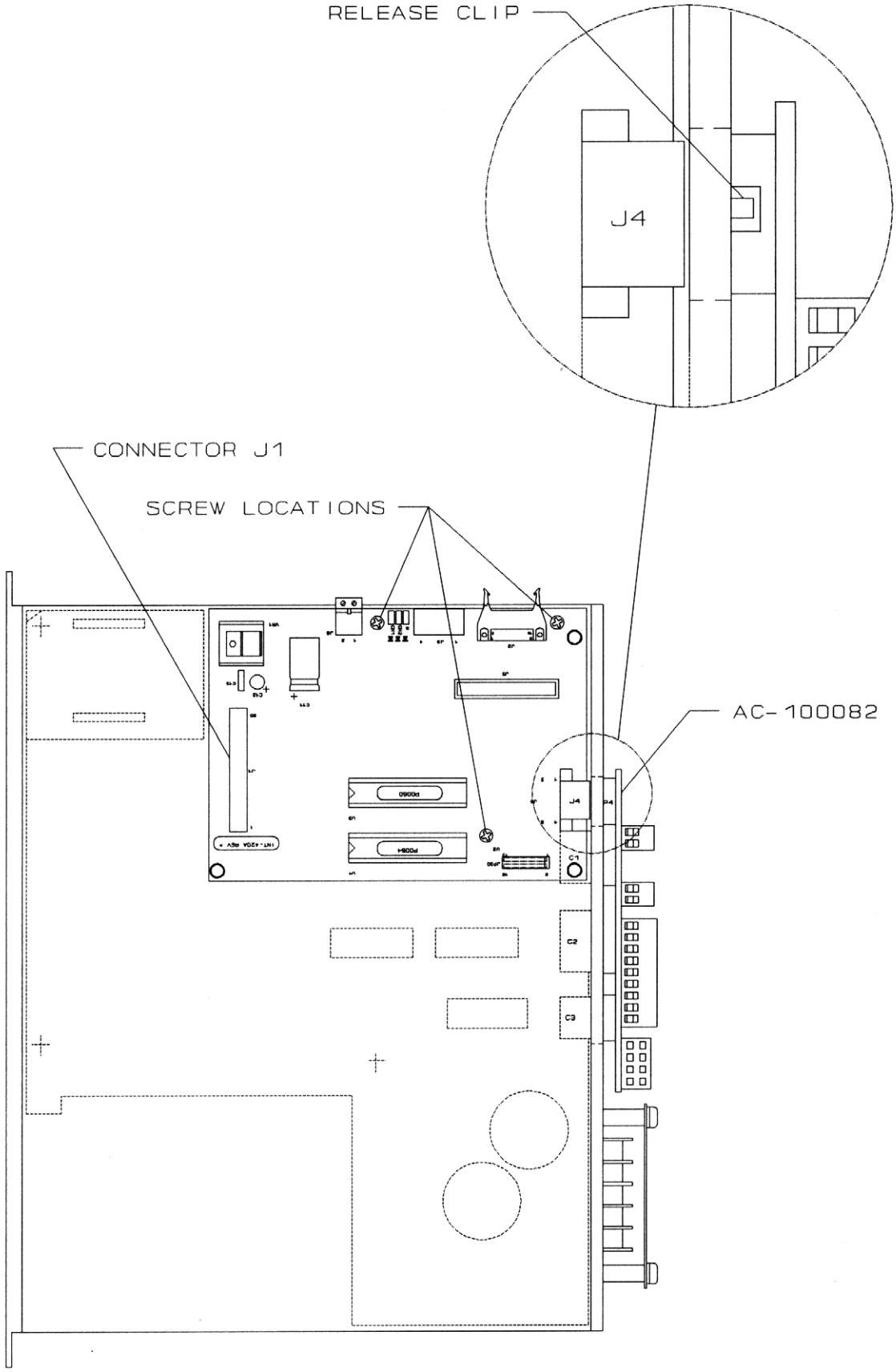


Figure 4.3 - INT-420A or INT-420 Board Removal

c. Insert a screwdriver under the AC-100082 board where it connects to the INT-420A or INT-420 board (J4) (refer to **Figure 4.3**), and depress the connector release clip between the AC-100082 and the BSD6-300 cover plate.

d. Gently pull the INT-420A or INT-420 board down while depressing the release clip.

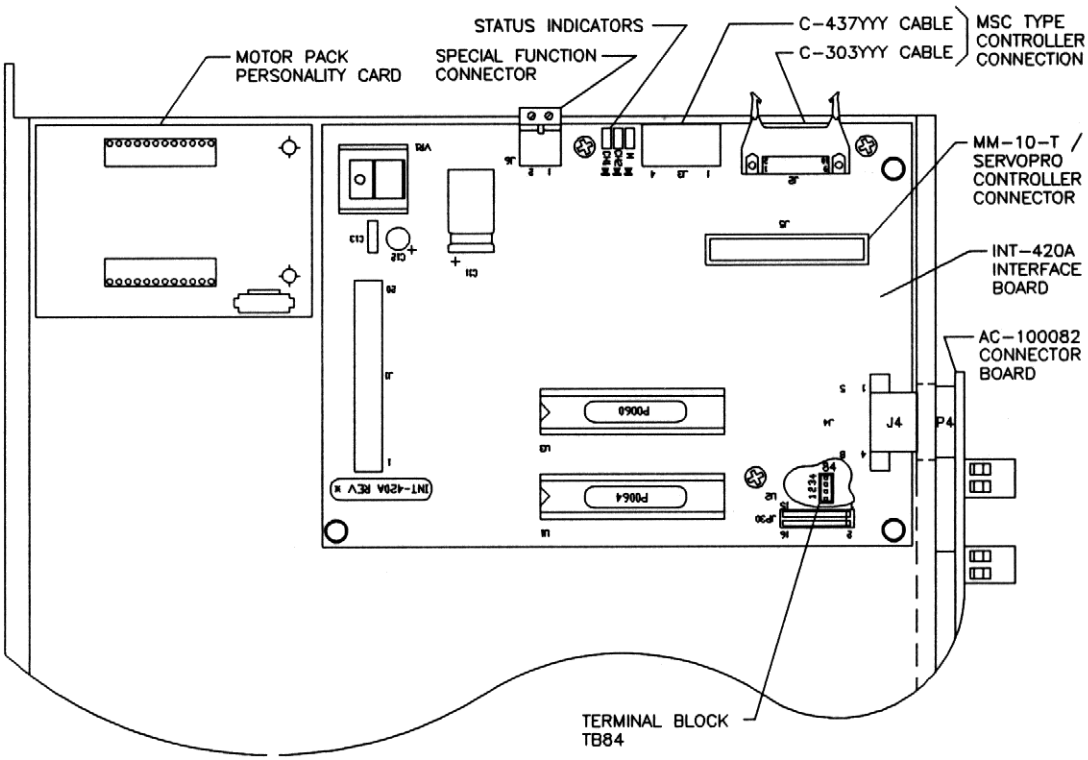


Figure 4.4 - Drive: Partial Side View (Cover Removed)

5. Connect a small jumper between pins 3 and 4 on terminal block TB84 (refer to **Figure 4.4**). While in this mode, the FOLDBACK LED becomes the resolver alignment indicator.

6. Check for proper motor and resolver alignment by conducting the following test:

   a. Apply power but **DO NOT ENABLE THE DRIVE.** If necessary, have a colleague observe the FOLDBACK LED.

   b. Slowly rotate the motor shaft by hand until the FOLDBACK LED flashes at its fastest rate. (Rotate the motor slightly, then pause to give the circuitry time to react.) The closer the resolver is to being correctly aligned, the faster the LED will flash. When the LED flashes at its fastest rate, the rate will be somewhere between 1 pulse per second and steadily illuminated.

WARNING

REMOVE HAND FROM MOTOR SHAFT BEFORE ENABLING THE DRIVE AS THE SHAFT WILL JERK INTO POSITION WITH FORCE.

c. Enable the drive by connecting the ENABLE test point to COM. The internal software of the drive will cause phase MA to have zero current. The MB and MC phases will have equal, but opposite, currents causing the motor shaft to align itself in a neutral position. The FOLDBACK LED should be steadily illuminated, indicating correct alignment of the resolver. If this is true, resolver alignment is correct and no further alignment is necessary

d. If the FOLDBACK LED is not steadily illuminated, it will be necessary to continue with the alignment procedure.

7. Disable the drive and remove all power, by removing the connection between ENABLE test point and COM.

8. Remove the rear motor cover to expose the resolver.

NOTE

The frame-less resolver rotor is slid forward onto the motor shaft and secured with a large lock nut. This part of the resolver should not be disturbed.

9. Loosen, but do not remove, the two servo clamp screws securing the resolver stator. **DO NOT MOVE THE POSITION OF THE MOTOR SHAFT!**

10. Turn on power to the system and enable the drive.

11. Slowly rotate the resolver stator (outside element) while a colleague watches the FOLDBACK LED on the front of the drive.

a. Slowly rotate the resolver stator by hand until the FOLDBACK LED flashes at its fastest rate. (Rotate the stator slightly, then pause to give the circuitry time to react.) The closer the resolver is to being correctly aligned, the faster the LED will flash. When the LED flashes at its fastest rate, the rate will be somewhere between 1 pulse per second and steadily illuminated.

b. If the LED does not illuminate steadily, turn the resolver stator in the opposite direction. Continue to rotate the stator until the FOLDBACK LED illuminates steadily. If the correct alignment position is passed, the FOLDBACK LED will flash slower.

12. When the LED is steadily illuminated, stop turning the stator and tighten the two servo clamp screws.

13. Disable the drive and remove the power.

14. Repeat Step 6 to check for proper motor and resolver alignment.

15. When alignment is proper, disable the drive and remove the power.

16. Replace the motor end cover.

17. Remove the jumpers from terminal block TB84 and replace interface board INT-420A.

    a. Insert connector J4 into the AC-100082 connector until the clip snaps into position (refer to **Figure 4.3**).

    b. Pivot the connector at the bottom of the board into position on the pins of the BSD6-300 board.

    c. Install the three screws through the INT-420A or INT-420 board into the standoffs.

18. Replace the cover.

NOTES

APPENDIX A - GLOSSARY

A COM: Analog Common

Actuator: 1. A device used to supply a signal causing a controller to initiate specified sequences.
2. A device (such as a motor) which creates mechanical motion by converting various forms of energy to mechanical energy.

ASCII: American Standard Code for Information Interchange

BAUD: The number of bits per second that can be transmitted in computer communications.

BCD: Binary Coded Decimal System. A system of number representation in which each digit of a decimal number is represented by a binary number.

Brushless: A type of direct-current-excited synchronous motor that utilizes a field-excitation system which eliminates the need for collector rings and brushes.

Check Sum: A sum of digits or numbers used in a summation check. (A summation check is an error-detecting procedure involving adding together all the digits of some number and comparing this sum to a previously computed value of the same sum.)

Closed Loop: A regulating device in which the actuator position is sensed, and a signal proportional to this position (feedback position) is compared with a signal proportional to the desired actuator position (command position). The difference between these signals is the error signal. The error signal causes a change in the actuator so as to force this difference to be zero.

Communications: The transmission of information from one device to another. The information can take many forms such as command signals, device status, and fault conditions.

Comparator: A device where the feedback signal is subtracted from the command signal. The difference output of the comparator is called the error signal.

Controller: The device which receives data from various input devices and issues commands to the drive.

D COM: Digital Common

Daisy Chain: A means of connecting devices together by input/output buses which transmit in both directions simultaneously.

Edge triggered: An electronic circuit which must sense the initial change in a voltage before it is actuated.

Encoder: A type of feedback device which converts mechanical motion into electrical signals to indicate actuator position. The encoder typically produces an electrical pattern based on the interruption of a light source as a printed pattern is rotated between the source and a sensor. The interruptions are sensed and converted to electrical pulses. Actuator shaft position is determined by counting these pulses.

Feedback Device: Device which monitors shaft position by sending signals to the controller as the shaft rotates.

Flag: A bit in memory used by the programmer to evaluate action to be taken. A program branch may be executed depending on the true or false result of a bit test.

Foldback: A condition where the drive automatically reduces the peak current to the continuous current rating of the drive during excessive current conditions.

Full Duplex: A method of operating a communications circuit so that each end can simultaneously transmit and receive.

Gain: A multiplication factor. When used with the MSC-250 controller, it is the factor used to increase or decrease the apparent number of counts per revolution.

High True: A binary coded decimal condition where the binary digit "1" is the high logic voltage.

Home: Absolute 0.00 or the point from which all absolute points are measured.

Host Computer: A computer system whose function is to monitor and coordinate the processes of other devices. A host computer will typically coordinate motion control functions as well as their interaction with other machine processes.

T LIMIT: Torque Limit

Index: To move the motor shaft an incremental distance from the current position.

Initialize: To execute a series of Macroprogram instructions to teach a MSC axis controller an absolute zero reference.

I/O: Input/Output. (Pertaining to all equipment and activity that transfers information into or out of a computer or similar device — such as the MSC-250 controller.)

Least Significant Bit: The bit that carries the lowest value or weight in the binary notation for a numeral. The right-most bit in the binary word (notation).

LED: Light-Emitting Diode. Also known as solid-state lamp. A semiconductor diode that converts electric energy to light.

MDPAK™: Industrial Indexing Systems Motor/Drive Package

Most Significant Bit: The bit that carries the greatest value or weight in the binary notation for a numeral. The left-most bit in the binary word (notation).

Nonvolatile Memory: A computer storage medium that retains information in the absence of power.

Optically Isolated: Indicates an I/O which uses a coupling device in which a light-emitting diode, energized by an input signal, is optically coupled to a photodetector.

Parameters: Predefined data which is used in the execution of instructions.

Peripheral: Various kinds of devices that operate in combination or conjunction with the MSC-250 controller but are not physically part of the controller.

PLC: Programmable Logic Controller.

Position: To move the motor to an absolute position in reference to a previously established 0.00 point (Home).

Position Error: The difference between the present actuator position (feedback) and the desired position (command).

Position Feedback: Present actuator position as measured by a position transducer.

POS OUT: Position Output (motor error output).

Programmable Logic Controller: An electronic device that scans on/off type inputs and controls on/off type outputs. The relationship between the inputs and outputs are programmable by the user.

PWRPAK™: Industrial Indexing Systems Power Supply Package

Quadrature: When relating to a shaft encoder, indicates that there are two oscillating outputs whose frequencies are 90° out of phase.

Regeneration Circuit: The circuit which causes excess system energy to be directed to a regeneration resistor, if present.

Regeneration Resistor: An external resistor used by some system power supplies to dissipate energy when the system motor is decelerating.

Resolver: A type of feedback device which converts mechanical position into an electrical signal. A resolver is a variable transformer that divides the impressed AC signal into a sine and cosine output signal. The phase of these two signals represent the absolute position of the resolver shaft.

Transformer: An electrical component used to convert electrical energy from one or more alternating-currrent circuits to one or more others by magnetic induction.

APPENDIX B
MDPAK™ SPECIFICATIONS

Series 6 Motor/Drive Packages Summary

INDUSTRIAL INDEXING SYSTEMS, INC.
SERIES 6 MOTOR/DRIVE PACKAGES SUMMARY

MOTOR DRIVE PART NUMBER	DRIVE SIZE (INCHES) HEIGHT	WIDTH	DEPTH	POWER (WATTS)	MOTOR ASSEMBLY	RATED SPEED (RPM)	RATED TORQUE (LB-FT)	PEAK TORQUE (LB-FT)	ROTOR PEAK HP	INPUT INERTIA (LB-FT-SEC^2)	MOTOR WEIGHT (LBS)
MDPAK6-0600M	14.01	2.36	11.02	600	BLM-1045	2500	1.7	4.2	1.00	0.000617	11.00
MDPAK6-0815M	14.01	2.36	11.02	815	BLM-1046	1900	3.1	6.5	1.45	0.000843	16.00
MDPAK6-0900	14.01	2.36	11.02	900	BLM-1039	3800	1.7	3.0	1.60	0.000073	16.70
MDPAK6-0940	14.01	2.36	11.02	940	BLM-1037	1400	4.8	8.2	1.73	0.000185	9.00
MDPAK6-0950	14.01	2.36	11.02	950	BLM-1022	1500	4.5	9.1	1.55	0.000238	18.50
MDPAK6-0960M	14.01	2.36	11.02	960	BLM-1049	1400	4.8	8.5	1.60	0.001300	21.00
MDPAK6-1000M	14.01	2.36	11.02	1000	BLM-1050	1500	4.9	8.0	1.62	0.001910	23.00
MDPAK6-1450	14.01	2.36	11.02	1450	BLM-1036	6200	1.6	3.5	3.00	0.000073	16.70
MDPAK6-1500	14.01	2.36	11.02	1500	BLM-1038	3600	3.0	7.0	3.25	0.000128	13.60
MDPAK6-1825	14.01	2.36	11.02	1825	BLM-1035	2800	4.6	8.6	3.60	0.000185	13.60
MDPAK6-1850M	14.01	2.36	11.02	1850	BLM-1048	2800	4.6	8.7	3.60	0.001300	21.00
MDPAK6-2000M	14.01	2.36	11.02	2000	BLM-1052	1500	9.6	16.0	3.25	0.003250	34.00
MDPAK6-2030	14.01	2.36	11.02	2030	BLM-1024	1500	9.6	18.0	2.74	0.000484	27.50
MDPAK6-2100	14.01	2.36	11.02	2100	BLM-1023	3000	4.9	9.3	3.54	0.000238	18.50
MDPAK6-2800	14.01	3.46	11.02	2800	BLM-1034	6200	3.2	5.5	5.00	0.000128	9.00
MDPAK6-2800M	14.01	3.46	11.02	2800	BLM-1047	6200	3.2	4.75	5.80	0.000843	16.00
MDPAK6-2875	14.01	3.46	11.02	2875	BLM-1026	1700	12.0	26.0	4.90	0.000685	35.00
MDPAK6-3000M	14.01	3.46	11.02	3000	BLM-1053	1700	12.4	23.0	5.40	0.004850	44.00
MDPAK6-3290	14.01	3.46	11.02	3290	BLM-1028	2000	11.6	20.0	5.50	0.000758	37.00
MDPAK6-3300	14.01	3.46	11.02	3300	BLM-1025	2500	9.4	18.5	5.30	0.000484	27.50
MDPAK6-3300M	14.01	3.46	11.02	3300	BLM-1055	2000	11.6	19.0	5.50	0.005720	44.00
MDPAK6-3500M	14.01	3.46	11.02	3500	BLM-1051	2500	9.9	18.3	5.55	0.003250	34.00
MDPAK6-4500M	14.01	4.17	11.02	4500	BLM-1056	3000	10.7	29.0	11.04	0.005720	44.00
MDPAK6-4700M	14.01	4.17	11.02	4700	BLM-1058	1600	20.6	50.0	12.00	0.010370	63.00
MDPAK6-5460	14.01	4.17	11.02	5460	BLM-1027	3200	12.1	27.0	10.80	0.000685	35.00
MDPAK6-5600M	14.01	4.17	11.02	5600	BLM-1054	3200	12.3	27.0	10.80	0.004850	44.00
MDPAK6-5730	14.01	4.17	11.02	5730	BLM-1029	4000	10.1	18.0	9.90	0.000758	37.00
MDPAK6-5900M	14.01	4.17	11.02	5900	BLM-1057	2150	19.5	40.0	12.25	0.010370	63.00
MDPAK6-5950	14.01	4.17	11.02	5950	BLM-1030	2150	19.5	42.0	13.10	0.001500	51.00
MDPAK6-6100	14.01	4.17	11.02	6100	BLM-1032	1500	29.7	62.0	12.30	0.002240	66.00
MDPAK6-6500M	14.01	4.17	11.02	6500	BLM-1059	1550	29.7	56.0	13.50	0.015610	83.00
MDPAK6-7000	14.00	4.17	11.02	7000	BLM-1116	1600	31.0	62.0	15.73	0.003600	79.00

APPENDIX C
MOTOR DIMENSIONS AND CONNECTIONS

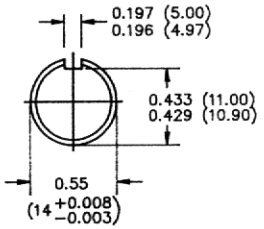
DRAWING NUMBER	DESCRIPTION
IM-BLM-B20X	Motor, Brushless
IM-BLM-B40X	Motor, Brushless
IM-BLM-B60X	Motor, Brushless
IM-BLM-B80X	Motor, Brushless

DATE	SYM	REVISION RECORD	DR	CK	CK
6/16/93	A	ECN 93-131	EB		
11/05/93	B	ECN 93-0130	MC	CB	

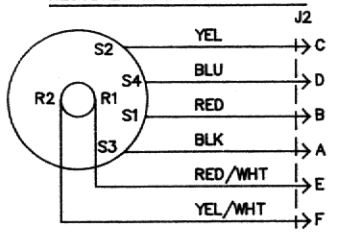
NOTES:

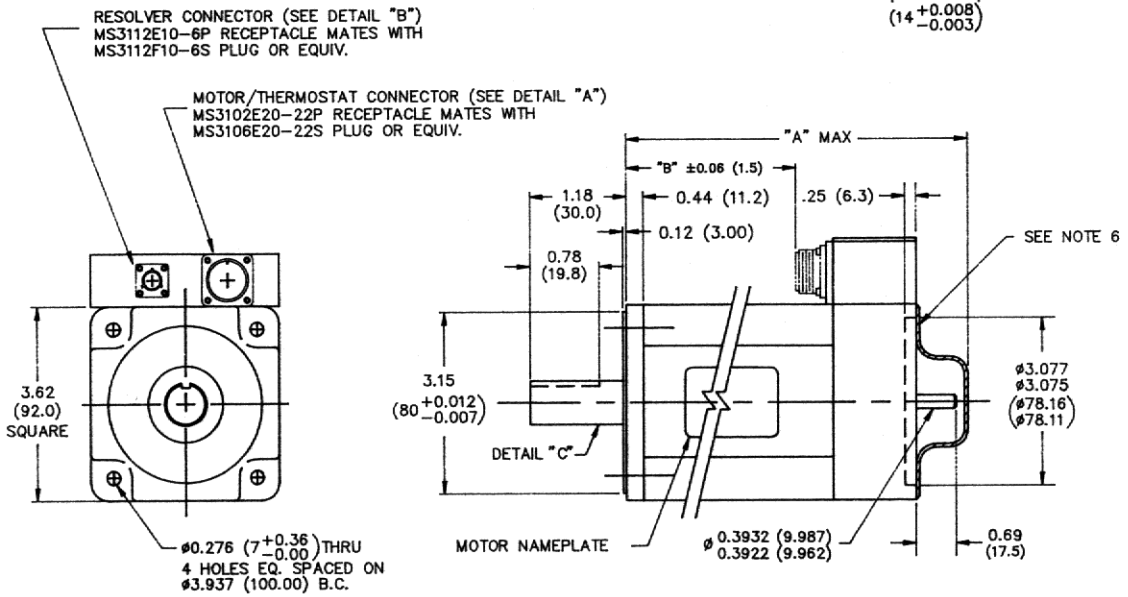
1. WITH PHASE SEQUENCE A-B-C, MOTOR ROTATION WILL BE CLOCKWISE (FACING MOUNTING END)
2. MOTOR CAN BE MOUNTED IN ANY POSITION
3. ALL DIMENSIONS ARE IN INCHES (mm)
4. ALL MOTORS ARE CERTIFIED TO MEET IP65 SEALING.
5. MOTORS THAT NEED TO BE CERTIFTIED TO MEET IP-67 SEALING, ADD -67 TO MOTOR MODEL NUMBER
6. M5 x 0.8 TAP x 0.39 (10.0) MIN. DEEP, 4 HOLES EQUALLY SPACED ON ø3.937 (100.00) B.C.

DETAIL "C"
MOTOR SHAFT DIMENSIONS

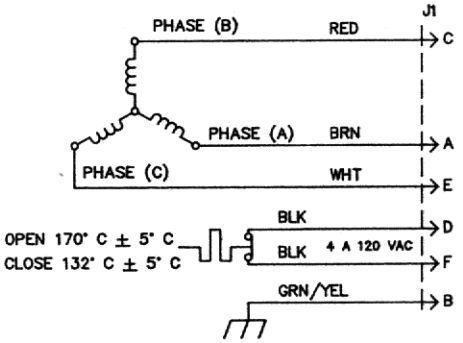


DETAIL "B"
RESOLVER CONNECTOR DIAGRAM





DETAIL "A"
MOTOR/THERMOSTAT CONNECTOR DIAGRAM



INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

	LOW ROTOR INERTIA			MEDIUM ROTOR INERTIA		
MODEL NUMBER	BLM-1036 BLM-1039	BLM-1034 BLM-1038	BLM-1035 BLM-1037	BLM-1045	BLM-1046 BLM-1047	BLM-1048 BLM-1049
"A" DIMENSION	9.30 (236.2)	10.86 (275.8)	12.42 (315.4)	10.86 (275.8)	12.42 (315.5)	14.69 (373.2)
"B" DIMENSION	4.56 (115.8)	6.12 (155.4)	7.68 (195.0)	6.12 (155.4)	7.68 (195)	9.94 (252.4)
MOTOR WEIGHT (IN LBS.)	9.0	13.6	16.7	11	16	21

CHECKED BY: [illegible] DATE: 12/93
APPROVED BY: DATE:
APPROVED BY: DATE:
MATERIAL: ----------
FINISH: ----------

TITLE: MOTOR, BRUSHLESS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ----- ANGULAR ± 1°
X.XX± 0.01
X.XXX± 0.005

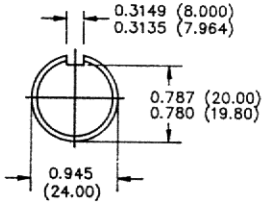
DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DWG\IB\IB16B001\RA\
DRAWING NUMBER: IM-BLM-B20X
B | DATE: 6/15/93 | SCALE: --- | SHEET NO.: 1 OF 1 | REVISION: B

NOTES:

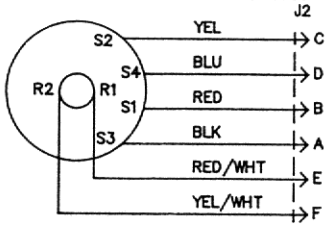
1. WITH PHASE SEQUENCE A–B–C, MOTOR ROTATION WILL BE CLOCKWISE (FACING MOUNTING END)
2. MOTOR CAN BE MOUNTED IN ANY POSITION
3. ALL DIMENSIONS ARE IN INCHES (mm)
4. ALL MOTORS ARE CERTIFIED TO MEET IP65 SEALING.
5. MOTORS THAT NEED TO BE CERTIFTIED TO MEET IP–67 SEALING, ADD –67 TO MOTOR MODEL NUMBER
6. M5 x 0.8 TAP x 0.55 (14.0) MIN. DEEP, 4 HOLES EQUALLY SPACED ON ø5.118 (130.00) B.C.

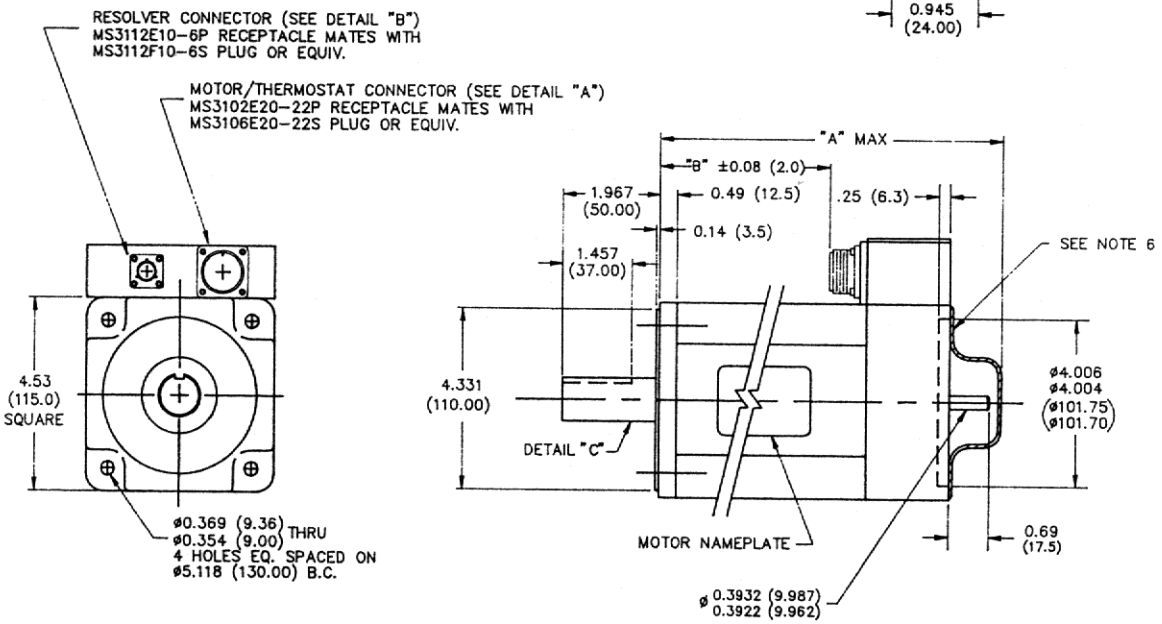
DATE	SYM	REVISION RECORD	DR	CK	CK
6/16/93	A	ECN 93–131	EB		
11/05/93	B	ECN 93–0130	MC	CB	

DETAIL "C"
MOTOR SHAFT DIMENSIONS

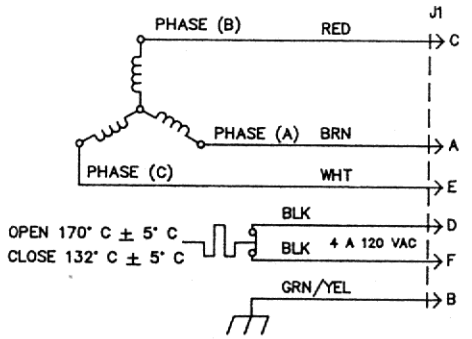


DETAIL "B"
RESOLVER CONNECTOR DIAGRAM





DETAIL "A"
MOTOR/THERMOSTAT CONNECTOR DIAGRAM



LOW ROTOR INERTIA				MEDIUM ROTOR INERTIA		
MODEL NUMBER	BLM–1022 BLM–1023	BLM–1024 BLM–1025	BLM–1026 BLM–1027	BLM–1050	BLM–1051 BLM–1052	BLM–1053 BLM–1054
"A" DIMENSION	10.45 (265.5)	12.55 (318.8)	14.65 (372.1)	12.55 (318.8)	14.65 (372.1)	17.52 (444.9)
"B" DIMENSION	6.20 (157.6)	8.30 (210.9)	10.41 (264.3)	10.51 (266.9)	12.61 (320.2)	15.47 (393.0)
MOTOR WEIGHT (IN LBS.)	18.5	27.5	35.0	23.0	34.0	44.0

CHECKED BY: CB DATE: 12/93
APPROVED BY: DATE:
APPROVED BY: DATE:
MATERIAL: ----------
FINISH: ----------

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924–9181 FAX: (716) 924–2169

TITLE: MOTOR, BRUSHLESS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ----- ANGULAR ± 1°
X.XX± 0.01
X.XXX± 0.005

DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DWG\IB\IB16B001\RA\

SIZE	DATE	SCALE	SHEET NO.	REVISION
B	6/15/93	-----	1 OF 1	B

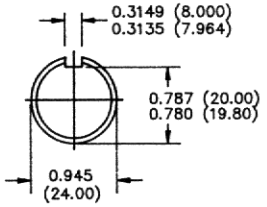
DRAWING NUMBER: IM–BLM–B40X

DATE	SYM	REVISION RECORD	DR	CK	CK
6/16/93	A	ECN 93-131	EB		
11/08/93	B	ECN 93-0130	MC	gb	

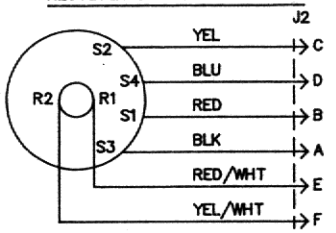
NOTES:

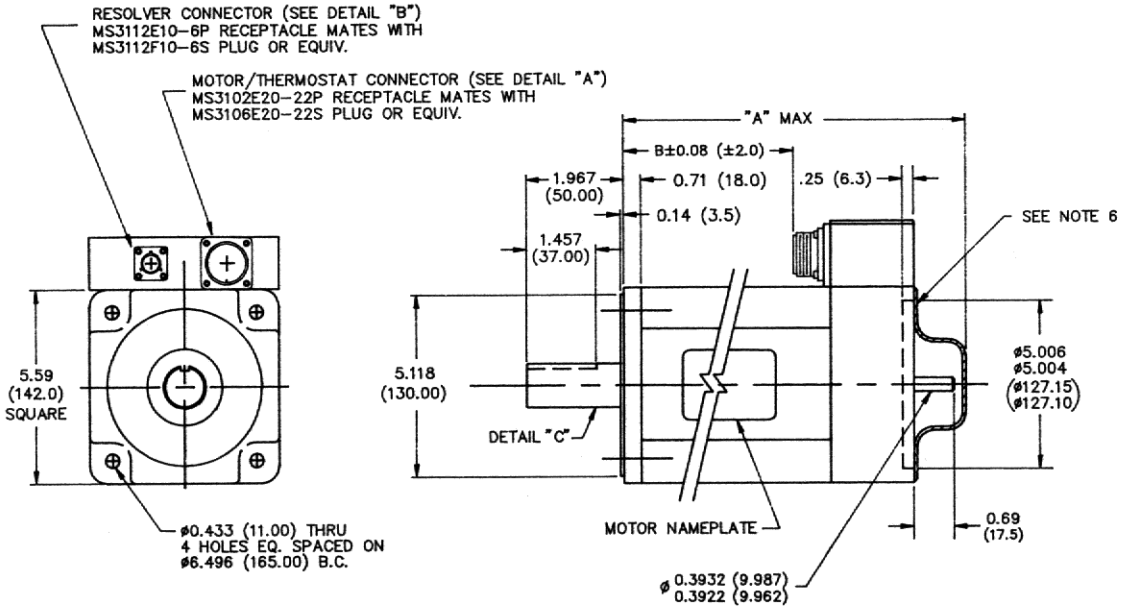
1. WITH PHASE SEQUENCE A-B-C, MOTOR ROTATION WILL BE CLOCKWISE (FACING MOUNTING END)
2. MOTOR CAN BE MOUNTED IN ANY POSITION
3. ALL DIMENSIONS ARE IN INCHES (mm)
4. ALL MOTORS ARE CERTIFIED TO MEET IP65 SEALING.
5. MOTORS THAT NEED TO BE CERTIFTIED TO MEET IP-67 SEALING, ADD -67 TO MOTOR MODEL NUMBER
6. M5 x 0.8 TAP x 0.39 (10.0) MIN. DEEP, 4 HOLES EQUALLY SPACED ON ø6.465 (164.00) B.C.

DETAIL "C"
MOTOR SHAFT DIMENSIONS

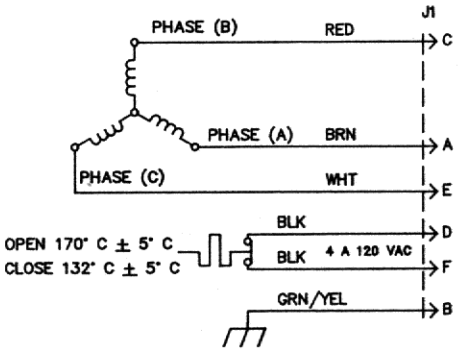


DETAIL "B"
RESOLVER CONNECTOR DIAGRAM





DETAIL "A"
MOTOR/THERMOSTAT CONNECTOR DIAGRAM



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	LOW ROTOR INERTIA			MEDIUM ROTOR INERTIA		
MODEL NUMBER	BLM-1028 BLM-1029	BLM-1030	BLM-1032	BLM-1055 BLM-1056	BLM-1057 BLM-1058	BLM-1059
"A" DIMENSION	11.78 (299.2)	14.48 (367.8)	17.18 (436.4)	14.48 (367.8)	17.18 (436.4)	20.93 (531.5)
"B" DIMENSION	5.47 (139.0)	8.17 (207.6)	10.87 (276.2)	12.46 (316.6)	15.17 (385.2)	18.91 (480.3)
MOTOR WEIGHT (IN LBS.)	37.0	51.0	66.0	44.0	63.0	83.0

CHECKED BY: E Bair — DATE: 12/93
APPROVED BY — DATE
APPROVED BY — DATE
MATERIAL: ----------
FINISH: ----------

TITLE: MOTOR, BRUSHLESS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES: X.X± ----- ; X.XX± 0.01 ; X.XXX± 0.005 ; ANGULAR ± 1°

DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DWG\IB\IB16B001\RA
DRAWING NUMBER: IM-BLM-B60X
B | DATE 6/16/93 | SCALE ---- | SHEET NO. 1 OF 1 | REVISION B

NOTES:

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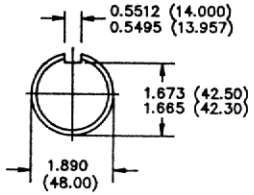
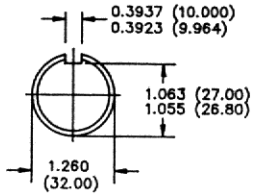
2. MOTOR CAN BE MOUNTED IN ANY POSITION
3. ALL DIMENSIONS ARE IN INCHES (mm)
4. ALL MOTORS ARE CERTIFIED TO MEET IP65 SEALING.
5. MOTORS THAT NEED TO BE CERTIFTIED TO MEET IP–67 SEALING, ADD –67 TO MOTOR MODEL NUMBER
6. M5 x 0.8 TAP x .55 (14.00) MIN. DEEP, 4 HOLES EQUALLY SPACED ON ø8.937 (227.00) B.C.

DATE	SYM	REVISION RECORD	DR	CK	CK
05MAY95	0	ECN 95–001	CWB	CB	WE

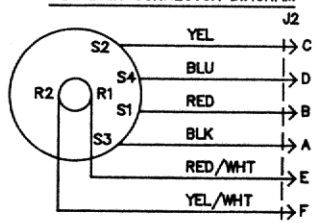
DETAIL "D"
MOTOR SHAFT DIMENSIONS
BLM–1040

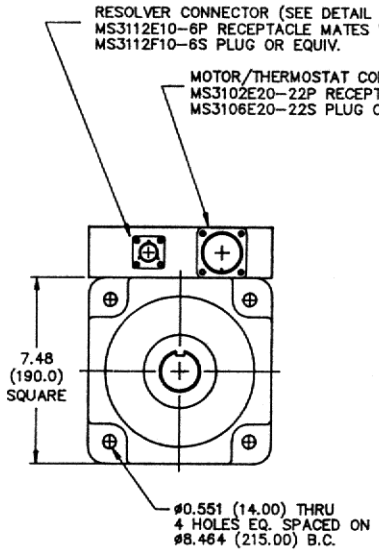


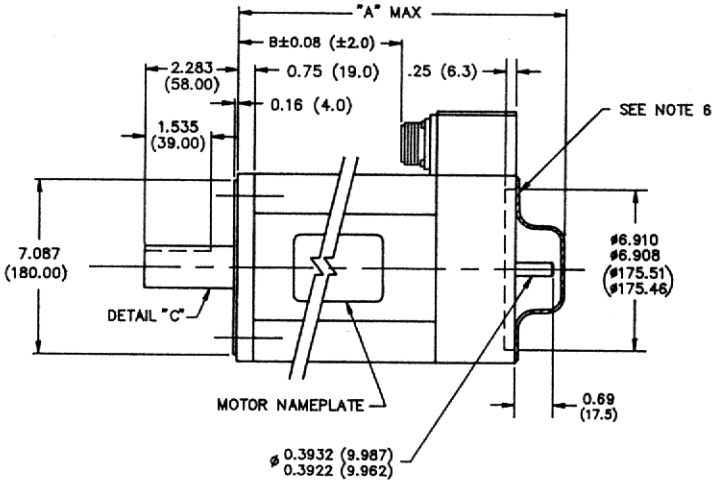
DETAIL "C"
MOTOR SHAFT DIMENSIONS
BLM–1116



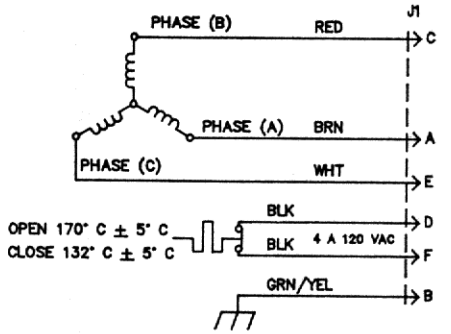
DETAIL "B"
RESOLVER CONNECTOR DIAGRAM







DETAIL "A"
MOTOR/THERMOSTAT CONNECTOR DIAGRAM



	LOW ROTOR INERTIA			MEDIUM ROTOR INERTIA		
MODEL NUMBER	BLM–1116	BLM–1040				
"A" DIMENSION	14.19 (360.4)	21.24 (539.5)				
"B" DIMENSION	7.44 (188.9)	14.48 (367.7)				
MOTOR WEIGHT (IN LBS.)	37.0	51.0				

CHECKED BY — DATE
APPROVED BY — DATE 6/16/95
APPROVED BY — DATE
MATERIAL ----------
FINISH ----------

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924–9181 FAX: (716) 924–2169

TITLE: MOTOR, BRUSHLESS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ----- ANGULAR ± 1°
X.XX± 0.01
X.XXX± 0.005

DRAWN BY CWB
AutoCAD FILE LOCATION Q:\DWG\IB\IB16B001\RA

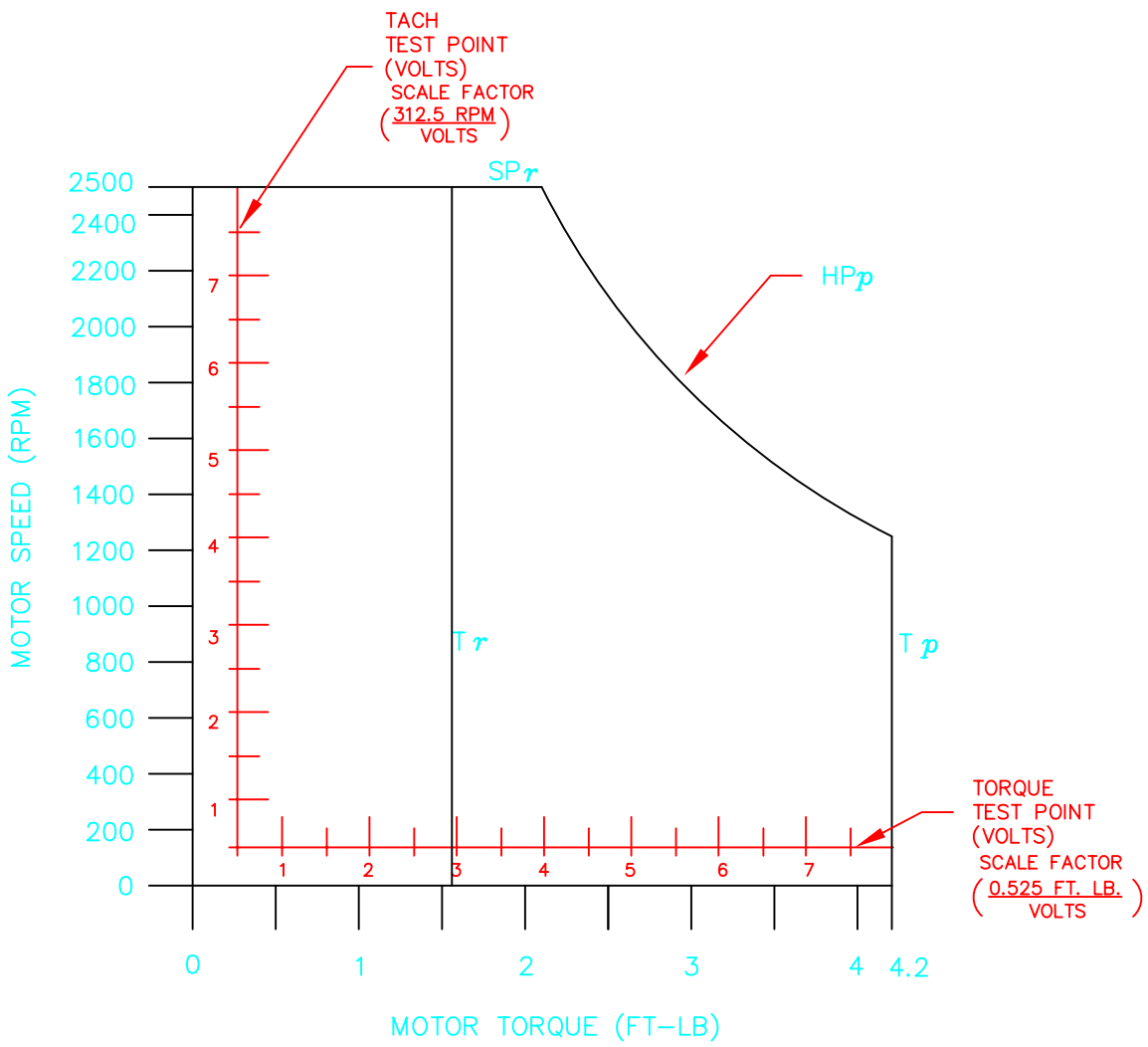
DRAWING NUMBER IM–BLM–B80X

B | DATE 05MAY95 | SCALE ----- | SHEET NO. 1 OF 1 | REVISION 0

APPENDIX D
MOTOR TORQUE CURVES

DRAWING NUMBER	DESCRIPTION
MDPAK6-0600M	Motor Drive Package
MDPAK6-0815M	Motor Drive Package
MDPAK6-0900	Motor Drive Package
MDPAK6-0940	Motor Drive Package
MDPAK6-0950	Motor Drive Package
MDPAK6-0960M	Motor Drive Package
MDPAK6-1000M	Motor Drive Package
MDPAK6-1450	Motor Drive Package
MDPAK6-1500	Motor Drive Package
MDPAK6-1825	Motor Drive Package
MDPAK6-1850M	Motor Drive Package
MDPAK6-2000M	Motor Drive Package
MDPAK6-2030	Motor Drive Package
MDPAK6-2100	Motor Drive Package
MDPAK6-2800	Motor Drive Package
MDPAK6-2800M	Motor Drive Package
MDPAK6-2875	Motor Drive Package
MDPAK6-3000M	Motor Drive Package
MDPAK6-3290	Motor Drive Package
MDPAK6-3300	Motor Drive Package
MDPAK6-3300M	Motor Drive Package
MDPAK6-3500M	Motor Drive Package
MDPAK6-4500M	Motor Drive Package
MDPAK6-4700M	Motor Drive Package
MDPAK6-5460	Motor Drive Package
MDPAK6-5600M	Motor Drive Package
MDPAK6-5730	Motor Drive Package
MDPAK6-5900M	Motor Drive Package
MDPAK6-5950	Motor Drive Package
MDPAK6-6100	Motor Drive Package
MDPAK6-6500M	Motor Drive Package
MDPAK6-7000	Motor Drive Package

DATE	SYM	REVISION RECORD	DR	CK	CK
11/18/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/03-1045	MM-5/0600M-SF0-XXXX
MOTOR ASSY	BLM-1045	BLM-1045
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	1.66	FT-LB
PEAK TORQUE	Tp	4.20	FT-LB
RATED SPEED	SPr	2500	RPM
PEAK HORSEPOWER	HPp	1.00	HP
ROTOR INERTIA	Jm	0.000617	FT-LB-SEC^2
OUTPUT POWER	W	600	WATT

CHECKED BY — DATE

APPROVED BY — DATE

APPROVED BY — DATE

MATERIAL: -------

FINISH: --------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ---- ; X.XX± --- ; X.XXX± -- ; ANGULAR ± --

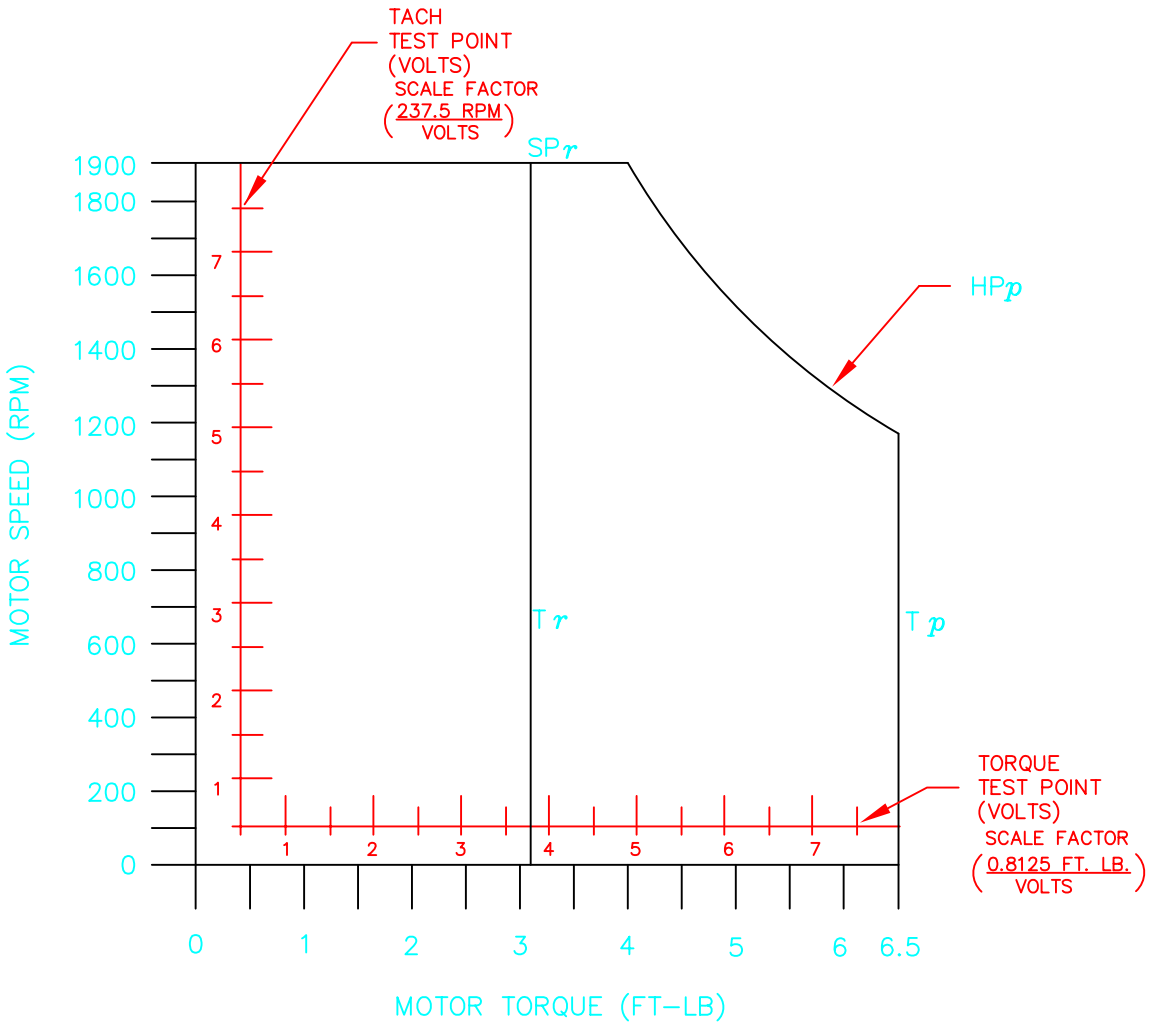
DRAWN BY: CAD

AutoCAD FILE LOCATION: Q:\CAD\MDPAK6

DRAWING NUMBER: MDPAK6-0600M MM-5/0600M

B | DATE: 11/18/93 | SCALE: --- | SHEET NO.: 1 OF 1 | REVISION: 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/10/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

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OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/03-1046	MM-5/0815M-SF0-XXXX
MOTOR ASSY	BLM-1046	BLM-1046
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	3.10	FT-LB
PEAK TORQUE	Tp	6.50	FT-LB
RATED SPEED	SPr	1900	RPM
PEAK HORSEPOWER	HPp	1.45	HP
ROTOR INERTIA	Jm	0.000843	FT-LB-SEC^2
OUTPUT POWER	W	815	WATT

CHECKED BY — DATE

APPROVED BY — DATE

APPROVED BY — DATE

MATERIAL: -------

FINISH: --------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ---- ; X.XX± --- ; X.XXX± -- ; ANGULAR ± --

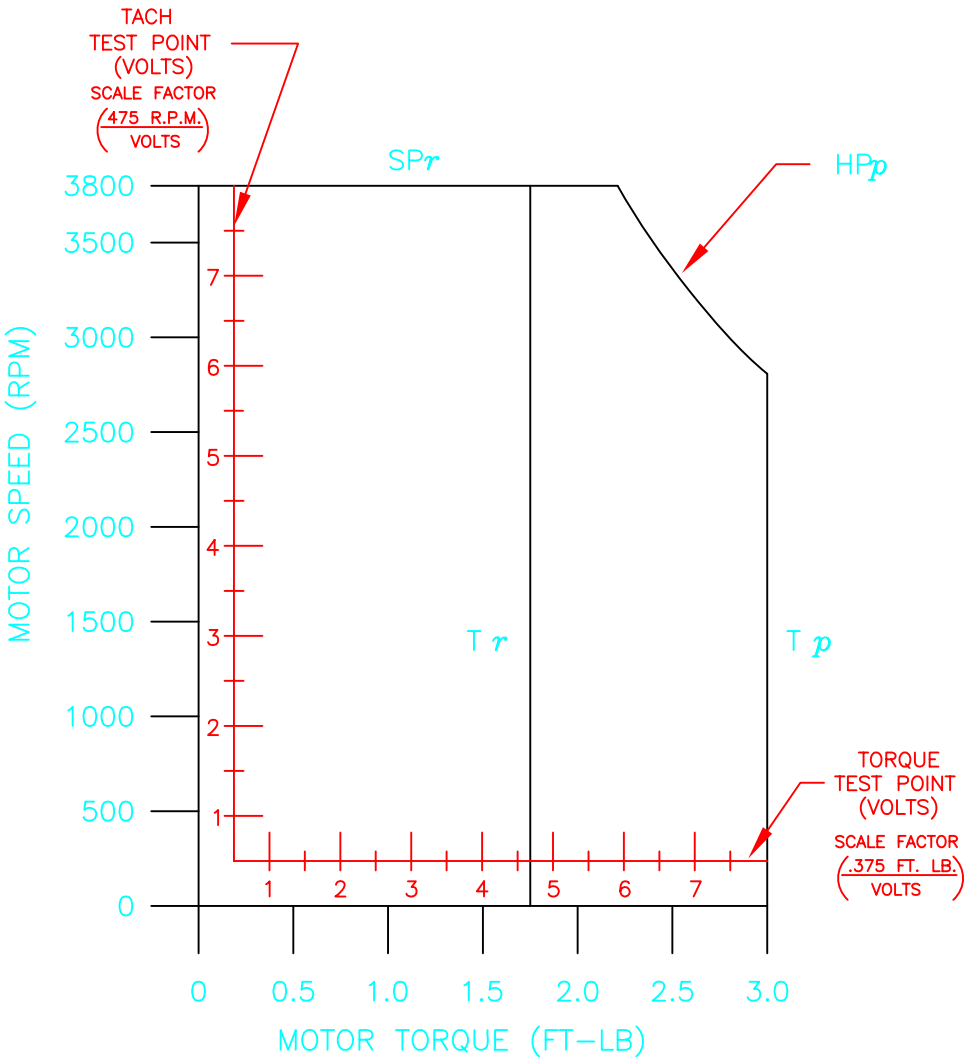
DRAWN BY: CAD

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-0815M / MM-5/0815M

B | DATE 11/10/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.
  OR
- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/03-1039	MM-5/0900-SF0-XXXX
MOTOR ASSY	BLM-1039	BLM-1039
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	1.75 FT-LB
PEAK TORQUE	Tp	3.00 FT-LB
RATED SPEED	SPr	3800 RPM
PEAK HORSEPOWER	HPp	1.60 HP
ROTOR INERTIA	Jm	0.000073 FT-LB-SEC^2
OUTPUT POWER	W	900 WATT

CHECKED BY — DATE

APPROVED BY W.E.S. — DATE 7/21/93

APPROVED BY — DATE

MATERIAL ----------

FINISH ----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± --- ; X.XX± --- ; X.XXX± --- ; ANGULAR ± ---

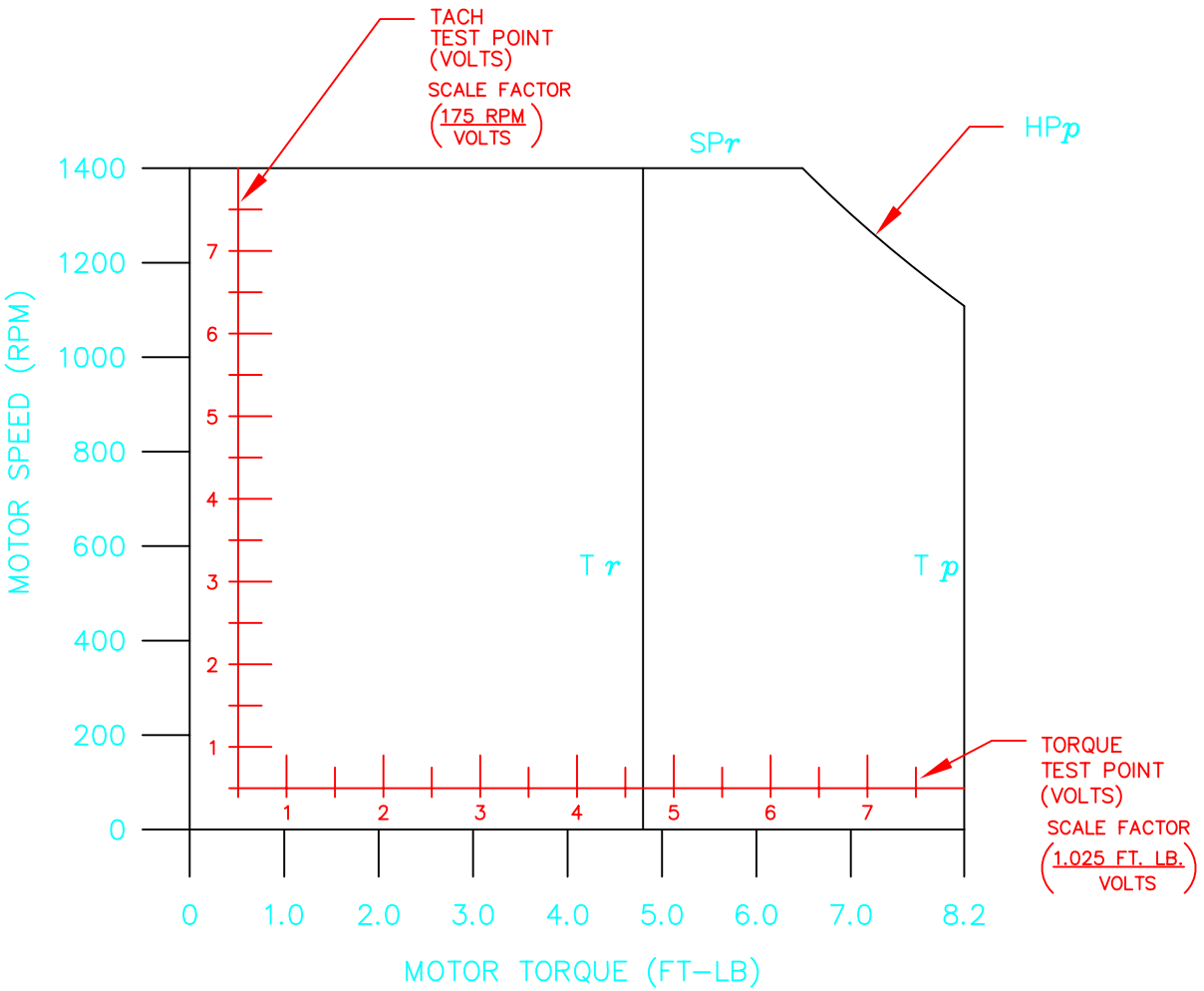
DRAWN BY: Mike E.

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

DRAWING NUMBER: MDPAK6-0900 MM-5/0900

B — DATE 7/20/92 — SCALE -- — SHEET NO. 1 OF 1 — REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/03-1037	MM-5/0940-SFO-XXXX
MOTOR ASSY	BLM-1037	BLM-1037
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

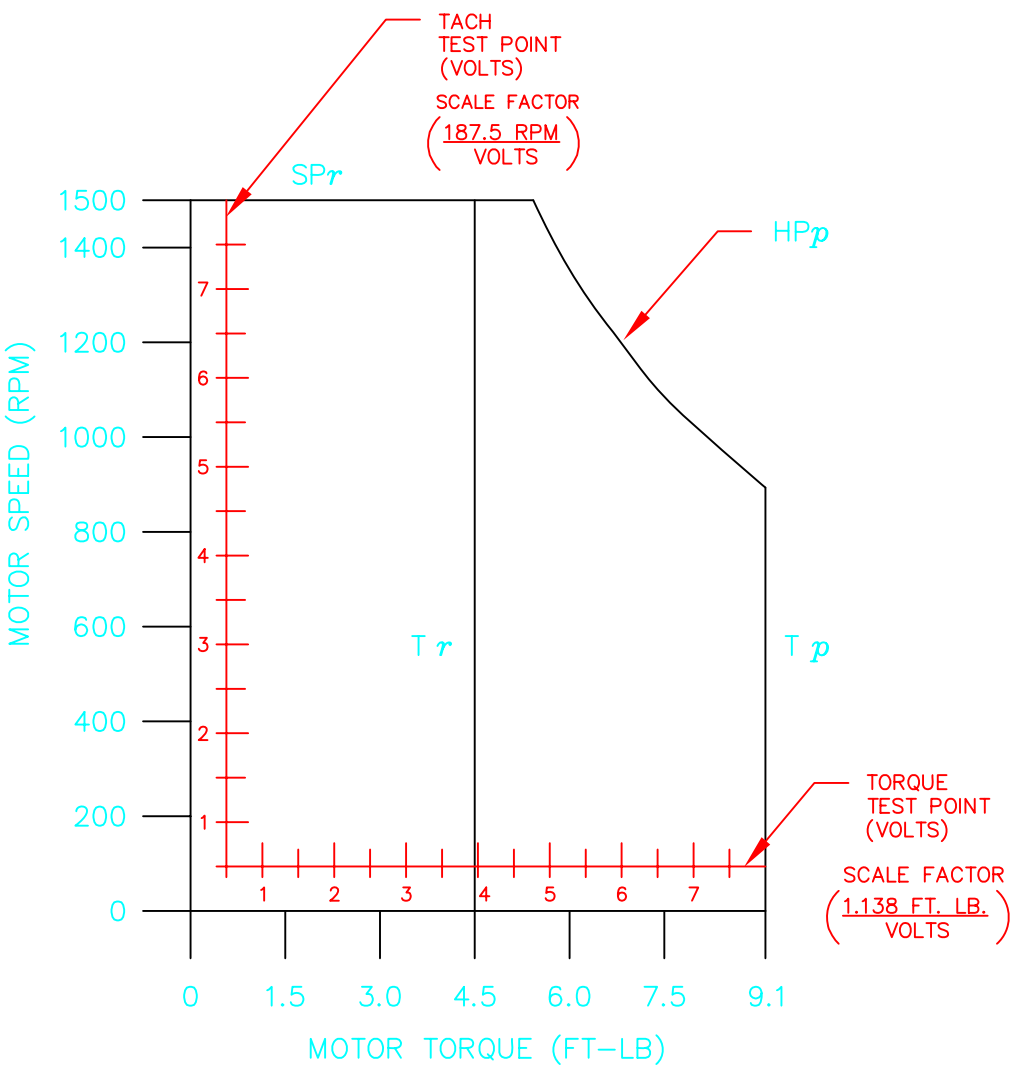
RATED TORQUE	Tr	4.80	FT-LB
PEAK TORQUE	Tp	8.20	FT-LB
RATED SPEED	SPr	1400	RPM
PEAK HORSEPOWER	HPp	1.73	HP
ROTOR INERTIA	Jm	0.000185	FT-LB-SEC^2
OUTPUT POWER	W	940	WATT

CHECKED BY	DATE
APPROVED BY W.E.S.	DATE 7/21/93
APPROVED BY	DATE
MATERIAL	----------
FINISH	----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY Mike E.		DRAWING NUMBER MDPAK6-0940 MM-5/0940
TOLERANCES	AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001		
X.X± -- X.XX±-- X.XXX± -- ANGULAR ± --	B	DATE 7/20/92	SCALE --
	SHEET NO. 1 OF 1		REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/03-1022	MM-5/0950-SFO-XXXX
MOTOR ASSY	BLM-1022	BLM-1022
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	4.50	FT-LB
PEAK TORQUE	Tp	9.10	FT-LB
RATED SPEED	SPr	1500	RPM
PEAK HORSEPOWER	HPp	1.55	HP
ROTOR INERTIA	Jm	0.000238	FT-LB-SEC^2
OUTPUT POWER	W	950	WATT

CHECKED BY	DATE
APPROVED BY W.E.S.	DATE 7/21/93
APPROVED BY	DATE
MATERIAL	----------
FINISH	----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY Mike E.		DRAWING NUMBER MDPAK6-0950 MM-5/0950
TOLERANCES X.X± --- X.XX±--- X.XXX±-- ANGULAR ±--	AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001		
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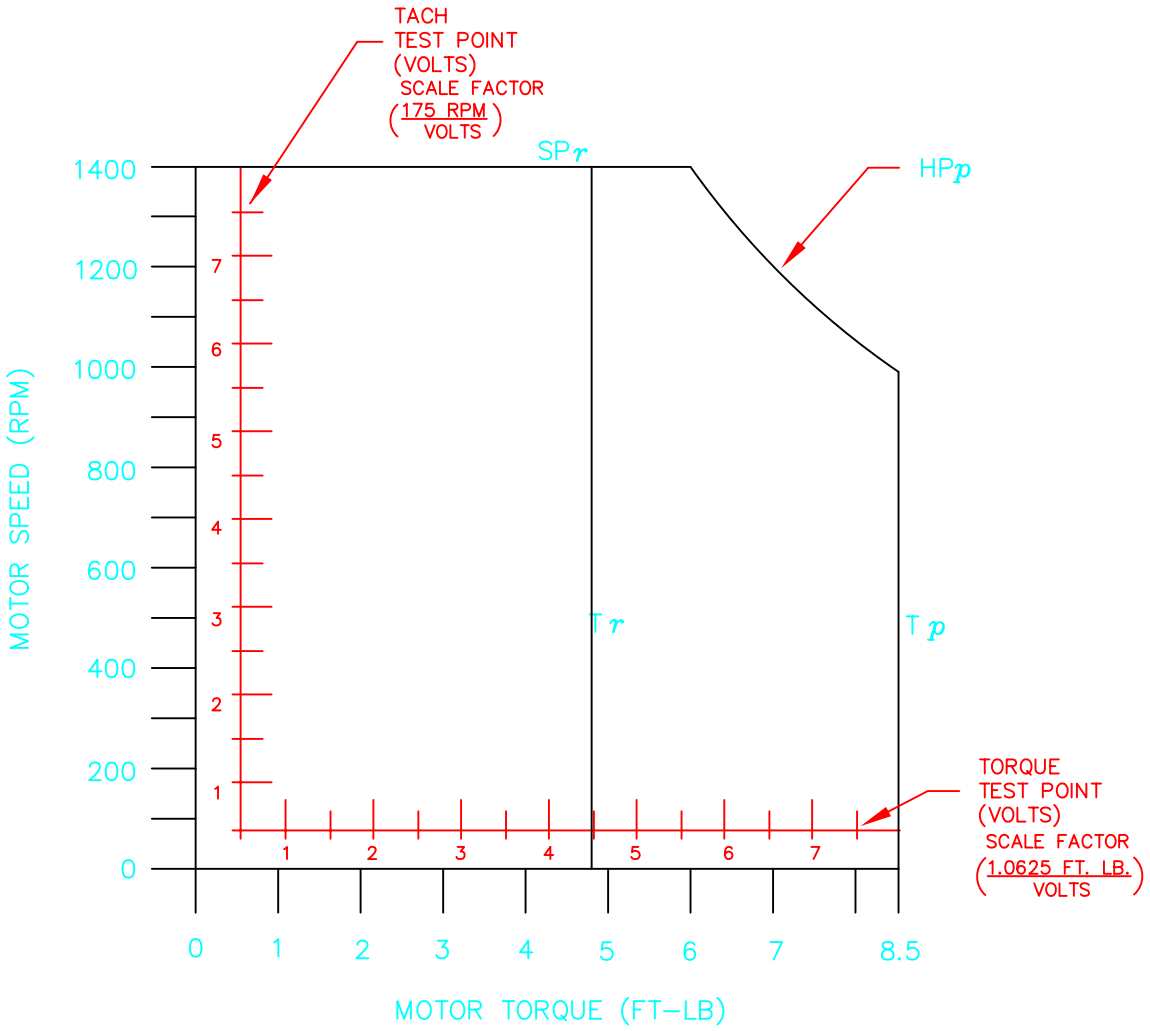
		SHEET NO. 1 OF 1	REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/11/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/03-1049	MM-5/0960M-SF0-XXXX
MOTOR ASSY	BLM-1049	BLM-1049
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	4.8	FT-LB
PEAK TORQUE	Tp	8.50	FT-LB
RATED SPEED	SPr	1400	RPM
PEAK HORSEPOWER	HPp	1.60	HP
ROTOR INERTIA	Jm	0.001300	FT-LB-SEC^2
OUTPUT POWER	W	960	WATT

CHECKED BY — DATE
APPROVED BY — DATE
APPROVED BY — DATE
MATERIAL: --------
FINISH: ---------

TITLE: MOTOR DRIVE PACKAGE

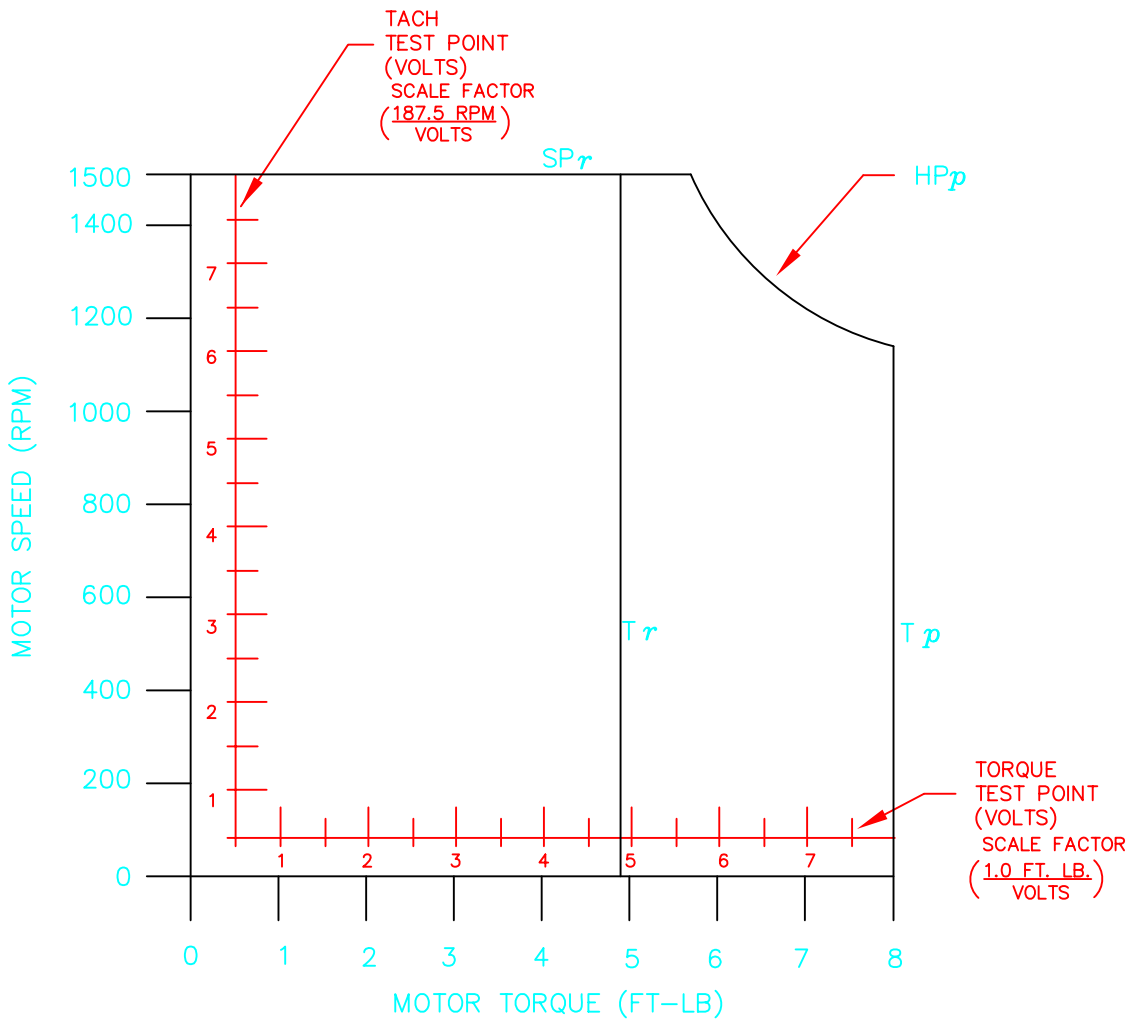
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ----
X.XX± ---
X.XXX± --
ANGULAR ± --

DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-0960M / MM-5/0960M

B | DATE 11/11/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/11/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX
- OUTPUT POWER WATTS

MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/03-1050	MM-5/1000M-SF0-XXXX
MOTOR ASSY	BLM-1050	BLM-1050
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	4.9	FT-LB
PEAK TORQUE	Tp	8.0	FT-LB
RATED SPEED	SPr	1500	RPM
PEAK HORSEPOWER	HPp	1.62	HP
ROTOR INERTIA	Jm	0.001910	FT-LB-SEC^2
OUTPUT POWER	W	1000	WATT

CHECKED BY — DATE

APPROVED BY — DATE

APPROVED BY — DATE

MATERIAL: -------

FINISH: --------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ---- ANGULAR ± --
X.XX± ---
X.XXX± --

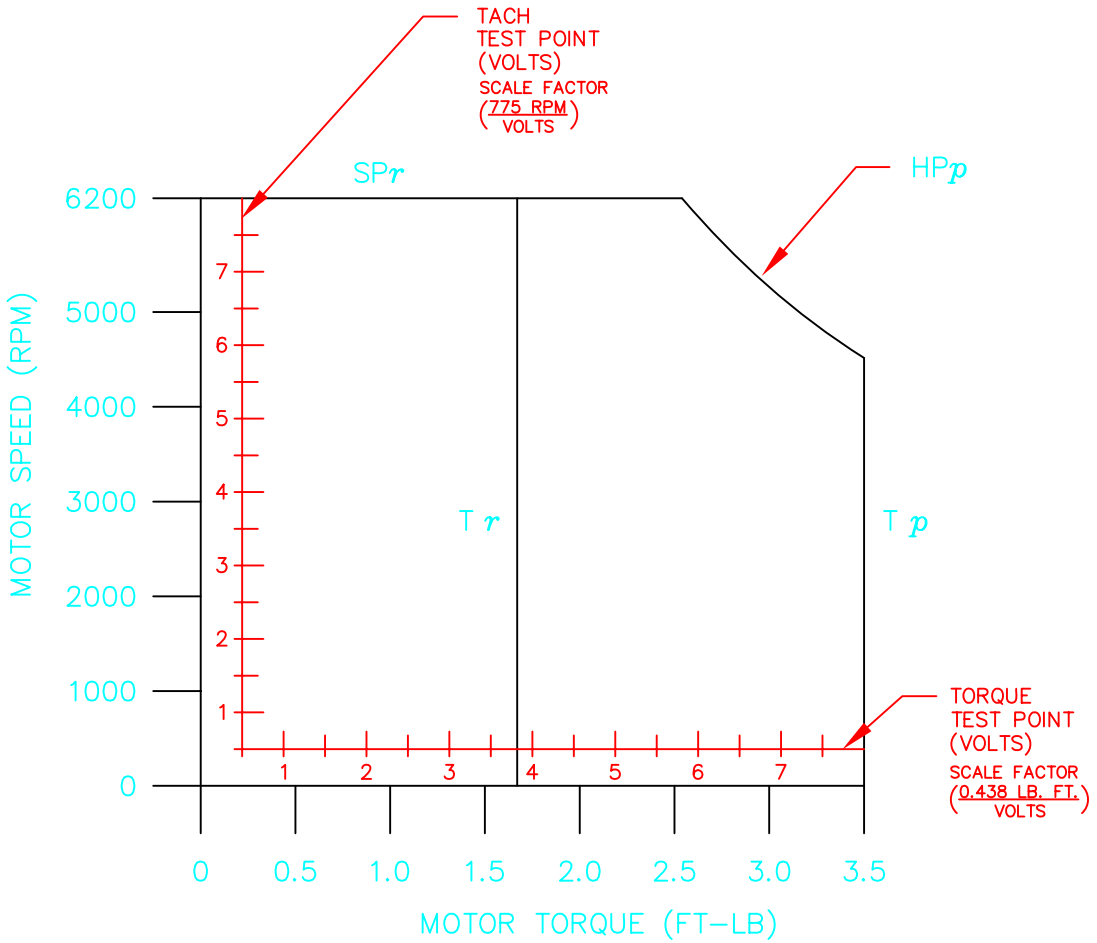
DRAWN BY: CAD

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-1000M MM-5/1000M

B | DATE 11/11/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/06-1036	MM-5/1450-SFO-XXXX
MOTOR ASSY	BLM-1036	BLM-1036
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	T_r	1.67	FT-LB
PEAK TORQUE	T_p	3.50	FT-LB
RATED SPEED	SP_r	6200	RPM
PEAK HORSEPOWER	HP_p	3.00	HP
ROTOR INERTIA	J_m	0.000073	FT-LB-SEC^2
OUTPUT POWER	W	1450	WATT

CHECKED BY	DATE
APPROVED BY W.E.S.	DATE 7/21/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± --- ; X.XX± ---- ; X.XXX± --- ; ANGULAR ± --

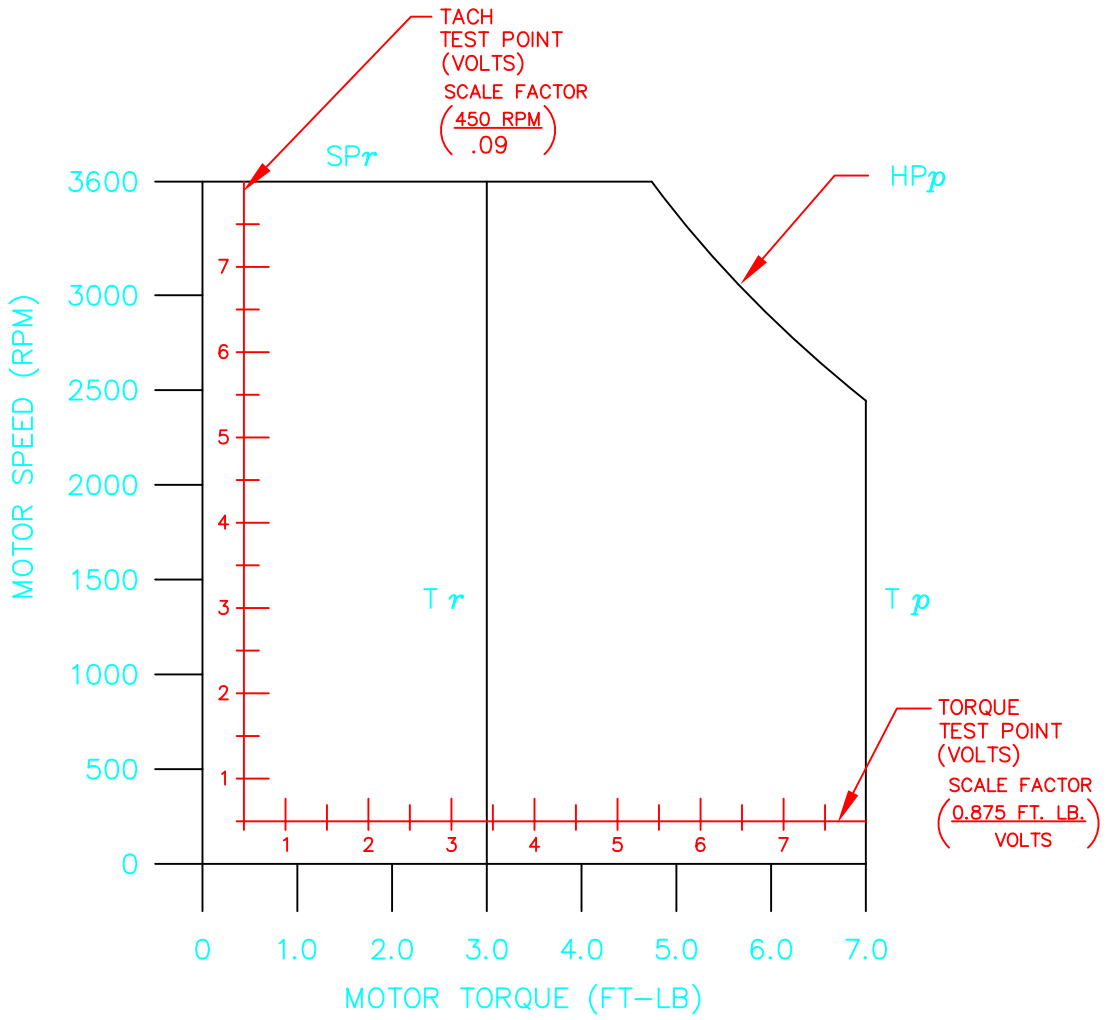
DRAWN BY: Mike E.

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

DRAWING NUMBER: MDPAK6-1450 / MM-5/1450

B | DATE 7/20/92 | SCALE -- | SHEET NO. 1 OF 1 | REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/06-1038	MM-5/1500-SF0-XXXX
MOTOR ASSY	BLM-1038	BLM-1038
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

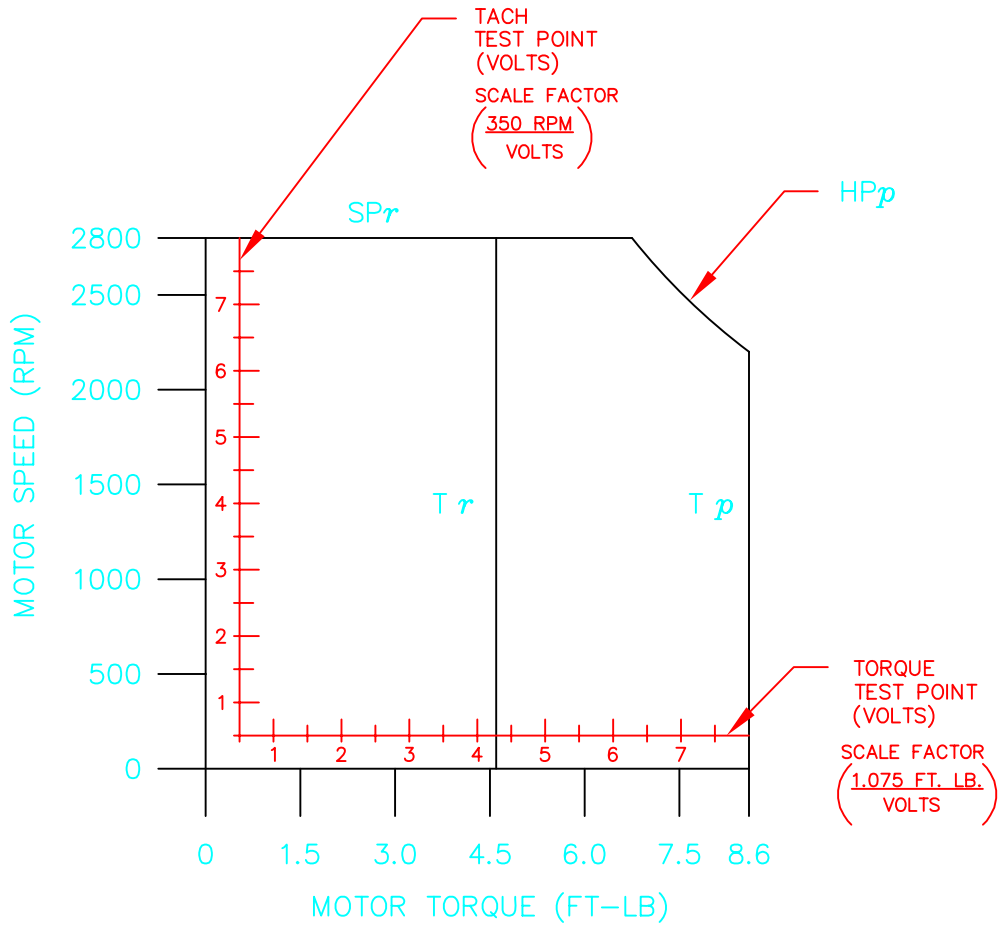
RATED TORQUE	Tr	3.00	FT-LB
PEAK TORQUE	Tp	7.00	FT-LB
RATED SPEED	SPr	3600	RPM
PEAK HORSEPOWER	HPp	3.25	HP
ROTOR INERTIA	Jm	0.000128	FT-LB-SEC^2
OUTPUT POWER	W	1500	WATT

CHECKED BY	DATE
APPROVED BY W.E.S.	DATE 7/21/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY Mike E.		DRAWING NUMBER MDPAK6-1500 MM-5/1500
TOLERANCES X.X± --- X.XX±-- X.XXX±-- ANGULAR ±--	AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001		
B	DATE 7/20/92	SCALE --	SHEET NO. 1 OF 1 / REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/06-1035	MM-5/1825-SF0-XXXX
MOTOR ASSY	BLM-1035	BLM-1035
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	T_r	4.60	FT-LB
PEAK TORQUE	T_p	8.60	FT-LB
RATED SPEED	SP_r	2800	RPM
PEAK HORSEPOWER	HP_p	3.60	HP
ROTOR INERTIA	J_m	0.000185	FT-LB-SEC^2
OUTPUT POWER	W	1825	WATT

CHECKED BY — DATE

APPROVED BY W.E.S. — DATE 7/21/93

APPROVED BY — DATE

MATERIAL ----------

FINISH ----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± --- X.XX± --- X.XXX± --- ANGULAR ± --

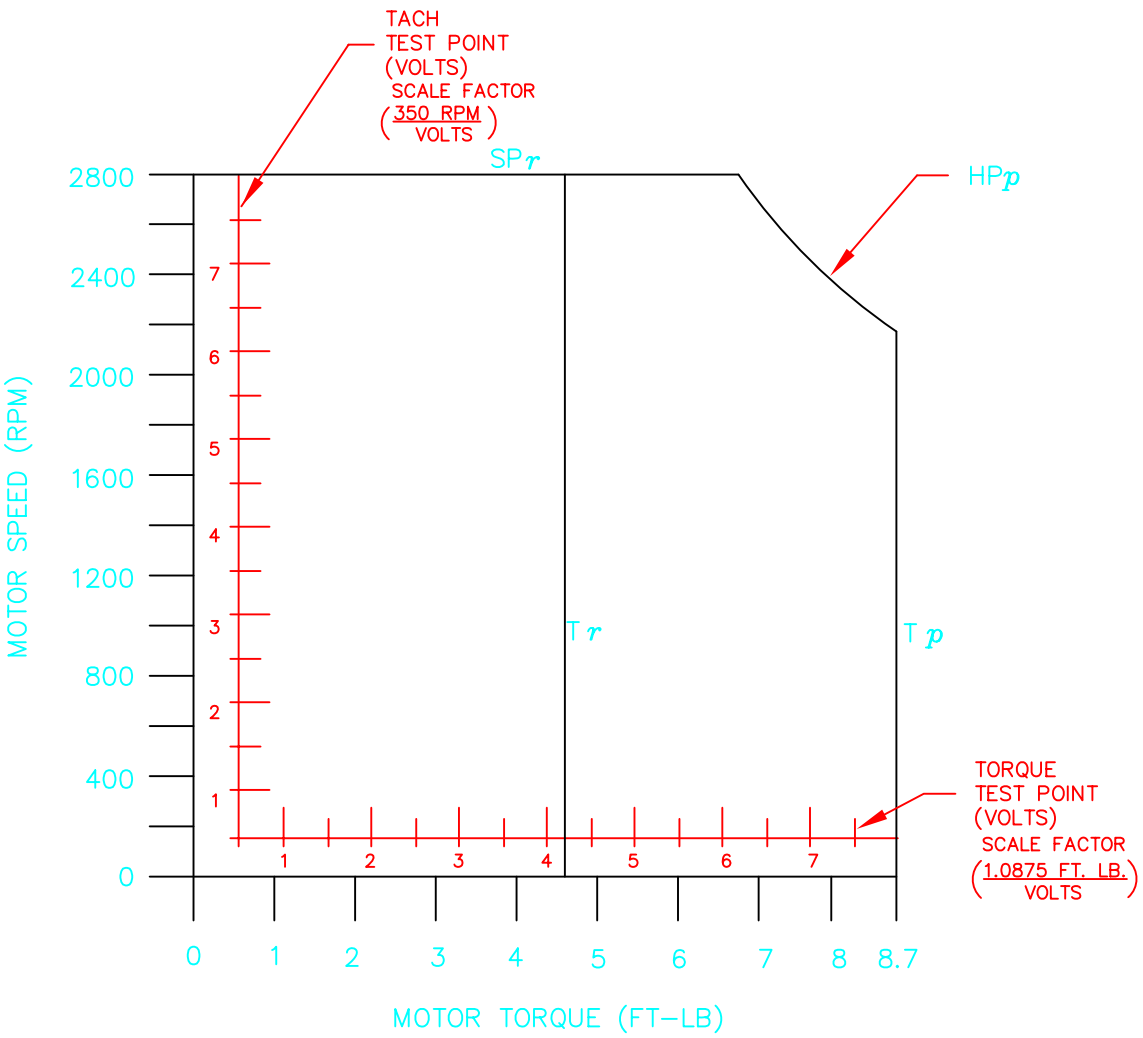
DRAWN BY: Mike E.

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

DRAWING NUMBER: MDPAK6-1825 MM-5/1825

B | DATE 7/20/93 | SCALE -- | SHEET NO. 1 OF 1 | REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/11/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/06-1048	MM-5/1850M-SF0-XXXX
MOTOR ASSY	BLM-1048	BLM-1048
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	4.6	FT-LB
PEAK TORQUE	Tp	8.70	FT-LB
RATED SPEED	SPr	2800	RPM
PEAK HORSEPOWER	HPp	3.60	HP
ROTOR INERTIA	Jm	0.001300	FT-LB-SEC^2
OUTPUT POWER	W	1850	WATT

CHECKED BY — DATE
APPROVED BY — DATE
APPROVED BY — DATE
MATERIAL: -------
FINISH: --------

TITLE: MOTOR DRIVE PACKAGE

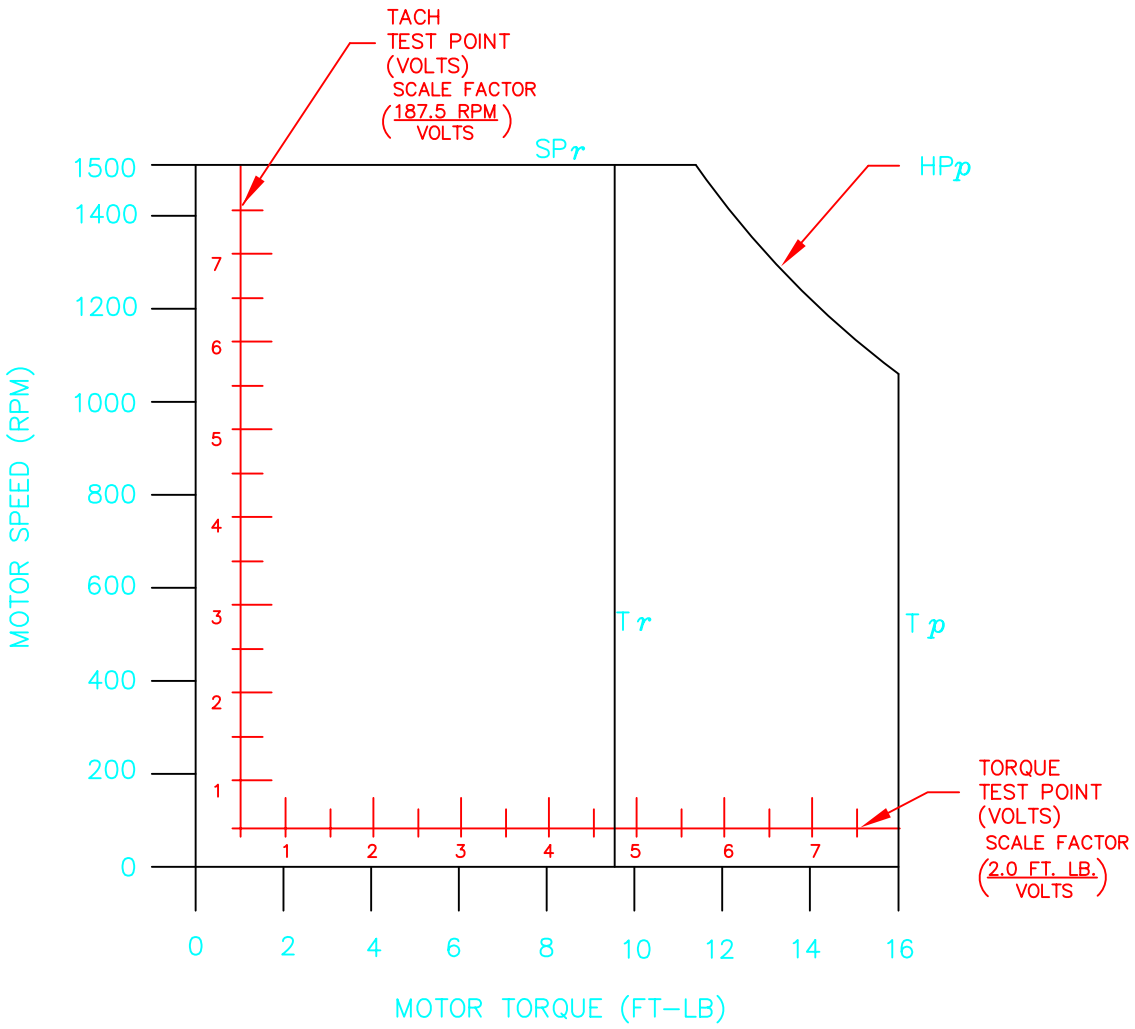
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES: X.X± ---- X.XX± --- X.XXX± -- ANGULAR ± --

DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-1850M / MM-5/1850M

B | DATE 11/11/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/11/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/06-1052	MM-5/2000M-SF0-XXXX
MOTOR ASSY	BLM-1052	BLM-1052
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	9.6	FT-LB
PEAK TORQUE	Tp	16.0	FT-LB
RATED SPEED	SPr	1500	RPM
PEAK HORSEPOWER	HPp	3.25	HP
ROTOR INERTIA	Jm	0.003250	FT-LB-SEC^2
OUTPUT POWER	W	2000	WATT

CHECKED BY — DATE
APPROVED BY — DATE
APPROVED BY — DATE
MATERIAL: ---------
FINISH: ---------

TITLE: MOTOR DRIVE PACKAGE

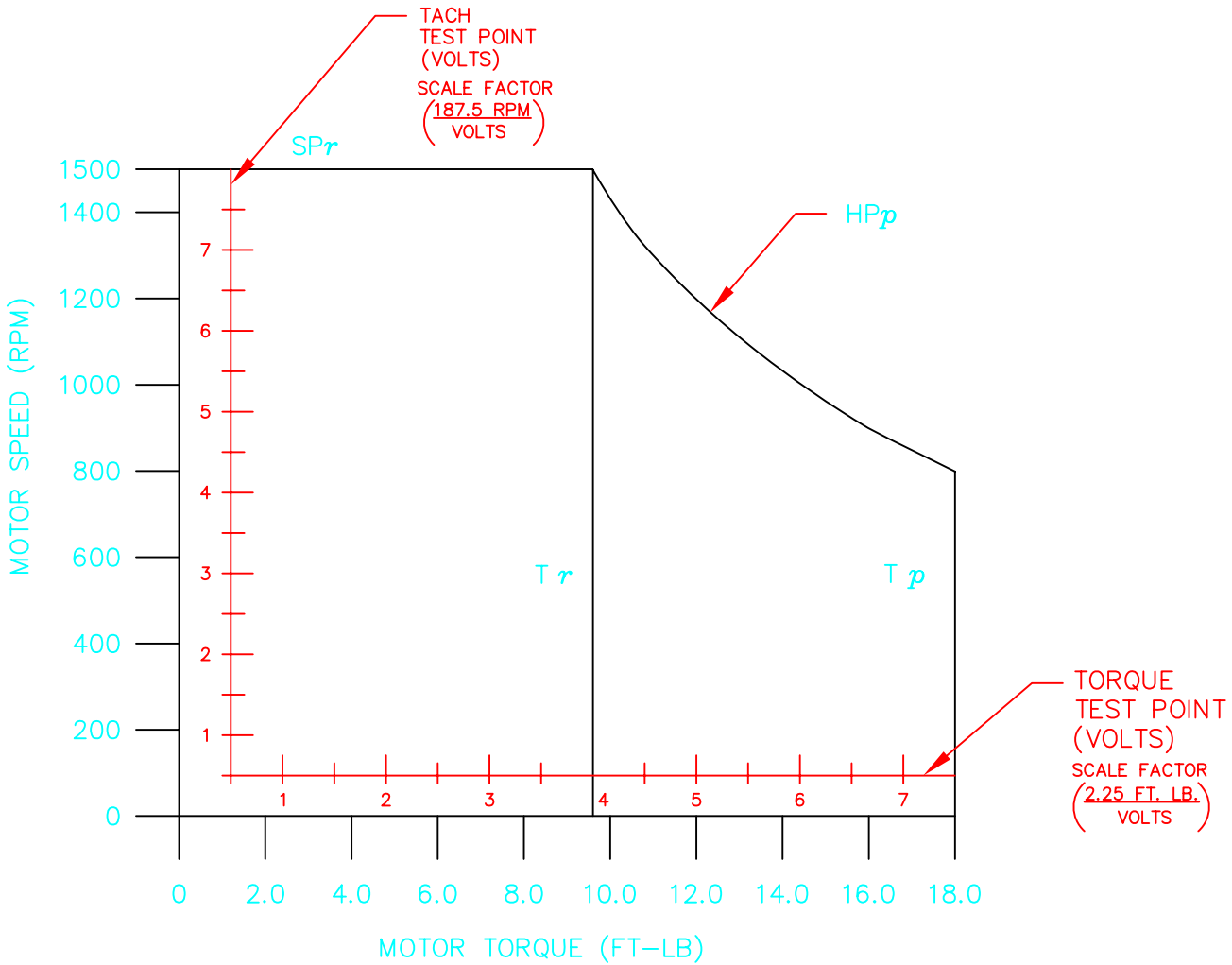
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES: X.X± ---- X.XX± --- X.XXX± -- ANGULAR ± --

DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-2000M MM-5/2000M

B | DATE 11/11/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/16/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/06-1024	MM-5/2030-SFO-XXXX
MOTOR ASSY	BLM-1024	BLM-1024
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	T_r	9.60	FT-LB
PEAK TORQUE	T_p	18.00	FT-LB
RATED SPEED	SP_r	1500	RPM
PEAK HORSEPOWER	HP_p	2.74	HP
ROTOR INERTIA	J_m	0.000484	FT-LB-SEC^2
OUTPUT POWER	W	2030	WATT

CHECKED BY — DATE

APPROVED BY W.E.S. — DATE 7/21/93

APPROVED BY — DATE

MATERIAL ----------

FINISH ----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± --- ; X.XX± --- ; X.XXX± -- ; ANGULAR ± --

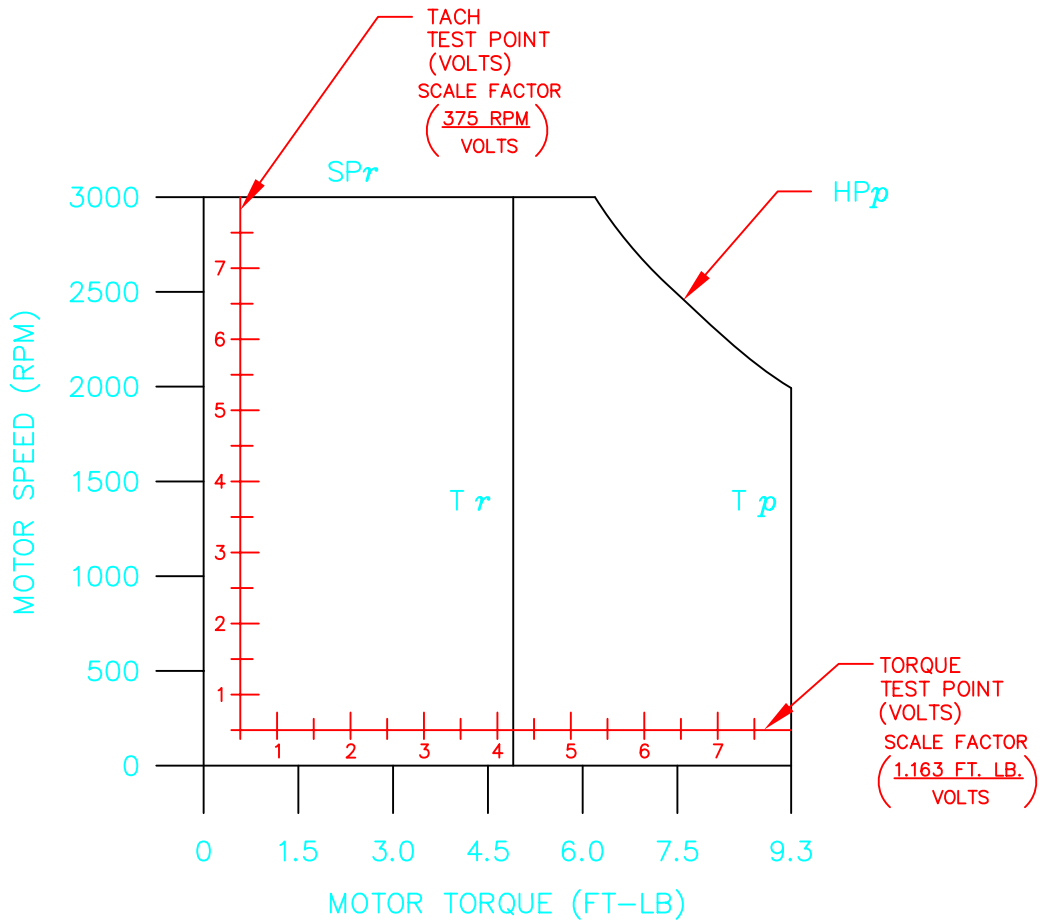
DRAWN BY: Mike E.

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

DRAWING NUMBER: MDPAK6-2030 / MM-5/2030

B — DATE 7/20/92 — SCALE -- — SHEET NO. 1 OF 1 — REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/06-1023	MM-5/2100-SFO-XXXX
MOTOR ASSY	BLM-1023	BLM-1023
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	T_r	4.90	FT-LB
PEAK TORQUE	T_p	9.30	FT-LB
RATED SPEED	SP_r	3000	RPM
PEAK HORSEPOWER	HP_p	3.54	HP
ROTOR INERTIA	J_m	0.000238	FT-LB-SEC^2
OUTPUT POWER	W	2100	WATT

CHECKED BY — DATE

APPROVED BY W.E.S. — DATE 7/21/93

APPROVED BY — DATE

MATERIAL ----------

FINISH ----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± --- ; X.XX± -- ; X.XXX± -- ; ANGULAR ± --

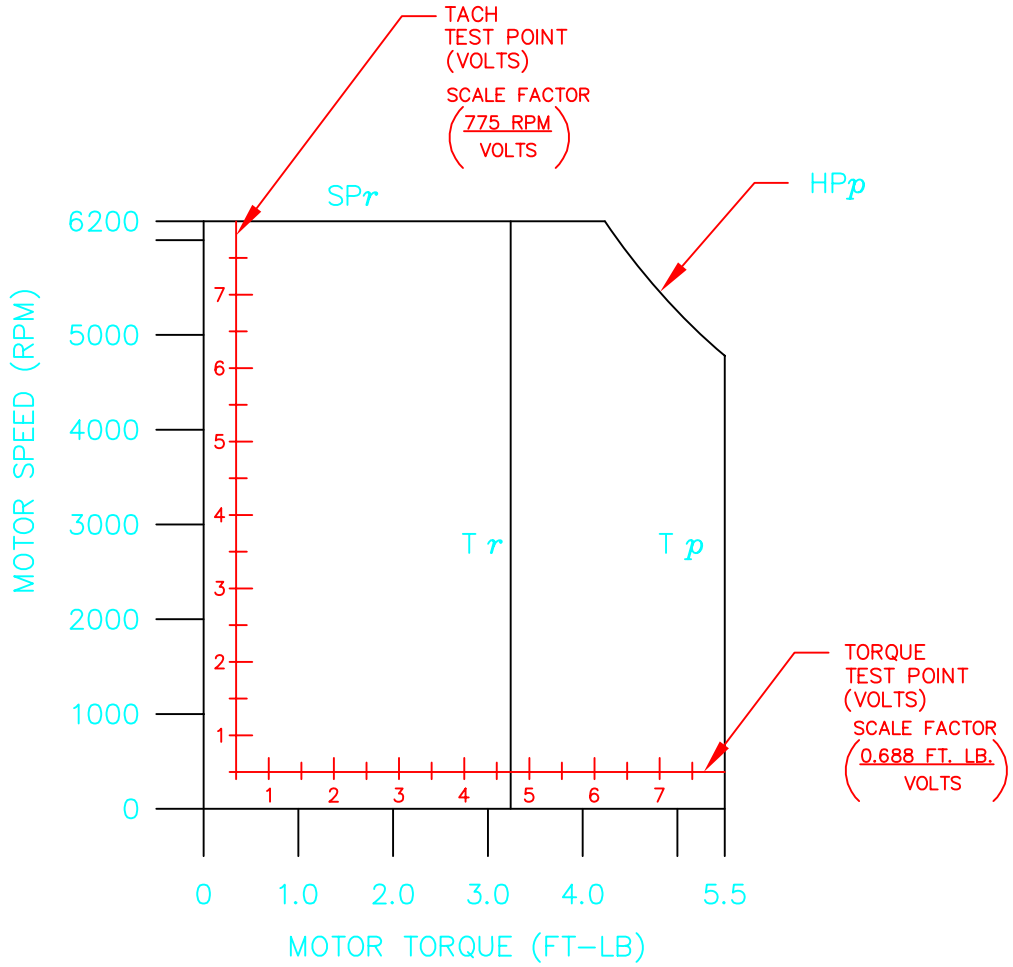
DRAWN BY: Mike E.

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

DRAWING NUMBER: MDPAK6-2100 MM-5/2100

B — DATE 7/20/92 — SCALE -- — SHEET NO. 1 OF 1 — REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/10-1034	MM-5/2800-SFO-XXXX
MOTOR ASSY	BLM-1034	BLM-1034
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	3.24	FT-LB
PEAK TORQUE	Tp	5.50	FT-LB
RATED SPEED	SPr	6200	RPM
PEAK HORSEPOWER	HPp	5.00	HP
ROTOR INERTIA	Jm	0.000128	FT-LB-SEC^2
OUTPUT POWER	W	2800	WATT

CHECKED BY	DATE
APPROVED BY W.E.S.	DATE 7/21/93
APPROVED BY	DATE
MATERIAL	----------
FINISH	----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± --- X.XX±--- X.XXX±-- ANGULAR ±--

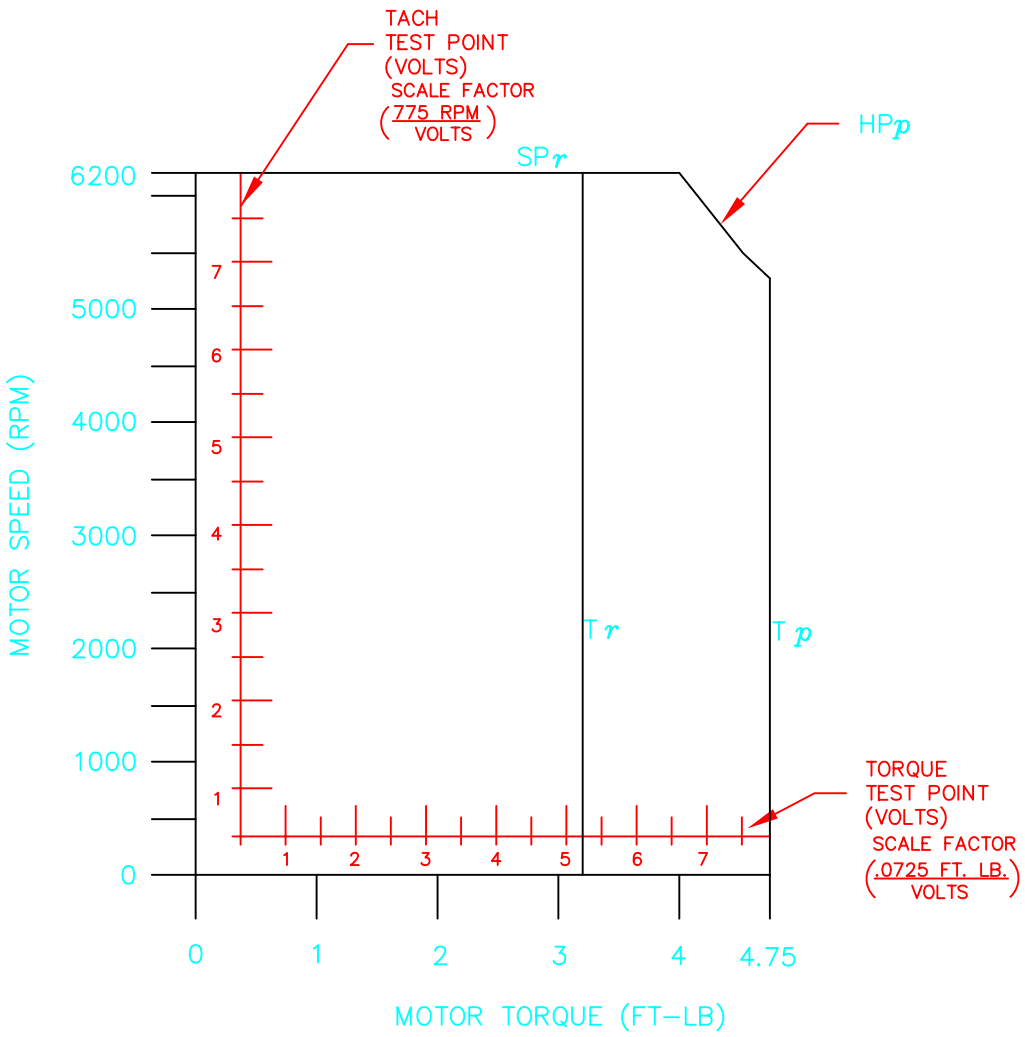
DRAWN BY: Mike E.

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

DRAWING NUMBER: MDPAK6-2800 MM-5/2800

B | DATE 7/20/93 | SCALE -- | SHEET NO. 1 OF 1 | REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/11/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.
  OR
- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/10-1047	MM-5/2800M-SF0-XXXX
MOTOR ASSY	BLM-1047	BLM-1047
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	3.20	FT-LB
PEAK TORQUE	Tp	4.75	FT-LB
RATED SPEED	SPr	6200	RPM
PEAK HORSEPOWER	HPp	5.8	HP
ROTOR INERTIA	Jm	0.000843	FT-LB-SEC^2
OUTPUT POWER	W	2800	WATT

CHECKED BY — DATE
APPROVED BY — DATE
APPROVED BY — DATE
MATERIAL: -------
FINISH: --------

TITLE: MOTOR DRIVE PACKAGE

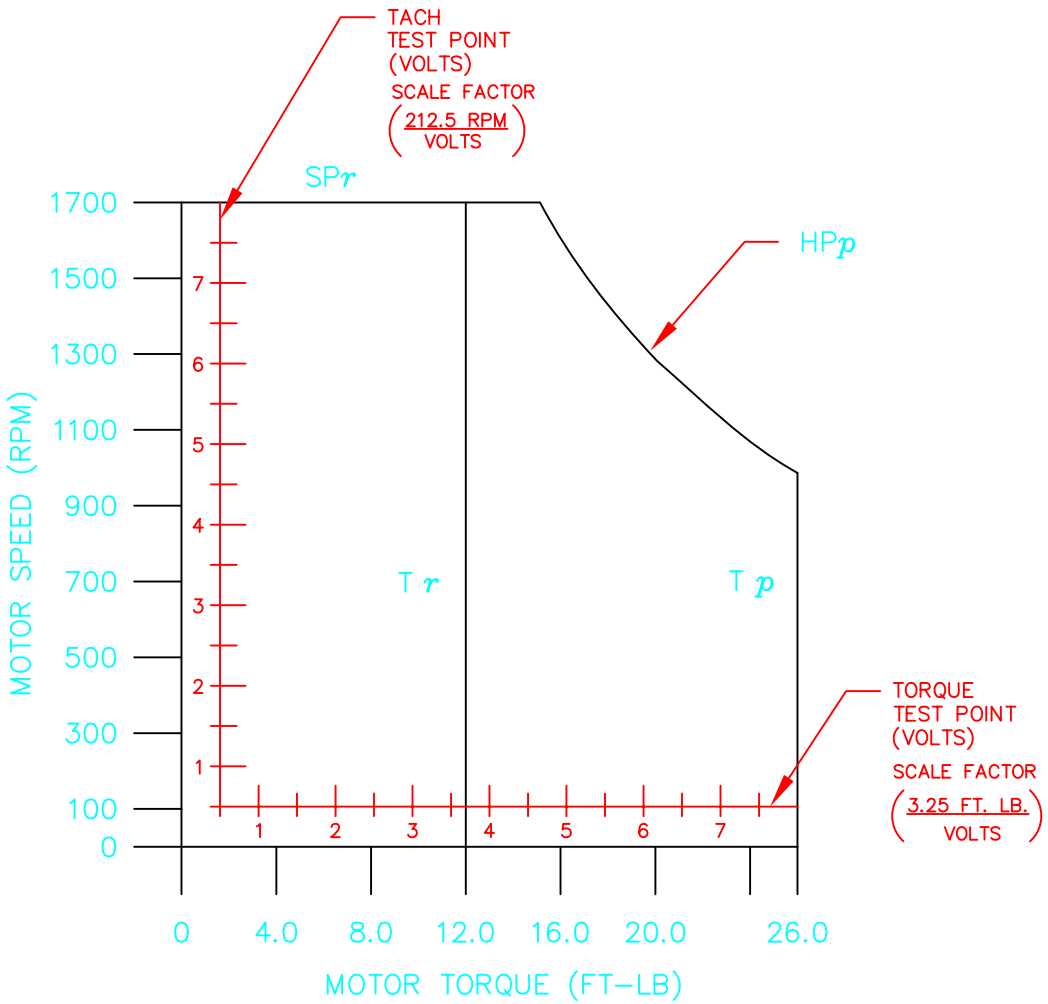
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ----
X.XX± ---
X.XXX± --
ANGULAR ± --

DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-2800M / MM-5/2800M

B | DATE: 11/11/93 | SCALE: --- | SHEET NO.: 1 OF 1 | REVISION: 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/10-1026	MM-5/2875-SFO-XXXX
MOTOR ASSY	BLM-1026	BLM-1026
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	T_r	12.00	FT-LB
PEAK TORQUE	T_p	26.00	FT-LB
RATED SPEED	SP_r	1700	RPM
PEAK HORSEPOWER	HP_p	4.90	HP
ROTOR INERTIA	J_m	0.000685	FT-LB-SEC^2
OUTPUT POWER	W	2875	WATT

CHECKED BY — DATE

APPROVED BY W.E.S. — DATE 7/21/93

APPROVED BY — DATE

MATERIAL ----------

FINISH ----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± --- X.XX± --- X.XXX± ---; ANGULAR ± --

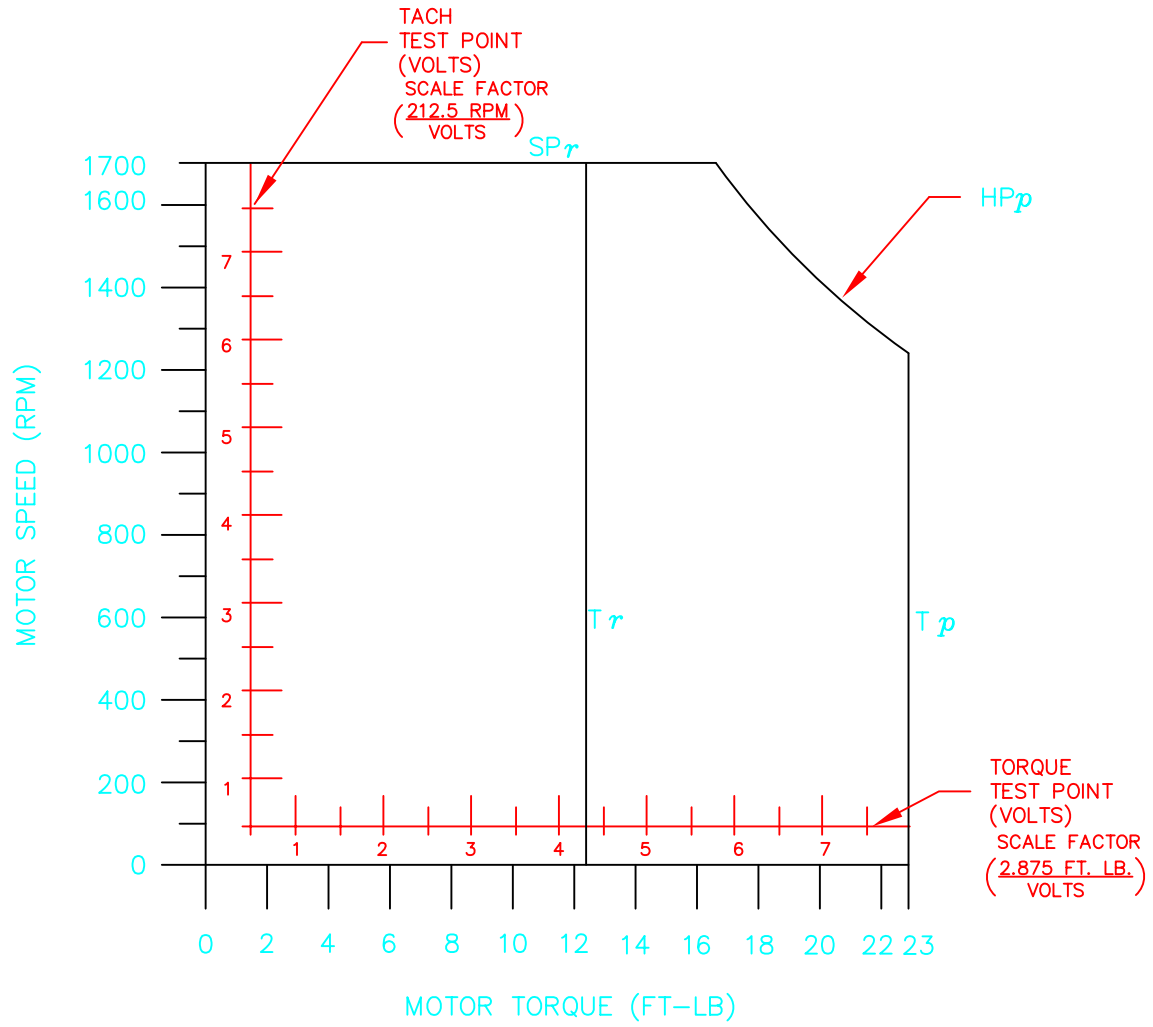
DRAWN BY: Mike E.

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

DRAWING NUMBER: MDPAK6-2875 MM-5/2875

B | DATE 7/20/92 | SCALE -- | SHEET NO. 1 OF 1 | REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/12/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/03-1053	MM-5/3000M-SF0-XXXX
MOTOR ASSY	BLM-1053	BLM-1053
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	12.40	FT-LB
PEAK TORQUE	Tp	23.00	FT-LB
RATED SPEED	SPr	1700	RPM
PEAK HORSEPOWER	HPp	5.40	HP
ROTOR INERTIA	Jm	0.004850	FT-LB-SEC^2
OUTPUT POWER	W	3000	WATT

CHECKED BY — DATE
APPROVED BY — DATE
APPROVED BY — DATE
MATERIAL: -------
FINISH: --------

TITLE: MOTOR DRIVE PACKAGE

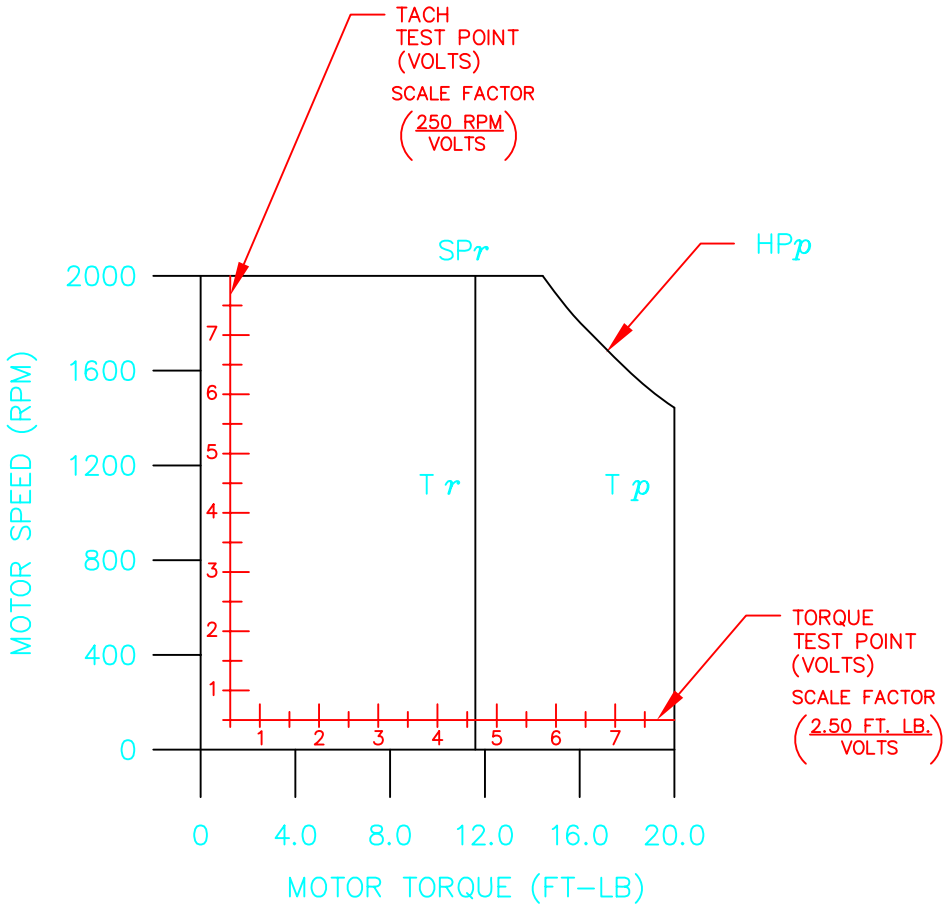
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES: X.X± ---- ANGULAR ± --
X.XX± ---
X.XXX± --

DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-3000M MM-5/3000M

B | DATE 11/12/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/10-1028	MM-5/3290-SFO-XXXX
MOTOR ASSY	BLM-1028	BLM-10XX
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	11.60	FT-LB
PEAK TORQUE	Tp	20.00	FT-LB
RATED SPEED	SPr	2000	RPM
PEAK HORSEPOWER	HPp	5.50	HP
ROTOR INERTIA	Jm	0.000758	FT-LB-SEC^2
OUTPUT POWER	W	3290	WATT

CHECKED BY — DATE

APPROVED BY W.E.S. — DATE 7/21/93

APPROVED BY — DATE

MATERIAL ----------

FINISH ----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± --- X.XX± --- X.XXX± --- ANGULAR ± --

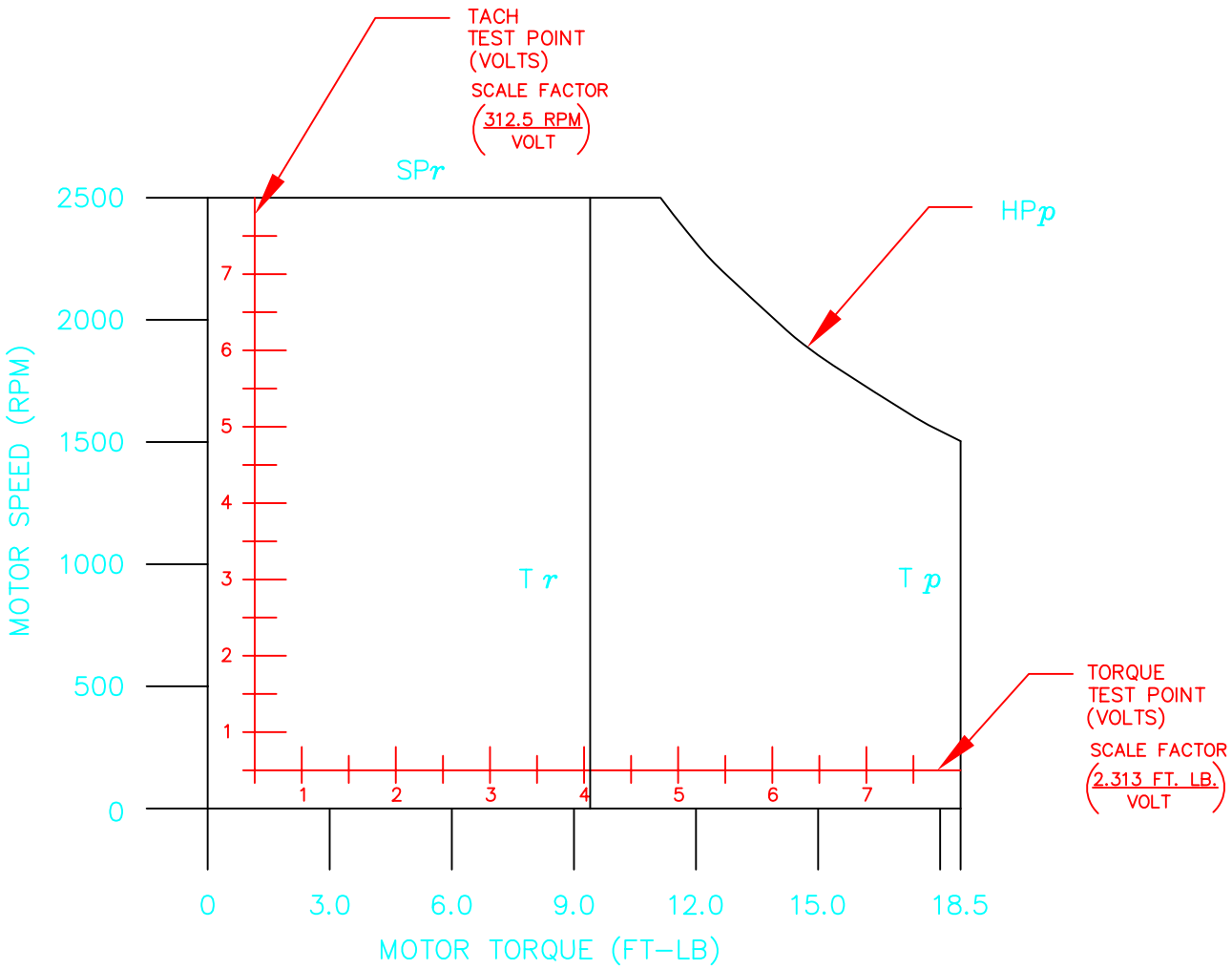
DRAWN BY: Mike E.

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

DRAWING NUMBER: MDPAK6-3290 MM-5/3290

B | DATE 7/20/92 | SCALE -- | SHEET NO. 1 OF 1 | REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/10-1025	MM-5/3300-SFO-XXXX
MOTOR ASSY	BLM-1025	BLM-1025
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

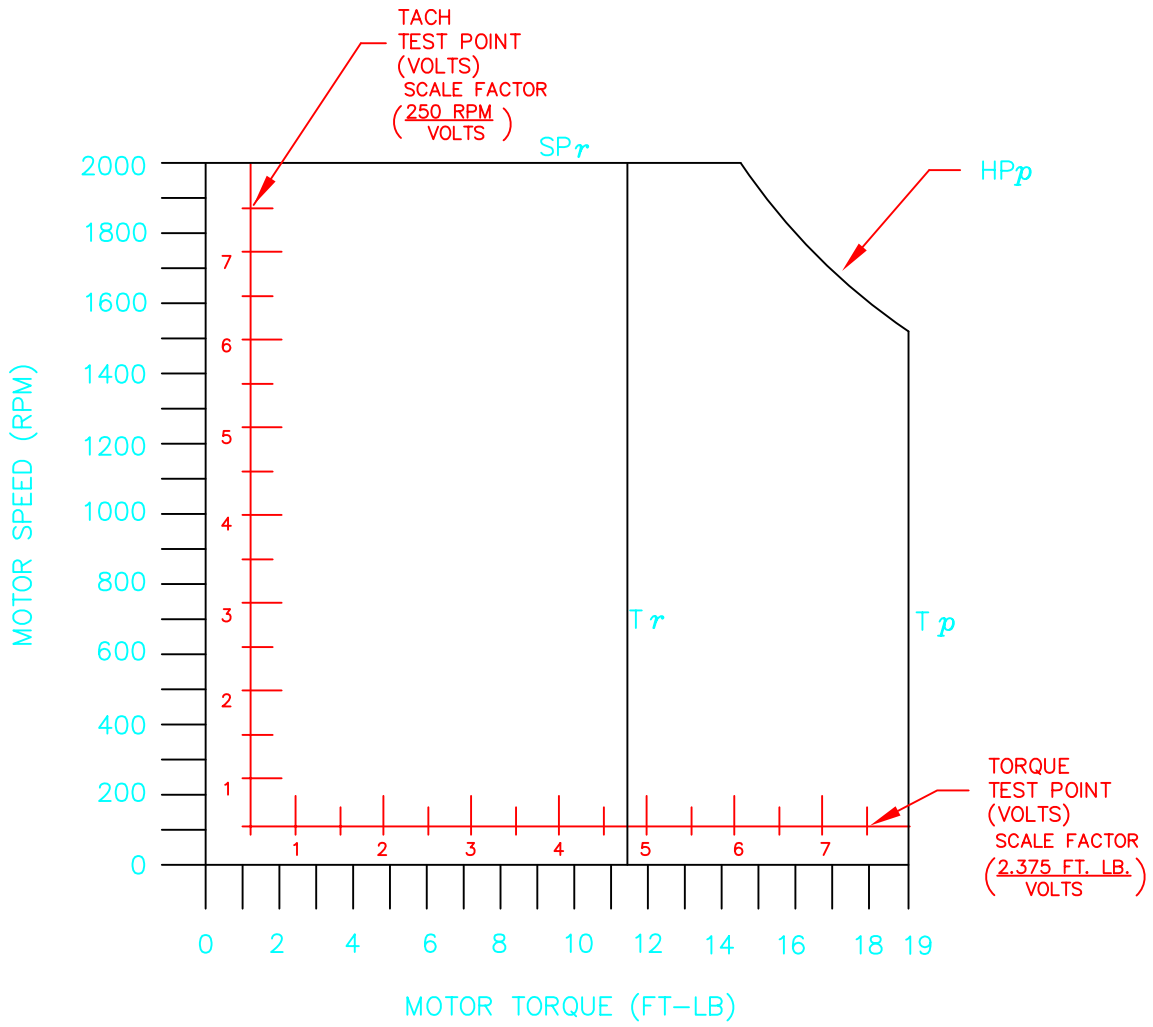
RATED TORQUE	T_r	9.40	FT-LB
PEAK TORQUE	T_p	18.50	FT-LB
RATED SPEED	SP_r	2500	RPM
PEAK HORSEPOWER	HP_p	5.30	HP
ROTOR INERTIA	J_m	0.000484	FT-LB-SEC^2
OUTPUT POWER	W	3300	WATT

CHECKED BY	DATE
APPROVED BY W.E.S.	DATE 7/21/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY Mike E.		DRAWING NUMBER MDPAK6-3300 MM-5/3300
TOLERANCES X.X± --- X.XX± --- X.XXX± --- ANGULAR ± --	AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001		
	B	DATE 7/20/93	SCALE --
			SHEET NO. 1 OF 1
			REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/12/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/10-1055	MM-5/3300M-SF0-XXXX
MOTOR ASSY	BLM-1055	BLM-1055
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	T_r	11.60	FT-LB
PEAK TORQUE	T_p	19.00	FT-LB
RATED SPEED	SP_r	2000	RPM
PEAK HORSEPOWER	HP_p	5.50	HP
ROTOR INERTIA	J_m	0.005720	FT-LB-SEC^2
OUTPUT POWER	W	3300	WATT

CHECKED BY — DATE

APPROVED BY — DATE

APPROVED BY — DATE

MATERIAL: -------

FINISH: --------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ---- ; X.XX± --- ; X.XXX± -- ; ANGULAR ± --

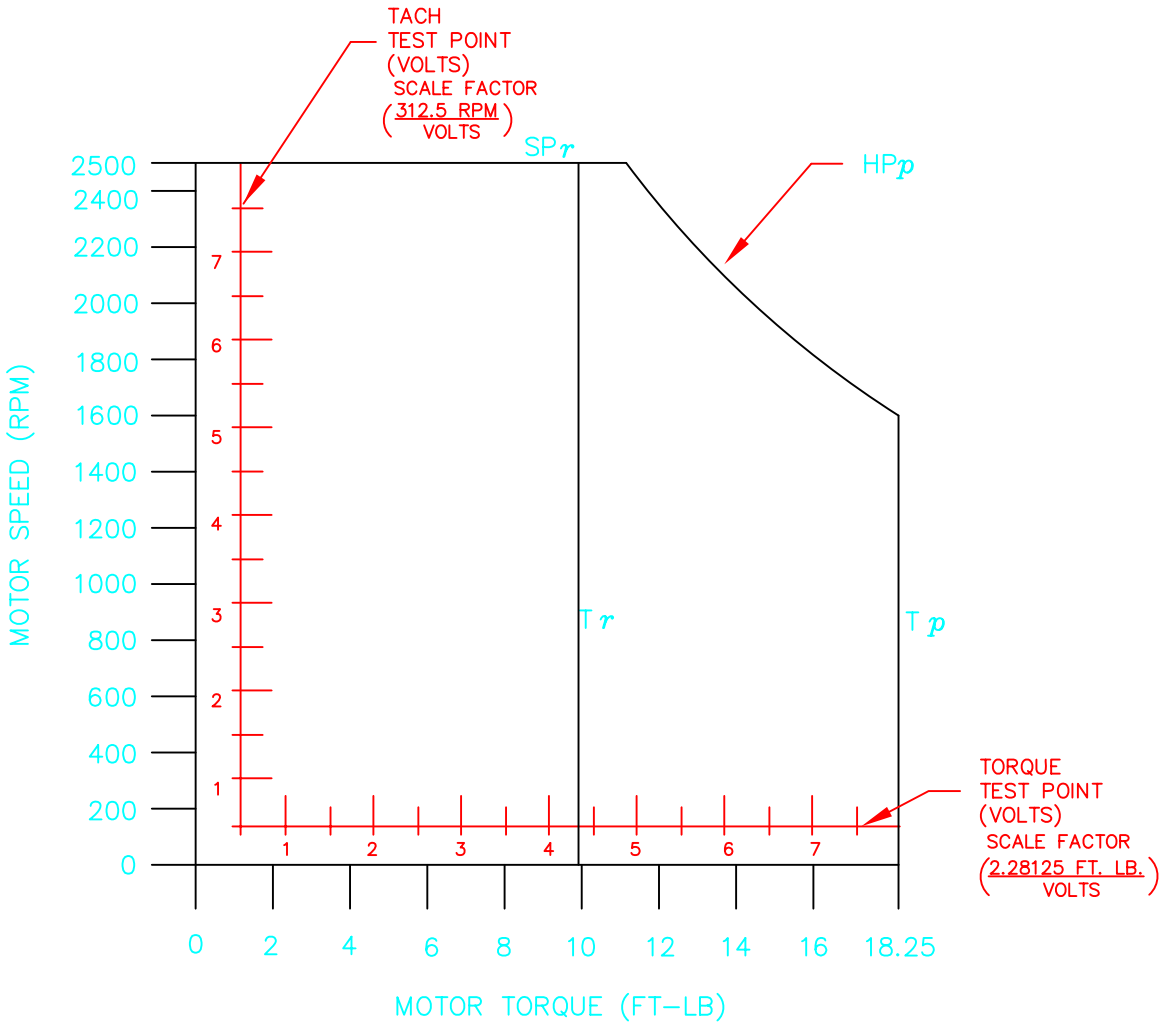
DRAWN BY: CAD

AutoCAD FILE LOCATION: Q:\DFTG\1B\1B16B001

DRAWING NUMBER: MDPAK6-3300M MM-5/3300M

B | DATE 11/12/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/11/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/10-1051	MM-5/3500M-SF0-XXXX
MOTOR ASSY	BLM-1051	BLM-1051
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	9.90	FT-LB
PEAK TORQUE	Tp	18.25	FT-LB
RATED SPEED	SPr	2500	RPM
PEAK HORSEPOWER	HPp	5.55	HP
ROTOR INERTIA	Jm	0.003250	FT-LB-SEC^2
OUTPUT POWER	W	3500	WATT

CHECKED BY — DATE

APPROVED BY — DATE

APPROVED BY — DATE

MATERIAL: -------

FINISH: --------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ---- ; X.XX± --- ; X.XXX± -- ; ANGULAR ± --

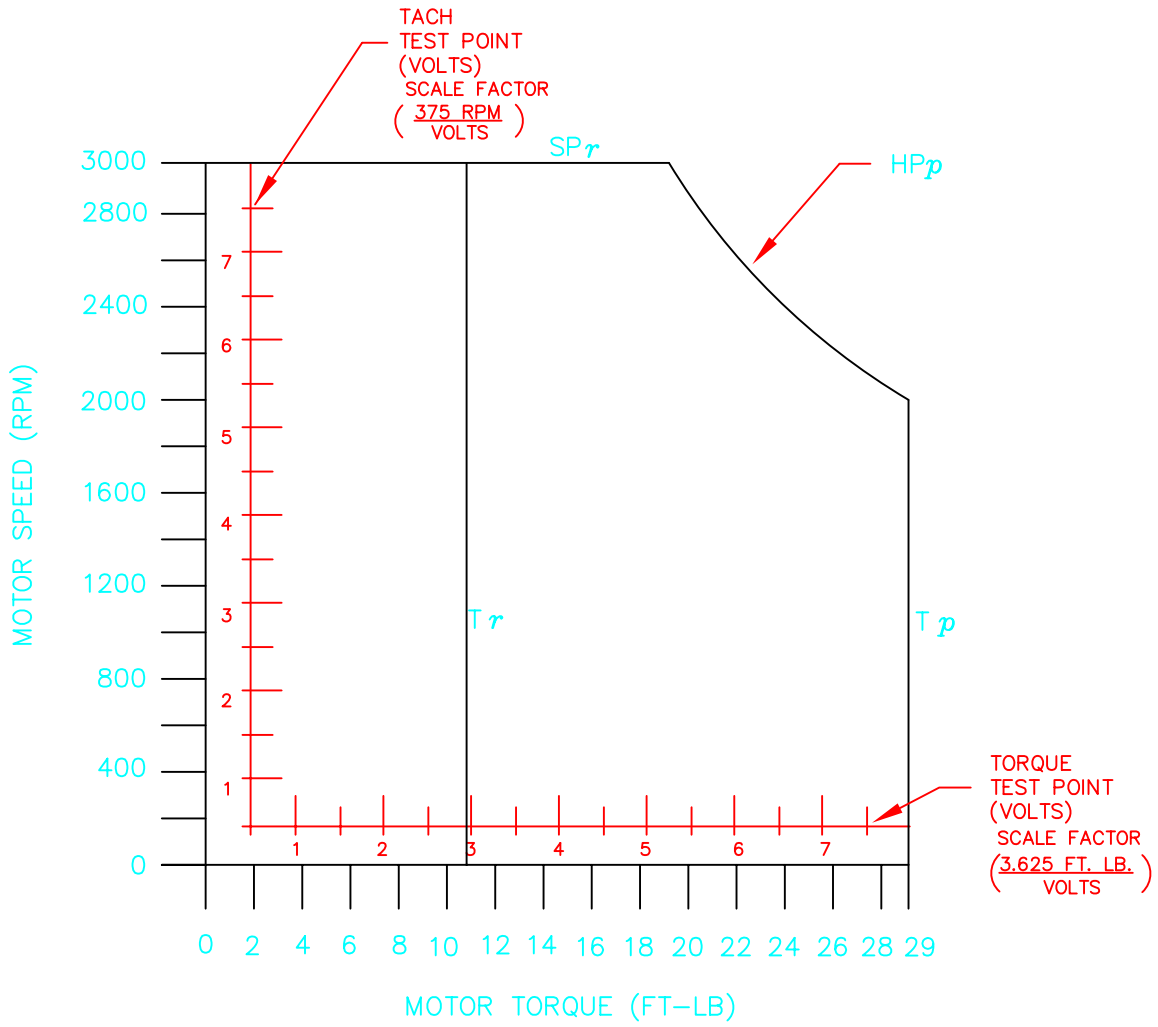
DRAWN BY: CAD

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

DRAWING NUMBER: MDPAK6-3500M MM-5/3500M

B | DATE: 11/11/93 | SCALE: --- | SHEET NO.: 1 OF 1 | REVISION: 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/12/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.
  OR
- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/20-1056	MM-5/4500M-SF0-XXXX
MOTOR ASSY	BLM-1056	BLM-1056
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	10.70	FT-LB
PEAK TORQUE	Tp	29.00	FT-LB
RATED SPEED	SPr	3000	RPM
PEAK HORSEPOWER	HPp	11.04	HP
ROTOR INERTIA	Jm	0.005720	FT-LB-SEC^2
OUTPUT POWER	W	4500	WATT

CHECKED BY — DATE
APPROVED BY — DATE
APPROVED BY — DATE
MATERIAL: --------
FINISH: ---------

TITLE: MOTOR DRIVE PACKAGE

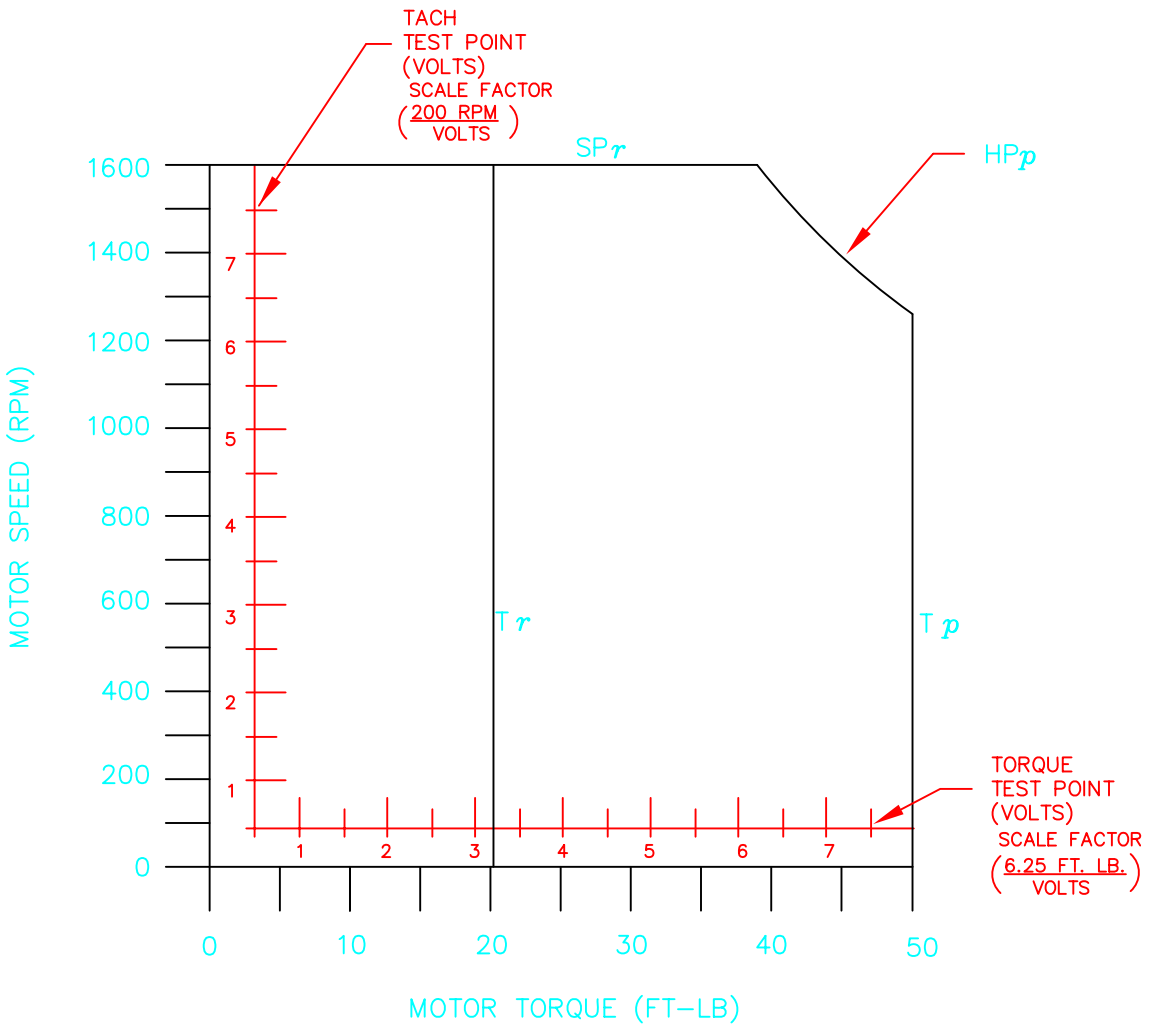
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ----
X.XX± ---
X.XXX± --
ANGULAR ± --

DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-4500M / MM-5/4500M

B | DATE 11/12/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/17/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/20-1058	MM-5/4700M-SF0-XXXX
MOTOR ASSY	BLM-1058	BLM-1058
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	20.60	FT-LB
PEAK TORQUE	Tp	50.00	FT-LB
RATED SPEED	SPr	1600	RPM
PEAK HORSEPOWER	HPp	12.00	HP
ROTOR INERTIA	Jm	0.010370	FT-LB-SEC^2
OUTPUT POWER	W	4700	WATT

CHECKED BY — DATE
APPROVED BY — DATE
APPROVED BY — DATE
MATERIAL: -------
FINISH: ---------

TITLE: MOTOR DRIVE PACKAGE

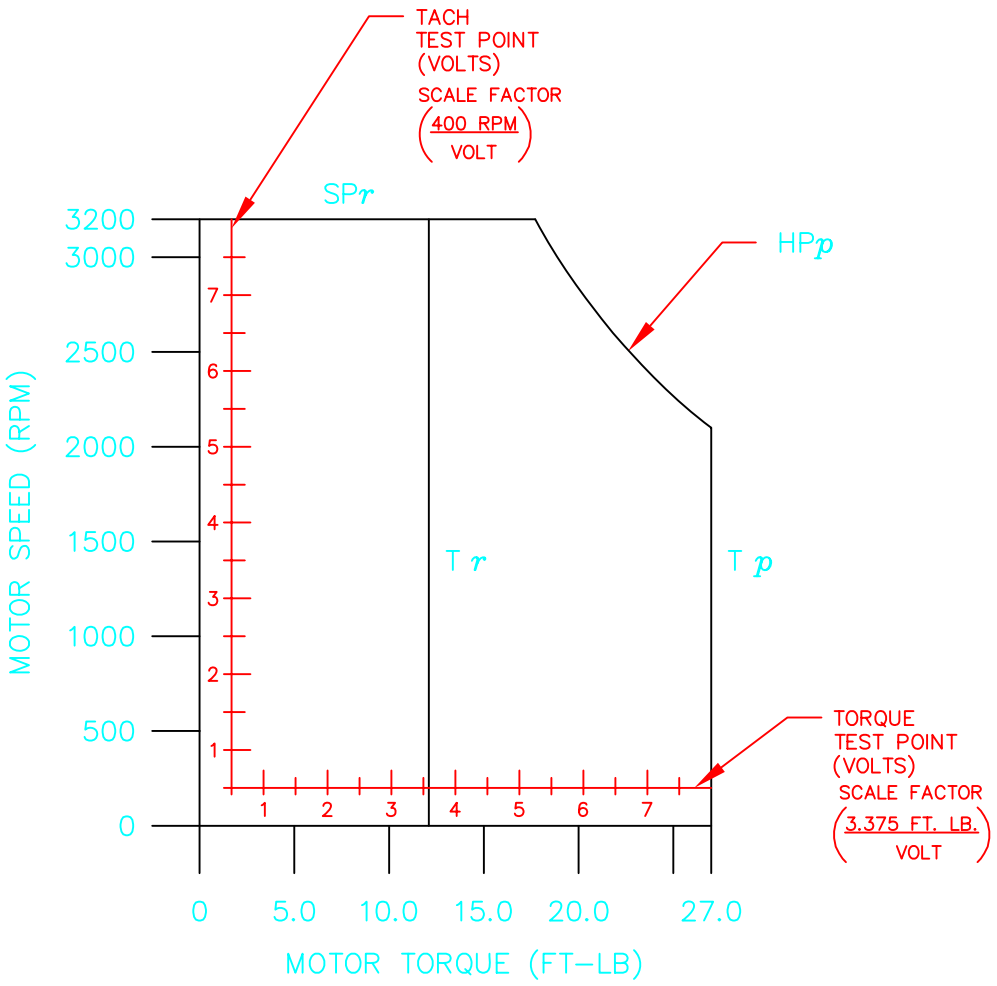
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ----
X.XX± ---
X.XXX± --
ANGULAR ± --

DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-4700M / MM-5/4700M

B | DATE: 11/17/93 | SCALE: --- | SHEET NO.: 1 OF 1 | REVISION: 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/20-1027	MM-5/5460-SFO-XXXX
MOTOR ASSY	BLM-1027	BLM-1027
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	12.10	FT-LB
PEAK TORQUE	Tp	27.00	FT-LB
RATED SPEED	SPr	3200	RPM
PEAK HORSEPOWER	HPp	10.80	HP
ROTOR INERTIA	Jm	0.000685	FT-LB-SEC^2
OUTPUT POWER	W	5460	WATT

CHECKED BY — DATE

APPROVED BY W.E.S. — DATE 7/21/93

APPROVED BY — DATE

MATERIAL ----------

FINISH ----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ------ ANGULAR ---; X.XX± ---; X.XXX± --; ± --

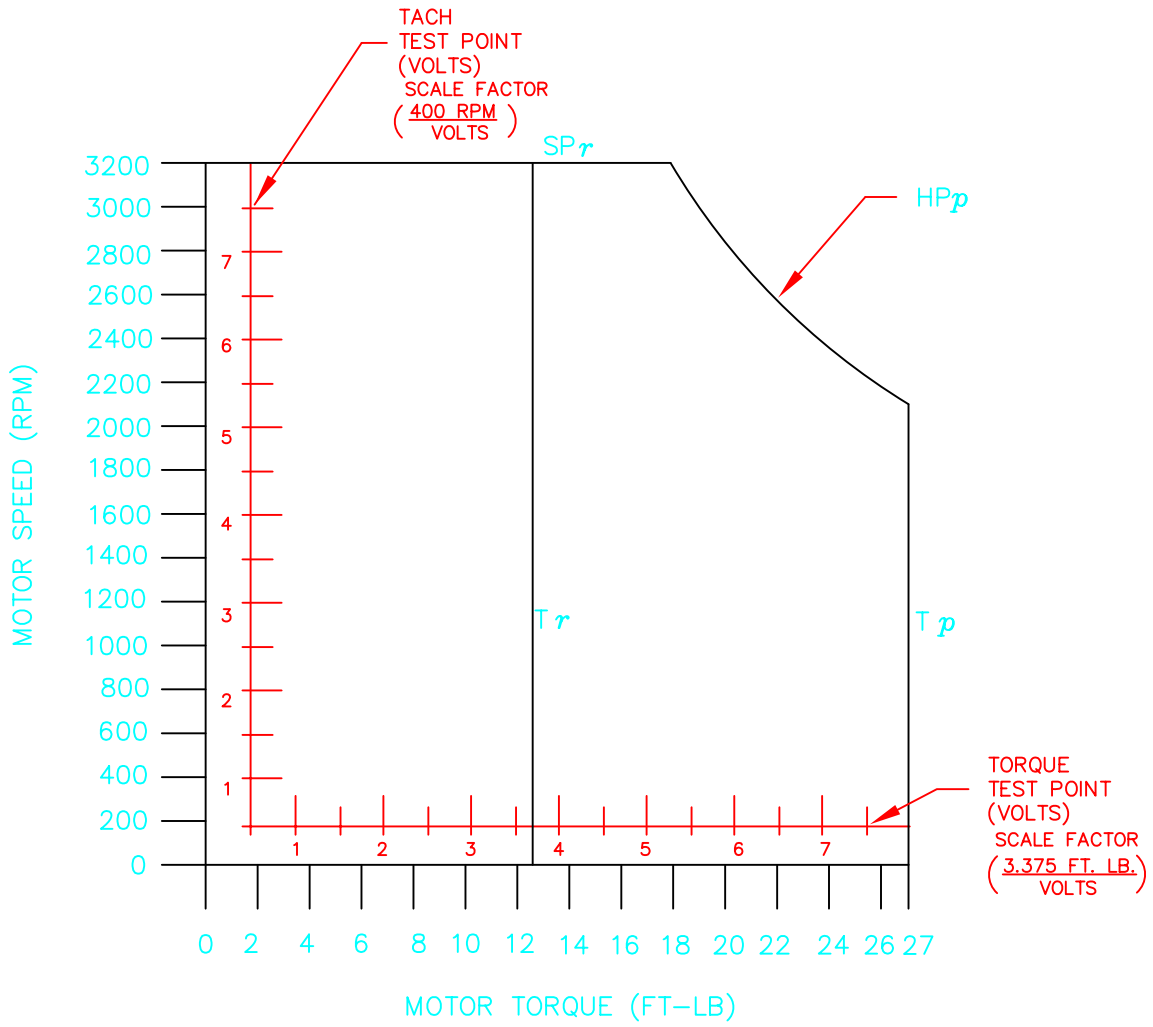
DRAWN BY: Mike E.

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

DRAWING NUMBER: MDPAK6-5460 / MM-5/5460

B | DATE 7/20/92 | SCALE -- | SHEET NO. 1 OF 1 | REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/12/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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(716) 924-9181 FAX: (716) 924-2169

LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/20-1054	MM-5/5600M-SF0-XXXX
MOTOR ASSY	BLM-1054	BLM-1054
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	12.30	FT-LB
PEAK TORQUE	Tp	27.00	FT-LB
RATED SPEED	SPr	3200	RPM
PEAK HORSEPOWER	HPp	10.80	HP
ROTOR INERTIA	Jm	0.004850	FT-LB-SEC^2
OUTPUT POWER	W	5600	WATT

CHECKED BY — DATE

APPROVED BY — DATE

APPROVED BY — DATE

MATERIAL: -------

FINISH: --------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ---- ANGULAR ± -- ; X.XX± --- ; X.XXX± --

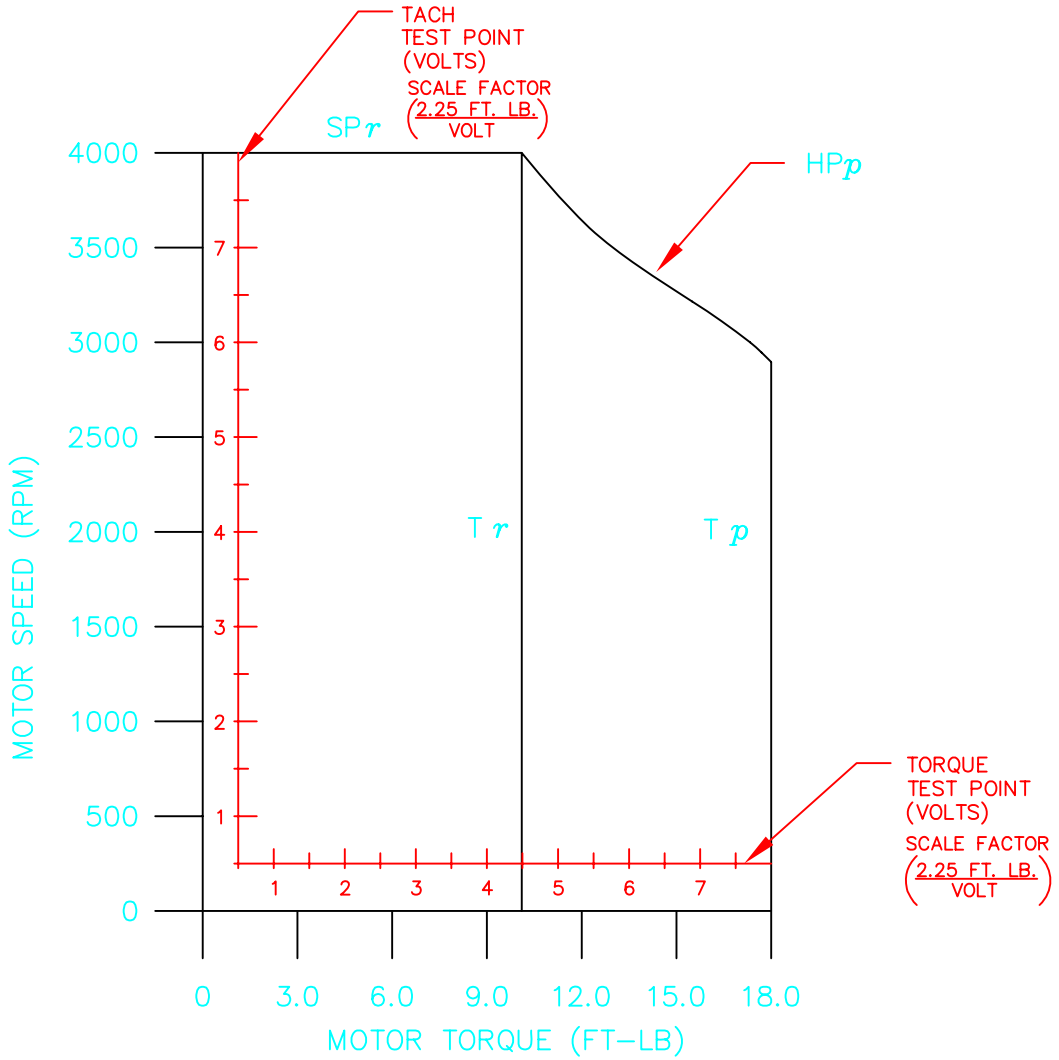
DRAWN BY: CAD

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-5600M MM-5/5600M

B | DATE 11/12/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/20-1029	MM-5/5730-SFO-XXXX
MOTOR ASSY	BLM-1029	BLM-1029
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

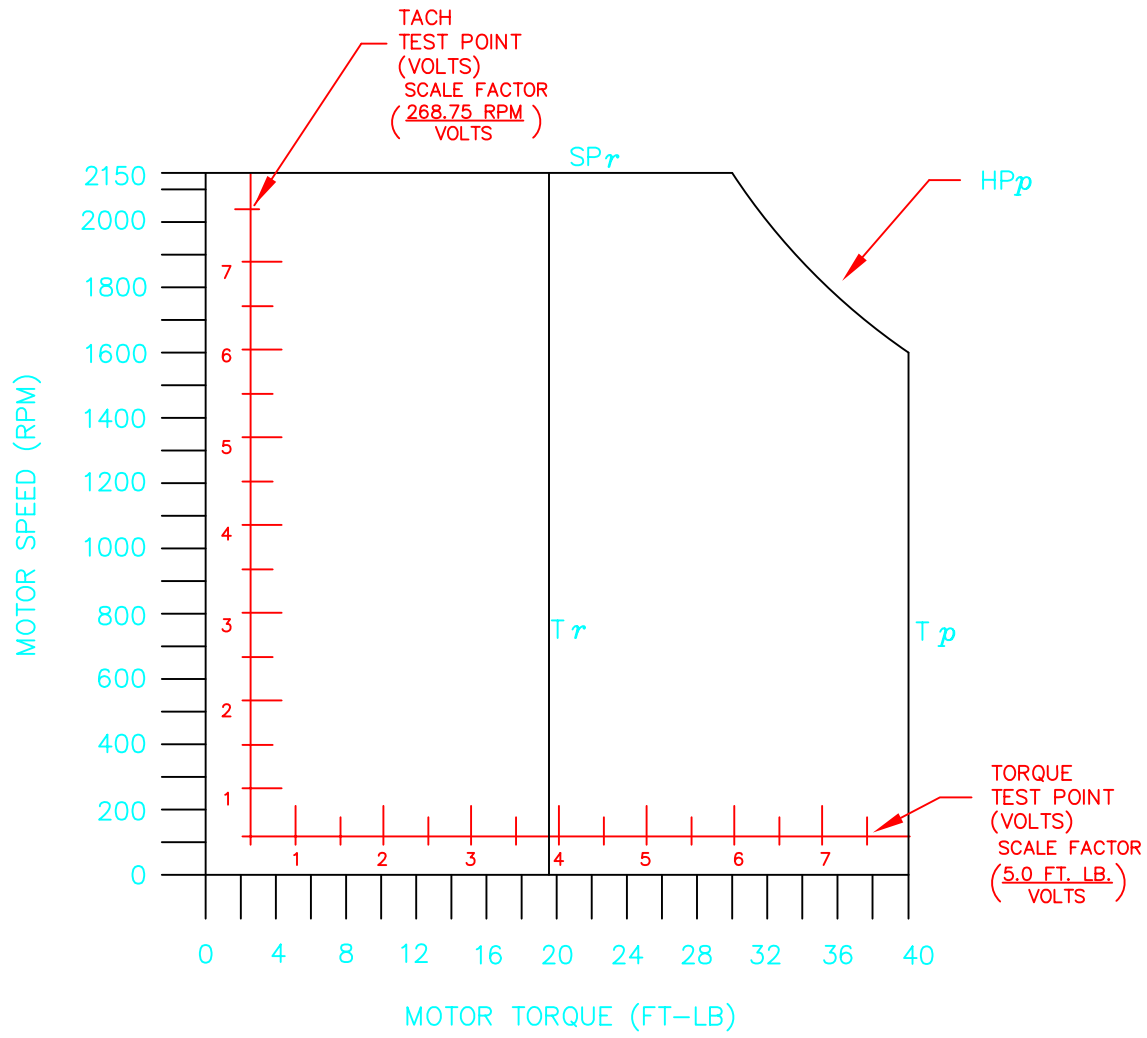
RATED TORQUE	Tr	10.10 FT-LB
PEAK TORQUE	Tp	18.00 FT-LB
RATED SPEED	SPr	4000 RPM
PEAK HORSEPOWER	HPp	9.90 HP
ROTOR INERTIA	Jm	0.000758 FT-LB-SEC^2
OUTPUT POWER	W	5730 WATT

CHECKED BY	DATE
APPROVED BY W.E.S.	DATE 7/21/93
APPROVED BY	DATE
MATERIAL	----------
FINISH	----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY Mike E.		DRAWING NUMBER MDPAK6-5730 MM-5/5730
TOLERANCES X.X± --- X.XX± --- X.XXX± --- ANGULAR ± --	AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001		
B	DATE 7/20/92	SCALE --	SHEET NO. 1 OF 1 / REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/12/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.
  OR
- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/20-1057	MM-5/5900M-SF0-XXXX
MOTOR ASSY	BLM-1057	BLM-1057
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	19.50	FT-LB
PEAK TORQUE	Tp	40.00	FT-LB
RATED SPEED	SPr	2150	RPM
PEAK HORSEPOWER	HPp	12.25	HP
ROTOR INERTIA	Jm	0.010370	FT-LB-SEC^2
OUTPUT POWER	W	5900	WATT

CHECKED BY — DATE
APPROVED BY — DATE
APPROVED BY — DATE
MATERIAL: -------
FINISH: --------

TITLE: MOTOR DRIVE PACKAGE

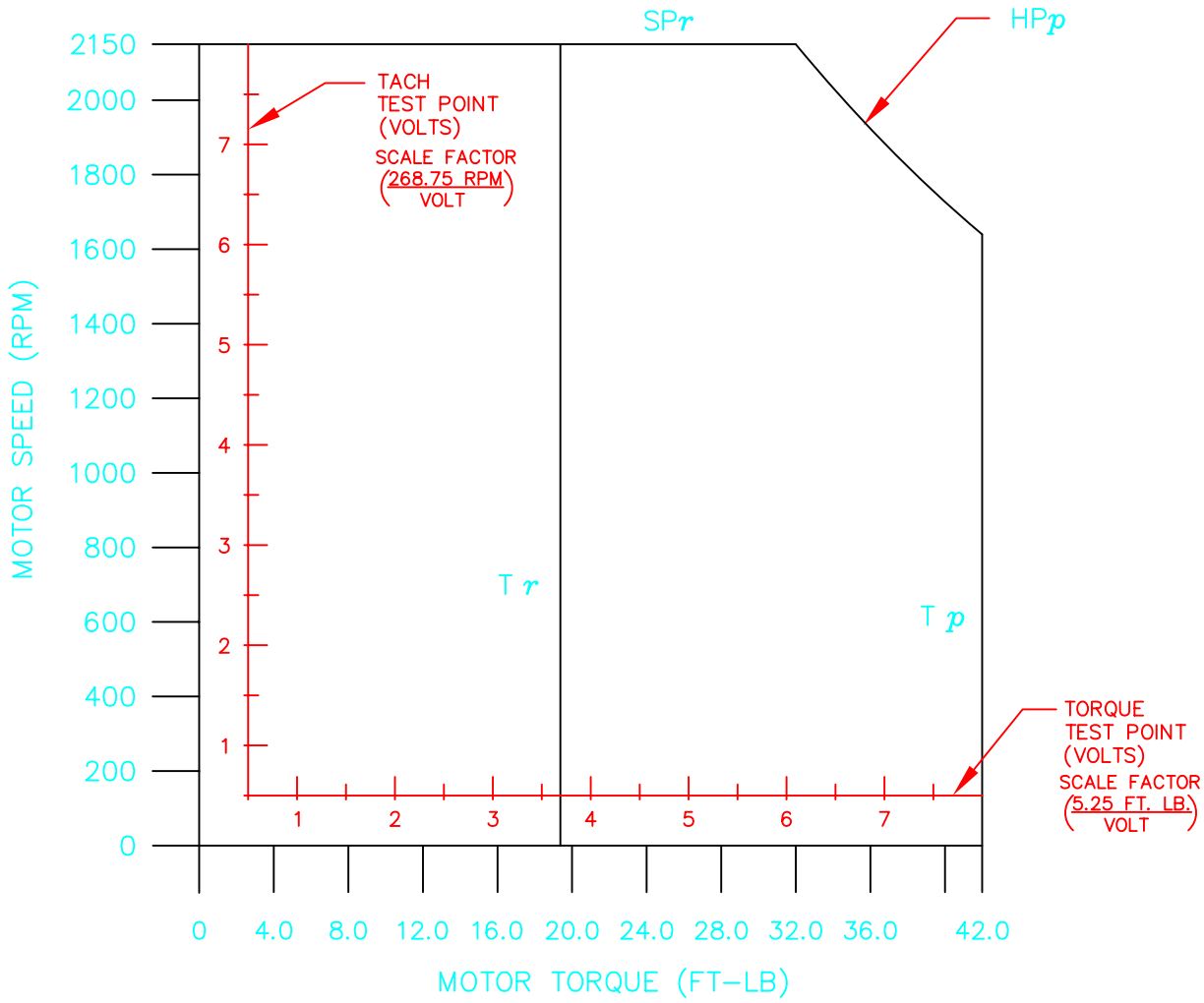
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ----
X.XX± ---
X.XXX± --
ANGULAR ± --

DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-5900M / MM-5/5900M

B | DATE 11/12/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
11/15/93	A	PER ECN 93-131	EB		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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(716) 924-9181 FAX: (716) 924-2169

LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/20-1030	MM-5/5950-SF0-XXXX
MOTOR ASSY	BLM-1030	BLM-1030
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	19.50	FT-LB
PEAK TORQUE	Tp	42.00	FT-LB
RATED SPEED	SPr	2150	RPM
PEAK HORSEPOWER	HPp	13.10	HP
ROTOR INERTIA	Jm	0.001500	FT-LB-SEC^2
OUTPUT POWER	W	5950	WATT

CHECKED BY — DATE

APPROVED BY W.E.S. — DATE 7/21/93

APPROVED BY — DATE

MATERIAL ----------

FINISH ----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± --- X.XX± --- X.XXX± -- ANGULAR ± --

DRAWN BY Mike E.

AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001

DRAWING NUMBER MDPAK6-5950 MM-5/5950

B — DATE 7/20/92 — SCALE -- — SHEET NO. 1 OF 1 — REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
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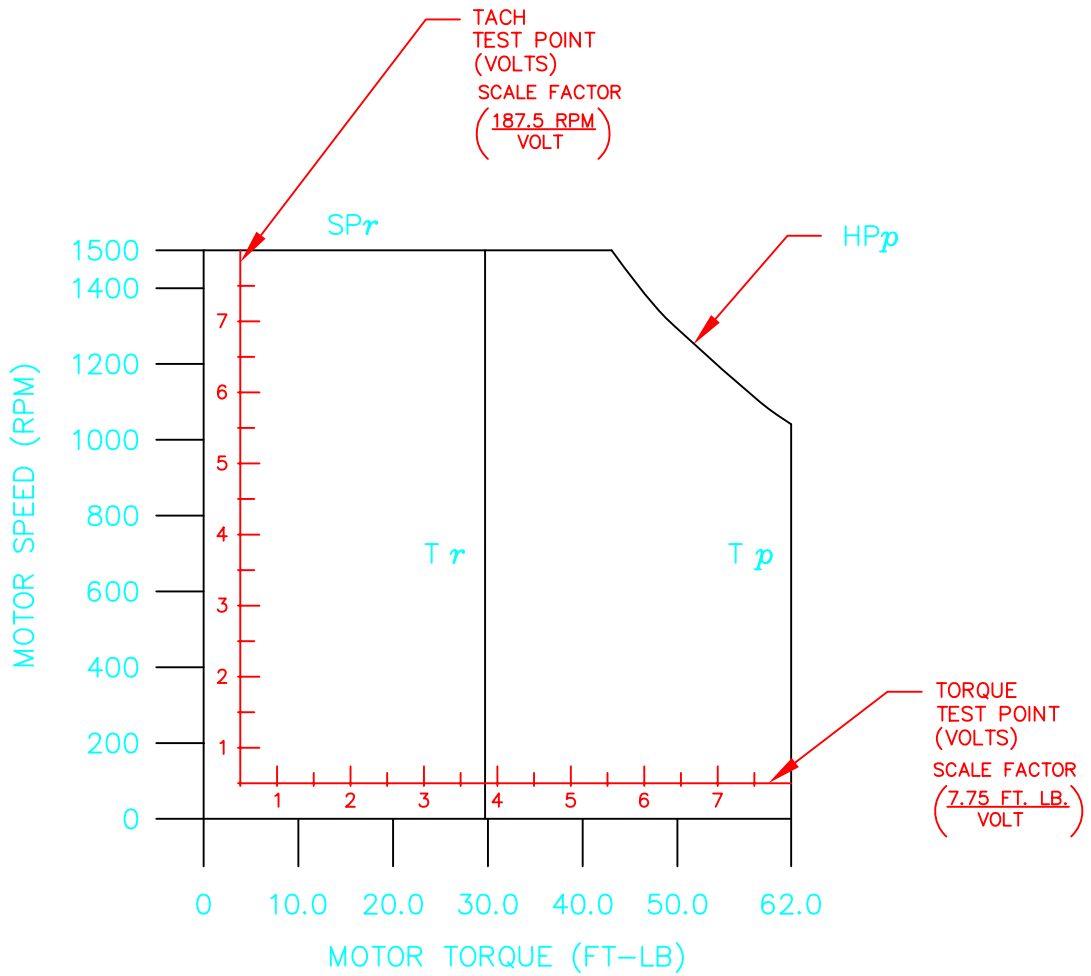

CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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(716) 924-9181 FAX: (716) 924-2169

LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/20-1032	MM-5/6100-SFO-XXXX
MOTOR ASSY	BLM-1032	BLM-1032
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	29.70	FT-LB
PEAK TORQUE	Tp	62.00	FT-LB
RATED SPEED	SPr	1500	RPM
PEAK HORSEPOWER	HPp	12.30	HP
ROTOR INERTIA	Jm	0.002240	FT-LB-SEC^2
OUTPUT POWER	W	6100	WATT

CHECKED BY — DATE

APPROVED BY W.E.S. — DATE 7/21/93

APPROVED BY — DATE

MATERIAL ----------

FINISH ----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± --- ; X.XX± --- ; X.XXX± --- ; ANGULAR ± --

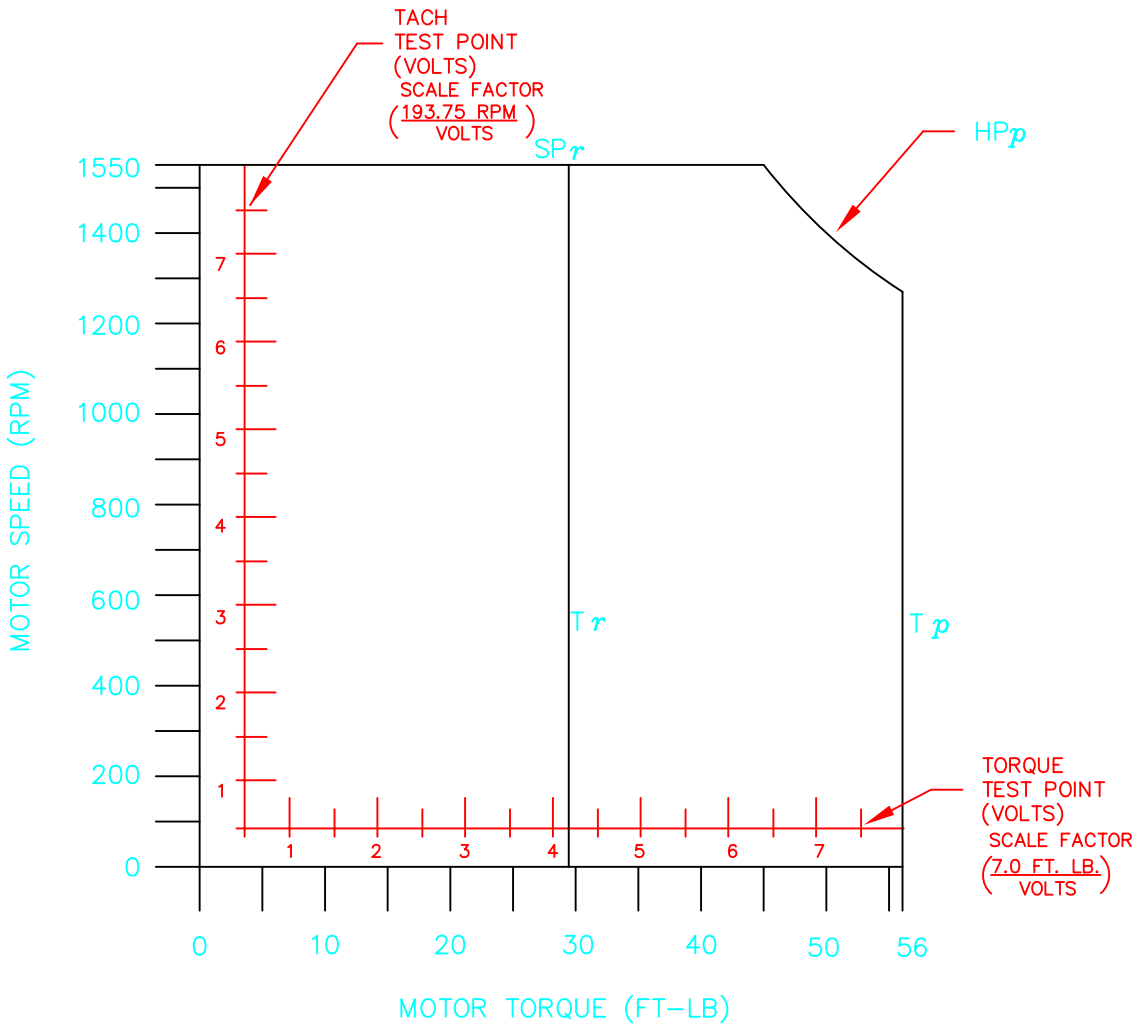
DRAWN BY: Mike E.

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

DRAWING NUMBER: MDPAK6-6100 MM-5/6100

B | DATE 7/20/92 | SCALE -- | SHEET NO. 1 OF 1 | REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
11/17/93	0	ECN 93-0130	MC		



CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/20-1059	MM-5/6500M-SF0-XXXX
MOTOR ASSY	BLM-1059	BLM-1059
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	T_r	29.70	FT-LB
PEAK TORQUE	T_p	56.00	FT-LB
RATED SPEED	SP_r	1550	RPM
PEAK HORSEPOWER	HP_p	13.50	HP
ROTOR INERTIA	J_m	0.015610	FT-LB-SEC^2
OUTPUT POWER	W	6500	WATT

CHECKED BY — DATE
APPROVED BY — DATE
APPROVED BY — DATE
MATERIAL: -------
FINISH: --------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES: X.X± ---- ANGULAR ± --
X.XX± ---
X.XXX± --

DRAWN BY: CAD
AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: MDPAK6-6500M MM-5/6500M

B | DATE: 11/17/93 | SCALE: --- | SHEET NO.: 1 OF 1 | REVISION: 0

DATE	SYM	REVISION RECORD	DR	CK	CK
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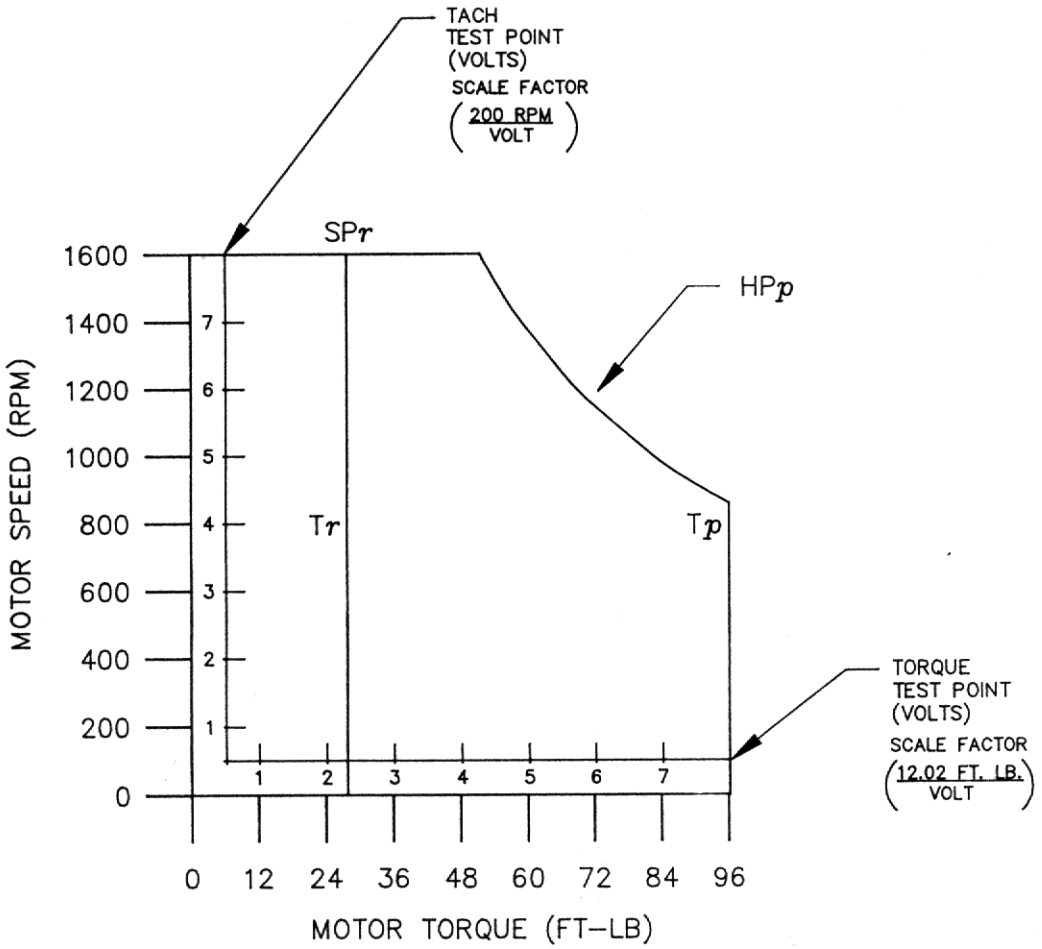

CONTROLLER PART NUMBER

XXXX — OUTPUT POWER WATTS

- MDPAK6- MOTOR DRIVE PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

OR

- MM-5/ INTEGRATED CONTROLLER PACKAGE, INTENDED FOR USE WITH PWRPAK6 POWER SUPPLY PACKAGE.

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626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

LIST OF MATERIALS

DESCRIPTION	MDPAK6 PART NUMBER	MM-5 PART NUMBER
CONTROLLER	BSD6-300/20-1116	MM-5/7000-SF0-XXXX
MOTOR ASSY	BLM-1116	BLM-1116
MANUAL	IB-16B001	IB-16B002

MOTOR DRIVE SPECIFICATIONS

RATED TORQUE	Tr	31	FT-LB
PEAK TORQUE	Tp	62	FT-LB
RATED SPEED	SPr	1600	RPM
PEAK HORSEPOWER	HPp	15.73	HP
ROTOR INERTIA	Jm	0.00360	FT-LB-SEC^2
OUTPUT POWER	W	7000	WATT

CHECKED BY — DATE

APPROVED BY — DATE

APPROVED BY — DATE: 1-9-95

MATERIAL: ----------

FINISH: ----------

TITLE: MOTOR DRIVE PACKAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ---- ; X.XX± ---- ; X.XXX± ---- ; ANGULAR ± ---

DRAWN BY: D.A.DAUNCE

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001

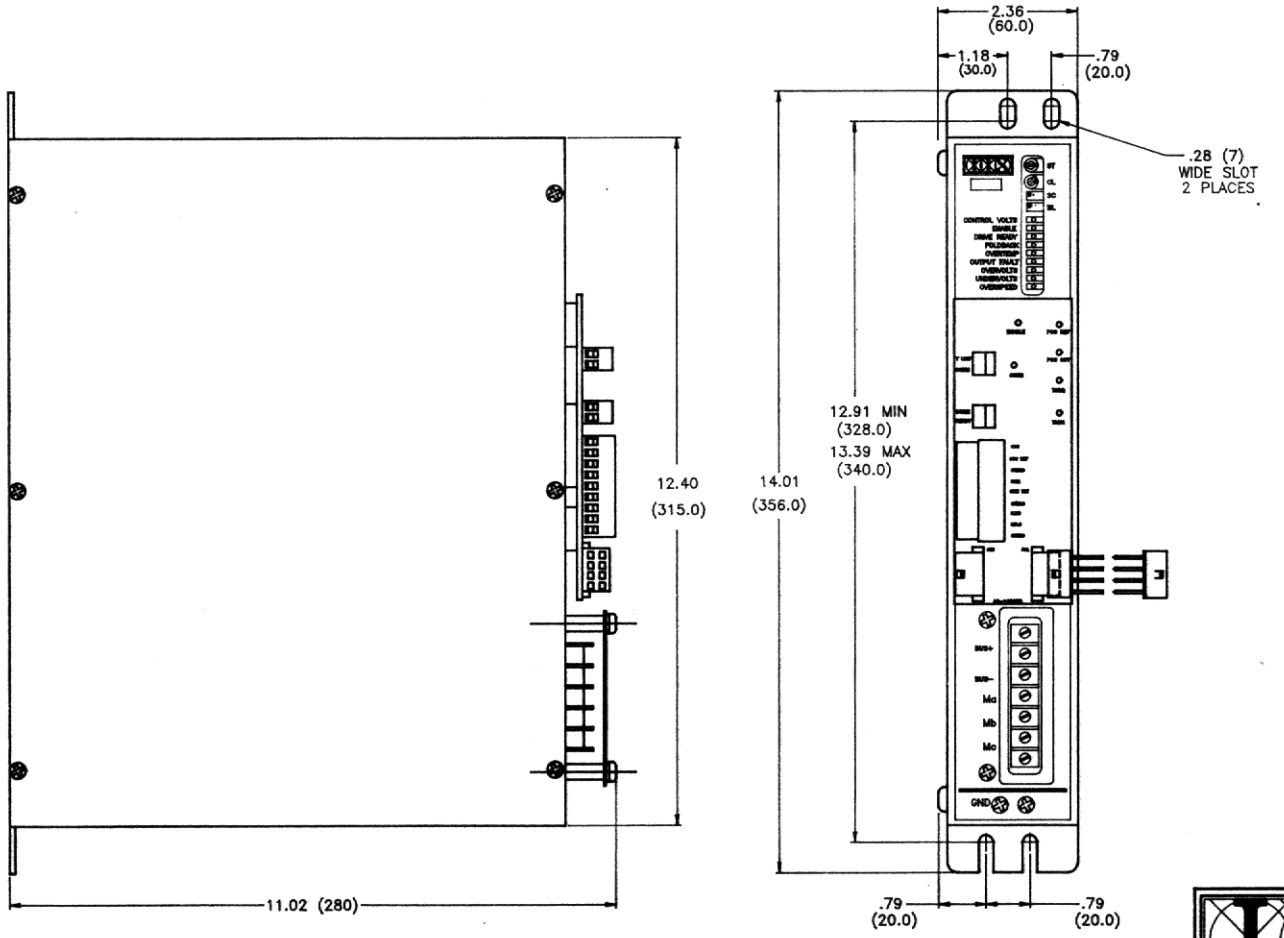
DRAWING NUMBER: MDPAK6-7000 MM-5/7000

B | DATE: 27JAN95 | SCALE: --- | SHEET NO.: 1 OF 1 | REVISION: 0

APPENDIX E
DRIVE DIMENSIONS AND CONNECTIONS

DRAWING NUMBER	DESCRIPTION
BSD6-300/03-xxxx	DRIVE, 3 AMP
BSD6-300/06-xxxx	DRIVE, 6 AMP
BSD6-300/10-xxxx	DRIVE, 10 AMP
BSD6-300/20-xxxx	DRIVE, 20 AMP

DATE	SYM	REVISION RECORD	DR	CK	CK
6/18/93	A	ECN 93-131	EB	WEK	



CURRENT CONFIGURATION

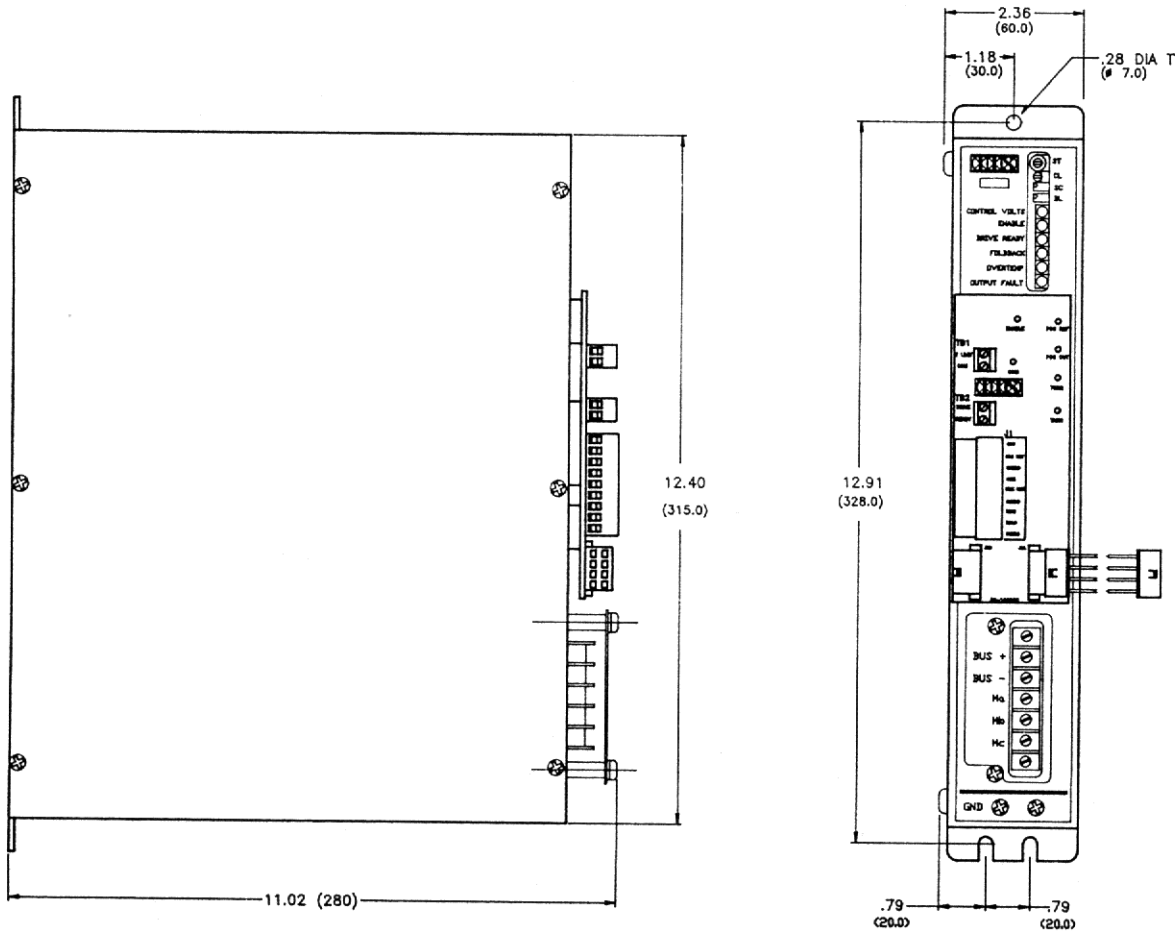
INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY: [illegible]	DATE: 8/93
APPROVED BY: WEK	DATE: 8/18/93
APPROVED BY	DATE
MATERIAL: ----------	
FINISH: ----------	

TITLE: DRIVE OUTLINE & DIMENSIONS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD		DRAWING NUMBER: BSD6-300/03-XXX
TOLERANCES	AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA		
X.X± -----	ANGULAR ± 1°	B	DATE 6/17/93
X.XX± 0.01			SCALE ---
X.XXX± 0.005			SHEET NO. 1 OF 2
			REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
6/18/93	A	ECN 93-131	EB	WEJ	



PREVIOUS CONFIGURATION

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY: Bob	DATE: 8/93
APPROVED BY: WEJ	DATE: 8/18/93
APPROVED BY	DATE
MATERIAL: ----------	
FINISH: ----------	

TITLE: DRIVE OUTLINE & DIMENSIONS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD		DRAWING NUMBER: BSD6-300/03-XXX
TOLERANCES	AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA		
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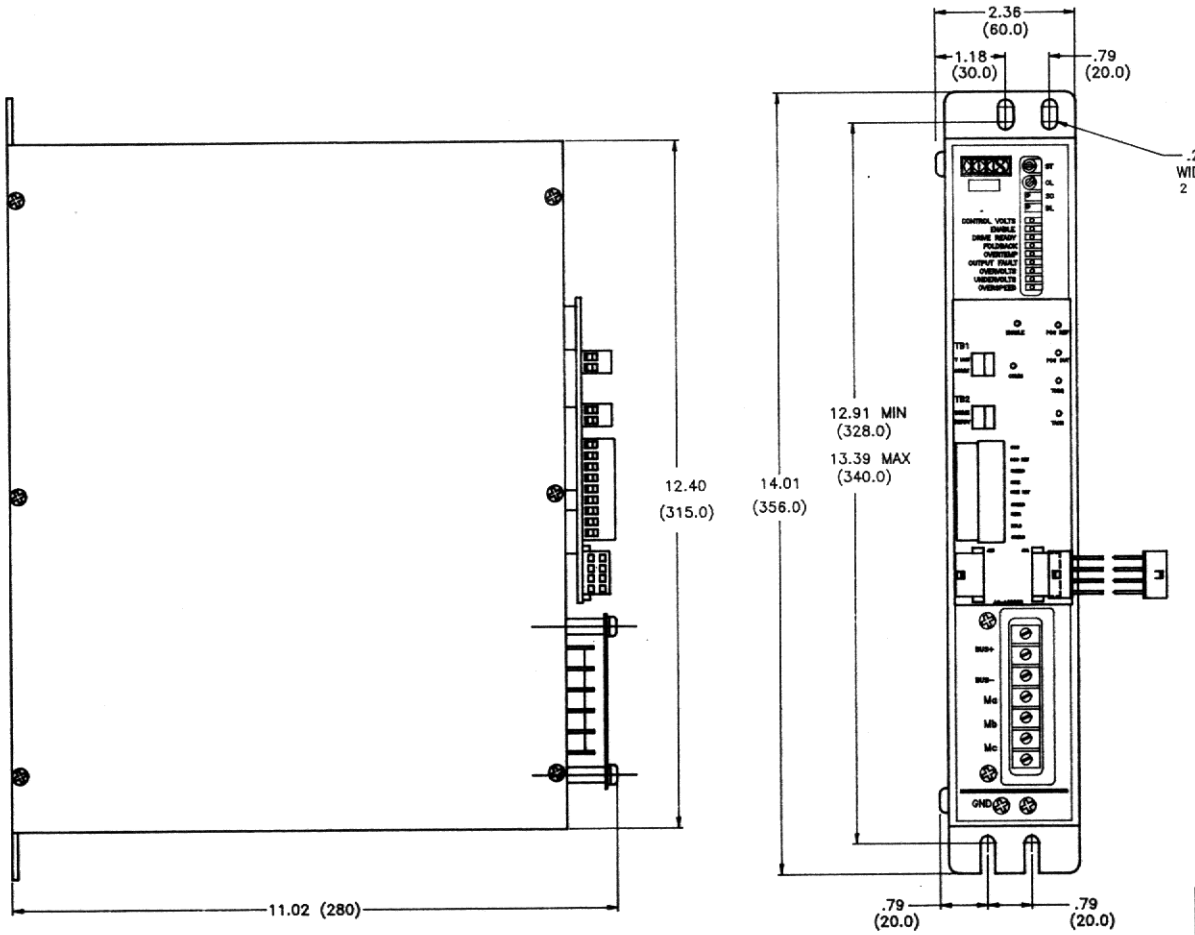
X.XX± 0.01		SCALE: ---	SHEET NO.: 2 OF 2
X.XXX± 0.005		REVISION: A	

DATE	SYM	REVISION RECORD	DR	CK	CK
6/18/93	A	ECN 93-131	EB	WEJ	



CURRENT CONFIGURATION

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY	DATE 8/93
APPROVED BY	DATE 9/18/93
APPROVED BY	DATE
MATERIAL	----------
FINISH	----------

TITLE: DRIVE OUTLINE & DIMENSIONS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD		DRAWING NUMBER BSD6-300/06-XXX
TOLERANCES	AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001\RA		
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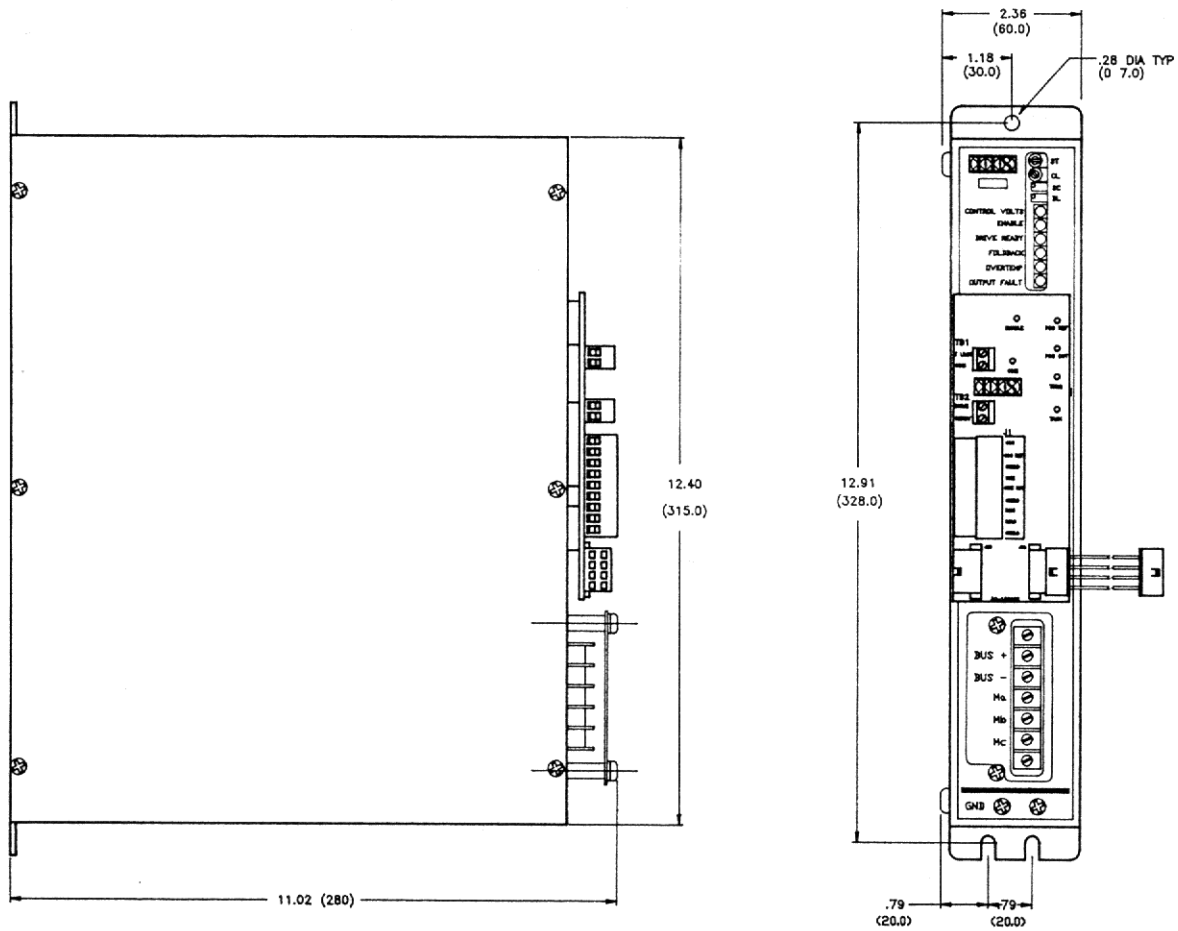
X.XX± 0.05		SCALE ---	SHEET NO. 1 OF 2
X.XXX± 0.001			REVISION A

DATE	SYM	REVISION RECORD	DR	CK	CK
6/18/93	A	ECN 93-131	EB	WEJ	



PREVIOUS CONFIGURATION

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY: [illegible]	DATE: 8/19
APPROVED BY: WEJ	DATE: 8/16/93
APPROVED BY	DATE
MATERIAL: ----------	
FINISH: ----------	

TITLE: DRIVE OUTLINE & DIMENSIONS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD			DRAWING NUMBER: BSD6-300/06-XXX
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X.XX± 0.05				SHEET NO.: 2 OF 2
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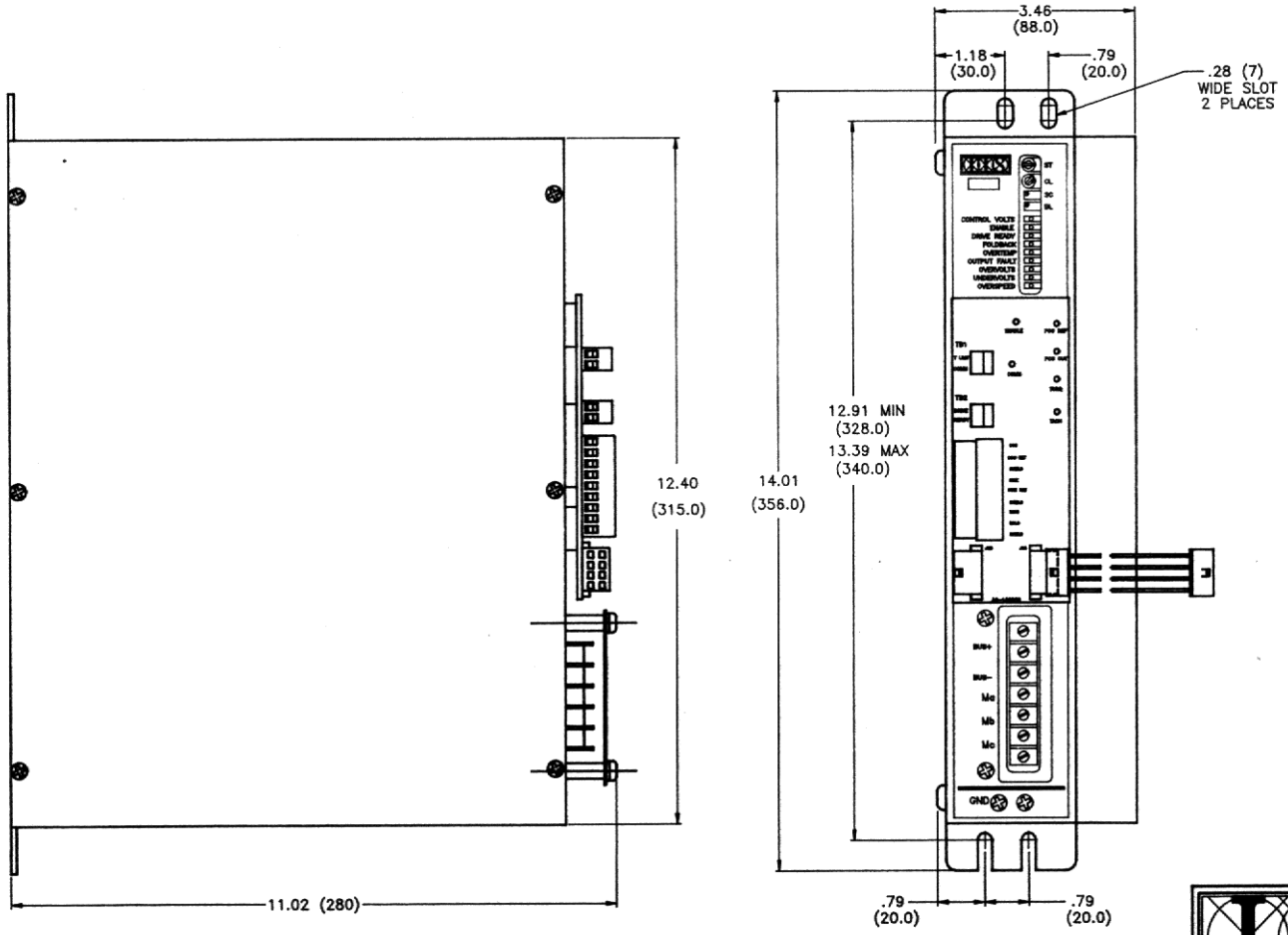
DATE	SYM	REVISION RECORD	DR	CK	CK
6/18/93	A	ECN-93-131	EB	WEJ	



CURRENT CONFIGURATION

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(716) 924-9181 FAX: (716) 924-2169

CHECKED BY: DAW	DATE: 8/93
APPROVED BY: WES	DATE: 8/18/93
APPROVED BY	DATE
MATERIAL: ----------	
FINISH: ----------	

TITLE: DRIVE OUTLINE & DIMENSIONS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD		DRAWING NUMBER: BSD6-300/10-XXX
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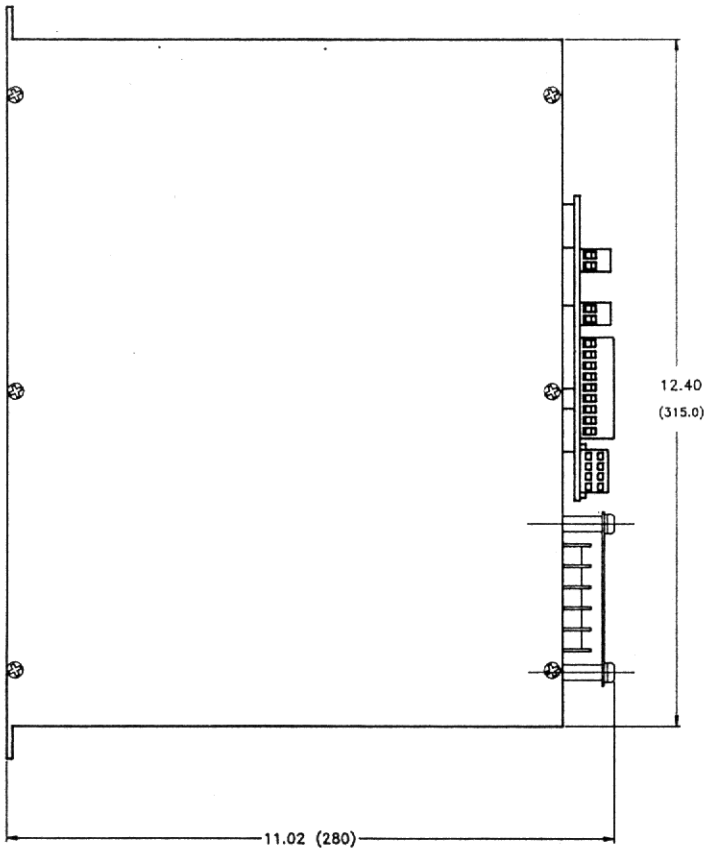
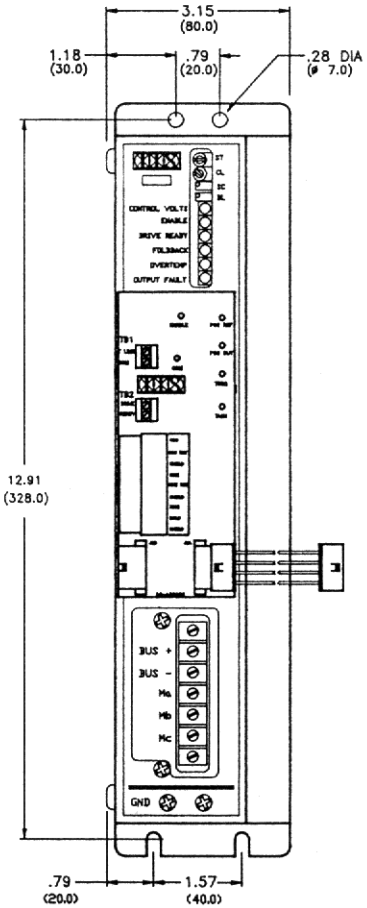
X.XX± 0.01		SHEET NO.: 1 OF 2	REVISION: A
X.XXX± 0.005			

DATE	SYM	REVISION RECORD	DR	CK	CK
6/18/93	A	ECN-93-131	EB	WEJ	





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626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY: Ray	DATE: 8/93
APPROVED BY: WEJ	DATE: 8/18/93
APPROVED BY	DATE
MATERIAL: ----------	
FINISH: ----------	

TITLE: **DRIVE OUTLINE & DIMENSIONS**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD			DRAWING NUMBER: BSD6-300/10-XXX
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X.X± ----- ANGULAR	B	DATE: 6/16/93	SCALE: 3-1	SHEET NO.: 2 OF 2 — REVISION: A
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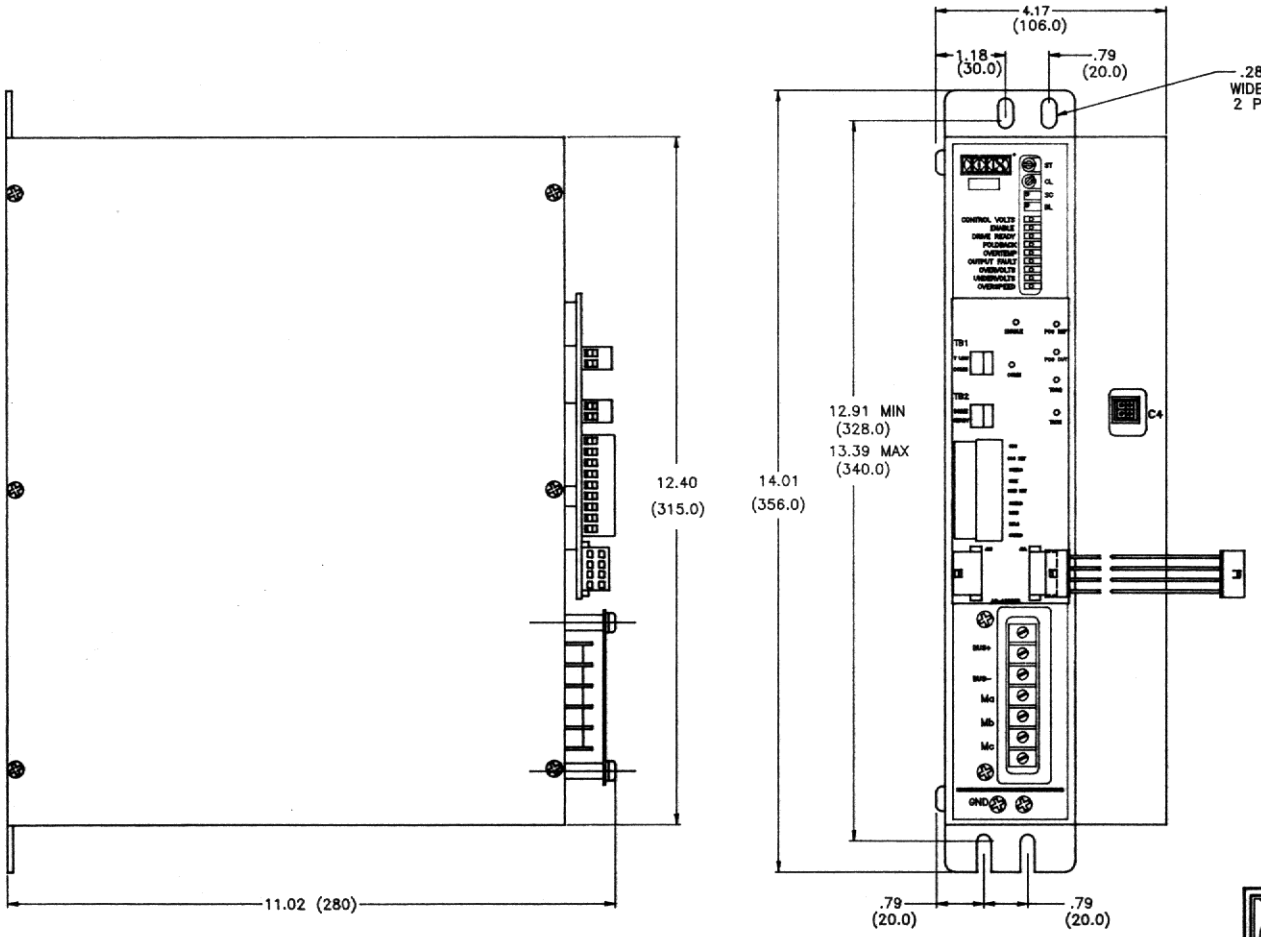
X.XXX± 0.005				

DATE	SYM	REVISION RECORD	DR	CK	CK
6/18/93	A	ECN 93-131	EB	WE	



CURRENT CONFIGURATION

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626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY: Brian	DATE: 8/93
APPROVED BY: WE	DATE: 8/18/93
APPROVED BY	DATE
MATERIAL: ----------	
FINISH: ----------	

TITLE: DRIVE OUTLINE & DIMENSIONS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD		DRAWING NUMBER: BSD6-300/20-XXX
TOLERANCES	AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA		
X.X± -----	ANGULAR ±	SIZE: B	DATE: 6/16/93
X.XX± 0.01		SCALE: ---	SHEET NO.: 1 OF 2
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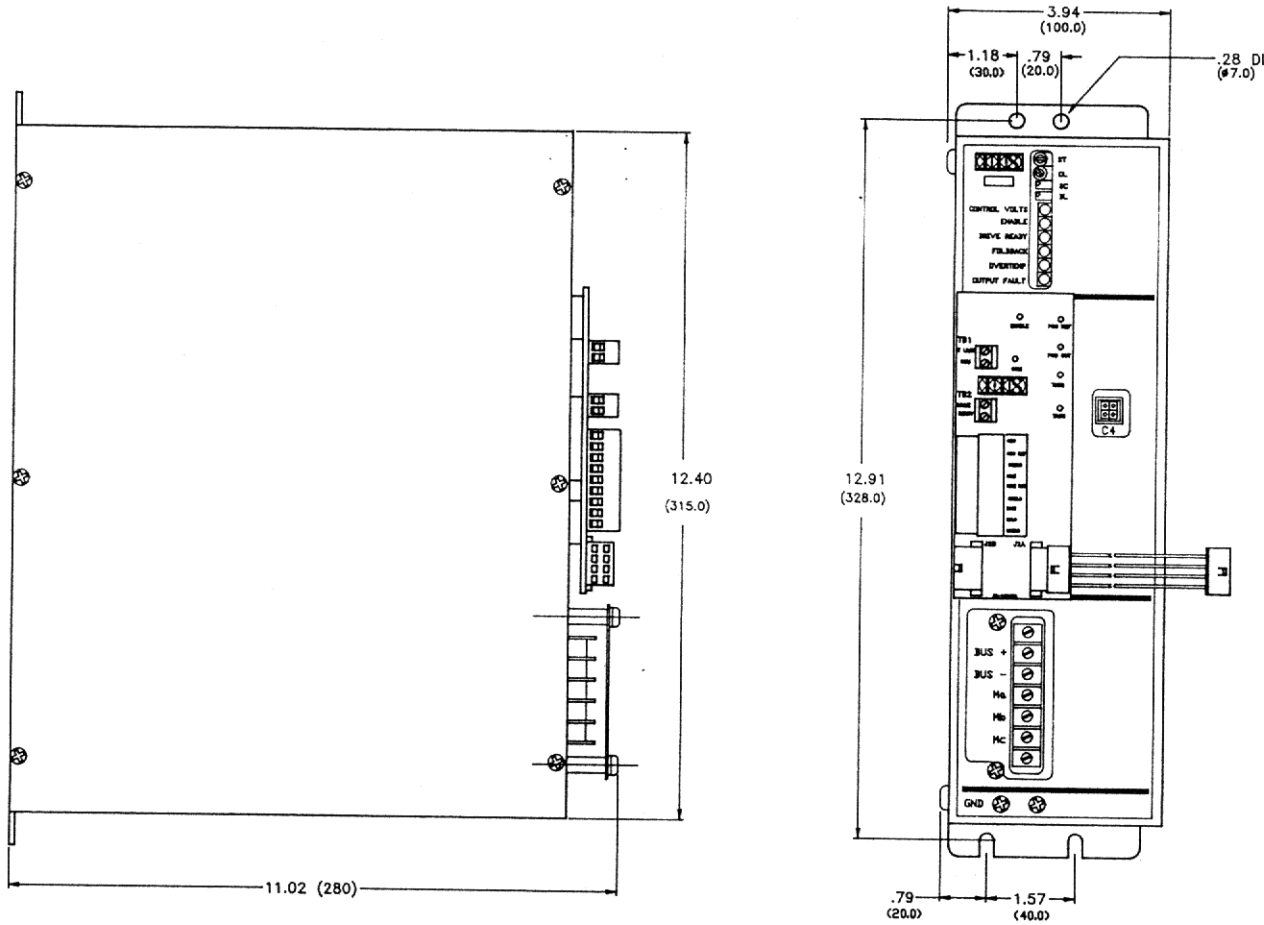
DATE	SYM	REVISION RECORD	DR	CK	CK
6/18/93	A	ECN 93-131	EB	WEK	



PREVIOUS CONFIGURATION

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626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY: Bain	DATE: 8/93
APPROVED BY: WEK	DATE: 8/18/93
APPROVED BY	DATE
MATERIAL: ----------	
FINISH: ----------	

TITLE: DRIVE OUTLINE & DIMENSIONS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD			DRAWING NUMBER: BSD6-300/20-XXX	
TOLERANCES	AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA				
X.X± ----	ANGULAR ±	B	DATE: 6/16/93	SCALE: ---	SHEET NO.: 2 OF 2
X.XX± 0.01					REVISION: A
X.XXX± 0.005					

APPENDIX F
DRIVE/AMPLIFIER SETUPS

DRAWING NUMBER	DESCRIPTION
SU-048001	Amplifier Setup, BSD6-300/03-1039
SU-048002	Amplifier Setup, BSD6-300/03-1037
SU-048003	Amplifier Setup, BSD6-300/03-1022
SU-048004	Amplifier Setup, BSD6-300/06-1036 N.A.
SU-048005	Amplifier Setup, BSD6-300/06-1038
SU-048006	Amplifier Setup, BSD6-300/06-1035 N.A.
SU-048007	Amplifier Setup, BSD6-300/06-1024
SU-048008	Amplifier Setup, BSD6-300/06-1023
SU-048009	Amplifier Setup, BSD6-300/10-1034 N.A.
SU-048010	Amplifier Setup, BSD6-300/10-1026
SU-048011	Amplifier Setup, BSD6-300/10-1028 N.A.
SU-048012	Amplifier Setup, BSD6-300/10-1025
SU-048013	Amplifier Setup, BSD6-300/20-1027 N.A.
SU-048014	Amplifier Setup, BSD6-300/20-1029
SU-048015	Amplifier Setup, BSD6-300/20-1030
SU-048016	Amplifier Setup, BSD6-300/20-1032
SU-048020	Amplifier Setup, BSD6-300/20-1057 N.A.
SU-048022	Amplifier Setup, BSD6-300/03-1045
SU-048025	Amplifier Setup, BSD6-300/03-1050 N.A.
SU-048026	Amplifier Setup, BSD6-300/06-1048
SU-048027	Amplifier Setup, BSD6-300/06-1052 N.A.
SU-048028	Amplifier Setup, BSD6-300/10-1047 N.A.
SU-048029	Amplifier Setup, BSD6-300/10-1053 N.A.
SU-048030	Amplifier Setup, BSD6-300/10-1055 N.A.
SU-048031	Amplifier Setup, BSD6-300/10-1051
SU-048032	Amplifier Setup, BSD6-300/20-1056 N.A.
SU-048033	Amplifier Setup, BSD6-300/20-1058
SU-048034	Amplifier Setup, BSD6-300/20-1054 N.A.
SU-048036	Amplifier Setup, BSD6-300/20-1059 N.A.
SU-048037	Amplifier Setup, BSD6-300/03-1046
SU-048038	Amplifier Setup, BSD6-300/03-1049 N.A.
SU-048042	Amplifier Setup, BSD6-300/20-1116 N.A.

NOTES:

SET-UP PROCEDURES FOR BSD6 & MM-5

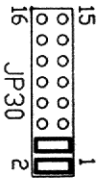
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET-UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 1500 R.P.M. FOR MM-5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 1500 R.P.M., FOR MAX. SPEED OF 1500 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (135° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

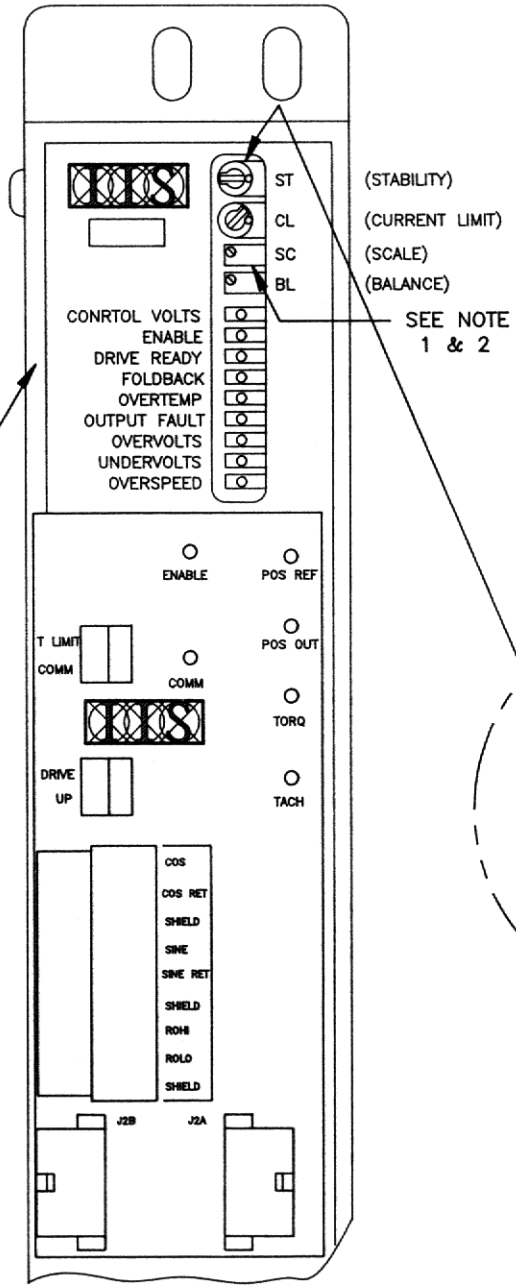
FOR BSD6-300 ONLY

MM-5 HAS NO USER JUMPERS

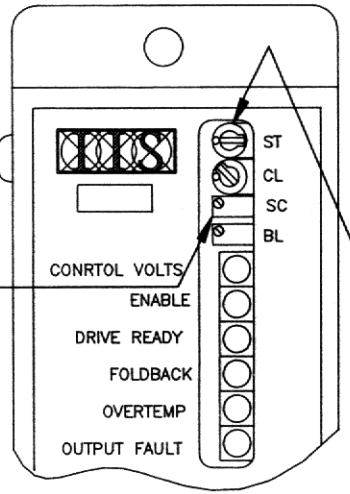


JP30
1 - 2
3 - 4

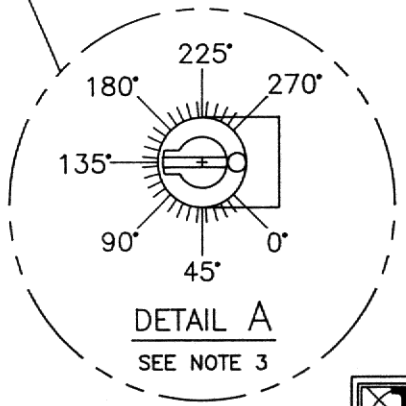
THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION



CURRENT CONFIGURATION

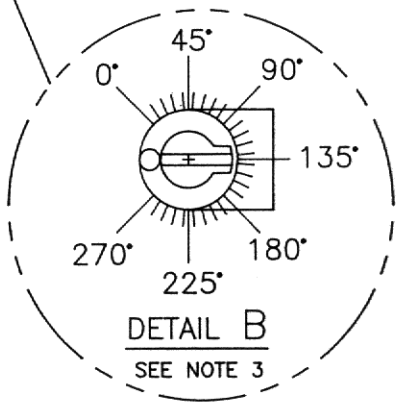


PREVIOUS CONFIGURATION



DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

DATE	SYM	REVISION RECORD	DR	CK	CK
6/21/93	A	ECN 93-131	EB	WEJ	

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY	DATE
APPROVED BY WEJ	DATE 7/21/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: SET-UP, BSD6-300/03-1039 (MM-5/900)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ------
X.XX± -----
X.XXX± ----
ANGULAR ± --

DRAWN BY CAD/BAIER
AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER SU-0480001

B | DATE 6/15/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION A

NOTES:

SET-UP PROCEDURES FOR BSD6 & MM-5

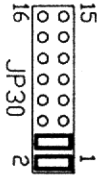
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET-UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 1400 R.P.M. FOR MM-5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 1400 R.P.M., FOR MAX. SPEED OF 1400 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (135° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

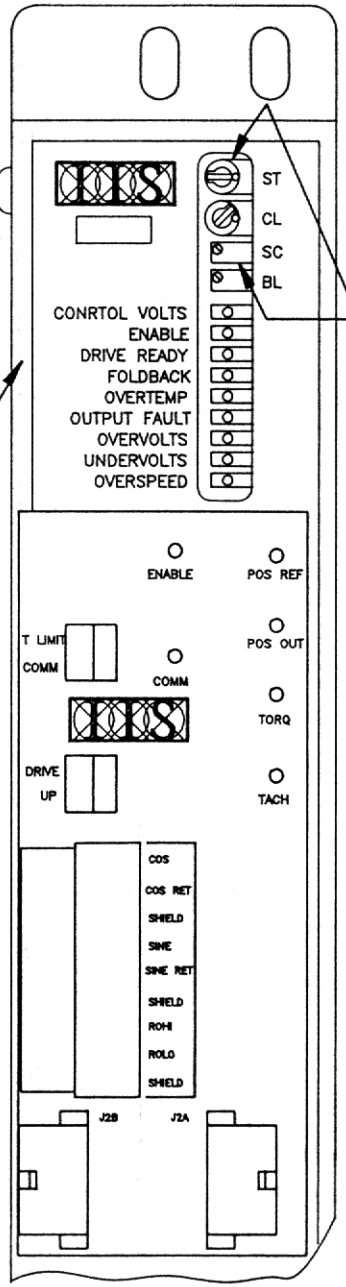
INTERNAL JUMPER LOCATIONS

FOR BSD6-300 ONLY

MM-5 HAS NO USER JUMPERS



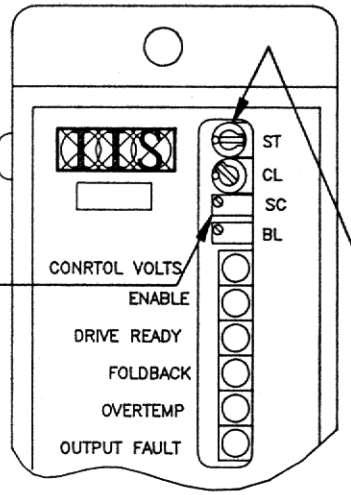
JP30
1 – 2
3 – 4
THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION



(STABILITY)
(CURRENT LIMIT)
(SCALE)
(BALANCE)

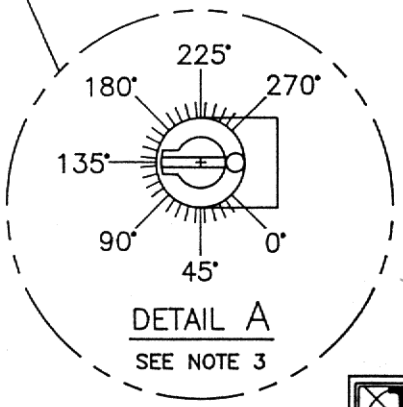
SEE NOTE 1 & 2

CURRENT CONFIGURATION

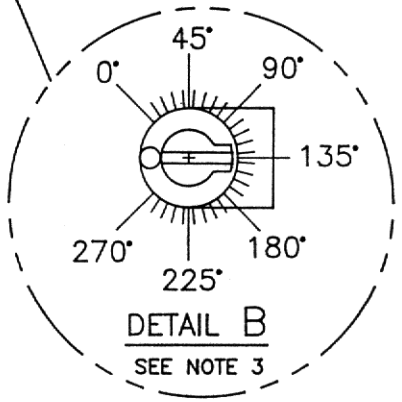


(STABILITY)
(CURRENT LIMIT)
(SCALE)
(BALANCE)

PREVIOUS CONFIGURATION



DETAIL A
SEE NOTE 3



DETAIL B
SEE NOTE 3

DATE	SYM	REVISION RECORD	DR	CK	CK
4/20/94	0	ECN 94-102	EB		

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626 FISHERS RUN
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(716) 924-9181 FAX: (716) 924-2169

CHECKED BY	DATE
APPROVED BY	DATE 4-20-94
APPROVED BY	DATE
MATERIAL	----------
FINISH	----------

TITLE: SET-UP, BSD6-300/03-1037 (MM-5/940)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD/BAIER		DRAWING NUMBER SU-048002
TOLERANCES	AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001\RA		
X.X± ------ ANGULAR ± ---	B	DATE 4/20/94 SCALE ---	SHEET NO. 1 OF 1 REVISION 0
X.XX± ------			
X.XXX± ----			

DATE	SYM	REVISION RECORD	DR	CK	CK
6/21/93	A	ECN 93-131	EB		

NOTES:

SET-UP PROCEDURES FOR BSD6 & MM-5

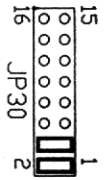
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET-UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 1500 R.P.M. FOR MM-5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 1500 R.P.M., FOR MAX. SPEED OF 1500 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (90° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

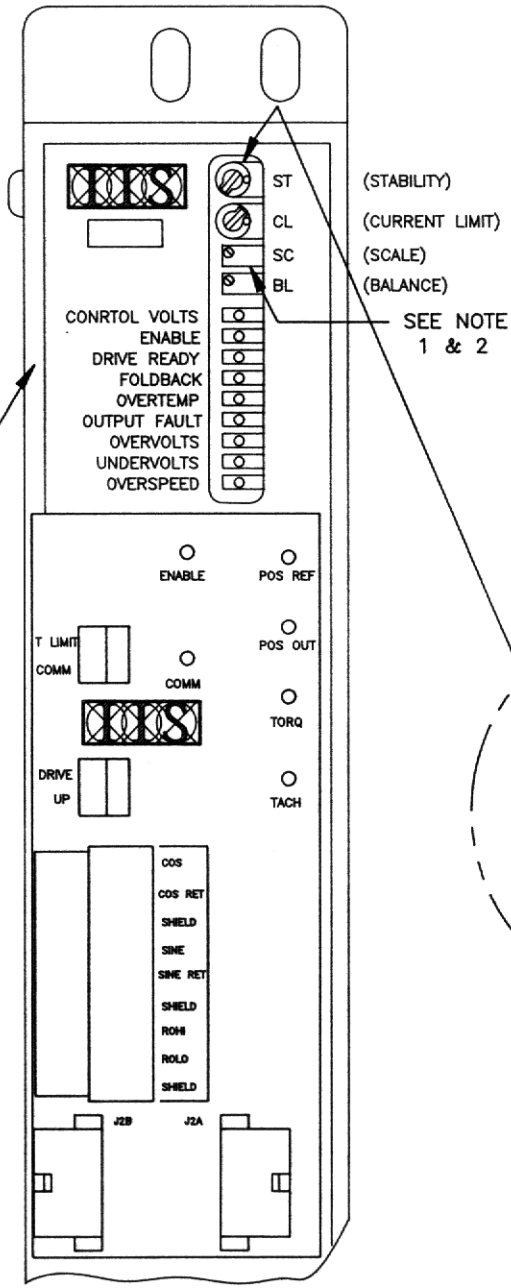
FOR BSD6-300 ONLY

MM-5 HAS NO USER JUMPERS

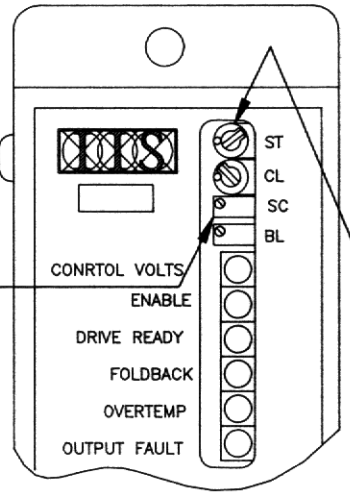


JP30
1 - 2
3 - 4

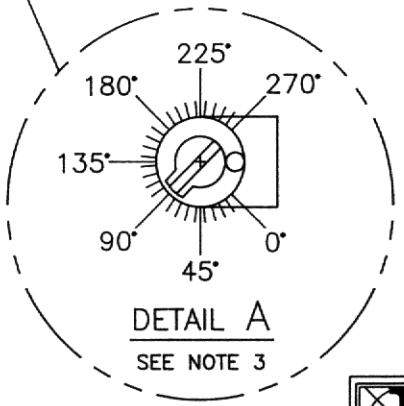
THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION



CURRENT CONFIGURATION

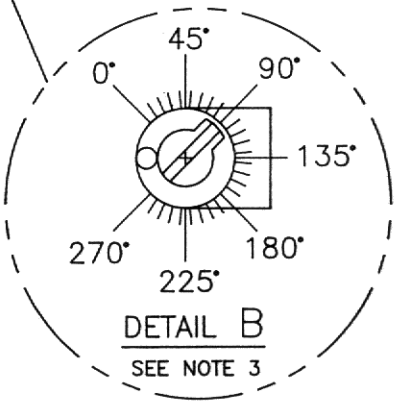


PREVIOUS CONFIGURATION



DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY	DATE
APPROVED BY WCB	DATE 7/21/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: SET-UP, BSD6-300/03-1022 (MM-5/950)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ----- ANGULAR ± --- ; X.XX± ----- ; X.XXX± ----

DRAWN BY CAD/BAIER

AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER SU-048003

B | DATE 6/15/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION A

NOTES:

SET–UP PROCEDURES FOR BSD6 & MM–5

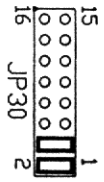
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET–UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 3600 R.P.M. FOR MM–5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 3600 R.P.M., FOR MAX. SPEED OF 3600 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (135° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

FOR BSD6–300 ONLY

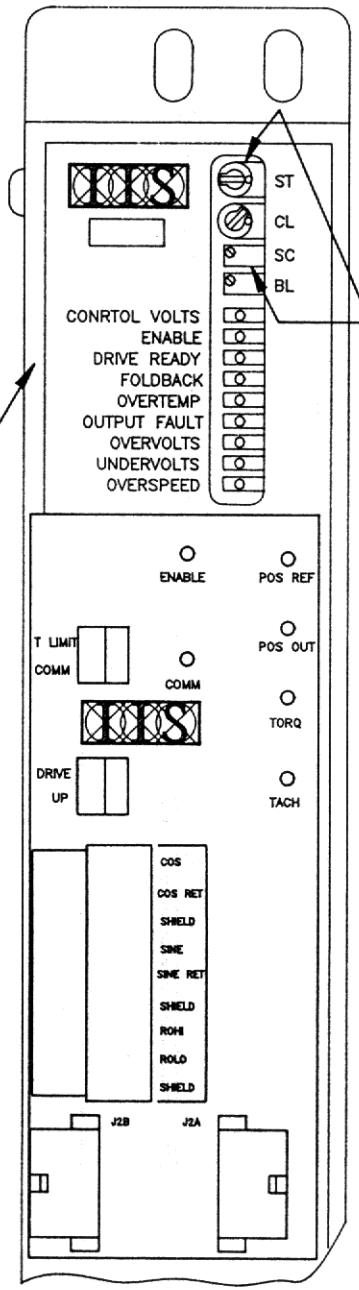
MM–5 HAS NO USER JUMPERS



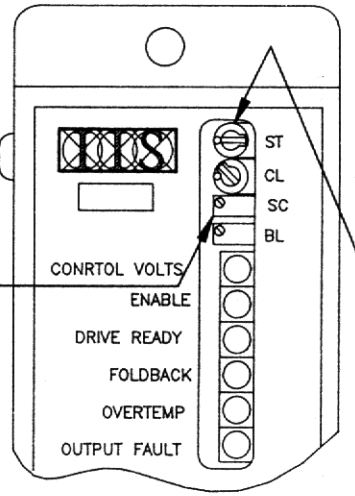
JP30
1 – 2
3 – 4

THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION

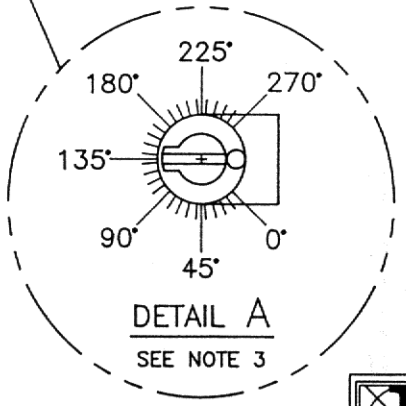
DATE	SYM	REVISION RECORD	DR	CK	CK
6/21/93	A	ECN–93–131	EB	WEA	



CURRENT CONFIGURATION

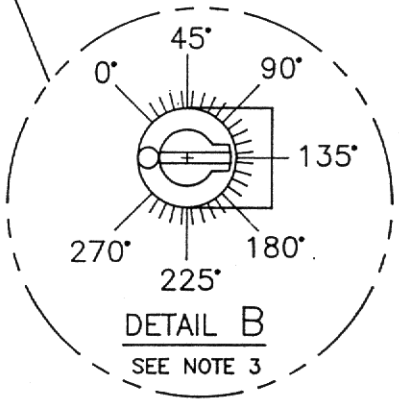


PREVIOUS CONFIGURATION



DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924–9181 FAX: (716) 924–2169

CHECKED BY: E. BAIER	DATE: 4/23/93
APPROVED BY: W.E.S.	DATE: 4/26/93
APPROVED BY:	DATE:
MATERIAL: ----------	
FINISH: ----------	

TITLE: SET–UP, BSD6–300/06–1038 (MM–5/1500)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ------ ANGULAR ± --- ; X.XX± ----- ; X.XXX± ---

DRAWN BY: CAD/BAIER

AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA

DRAWING NUMBER: SU–048005

SIZE	DATE	SCALE	SHEET NO.	REVISION
B	6/15/93	---	1 OF 1	A

NOTES:

SET–UP PROCEDURES FOR BSD6 & MM–5

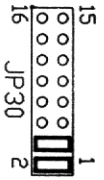
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET–UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 1500 R.P.M. FOR MM–5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 1500 R.P.M., FOR MAX. SPEED OF 1500 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (90° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

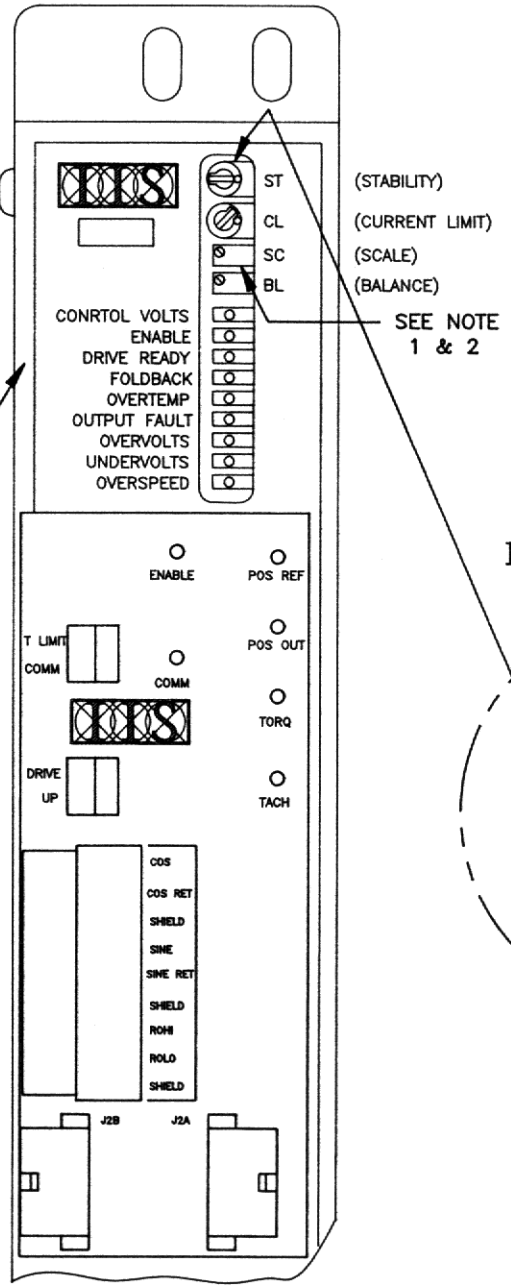
FOR BSD6–300 ONLY

MM–5 HAS NO USER JUMPERS

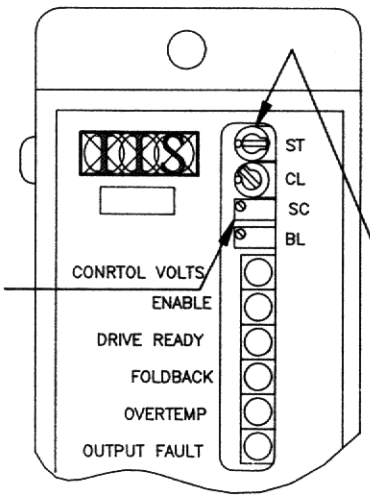


JP30
1 – 2
3 – 4

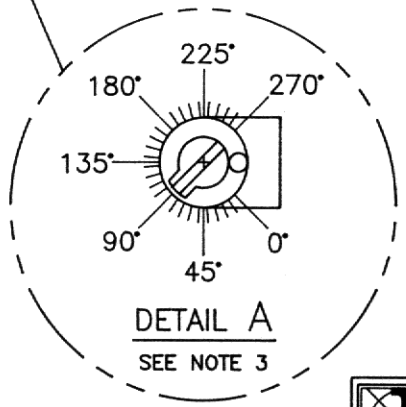
THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION



CURRENT CONFIGURATION

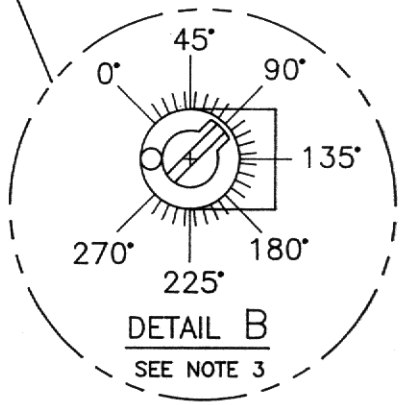


PREVIOUS CONFIGURATION



DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

DATE	SYM	REVISION RECORD	DR	CK	CK
5/25/93	0	ECN–93–074	EB		
6/21/93	A	ECN–93–131	EB	WF	

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626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924–9181 FAX: (716) 924–2169

CHECKED BY E. BAIER	DATE 5/25/93
APPROVED BY E.L.S.	DATE 5/26/93
APPROVED BY W.S.	DATE 7/21/93
MATERIAL ----------	
FINISH ----------	

TITLE: SET–UP, BSD6–300/06–1024 (MM–5/2030)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD/BAIER		DRAWING NUMBER SU–048007
TOLERANCES	AutoCAD FILE LOCATION Q:\DFTG\IB\16B001\RA		
X.X± ------- ANGULAR ± ---	B	DATE 6/15/93	SCALE ----	SHEET NO. 1 OF 1	REVISION A
X.XX± ------			
X.XXX± ----			

NOTES:

SET-UP PROCEDURES FOR BSD6 & MM-5

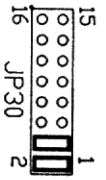
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET-UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 3000 R.P.M. FOR MM-5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 3000 R.P.M., FOR MAX. SPEED OF 3000 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (135° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

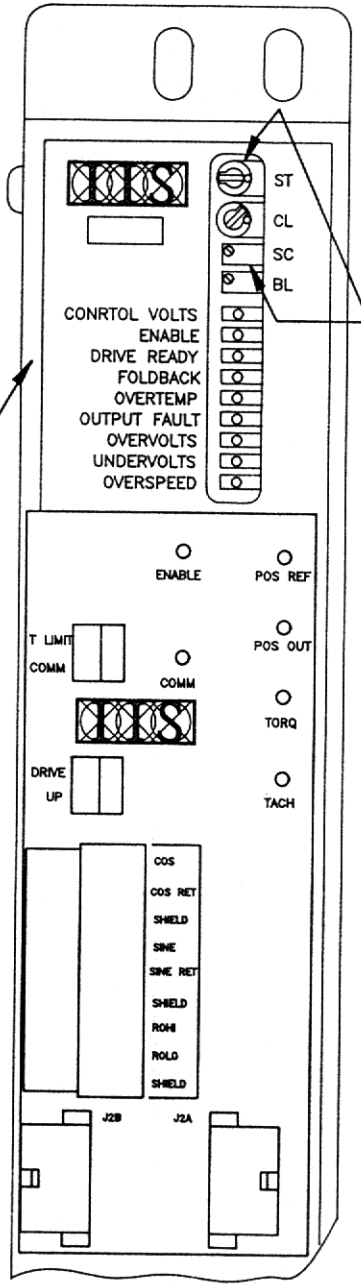
FOR BSD6-300 ONLY

MM-5 HAS NO USER JUMPERS



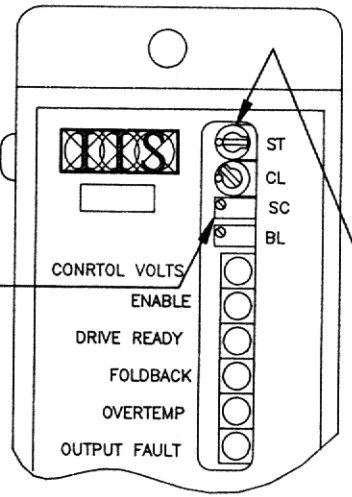
JP30
1 - 2
3 - 4

THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION



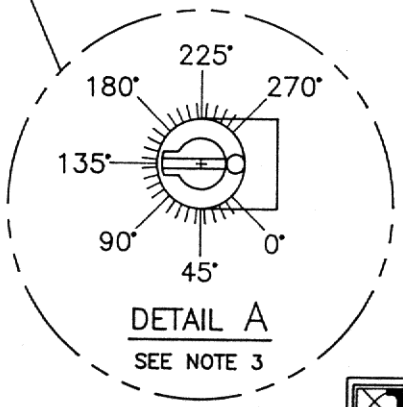
(STABILITY)
(CURRENT LIMIT)
(SCALE)
(BALANCE)
SEE NOTE 1 & 2

CURRENT CONFIGURATION

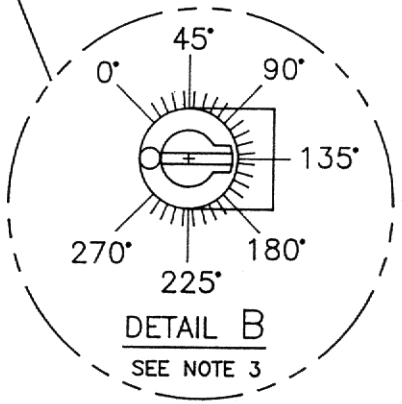


(STABILITY)
(CURRENT LIMIT)
(SCALE)
(BALANCE)

PREVIOUS CONFIGURATION



DETAIL A
SEE NOTE 3



DETAIL B
SEE NOTE 3

DATE	SYM	REVISION RECORD	DR	CK	CK
6/21/93	A	ECN-93-131	EB	[illegible]	

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY: E. BAIER	DATE: 7/29/92
APPROVED BY: J.C.	DATE: 8/01/92
APPROVED BY: [illegible]	DATE: 7/21/93
MATERIAL: ----------	
FINISH: ----------	

TITLE: SET-UP, BSD6-300/06-1023 (MM-5/2100)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ------- ANGULAR ± —
X.XX± -----
X.XXX± ----

DRAWN BY: CAD/BAIER
AutoCAD FILE LOCATION: Q:\DFTG\IB\16B001\RA

SIZE	DATE	SCALE
B	6/15/93	----

DRAWING NUMBER: SU-048008
SHEET NO.: 1 OF 1
REVISION: A

NOTES:

SET–UP PROCEDURES FOR BSD6 & MM–5

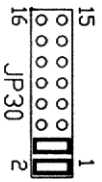
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET–UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 1700 R.P.M. FOR MM–5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 1700 R.P.M., FOR MAX. SPEED OF 1700 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (135° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

FOR BSD6–300 ONLY

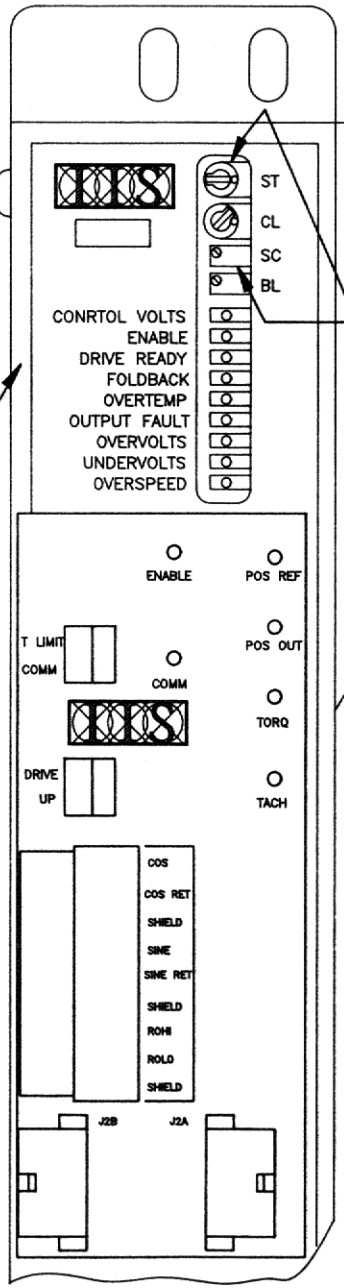
MM–5 HAS NO USER JUMPERS



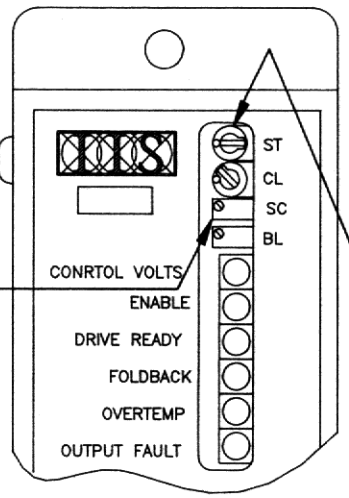
JP30
1 – 2
3 – 4

THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION

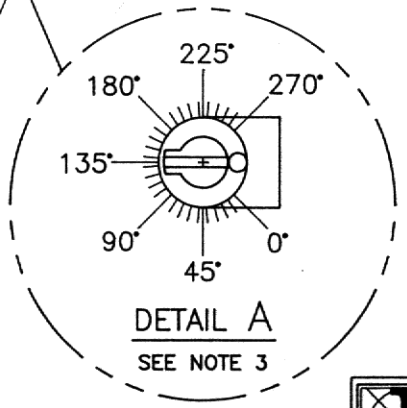
DATE	SYM	REVISION RECORD	DR	CK	CK
1/08/93	0	ECN 93–009	EB		
6/21/93	A	ECN 93–131	EB	WE	



CURRENT CONFIGURATION

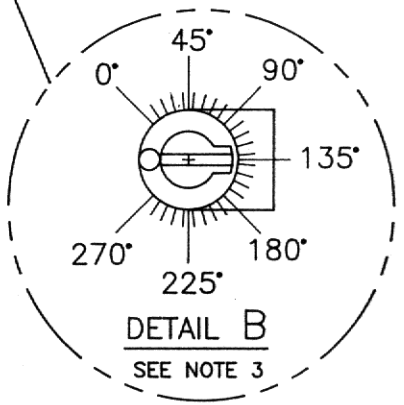


PREVIOUS CONFIGURATION



DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924–9181 FAX: (716) 924–2169

CHECKED BY E.BAIER	DATE 1/8/93
APPROVED BY D.SCOTT	DATE 1/8/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: SET–UP, BSD6–300/10–1026 (MM–5/2875)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD/BAIER		DRAWING NUMBER SU–048010
TOLERANCES	AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001\RA		
X.X± ------ ANGULAR			
X.XX± ------ ± —	B	DATE 6/15/93 SCALE ----	SHEET NO. 1 OF 1 REVISION A
X.XXX± ------			

NOTES:

SET–UP PROCEDURES FOR BSD6 & MM–5

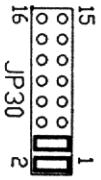
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET–UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 2500 R.P.M. FOR MM–5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 2500 R.P.M., FOR MAX. SPEED OF 2500 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (270° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

FOR BSD6–300 ONLY

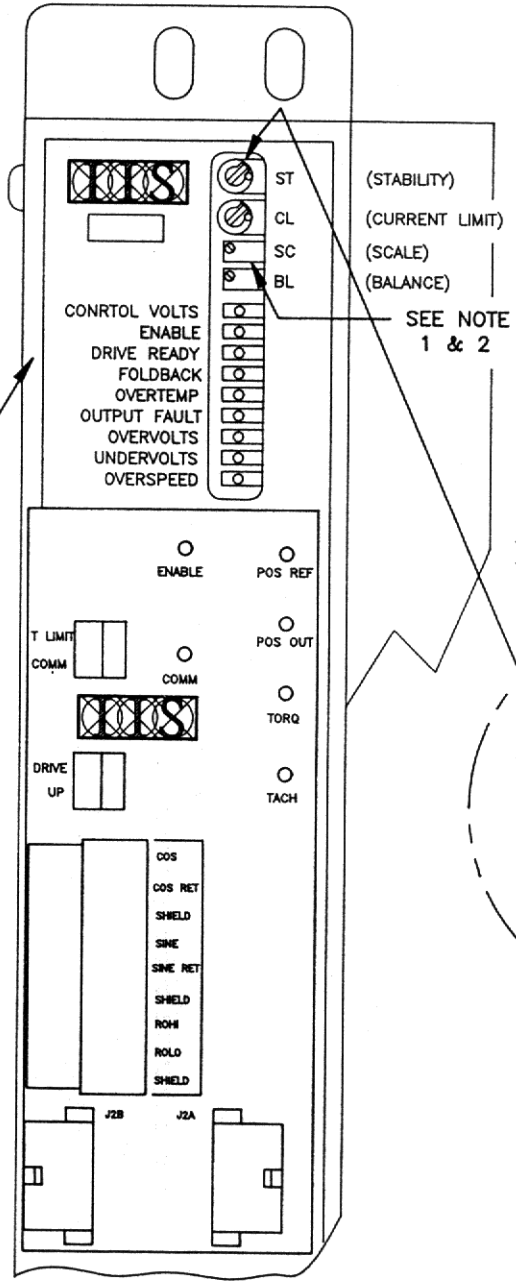
MM–5 HAS NO USER JUMPERS



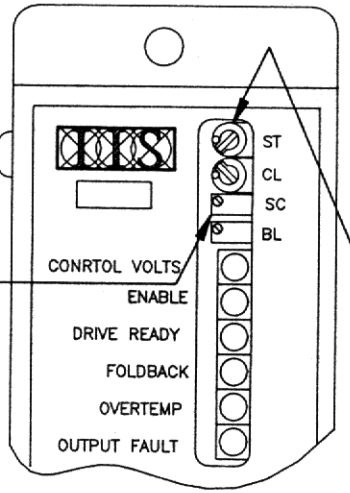
JP30
1 – 2
3 – 4

THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION

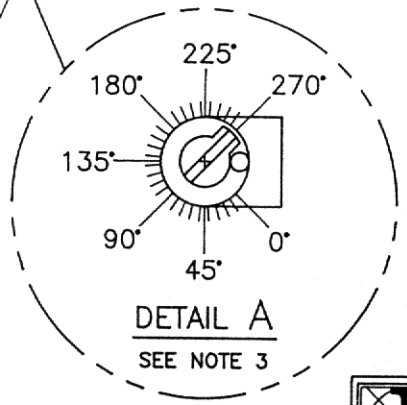
DATE	SYM	REVISION RECORD	DR	CK	CK
6/21/93	A	ECN 93–131	EB		



CURRENT CONFIGURATION

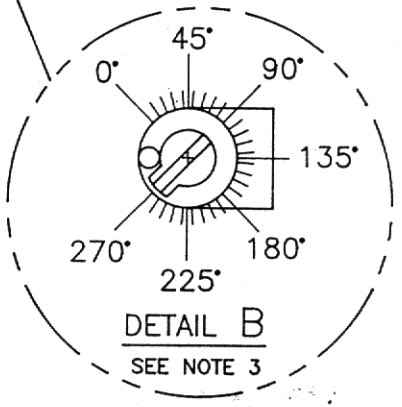


PREVIOUS CONFIGURATION



DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924–9181 FAX: (716) 924–2169

CHECKED BY E.BAIER	DATE 7/20/92
APPROVED BY J.C.	DATE 7/21/92
APPROVED BY W.S.	DATE 7/21/92
MATERIAL ----------	
FINISH ----------	

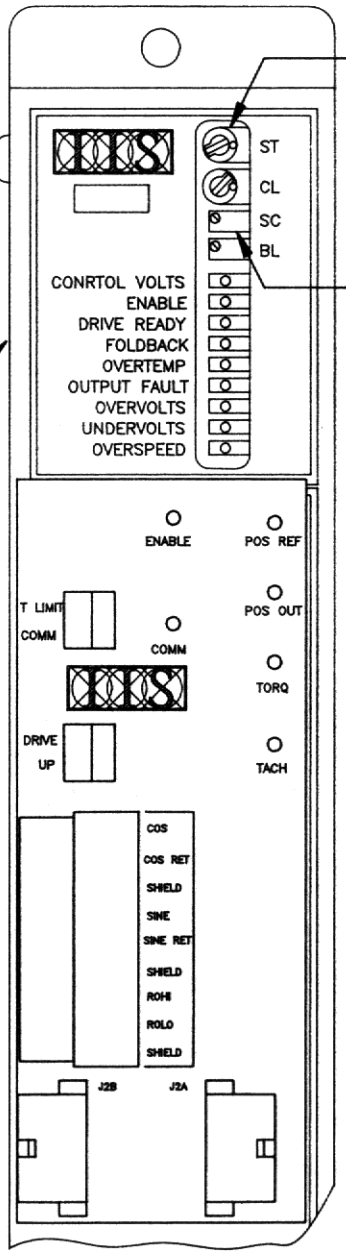
TITLE: SET–UP, BSD6–300/10–1025 (MM–5/3300)

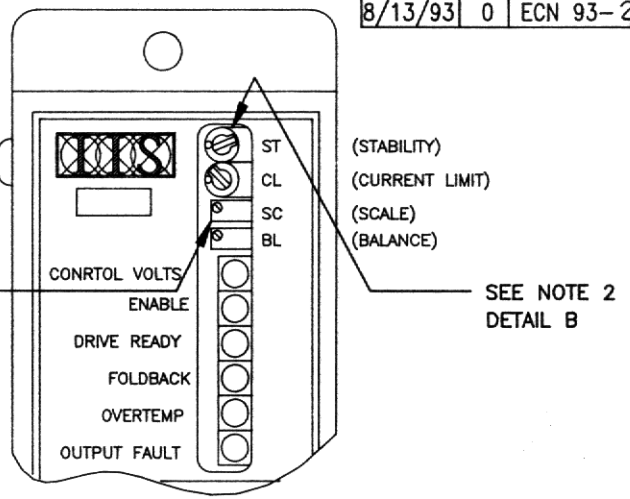
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD/BAIER		DRAWING NUMBER		
TOLERANCES	AutoCAD FILE LOCATION Q:\DFTG\IB\IB16B001\RA		SU–048012		
X.X± ------ ANGULAR ± —	B	DATE 6/15/93	SCALE ---	SHEET NO. 1 OF 1	REVISION A
X.XX± ------					
X.XXX± ---					

NOTES:

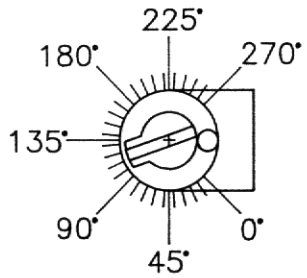
1) ADJUST 'SC' POT FOR 8 VOLTS ±0.025 VOLTS @ 4000 R.P.M. FOR MAX. SPEED OF 4000 R.P.M.
2) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A" (120° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
3) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
4) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

DATE	SYM	REVISION RECORD	DR	CK	CK
8/13/93	0	ECN 93-261	EB	WEB	

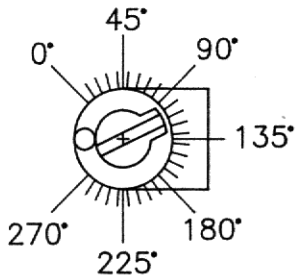




ALTERNATE CONFIGURATION

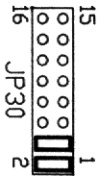


DETAIL A



DETAIL B

SIDE VIEW A
JUMPER LOCATIONS
FOR BSD6-300 ONLY
MM-5 HAS NO USER JUMPERS



JP30
1 – 2
3 – 4

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY	DATE
APPROVED BY WEB	DATE 11/22/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: SET-UP, BSD6-300/20-1029 (MM-5/5730)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD/BAIER		DRAWING NUMBER SU-048014
TOLERANCES: X.X± ------ ANGULAR; X.XX± ------ ± ---; X.XXX± ----	AutoCAD FILE LOCATION Q:\DRAFTING\IB16B001		
	B	DATE 8/13/93	SCALE ----
		SHEET NO. 1 OF 1	REVISION 0

NOTES:

SET-UP PROCEDURES FOR BSD6 & MM-5

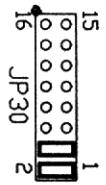
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET-UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 2150 R.P.M. FOR MM-5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 2150 R.P.M., FOR MAX. SPEED OF 2150 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (135° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

FOR BSD6-300 ONLY

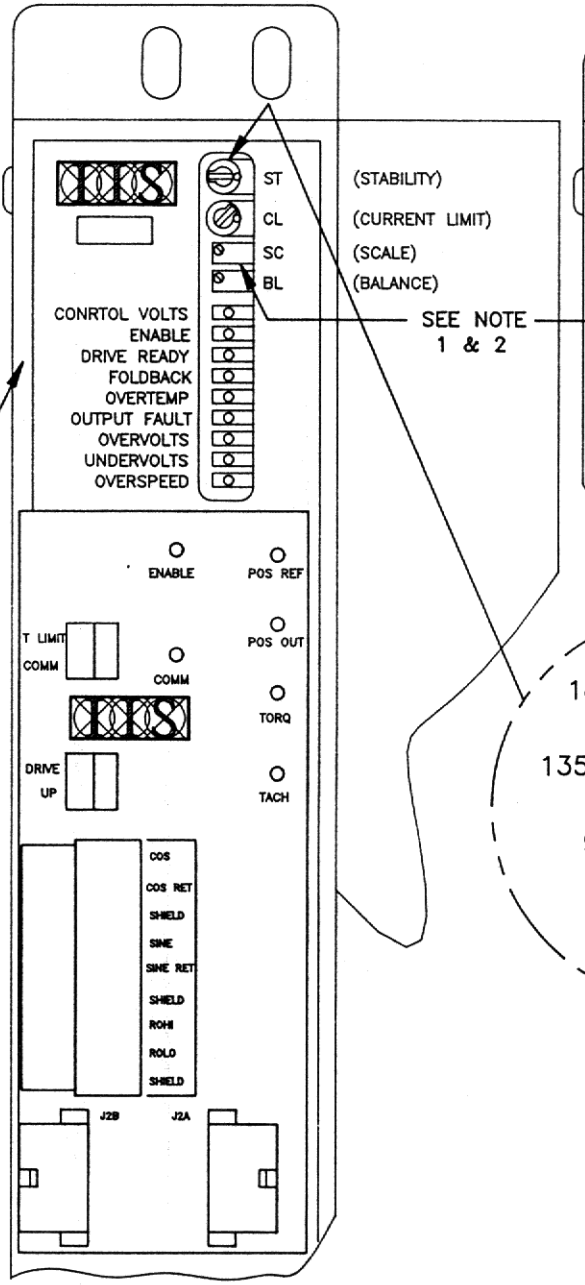
MM-5 HAS NO USER JUMPERS



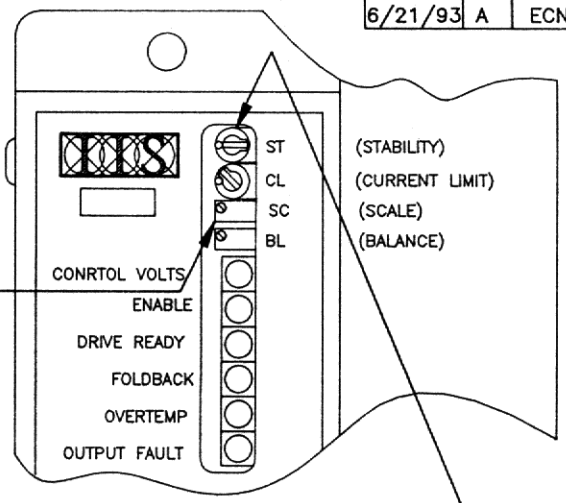
JP30
1 – 2
3 – 4

THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION

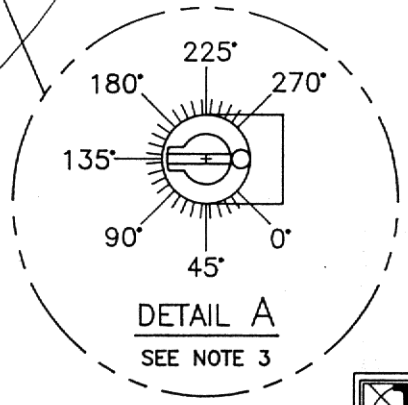
DATE	SYM	REVISION RECORD	DR	CK	CK
6/21/93	A	ECN 93-131	EB	WEJ	



CURRENT CONFIGURATION

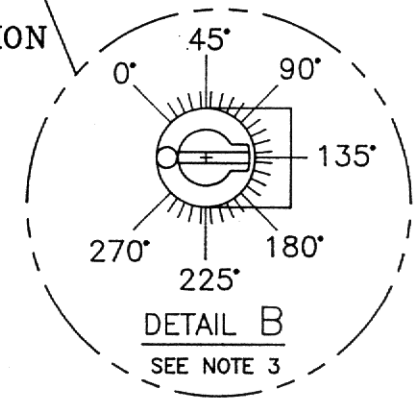


PREVIOUS CONFIGURATION



DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY	DATE
APPROVED BY WEJ	DATE 7/21/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: SET-UP, BSD6-300/20-1030 (MM-5/5950)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD/BAIER		DRAWING NUMBER SU-048015
TOLERANCES	AutoCAD FILE LOCATION Q:\DFTG\IB\16B001\RA\		
X.X± ------ ANGULAR	B	DATE 6/15/93	SCALE ---	SHEET NO. 1 OF 1	REVISION A
X.XX± ------ ± —			
X.XXX± ---			

DATE	SYM	REVISION RECORD	DR	CK	CK
6/21/93	A	ECN 93-131	EB	WEJ	

NOTES:

SET-UP PROCEDURES FOR BSD6 & MM-5

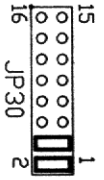
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET-UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 1500 R.P.M. FOR MM-5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 1500 R.P.M., FOR MAX. SPEED OF 1500 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (190° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

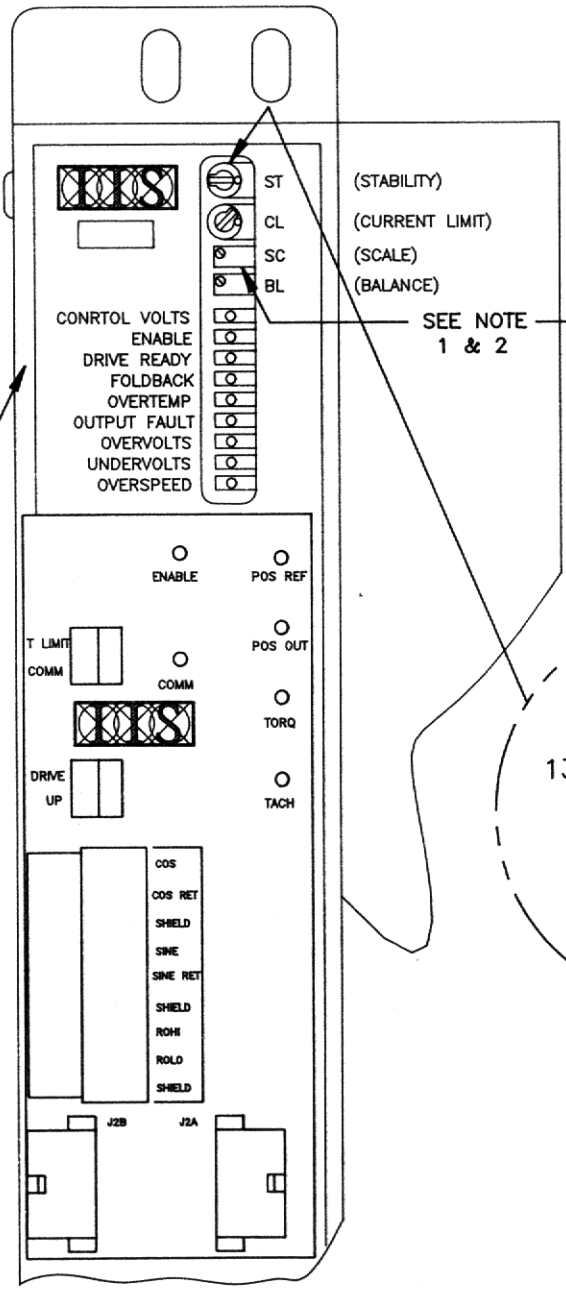
FOR BSD6-300 ONLY

MM-5 HAS NO USER JUMPERS

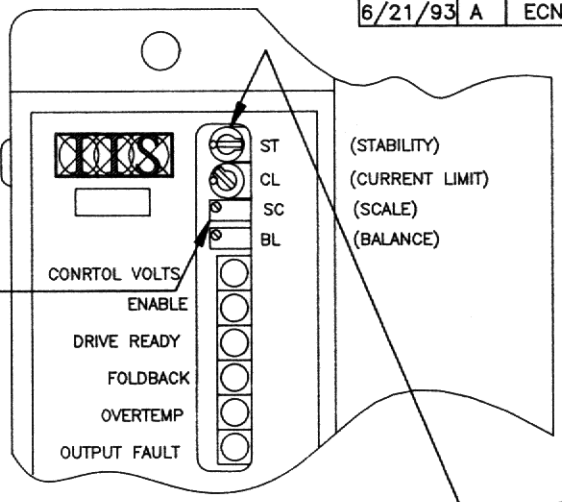


JP30
1 - 2
3 - 4

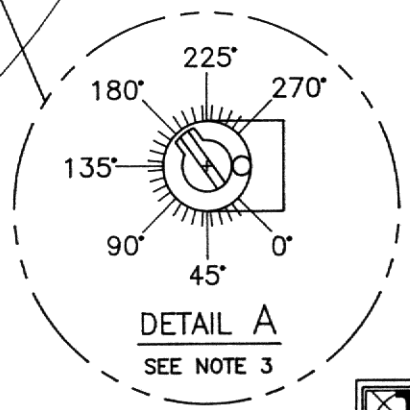
THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION



CURRENT CONFIGURATION

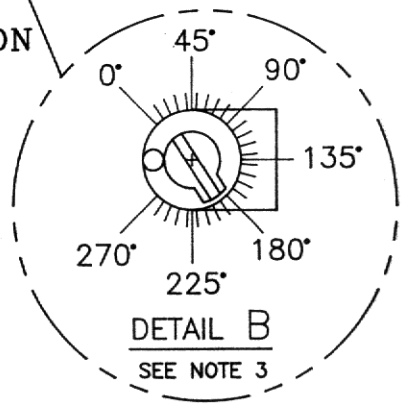


PREVIOUS CONFIGURATION



DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY	DATE
APPROVED BY WEJ	DATE 7/21/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: SET-UP, BSD6-300/20-1032 (MM-5/6100)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ------- ANGULAR ± ---
X.XX± -------
X.XXX± ----

DRAWN BY CAD/BAIER

AutoCAD FILE LOCATION Q:\DFTG\IB\16B001\RA\

DRAWING NUMBER SU-048016

B | DATE 6/15/93 | SCALE ---- | SHEET NO. 1 OF 1 | REVISION A

NOTES:

SET–UP PROCEDURES FOR BSD6 & MM–5

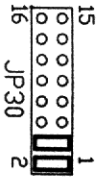
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET–UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 2500 R.P.M. FOR MM–5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 2500 R.P.M., FOR MAX. SPEED OF 2500 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (0° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

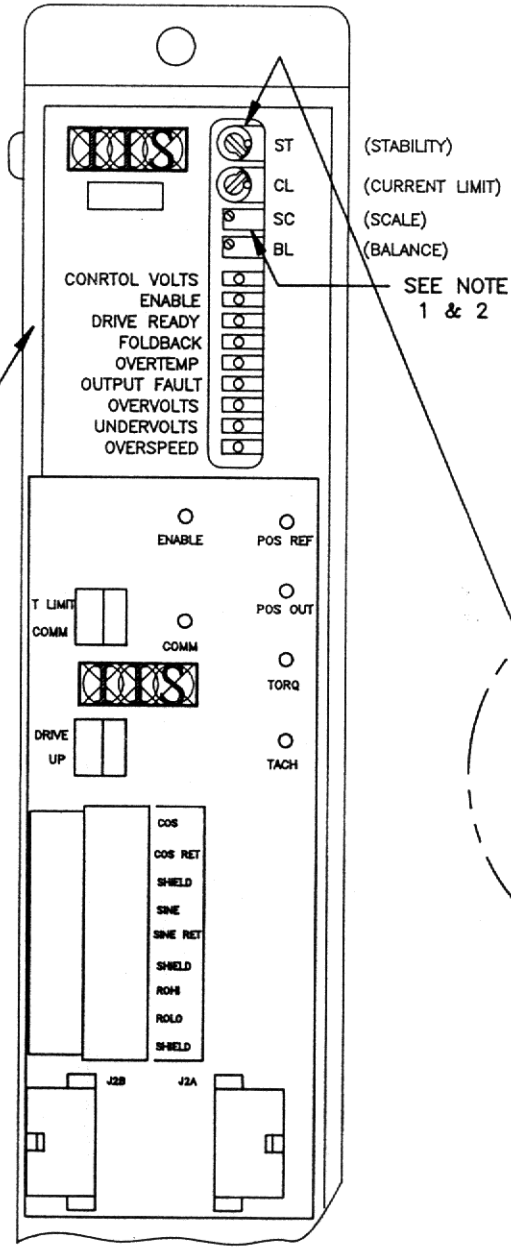
FOR BSD6–300 ONLY

MM–5 HAS NO USER JUMPERS



JP30
1 – 2
3 – 4

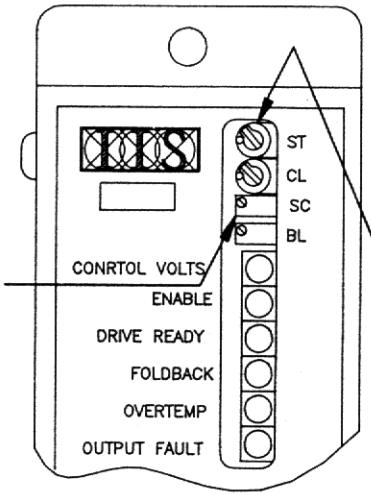
THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION



(STABILITY)
(CURRENT LIMIT)
(SCALE)
(BALANCE)

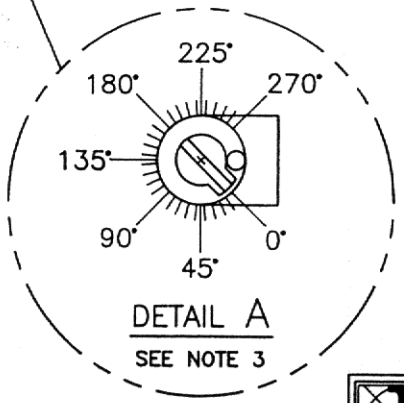
SEE NOTE 1 & 2

CURRENT CONFIGURATION



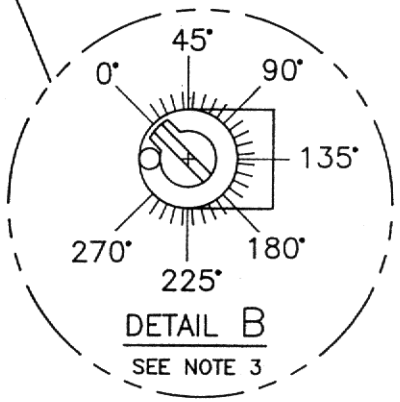
(STABILITY)
(CURRENT LIMIT)
(SCALE)
(BALANCE)

PREVIOUS CONFIGURATION



DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

DATE	SYM	REVISION RECORD	DR	CK	CK
8/30/93	0	ECN 93–277	MC		

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924–9181 FAX: (716) 924–2169

CHECKED BY	DATE 9/7/93
APPROVED BY	DATE
APPROVED BY	DATE
MATERIAL	----------
FINISH	----------

TITLE: AMPLIFIER SET–UP, BDS4–203J/1045

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ------
X.XX± -----
X.XXX± ----
ANGULAR ± --

DRAWN BY CAD/BAIER
AutoCAD FILE LOCATION Q:\DRAFTING\IB16B001

DRAWING NUMBER SU–048022

B | DATE 8/30/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION 0

NOTES:

SET–UP PROCEDURES FOR BSD6 & MM–5

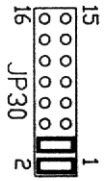
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET–UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 2800 R.P.M. FOR MM–5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 2800 R.P.M., FOR MAX. SPEED OF 2800 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (180° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

FOR BSD6–300 ONLY

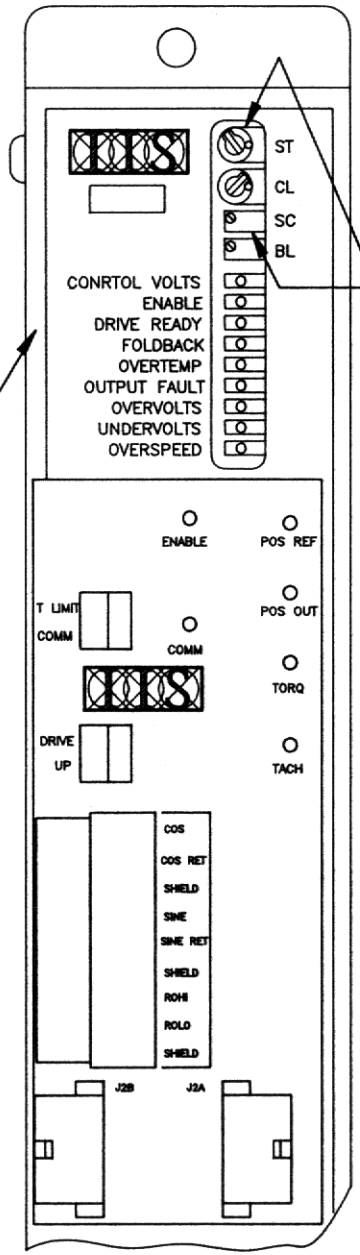
MM–5 HAS NO USER JUMPERS



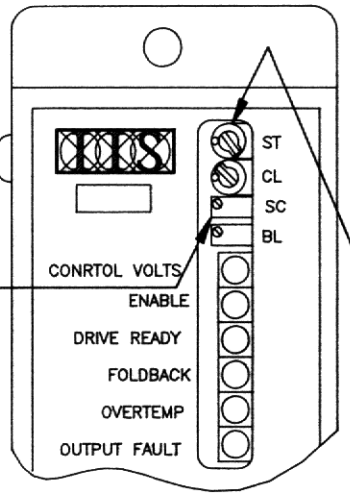
JP30
1 – 2
3 – 4

THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION

DATE	SYM	REVISION RECORD	DR	CK	CK
04/13/94	0	PER ECN 94–099	EB		



CURRENT CONFIGURATION



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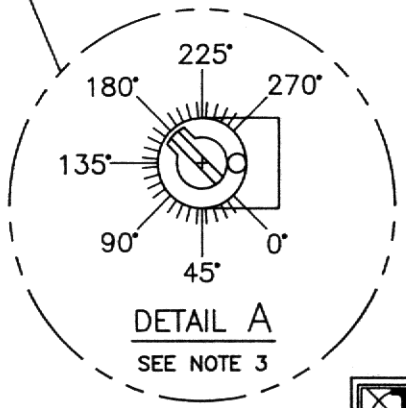
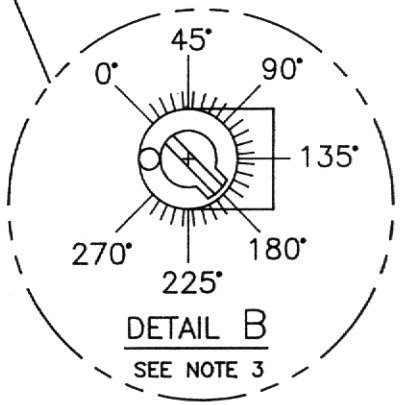


DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924–9181 FAX: (716) 924–2169

CHECKED BY	DATE 4-14-94
APPROVED BY	DATE 4-14-94
APPROVED BY	DATE
MATERIAL	----------
FINISH	----------

TITLE: SET–UP, BSD6–300/06–1048 (MM–5/1048)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD/BAIER		DRAWING NUMBER SU–048026
TOLERANCES	AutoCAD FILE LOCATION Q:\DRAFTING\IB16B001		
X.X± ------- ANGULAR	B	DATE 4/13/94	SCALE ----
X.XX± ------ ± ---		SHEET NO. 1 OF 1	REVISION 0
X.XXX± ----			

NOTES:

SET–UP PROCEDURES FOR BSD6 & MM–5

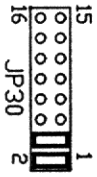
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET–UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 2500 R.P.M. FOR MM–5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 2500 R.P.M., FOR MAX. SPEED OF 2500 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (90° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

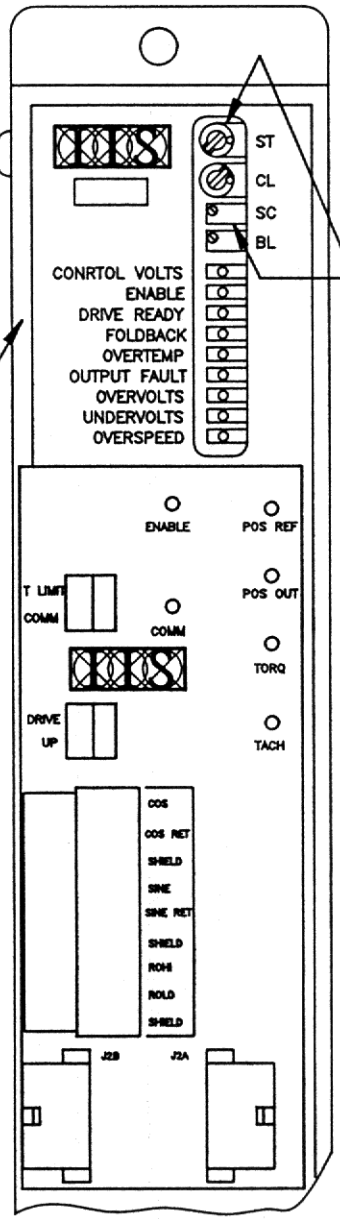
FOR BSD6–300 ONLY

MM–5 HAS NO USER JUMPERS



JP30
1 – 2
3 – 4

THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION



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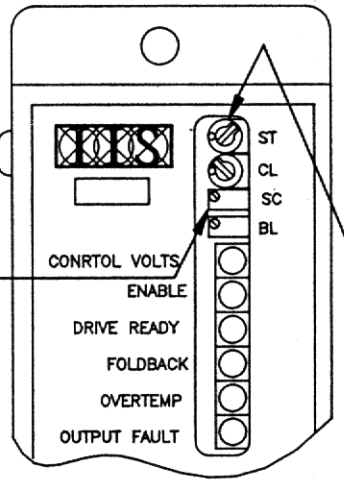

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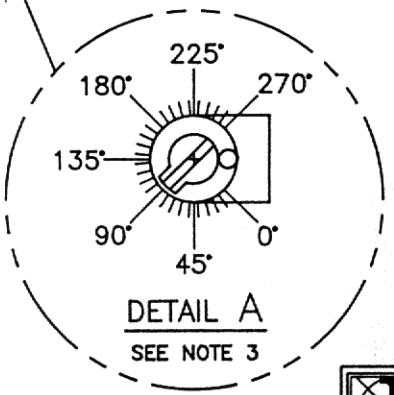
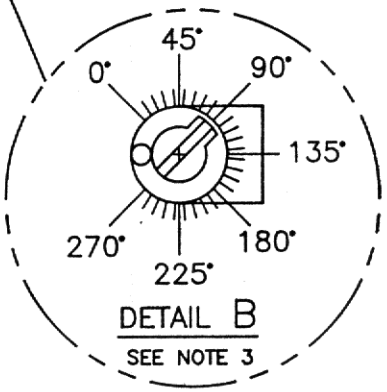


DETAIL A
SEE NOTE 3



DETAIL B
SEE NOTE 3

DATE	SYM	REVISION RECORD	DR	CK	CK
12/15/94	0	PER ECN 94–314	EB		

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(716) 924–9181 FAX: (716) 924–2169

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APPROVED BY Thos D. Baier	DATE 12-15-94
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: SET–UP, BSD6–300/10–1051 (MM–5/3500M)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD/BAIER		DRAWING NUMBER SU–048031
TOLERANCES: X.X± ——— ANGULAR ± —— ; X.XX± ——— ; X.XXX± ———	AutoCAD FILE LOCATION Q:\DRAFTING\IB16B001		
	B	DATE 12/15/94	SCALE ———	SHEET NO. 1 OF 1	REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
7/11/94	0	ECN 94-111	EB		

NOTES:

SET-UP PROCEDURES FOR BSD6 & MM-5

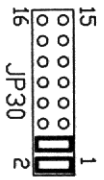
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET-UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 1600 R.P.M. FOR MM-5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 1600 R.P.M., FOR MAX. SPEED OF 1600 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (180° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

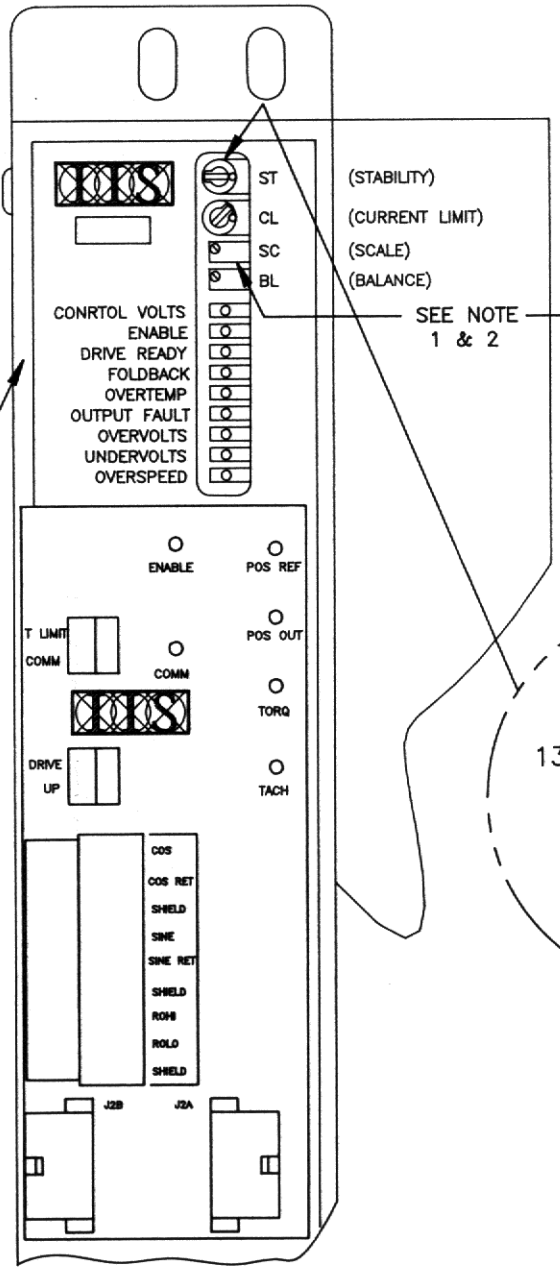
FOR BSD6-300 ONLY

MM-5 HAS NO USER JUMPERS

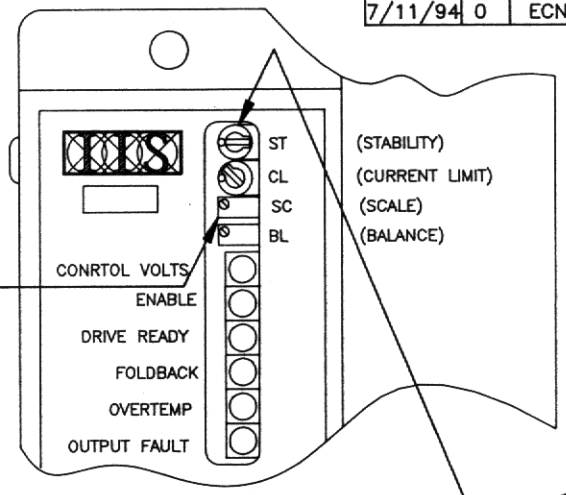


JP30
1 - 2
3 - 4

THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION



CURRENT CONFIGURATION



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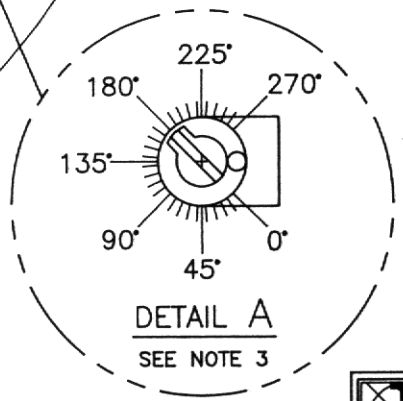
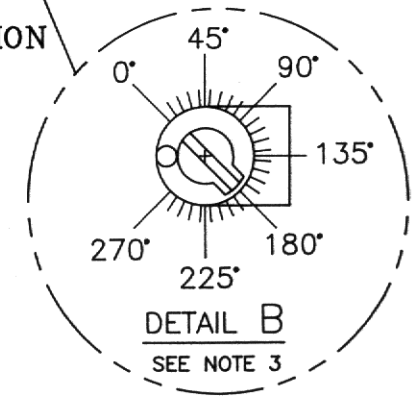


DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

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CHECKED BY	DATE
APPROVED BY	DATE
APPROVED BY RB	DATE 7/11/94
MATERIAL	----------
FINISH	----------

TITLE: SET-UP, BSD6-300/20-1058 (MM-5/4700M)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ------ X.XX± ------ X.XXX± ---- ANGULAR ± ---

DRAWN BY CAD/BAIER

AutoCAD FILE LOCATION Q:\DFTG\IB\16B001\RA\

DRAWING NUMBER SU-048033

B | DATE 7/11/94 | SCALE ---- | SHEET NO. 1 OF 1 | REVISION 0

DATE	SYM	REVISION RECORD	DR	CK	CK
5/6/94	0	ECN 94-110	EB		

NOTES:

SET-UP PROCEDURES FOR BSD6 & MM-5

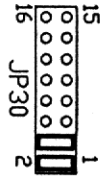
1) GROSS ADJUSTMENT OF THE "SC" POT, 15 TURNS CLOCKWISE. THIS ADJUSTMENT DOES NOT REPLACE SET-UP STEP 2.
2) FOR BSD6 ADJUST 'SC' POT FOR 8 VOLTS ±0.010 VOLTS @ 1900 R.P.M. FOR MM-5 ADJUST 'SC' POT FOR 4 VOLTS ±0.010 VOLTS @ 1900 R.P.M., FOR MAX. SPEED OF 1900 R.P.M., WHEN MEASURED BETWEEN POS. REF AND POS. OUT TEST POINTS.
3) ADJUST THE 'ST' POT AS INDICATED IN DETAIL "A OR B" (60° APPROX) SLIGHT ADJUSTMENT OF THE 'ST' POT MAY BE NEEDED FOR OPTIMUM PERFORMANCE.
4) ADJUST THE 'CL' POT FULL C.W. (FACTORY SETTING)
5) DO NOT ADJUST THE 'BL' POT FROM THE FACTORY SETTING

SIDE VIEW A

INTERNAL JUMPER LOCATIONS

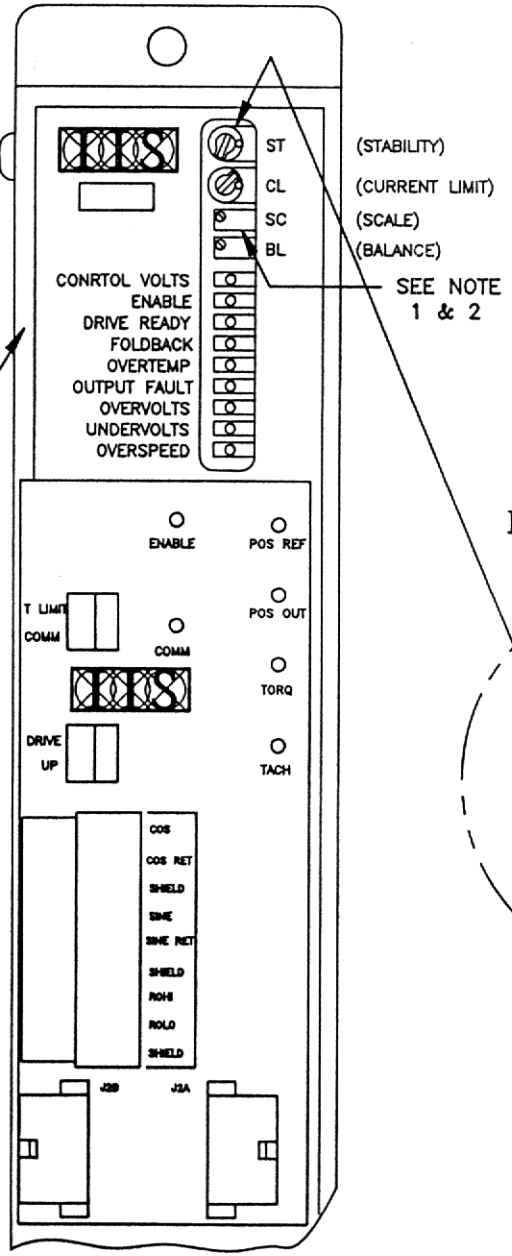
FOR BSD6-300 ONLY

MM-5 HAS NO USER JUMPERS

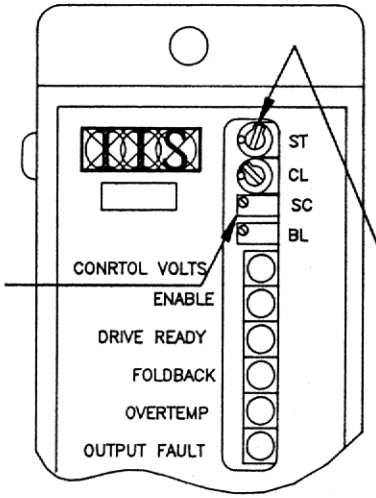


JP30
1 - 2
3 - 4

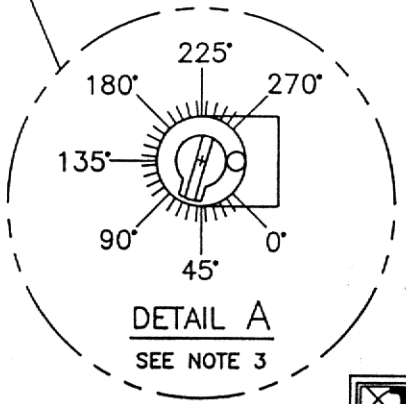
THIS SETTING YIELDS 1024 LINE COUNT PER REVOLUTION



CURRENT CONFIGURATION

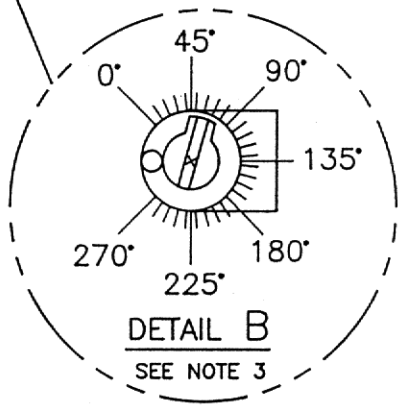


PREVIOUS CONFIGURATION



DETAIL A

SEE NOTE 3



DETAIL B

SEE NOTE 3

INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY	DATE
APPROVED BY	DATE 5-6-94
APPROVED BY	DATE 5/11/94
MATERIAL	----------
FINISH	----------

TITLE: AMPLIFIER SET-UP, BSD6-300/03-1046 (MM5\815)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD/BAIER		DRAWING NUMBER SU-048037
TOLERANCES	AutoCAD FILE LOCATION Q:\DRAFTING\IB16B001		
X.X± ------ ANGULAR	B	DATE 5/6/94	SCALE ----
X.XX± ------ ± —		SHEET NO. 1 OF 1	REVISION 0
X.XXX± ----			

APPENDIX G
PWRPAK™ SPECIFICATIONS

Series 6 Power Supply Packages Summary

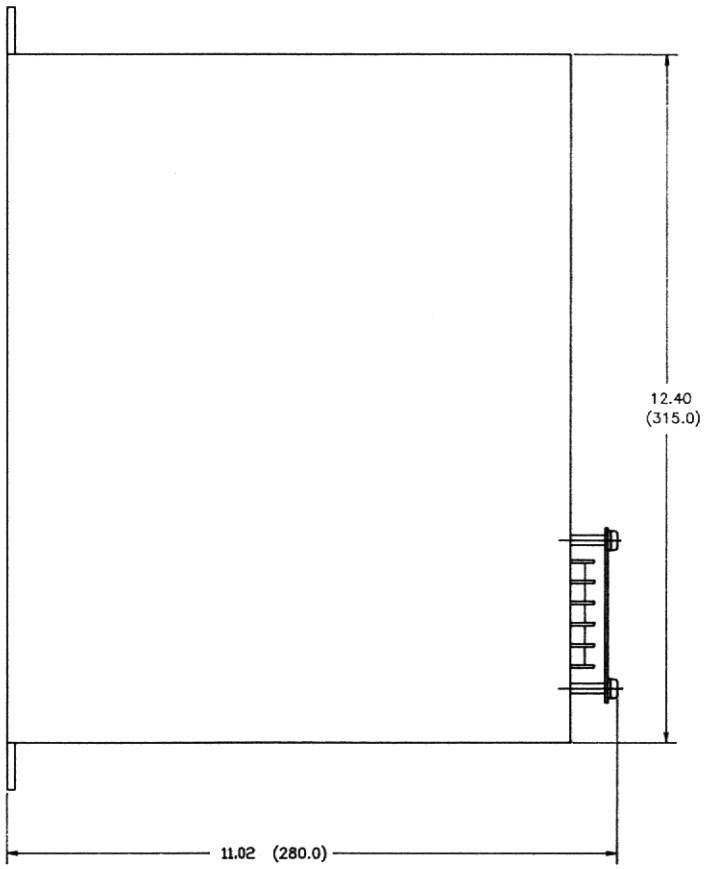
INDUSTRIAL INDEXING SYSTEMS, INC.
SERIES 6 POWER SUPPLY PACKAGES SUMMARY

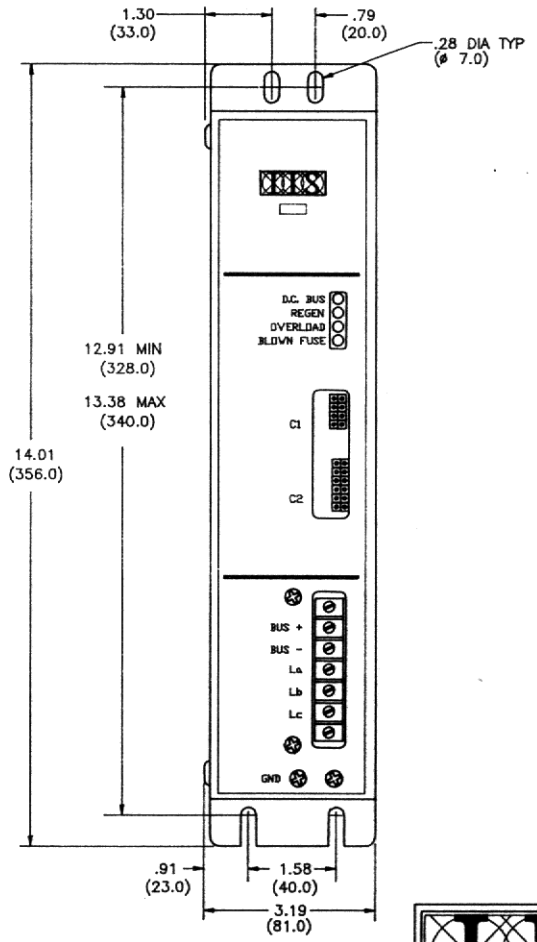
POWER SUPPLY PART NUMBER	OUTPUT POWER (WATTS)	NO. OF AXES	INPUT PHASES	POWER SUPPLY SIZE (INCHES) HEIGHT	WIDTH	DEPTH
IPS6-300/12	3600	4	3	14.01	3.15	11.02
IPS6-300/20	6000	4	3	14.01	3.15	11.02

APPENDIX H
POWER SUPPLY DIMENSIONS AND CONNECTIONS

DRAWING NUMBER	DESCRIPTION
IPS6-300/12	Dimensions, 12 Amp Power Supply
IPS6-300/20	Dimensions, 20 Amp Power Supply

DATE	SYM	REVISION RECORD	DR	CK	CK
6/18/93	A	ECN 93-131	EB	25	





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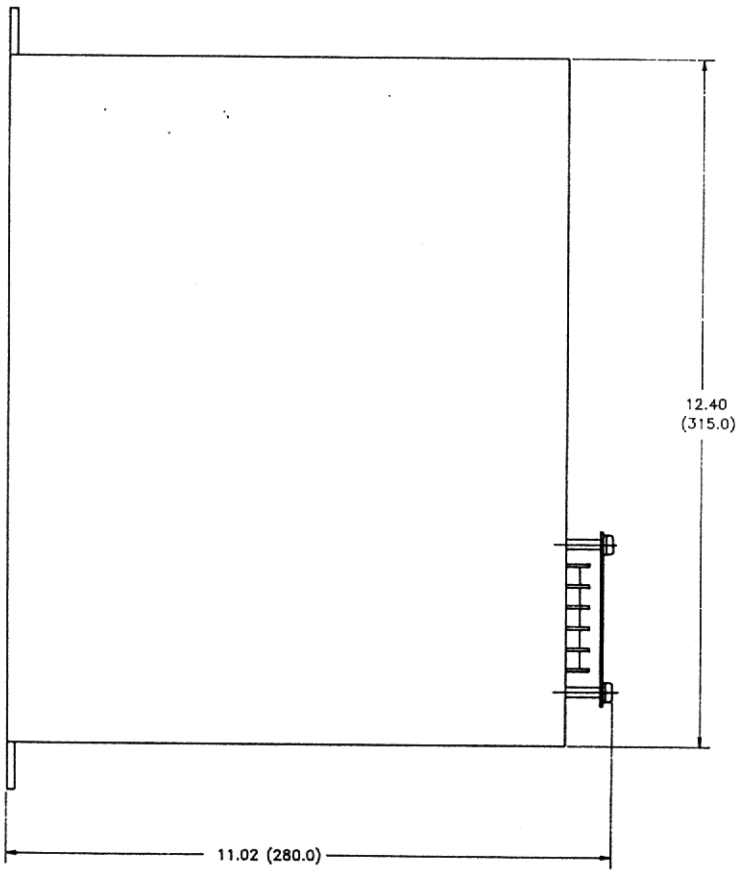
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

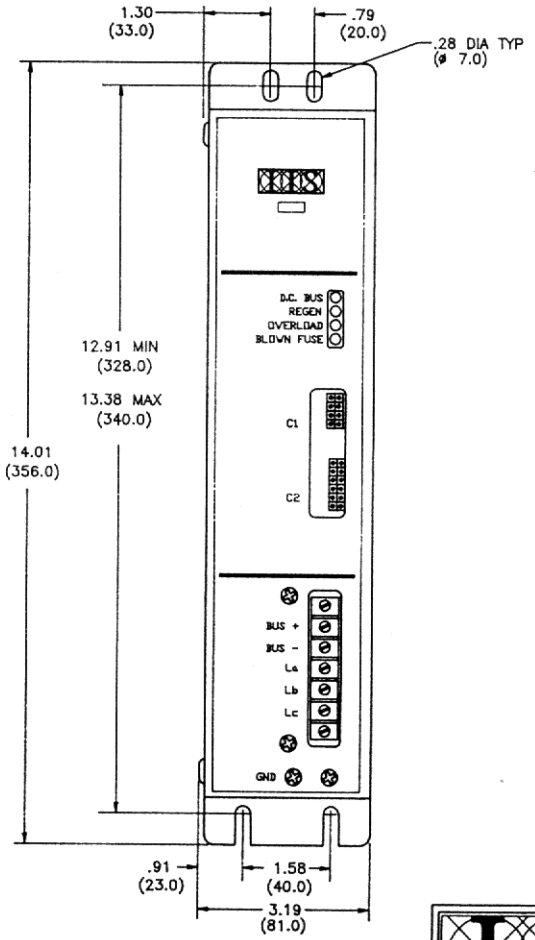
CHECKED BY: EBlass	DATE: 12/93
APPROVED BY:	DATE:
APPROVED BY:	DATE:
MATERIAL: ----------	
FINISH: ----------	

TITLE: DIMENSIONS, 12 AMP POWER SUPPLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD		DRAWING NUMBER: IPS6-300/12
TOLERANCES	AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA		
X.X± -----	ANGULAR ± 1°	B	DATE: 6/18/93
X.XX± 0.01		SCALE: -----	SHEET NO.: 1 OF 1
X.XXX± 0.005			REVISION: A

DATE	SYM	REVISION RECORD	DR	CK	CK
6/18/93	A	ECN 93-131	EB	DE	





INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY: E. Bain	DATE: 12/93
APPROVED BY	DATE
APPROVED BY	DATE
MATERIAL: ----------	
FINISH: ----------	

TITLE: DIMENSIONS, 20 AMP POWER SUPPLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD		DRAWING NUMBER: IPS6-300/20
TOLERANCES	AutoCAD FILE LOCATION: Q:\DFTG\IB\IB16B001\RA		
X.X± --- X.XX± 0.01 X.XXX± 0.005	ANGULAR ± 1°	B / DATE: 6/18/93 / SCALE: ----	SHEET NO.: 1 OF 1 / REVISION: A

APPENDIX I
CONNECTING CABLES

DRAWING NUMBER	DESCRIPTION
C-200YYY	Cable, Resolver
C-220YYY	Cable, Resolver
C-303YYY	Cable, Encoder
C-305YYY	Cable, Encoder
C-437YYY	Cable, Command
C-654YYY	Cable, Motor
C-672YYY	Cable, Motor
C-808YYY	Cable, Power IPS6 to BSD6
C-809005	Cable, Power IPS6 (5 Feet)
C-810005	Cable, Power BSD6 Fan (5 Feet)

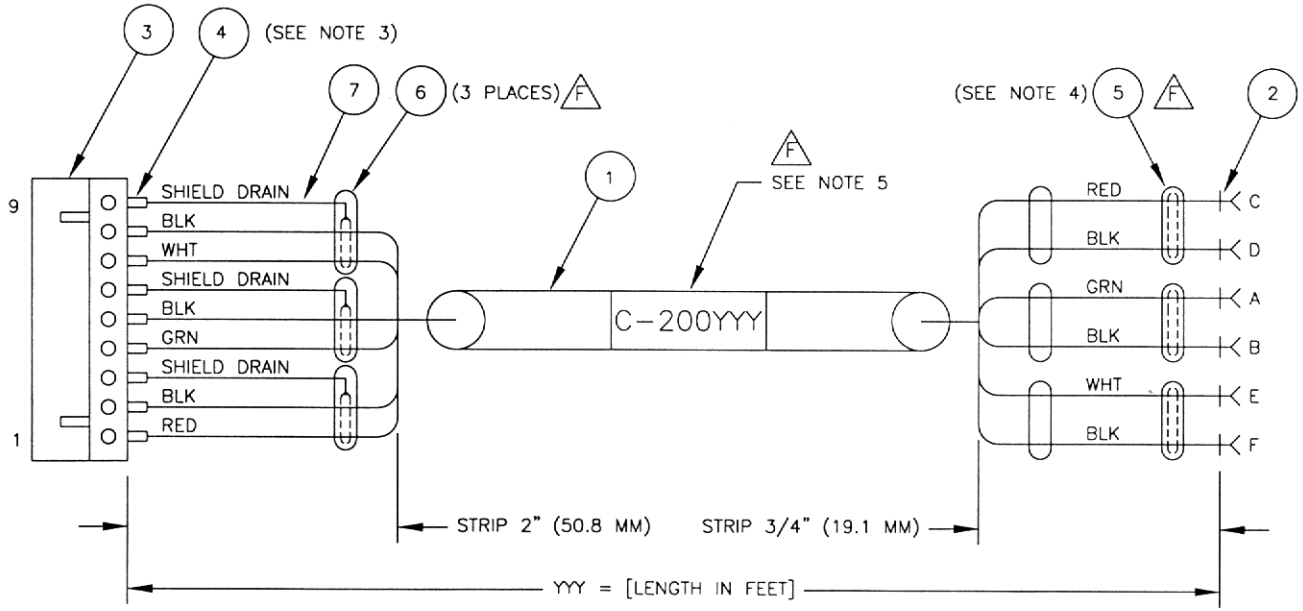
C-200YYY
BILL OF MATERIALS

COMPONENT	REFERENCE	DESCRIPTION
8777	1	CABLE, 3 PAIR SHLD, 22 AWG
MS3116F-10-6S	2	CONNECTOR, 6 PIN FEMALE
25.320.3953.1	3	CONNECTOR, PLUG, 9 PIN
6907.0	4	FERRULE, #20, ORN
FIT221-1/16	5	HEATSHRINK TUBING, 1/16 IN
FIT221-1/8	6	HEATSHRINK TUBING, 1/8 IN
TFE-20-TW	7	TUBING, CLEAR TEFLON, #20
PLM1M	8; MARK C-200 LENGTH IN FEET	CABLE TIE LABEL

NOTES: (F)

1. HEAT SHRINK TUBING [ITEM 6] OVER FOIL END (6 PLACES).
2. PIN NUMBERS SHOWN FOR REFERENCE ONLY.
3. CRIMP FURRELS USING WEIDMULLER CRIMP TOOL PZ4 OR EQUIVALENT.
4. HEAT SHRINK TUBING [ITEM 5] OVER SOLDER JOINT (6 PLACES).
5. MARK PER QP-08-0001.

DATE	SYM	REVISION RECORD	DR	CK	CK
06MAR89	D	PER ECN 89-073	EB	CE	
21JUN93	E	PER ECN 93-131	EB	CE	
20JUN00	F	PER ECN 00-188	CWB	86	



INDUSTRIAL INDEXING SYSTEMS, Inc.
626 FISHERS RUN
VICTOR, NEW YORK 14564
(716) 924-9181 FAX: (716) 924-2169

CHECKED BY: E. BAIER	DATE: 3/6/89
APPROVED BY: C.M.E.	DATE: 3/7/89
APPROVED BY:	DATE:
MATERIAL: ----------	
FINISH: ----------	

TITLE: CABLE, RESOLVER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: BAIER		DRAWING NUMBER: C-200YYY
TOLERANCES: X.X± --- ; X.XX± --- ; X.XXX± --- ; ANGULAR ± ---	AutoCAD FILE LOCATION: G:\CAD\CABLES\C-2XX		
B	DATE: 21JUN93	SCALE: ---	SHEET NO.: 1 OF 1 / REVISION: F

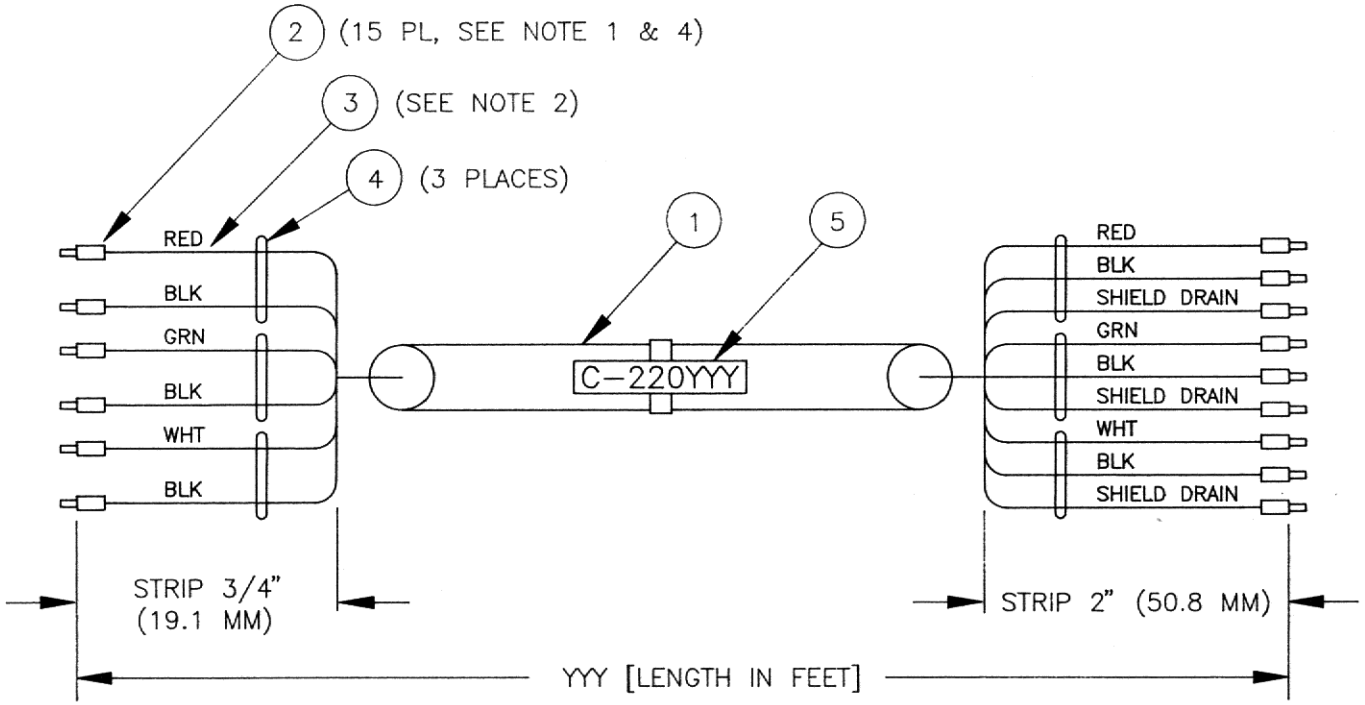
C-220YYY
BILL OF MATERIALS

COMPONENT	REFERENCE	DESCRIPTION
8777	1	CABLE, 3 PAIR SHLD, 22 AWG
6907.0	2	FERRULE, #20, ORN
FIT221-1/8	3	HEATSHRINK TUBING, 1/8 IN
TFE-20-TW	4	TUBING, CLEAR TEFLON, #20
PLM1M	5; MARK C-220 LENGTH IN FEET	CABLE TIE LABEL

DATE	SYM	REVISION RECORD	DR	CK	CK
6/29/93	A	ECN 93-131	DAD	WLS	

NOTES:

1. ALTERNATE CONSTRUCTION: STRIP AND TIN 1/4" (6.4 MM)
2. HEAT SHRINK TUBING [ITEM 3] OVER FOIL END (6 PLACES)
3. HEAT SHRINK TUBING [ITEM 3] OVER SPIDER JOINT (6 PLACES)
4. CRIMP FURRELS USING WEIDMULLER CRIMP TOOL PZ4 OF EQUIVALENT



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(716) 924-9181 FAX: (716) 924-2169

CHECKED BY	DATE
APPROVED BY ELS	DATE 01/86
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: CABLE, RESOLVER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ---- ; X.XX± .01 ; X.XXX± .005 ; ANGULAR ± ---

DRAWN BY DAD

AutoCAD FILE LOCATION

DRAWING NUMBER C-220YYY

B | DATE 01/30/86 | SCALE --- | SHEET NO. 1 OF 1 | REVISION A

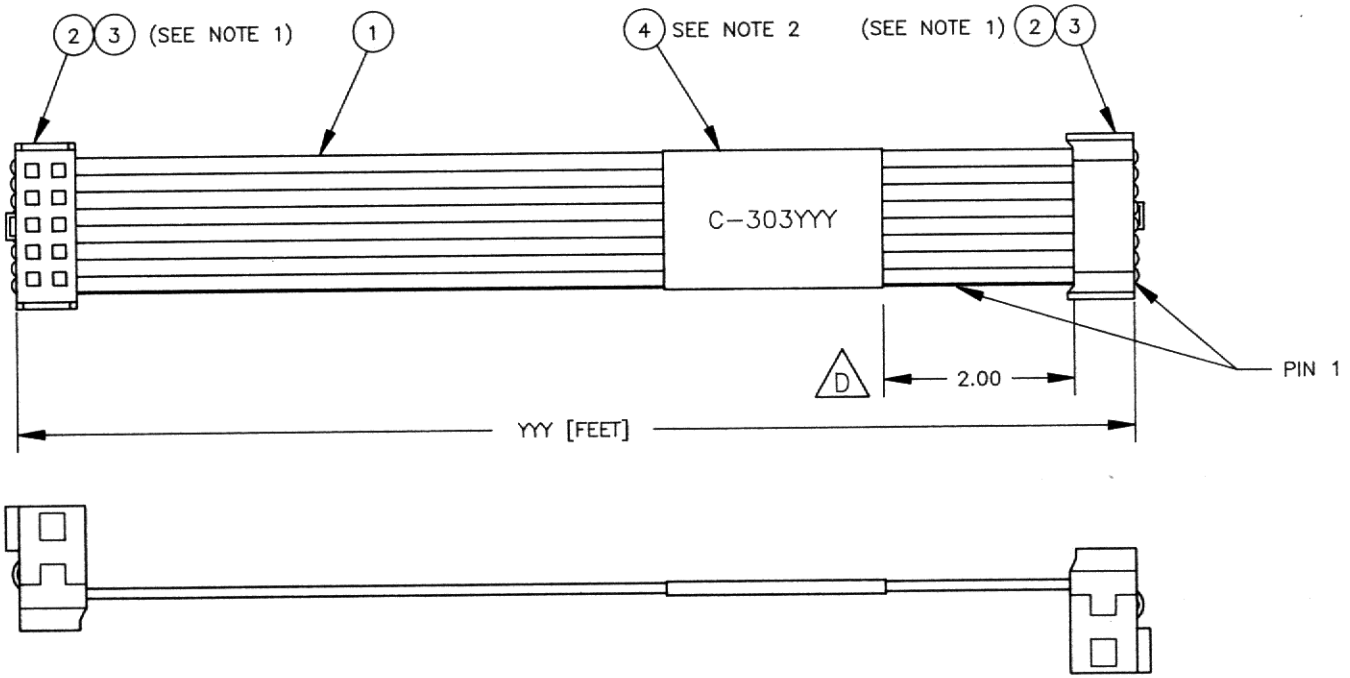
C-303YYY
BILL OF MATERIALS

COMPONENT	REFERENCE	DESCRIPTION
171-10CSA	1	CABLE, RIBBON, 10 COND.
609-1041	2	CONNECTOR, RIBBON, 10 PIN

NOTES:

1. INSTALL ITEM 2 USING ROBINSON NUGENT CABLING TOOL CT-1 OR EQUIVALENT
2. MARK ITEM 4 WITH CABLE NUMBER AND LOCATE APPROXIMATELY WHERE SHOWN. △D

DATE	SYM	REVISION RECORD	DR	CK	CK
5/89	A	ECN 89-0107	EB	CE	
8/89	B	ECN 89-0022	DD	CE	
6/93	C	ECN 93-131	EB	WES	
3/95	D	ECN 95-060	EB	WES	



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(716) 924-9181 FAX: (716) 924-2169

CHECKED BY WES	DATE 5/12/95
APPROVED BY W.E.S.	DATE 7/21/94
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE: CABLE, ENCODER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ---- ; X.XX± 0.01 ; X.XXX± 0.005 ; ANGULAR ± ---

DRAWN BY: BAIER

AutoCAD FILE LOCATION: G:\CABLES\

DRAWING NUMBER: C-303YYY

B | DATE 6/21/93 | SCALE ---- | SHEET NO. 1 OF 1 | REVISION D

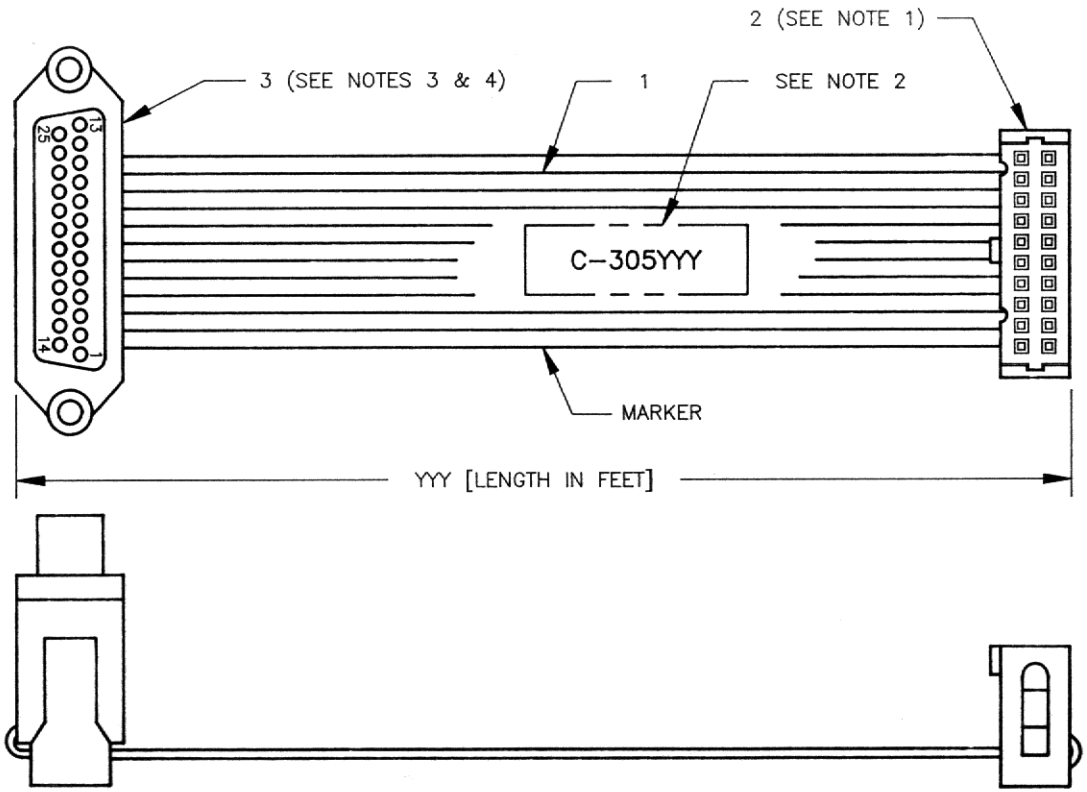
C-305YYY
BILL OF MATERIALS

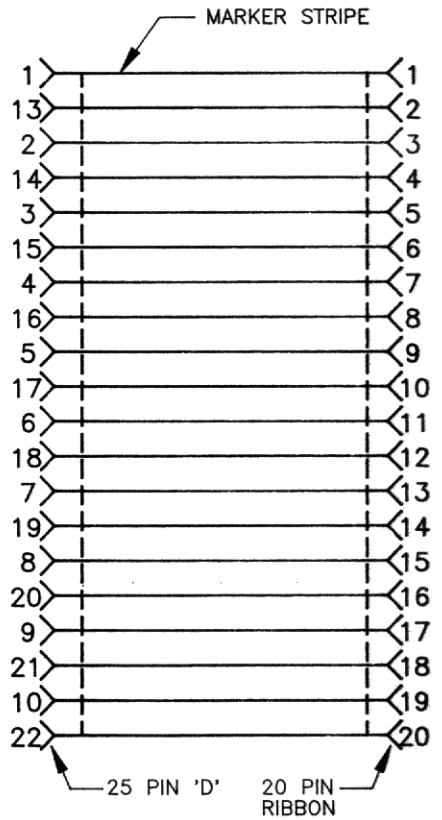
COMPONENT	REFERENCE	DESCRIPTION
171-20CSA	1	CABLE, RIBBON, 20 COND.
IDS-C20PK-SR-TG	2	CONNECTOR, RIBBON,20 PIN FE
609-25S	3	CONNECTOR, RIBBON,20 PIN D FE

NOTES:

1. INSTALL ITEM 2 USING ROBINSON NUGENT CABLING TOOL CT-1 OR EQUIVALENT
2. MARK CABLE NUMBER IN AREA SHOWN USING PERMANENT INK MARKER OR EQUIVALENT
3. INSTALL 20-CONDUCTOR RIBBON CABLE IN 25-CONDUCTOR CONNECTOR SUCH THAT PIN 1 IS COMMON AS SHOWN. NO CONNECTION AT PINS 11, 12, 13, 24 & 25
4. INSTALL ITEM 3 USING T & B CABLING TOOL 779-2100 OR EQUIVALENT

DATE	SYM	REVISION RECORD	DR	CK	CK
6/23/93	A	ECN-93-131	EB	WE	





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(716) 924-9181 FAX: (716) 924-2169

CHECKED BY: D.DAUNCE	DATE: 8/89
APPROVED BY: C.M.E.	DATE: 8/89
APPROVED BY	DATE
MATERIAL: ----------	
FINISH: ----------	

TITLE: CABLE, ENCODER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: BAIER		DRAWING NUMBER: C-305YYY
TOLERANCES: X.X± ------ ANGULAR ± --- ; X.XX± 0.01 ; X.XXX± 0.005	AutoCAD FILE LOCATION: G:\CAD\CABLES\		
B	DATE	SCALE: ---	SHEET NO.: 1 OF 1 — REVISION: A

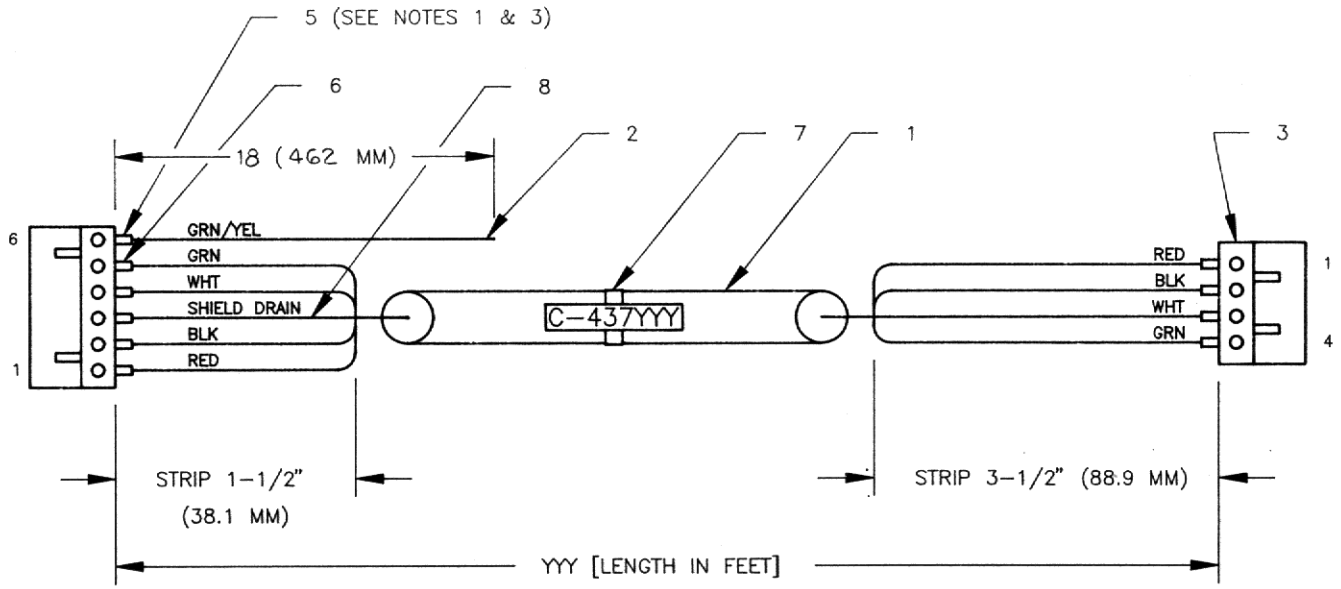
C-437YYY
BILL OF MATERIALS

COMPONENT	REFERENCE	DESCRIPTION
8722	1	CABLE, 2 PAIR SHLD, 20 AWG
AWG-16-GRN/YEL	2	WIRE, #16 GRN/YEL, STRANDED
25.320.3453.1	3	CONNECTOR, PLUG, 4 PIN
25.320.3653.1	4	CONNECTOR, PLUG, 6 PIN
4631.0	5	FERRULE, #16, RED
6907.0	6	FERRULE, #20, ORN
PLM1M	7; MARK C-437 LENGTH IN FEET	CABLE TIE LABEL
TFE-20-TW	8	TUBING, CLEAR TEFLON, #20

NOTES:

1. ALTERNATE CONSTRUCTION: STRIP AND TIN 1/4" (6.4 MM)
2. PIN NUMBERS SHOWN FOR REFERENCE ONLY
3. CRIMP FURRELS USING WEIDMULLER
   CRIMP TOOL PZ4 OR EQUIVALENT

DATE	SYM	REVISION RECORD	DR	CK	CK
3/27/89	0	ECN 89-0075	EB	CE	
6/23/93	A	ECN 93-131	EB	WC	



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CHECKED BY E.BAIER	DATE 3/89
APPROVED BY C.M.E.	DATE 3/89
APPROVED BY WC	DATE 7/2/93
MATERIAL ----------	
FINISH ----------	

TITLE: CABLE, COMMAND

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)
TOLERANCES
X.X± ---
X.XX± 0.05
X.XXX± 0.001
ANGULAR ± ---

DRAWN BY BAIER
AutoCAD FILE LOCATION G:\CAD\CABLES\

DRAWING NUMBER C-437YYY

B | DATE 6/23/93 | SCALE --- | SHEET NO. 1 OF 1 | REVISION B

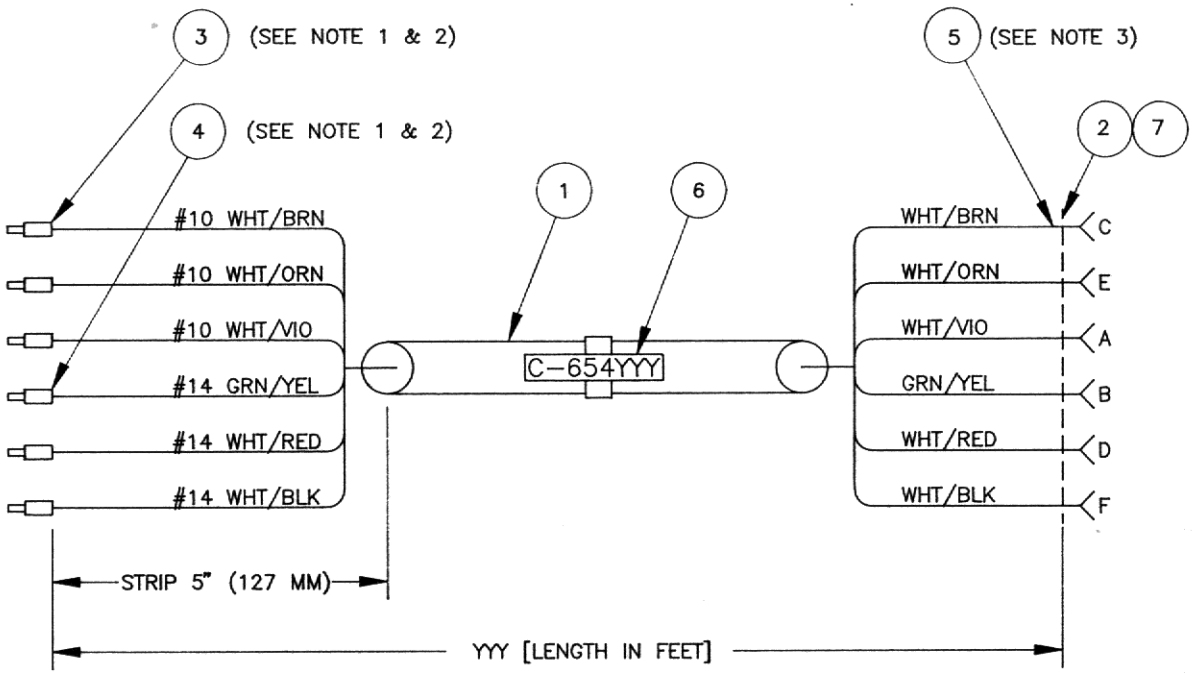
C-654YYY
BILL OF MATERIALS

COMPONENT	REFERENCE	DESCRIPTION
S72440	1	CABLE, 6 COND, 10 AWG
MS3106A20-22S	2	CONNECTOR, 6 PIN FEMALE
5335.0	3	FERRULE, #10, BLK
4632.0	4	FERRULE, #14, BLU
FIT221-1/4	5	HEATSHRINK TUBING, 1/4 IN
PLM1M	6; MARK C-654 LENGTH IN FEET	CABLE TIE LABEL
97-3057-1012-1	7	STRAIN RELIEF, #20 SHELL SIZE

NOTES:

1. INSTALL ITEM 2 USING WEIDMULLER CRIMP TOOL PZ–4 OR EQUIVALENT
2. ALTERNATE CONSTRUCTION; STRIP AND TIN 1/4"
3. HEAT SHRINK TUBING (ITEM 5) OVER SOLDER JOINT

DATE	SYM	REVISION RECORD	DR	CK	CK
11/88	A	ECN 88–0188	RT	EB	
8/90	B	ECN 89–0194	MFE	EB	JC
6/93	C	ECN 93–131	EB	[illegible]	



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CHECKED BY: E. BAIER	DATE: 9/4/90
APPROVED BY: J.C.	DATE: 9/4/90
APPROVED BY:	DATE:
MATERIAL: ----------	
FINISH: ----------	

TITLE: CABLE, MOTOR

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ---- ; X.XX± 0.01 ; X.XXX± 0.005 ; ANGULAR ± ---

DRAWN BY: MIKE E.

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B | DATE: 6/23/93 | SCALE: --- | SHEET NO.: 1 OF 1 | REVISION: C

DRAWING NUMBER: C–654YYY

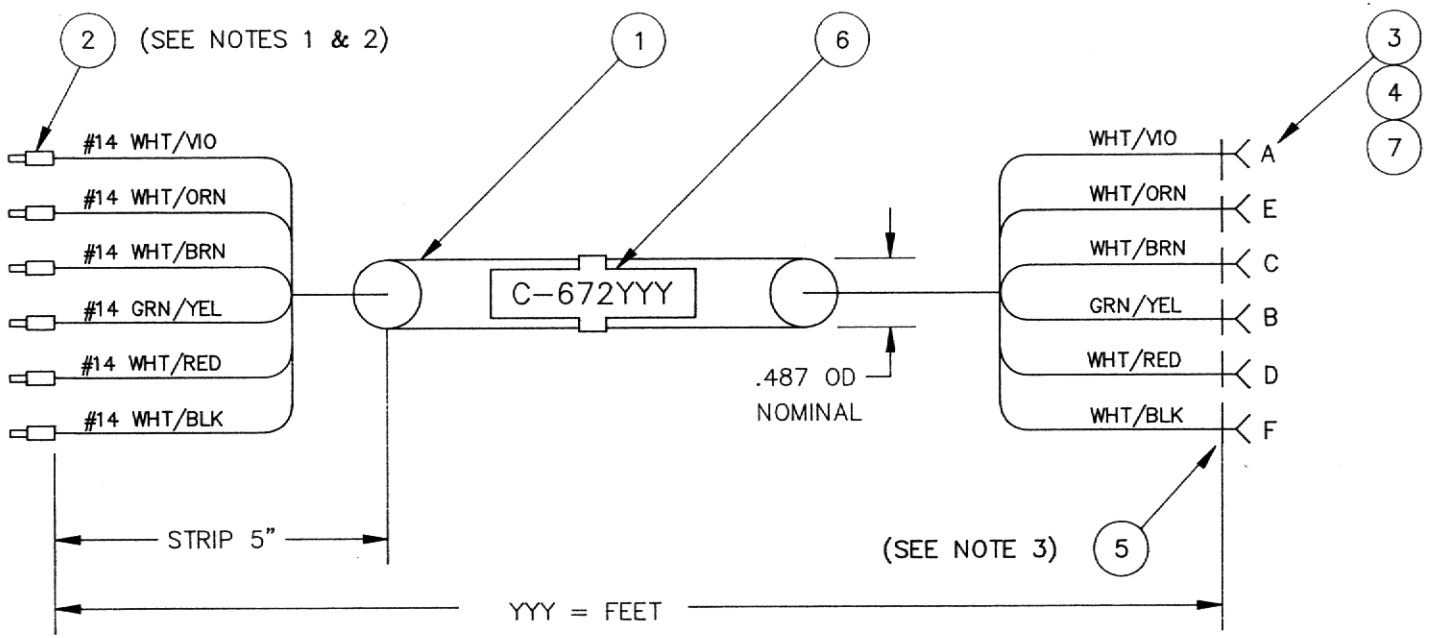
C-672YYY
BILL OF MATERIALS

COMPONENT	REFERENCE	DESCRIPTION
S72627	1	CABLE, 6 COND 14 AWG SPECIAL
4631.0	2	FERRULE, #16, RED
MS3106A20-22S	3	CONNECTOR, 6 PIN FEMALE
97-3057-1012-1	4	STRAIN RELIEF, #20 SHELL SIZE
FIT221-1/4	5	HEATSHRINK TUBING, 1/4 IN
PLM1M	6; MARK C-672 LENGTH IN FEET	CABLE TIE LABEL
9779-513-10	7	BOOT, MS, .56 O.D. CABLE

NOTES:

1. INSTALL ITEM 2 USING WEIDMULLER CRIMP TOOL PZ4 OR EQUIV
2. ALTERNATE CONSTRUCTION; STRIP AND TIN 1/4"
3. HEAT SHRINK TUBING (ITEM 5) OVER SOLDER JOINT

DATE	SYM	REVISION RECORD	DR	CK	CK
1APR93	0	PER ECN 93-102	EB	WJ	



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CHECKED BY E.BAIER	DATE 4/6/92
APPROVED BY J.C.	DATE 4/7/93
APPROVED BY W.E.S.	DATE 4/7/93
MATERIAL ------	
FINISH ------	

TITLE: CABLE, MOTOR

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD		DRAWING NUMBER	
TOLERANCES	AutoCAD FILE LOCATION G:\CAD\CABLES		C-672YYY	
X.X± ----- ANGULAR	B	DATE 1APR93	SCALE ---	SHEET NO. 1 OF 1 / REVISION 0
X.XX± ---- ± ---				
X.XXX± ---				

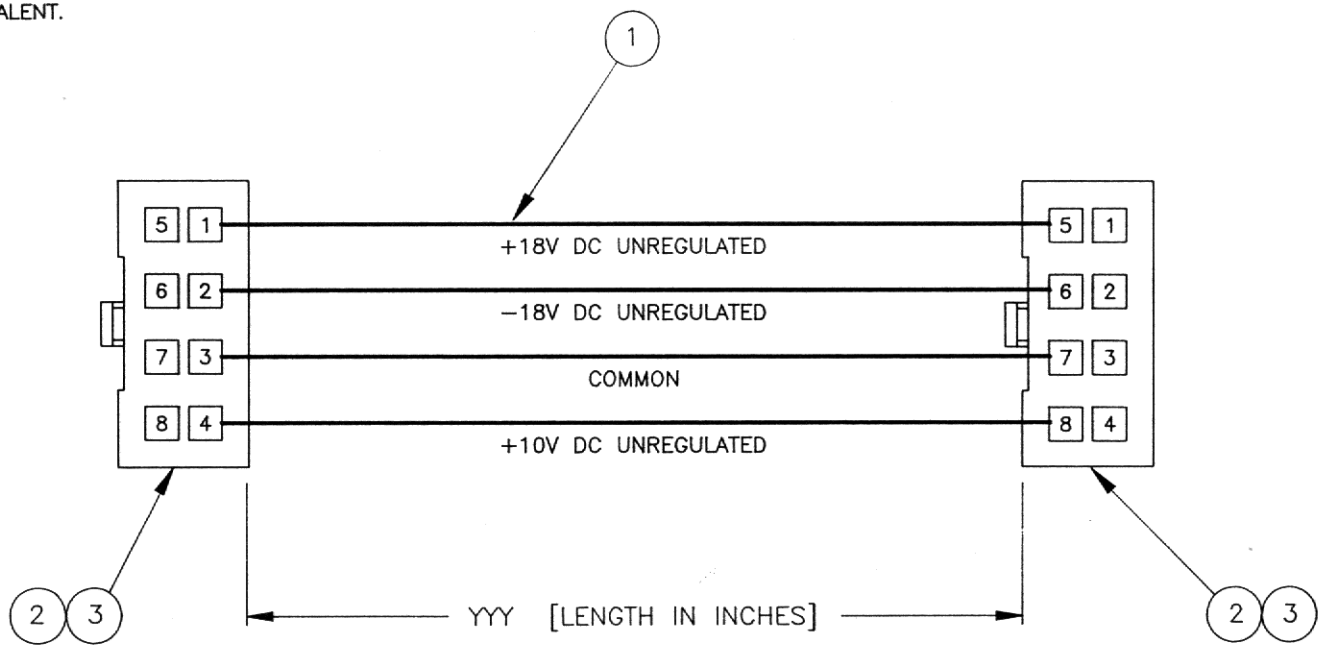
C-808YYY
BILL OF MATERIALS

COMPONENT	REFERENCE	DESCRIPTION
AWG-20-BLU	1	WIRE, #20, STRANDED
39-01-2085	2	CONNECTOR, 8 POS (MOLEX)
39-00-0039	3	TERMINAL, FE CRIMP18-24GA MOLEX

DATE	SYM	REVISION RECORD	DR	CK	CK
6/23/93	A	ECN-93-131	EB	WJB	

NOTES:

1) CONNECTORS SHOWN AS VIEWED FROM WIRE INSERTION SIDE.
2) CRIMP WIRE INTO TERMINAL (ITEM 3) USING MOLEX HAND CRIMP TOOL NO. 11-01-0125 OR EQUIVALENT.



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CHECKED BY	DATE
APPROVED BY	DATE
APPROVED BY	DATE
MATERIAL	----------
FINISH	----------

TITLE: CABLE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± --- ; X.XX± 0.05 ; X.XXX± 0.001 ; ANGULAR ± ---

DRAWN BY: BAIER

AutoCAD FILE LOCATION: G:\CAD\CABLES

DRAWING NUMBER: C-808YYY

B | DATE: 6/23/93 | SCALE: --- | SHEET NO.: 1 OF 1 | REVISION: A

C-809YYY
BILL OF MATERIALS

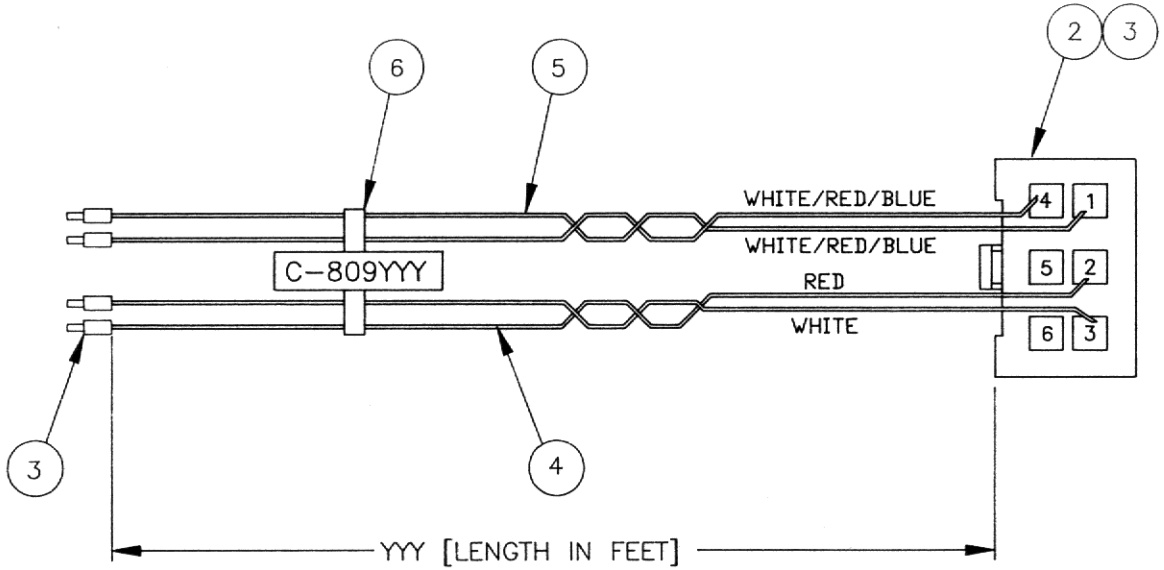
COMPONENT	REFERENCE	DESCRIPTION
39-01-2065	1	CONNECTOR, 6 POS (MOLEX)
39-00-0039	2	TERMINAL, FE CRIMP18-24GA (MOLEX)
AWG-18-RED	3	WIRE, #18 MTW, RED, STRANDED
AWG-18-WHT	4	WIRE, #18 MTW, WHITE, STRANDED
AWG-18-WHT/RED/BLU	5	WIRE, STRANDED, WHT/RED/BLUE
PLM1M	6; MARK C-809 LENGTH IN FEET	CABLE TIE LABEL

NOTES:

1) CONNECTOR SHOWN AS VIEWED FROM WIRE INSERTION SIDE

2) CRIMP WIRE INTO TERMINAL (ITEM 2) USING MOLEX HAND CRIMP TOOL NO. 11-01-0125 OR EQUIVALENT.

DATE	SYM	REVISION RECORD	DR	CK	CK
6/23/93	A	ECN 93-131	EB	WJ	



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CHECKED BY: E. BAIER	DATE: 4/28/92
APPROVED BY:	DATE:
APPROVED BY:	DATE:
MATERIAL: ----------	
FINISH: ----------	

TITLE: CABLE, POWER IPS6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: BAIER		DRAWING NUMBER: C-809YYY
TOLERANCES: X.X± ---- ANGULAR ± ---- X.XX± 0.05 X.XXX± 0.001	AutoCAD FILE LOCATION: G:\CAD\CABLES\		
	B	DATE: 6/23/93 SCALE: ---	SHEET NO.: 1 OF 1 REVISION: A

C-810YYY
BILL OF MATERIALS

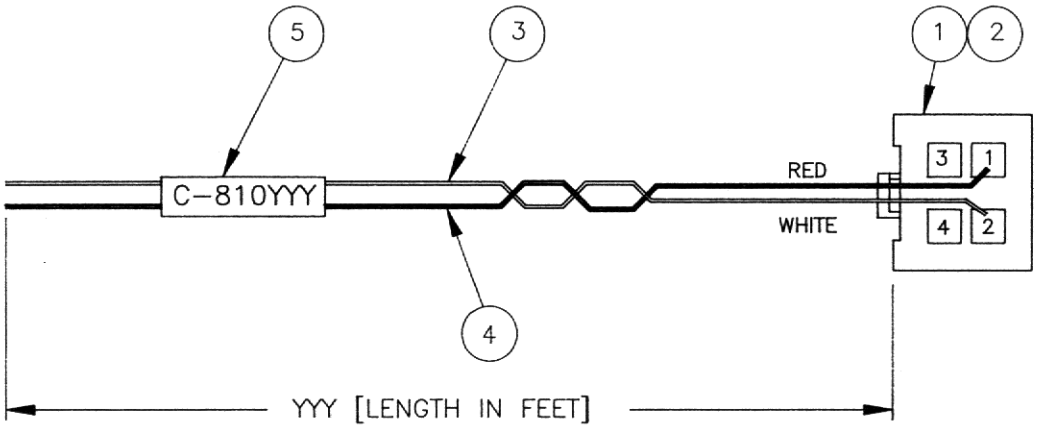
COMPONENT	REFERENCE	DESCRIPTION
39-01-2045	1	CONNECTOR, 4 POS (MOLEX)
39-00-0039	2	TERMINAL, FE CRIMP18-24GA (MOLEX)
AWG-18-RED	3	WIRE, #18 MTW, RED, STRANDED
AWG-18-WHT	4	WIRE, #18 MTW, WHITE, STRANDED
PLM1M	5; MARK C-810 LENGTH IN FEET	CABLE TIE LABEL

DATE	SYM	REVISION RECORD	DR	CK	CK
6/23/93	A	ECN 93-131	EB	WS	

NOTES:

1) CONNECTOR SHOWN AS VIEWED FROM WIRE INSERTION SIDE

2) CRIMP WIRE INTO TERMINAL (ITEM 2) USING MOLEX HAND CRIMP TOOL NO. 11-01-0125 OR EQUIVALENT.



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CHECKED BY: E. BAIER	DATE: 3/12/92
APPROVED BY: J. C.	DATE: 3/15/93
APPROVED BY:	DATE:
MATERIAL: ----------	
FINISH: ----------	

TITLE: CABLE, POWER BSD6 FAN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)

TOLERANCES: X.X± ---- ; X.XX± 0.05 ; X.XXX± 0.001 ; ANGULAR ± ---

DRAWN BY: CAD

AutoCAD FILE LOCATION: G:\CAD\CABLES\

DRAWING NUMBER: C-810YYY

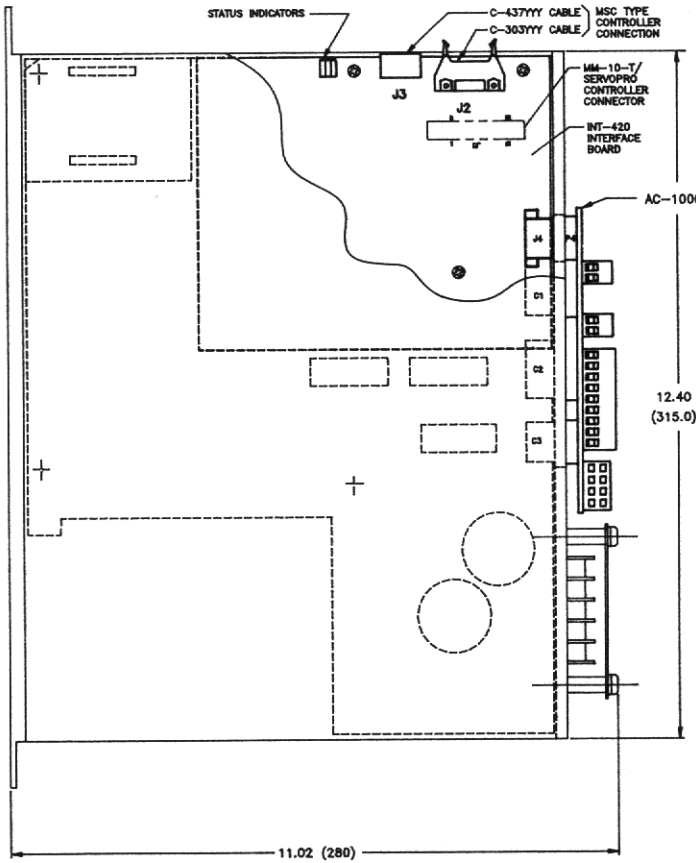
B | DATE: 6/23/93 | SCALE: ---- | SHEET NO.: 1 OF 1 | REVISION: A

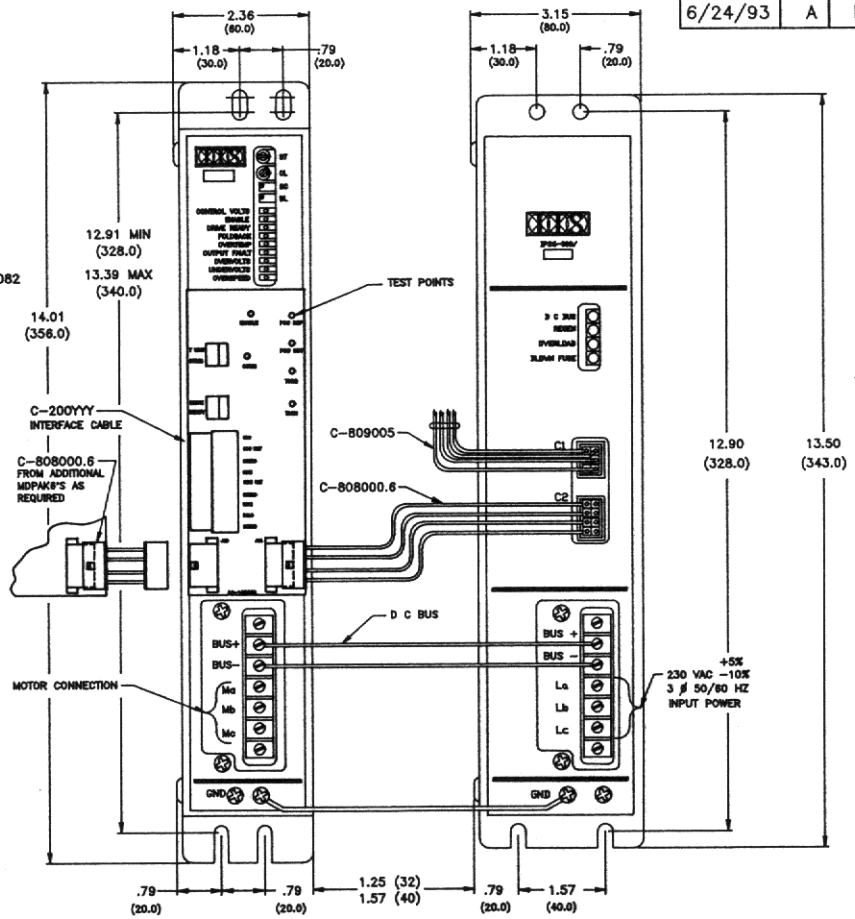
NOTES

APPENDIX J
INSTALLATION DRAWINGS

DRAWING NUMBER	DESCRIPTION
MDPAK6-INST1	Installation
MDPAK6-INST2	Installation
MDPAK6-INST3	Installation

DATE	SYM	REVISION RECORD	DR	CK	CK
6/24/93	A	ECN 93-131	EB	WS	





MDPAK6-900 THRU -2100

IPS6-300/12 AND 20

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CHECKED BY Dan	DATE 8/93
APPROVED BY WS	DATE 7/21/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE
INSTALLATION DRAWING, CURRENT CONFIGURATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD		DRAWING NUMBER MDPAK6-INST1
TOLERANCES	AutoCAD FILE LOCATION Q:\DFTG		
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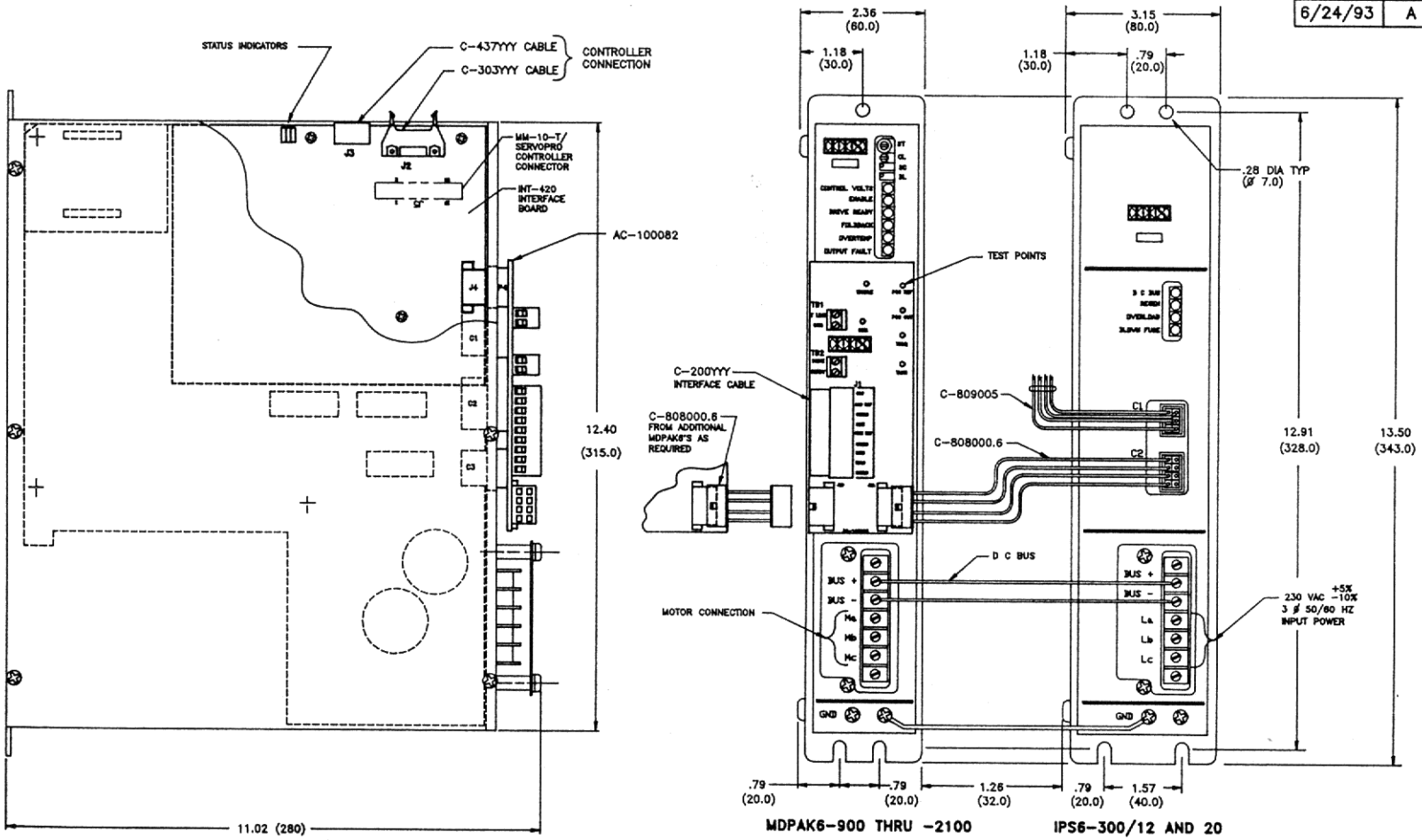
X.XX± 0.05 ± ----			
X.XXX± 0.001			

DATE	SYM	REVISION RECORD	DR	CK	CK
6/24/93	A	ECN 93-131	EB	WJ	



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CHECKED BY Dan	DATE 8/93
APPROVED BY WJ	DATE 7/21/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE
INSTALLATION DRAWING, PREVIOUS CONFIGURATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD		DRAWING NUMBER	
TOLERANCES	AutoCAD FILE LOCATION Q:\DFTG\		MDPAK6-INST1	
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X.XX± 0.05 ± ---				
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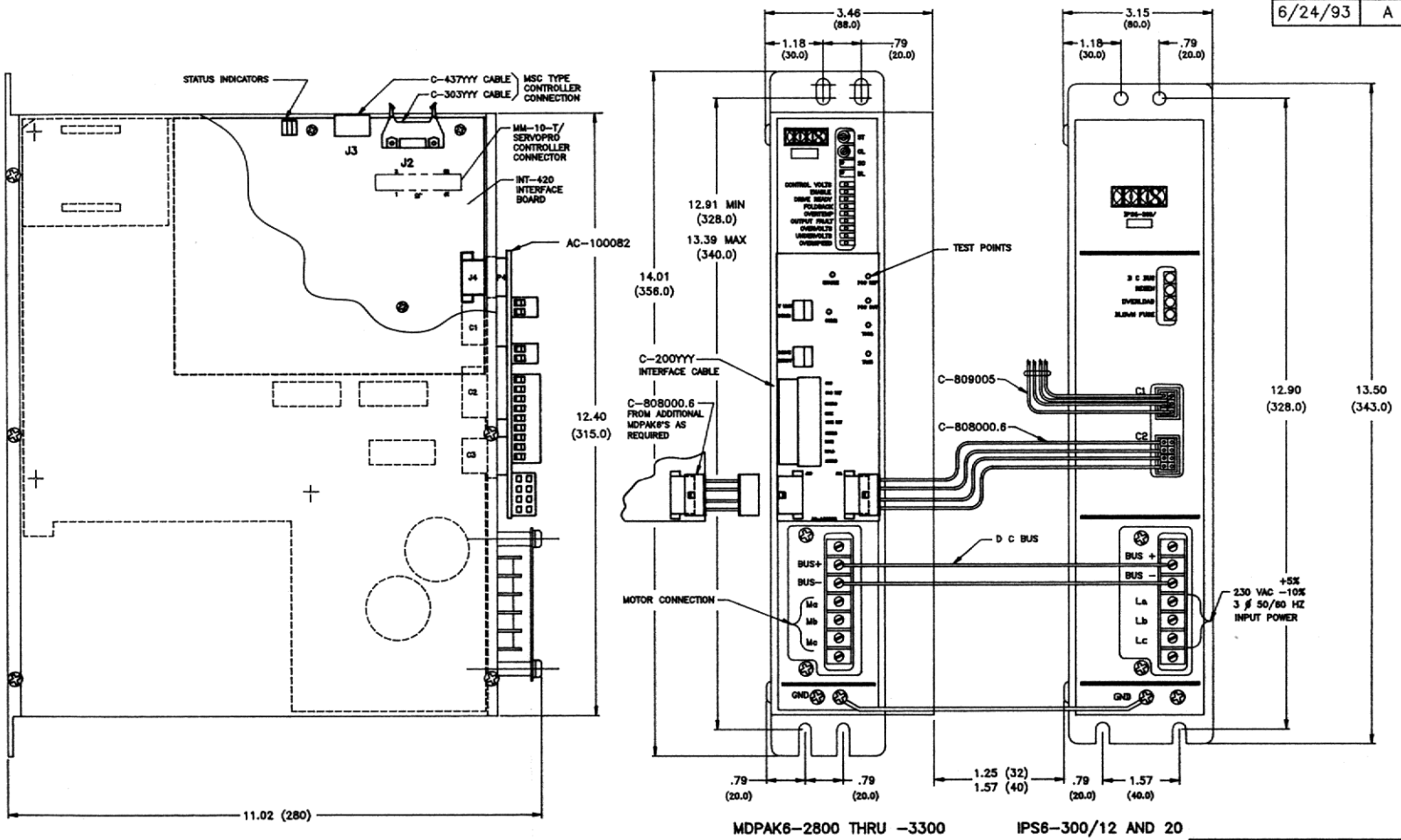
DATE	SYM	REVISION RECORD	DR	CK	CK
6/24/93	A	ECN 93-131	EB	WEJ	



MDPAK6-2800 THRU -3300 IPS6-300/12 AND 20

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CHECKED BY: Dan	DATE: 8/93
APPROVED BY: WEJ	DATE: 7/21/93
APPROVED BY	DATE
MATERIAL: ----------	
FINISH: ----------	

TITLE: INSTALLATION DRAWING, CURRENT CONFIGURATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD		DRAWING NUMBER: MDPAK6-INST2
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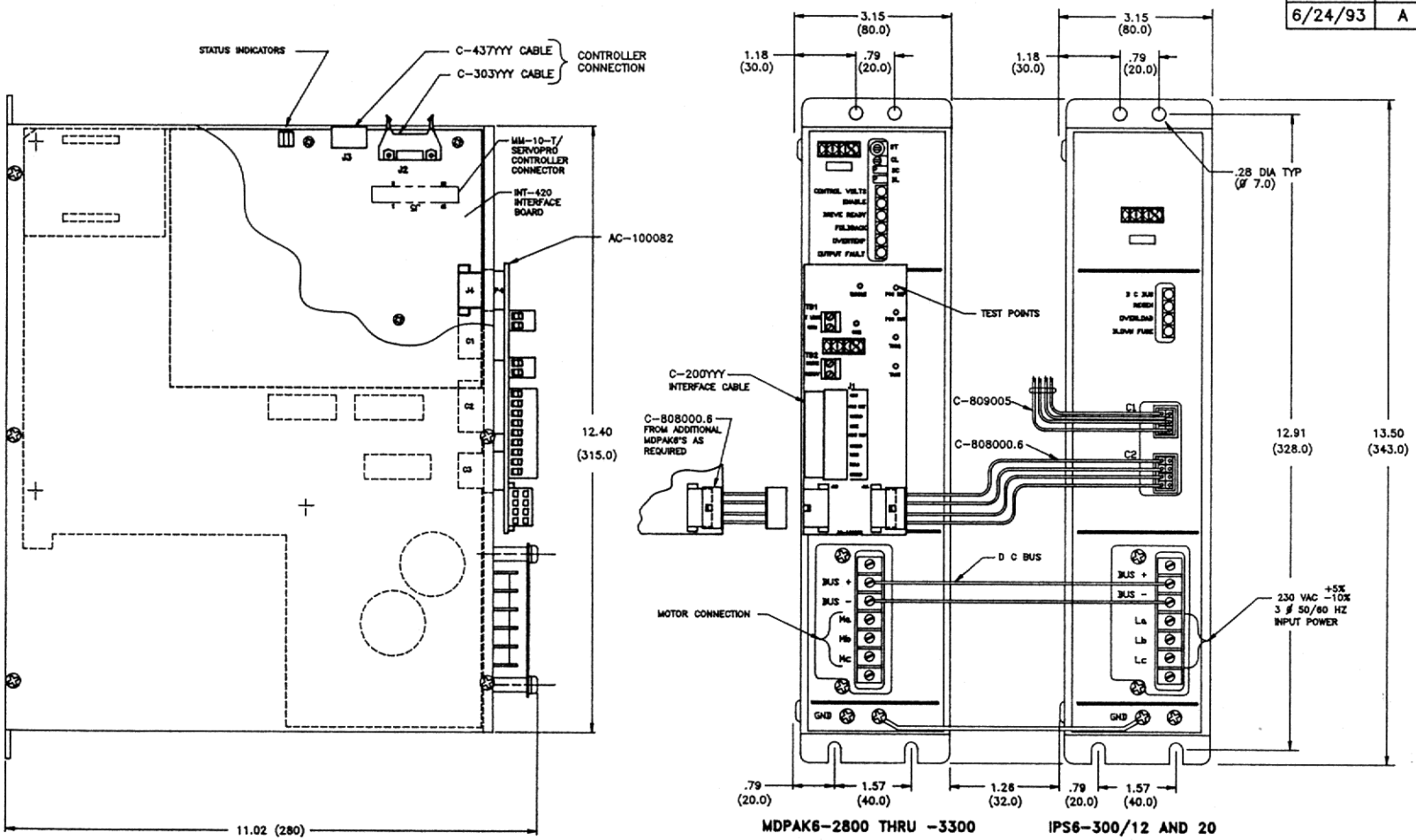
DATE	SYM	REVISION RECORD	DR	CK	CK
6/24/93	A	ECN 93-131	EB	WEJ	



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CHECKED BY: [illegible]	DATE: 8/93
APPROVED BY: WEJ	DATE: 7/21/93
APPROVED BY	DATE
MATERIAL: ----------	
FINISH: ----------	

TITLE: INSTALLATION DRAWING, PREVIOUS CONFIGURATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD		DRAWING NUMBER: MDPAK6-INST2	
TOLERANCES: X.X± ---, X.XX± 0.05, X.XXX± 0.001; ANGULAR ± ---	AutoCAD FILE LOCATION: Q:\DFTG			
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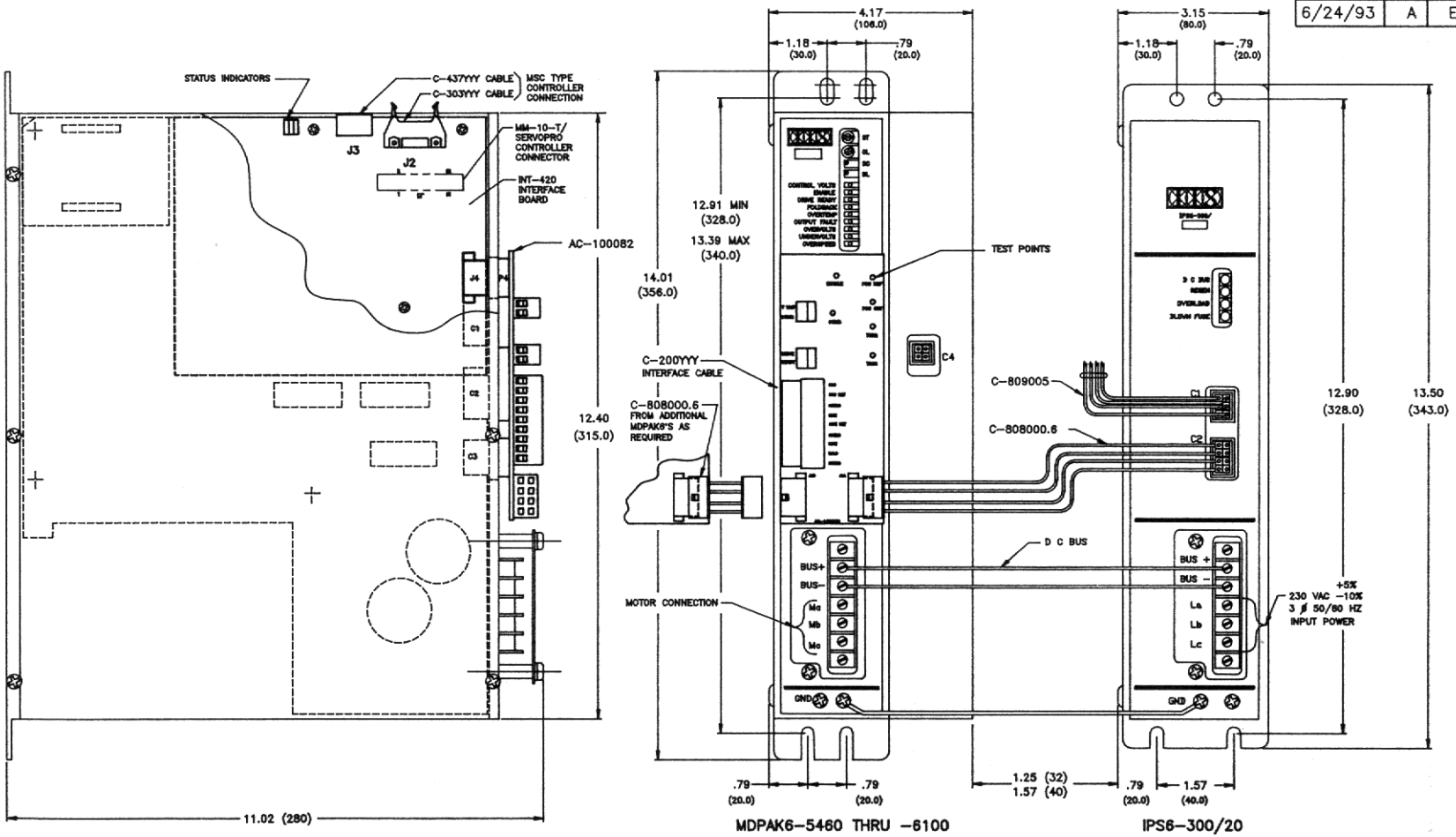
DATE	SYM	REVISION RECORD	DR	CK	CK
6/24/93	A	ECN 93-131	EB	WS	



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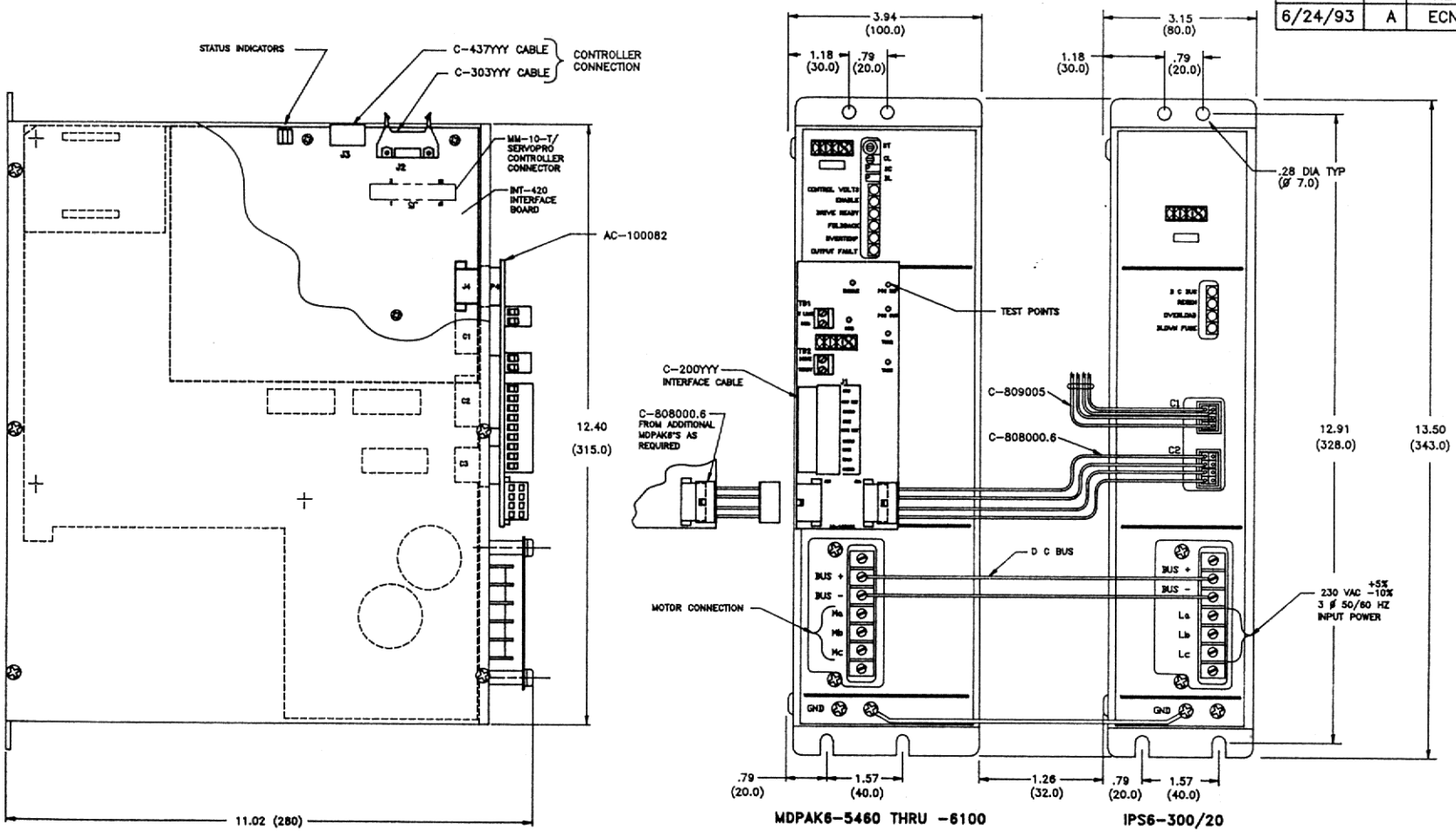
CHECKED BY Gaia	DATE 8/93
APPROVED BY WS	DATE 7/21/93
APPROVED BY	DATE
MATERIAL ----------	
FINISH ----------	

TITLE
INSTALLATION DRAWING, CURRENT CONFIGURATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY CAD		DRAWING NUMBER MDPAK6-INST3
TOLERANCES	AutoCAD FILE LOCATION Q:\DFTG		
X.X± ---- ANGULAR	B	DATE 6/23/93 SCALE ---	SHEET NO. 1 OF 2 REVISION A
X.XX± 0.05			
X.XXX± 0.001 ± ----			

DATE	SYM	REVISION RECORD	DR	CK	CK
6/24/93	A	ECN 93-131	EB	WEJ	



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CHECKED BY: Bacon	DATE: 8/93	
APPROVED BY: WEJ	DATE: 7/21/93	
APPROVED BY	DATE	
MATERIAL: ----------		
FINISH: ----------		

TITLE: INSTALLATION DRAWING, PREVIOUS CONFIGURATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE INCHES (mm)	DRAWN BY: CAD		DRAWING NUMBER: MDPAK6-INST3
TOLERANCES	AutoCAD FILE LOCATION: Q:\DFTG\		
X.X± ---- ANGULAR	B	DATE: 6/23/93 SCALE: ---	SHEET NO.: 2 OF 2 REVISION: A
X.XX± 0.05 ± ----			
X.XXX± 0.001			

APPENDIX K
OPTIONAL TRANSFROMER

The MDPAK6 operates directly from a three phase power source provided the voltage and frequency specifications in **Section 3** are met. Although it is not required, it is recommended that a three phase isolation transformer be used to isolate the main power from the servo system.

IIS offers a complete line of isolation transformers that not only provide isolation but also provide primary and secondary taps to optimize line voltage conditions. Both open frame and enclosed transformers are available.

This section shows the standard transformers offered by IIS. Transformers with different primary voltages and frequencies are available. Consult the factory for specific requirements.

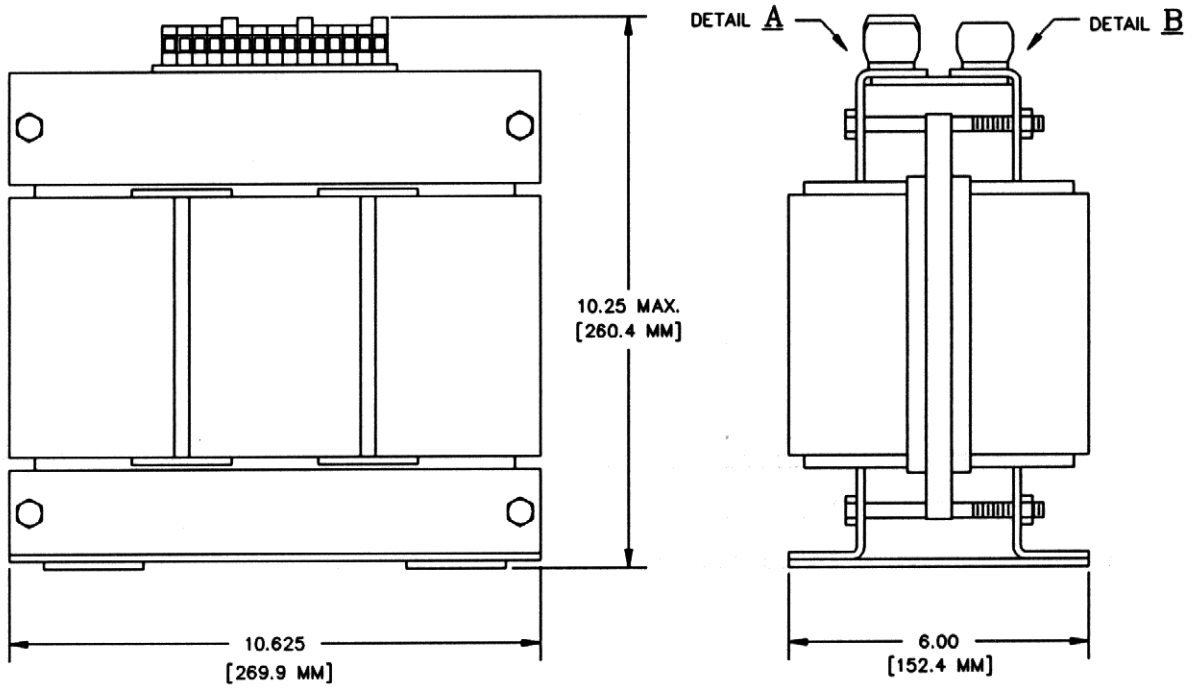
Several MDPAK-6s can be powered with a single transformer. Power rating of the transformer is determined as follows:

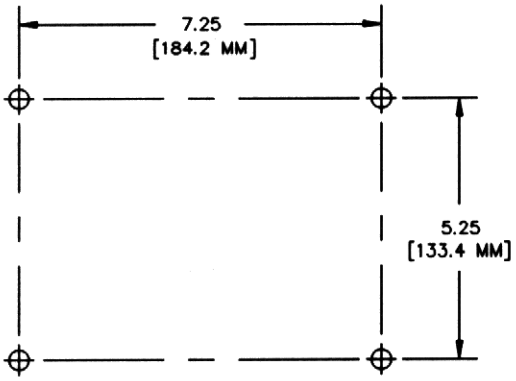
$$P_{OUT} = \frac{P_1 + P_2 + P_x}{.9} = (WATTS)$$

P_{OUT} = Output power of transformer (Watts)
P_x = Rated output power of MM-5

Select a transformer with at least as much output power as P_{OUT} above from **Table 1** or **Table 2**.

Both the single phase control power and three phase servo bus power can be connected to the transformer secondary.



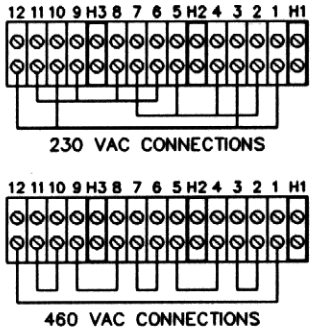


MOUNTING PATTERN

.625 [15.9 MM] DIA. THRU (4 PLACES)
USE 3/8-16 UNC MOUNTING HARDWARE

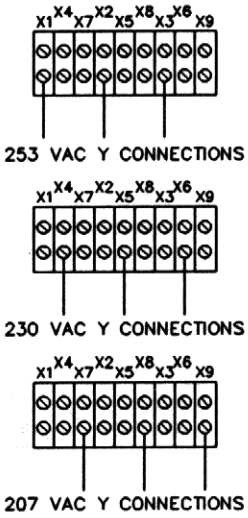
DETAIL A

WIRING/PRIMARY TERMINALS



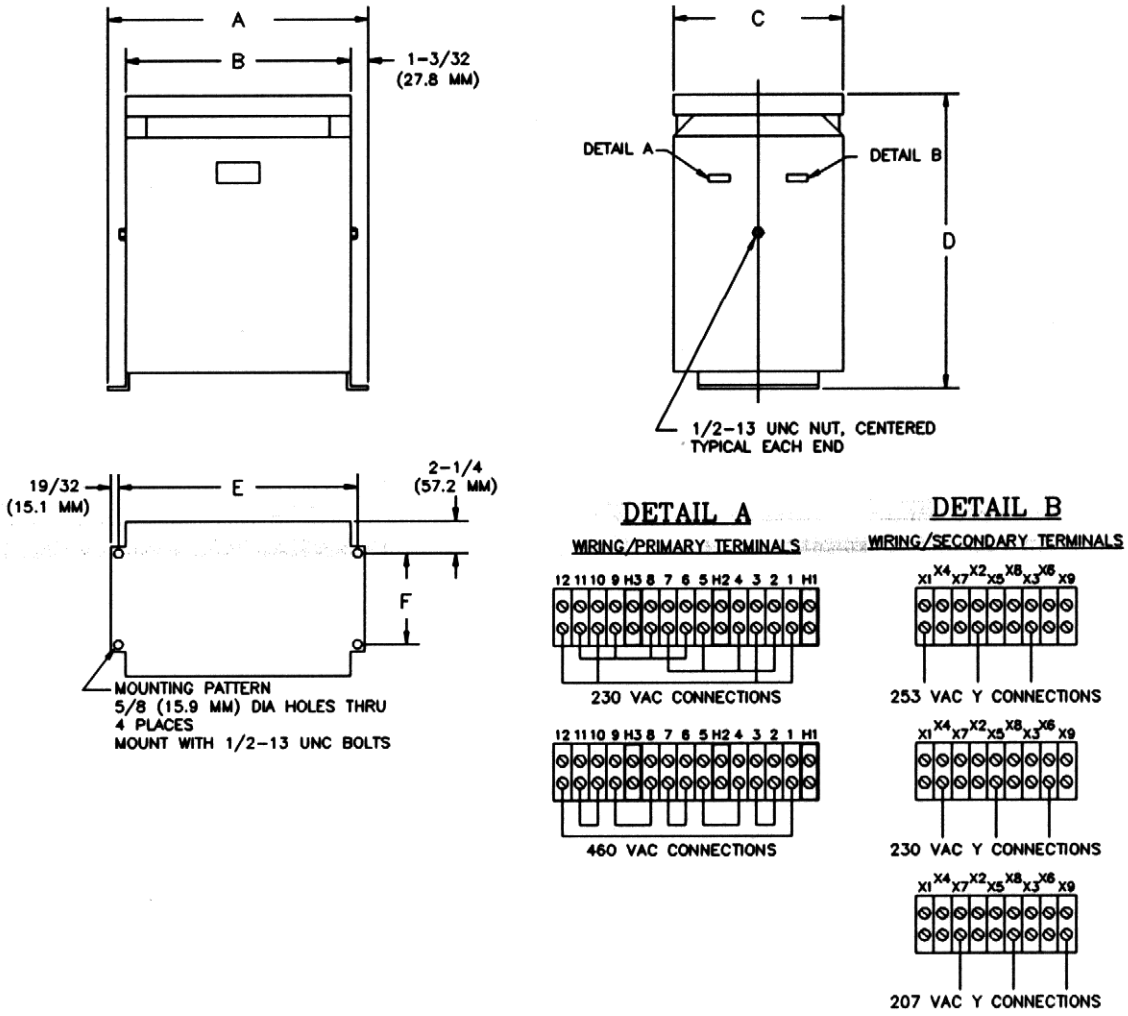
DETAIL B

WIRING/SECONDARY TERMINALS



TRANSFORMER	FREQ. (HZ)	PHASE	OUTPUT POWER (WATTS)	TEMP. RISE (°C)	WEIGHT (LBS.)
T-300/3-3	60	3	1000	150	80
T-300/5-3	60	3	1500	150	80
T-300/7.5-3	60	3	2200	150	80

Optional Open Frame Transformers



TRANSFORMER	FREQ. (HZ)	PHASE	OUTPUT POWER (WATTS)	TEMP. RISE (°C)	WEIGHT (LBS.)	A	B	C	D	E	F
TE-300/7.5-3	60	3	2250	150	110	18.19 (462)	16.00 (406)	8.00 (203)	21.00 (533)	17.00 (432)	3.50 (89)
TE-300/15-3	60	3	4500	150	125	18.19 (462)	16.00 (406)	8.00 (203)	21.00 (533)	17.00 (432)	3.50 (89)
TE-300/30-3	60	3	9000	150	175	22.19 (564)	20.00 (508)	12.00 (305)	21.00 (533)	21.00 (533)	7.50 (191)
TE-300/58-3	60	3	15000	150	216	28.19 (716)	26.00 (660)	16.00 (406)	27.00 (686)	27.00 (686)	11.50 (292)
TE-300/75-3	60	3	22500	150	400	28.19 (716)	26.00 (660)	16.00 (406)	27.00 (686)	27.00 (686)	11.50 (292)
TE-300/95-3	60	3	28500	150	400	28.19 (716)	26.00 (660)	16.00 (406)	27.00 (686)	27.00 (686)	11.50 (292)

DIMENSIONS = INCHES
(MILLIMETERS)

Optional Enclosed Transformers

NOTES

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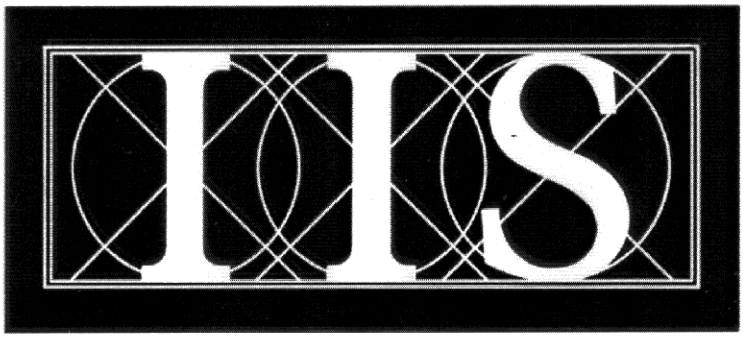

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