

INSTRUCTIONS

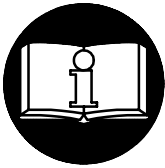
for

SERIES TMAD DC ELECTRIC TORQUE MANAGEMENT SYSTEM CONTROLLERS

NOTICE

Series TMAD Controllers are designed to be used with Series D Wrenches/Nutrunners for assembly applications requiring precise torque monitoring and control, accuracy, consistency and repeatability. Ingersoll-Rand is not responsible for customer modification of tools for applications on which Ingersoll-Rand was not consulted.

⚠ WARNING



**IMPORTANT SAFETY INFORMATION ENCLOSED.
READ ALL THESE INSTRUCTIONS BEFORE PLACING TOOL IN SERVICE
OR OPERATING THIS TOOL AND SAVE THESE INSTRUCTIONS.
IT IS THE RESPONSIBILITY OF THE EMPLOYER TO PLACE THE INFORMATION IN THIS
MANUAL INTO THE HANDS OF THE OPERATOR.
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.**

Disconnect the power cord from the receptacle before performing any maintenance on this tool.



This symbol is to alert the user and service personnel to the presence of uninsulated dangerous voltage that will cause a risk of electric shock.



This symbol is to alert the user and service personnel to the presence of important operating instructions that must be read and understood to prevent personal injury, electrical shock or damage to the equipment.

OPERATORS MUST READ THIS MANUAL BEFORE OPERATING THE SYSTEM.

**WHEN USING ELECTRIC TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS
BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK AND
PERSONAL INJURY, INCLUDING THE FOLLOWING.**

PLACING TOOL IN SERVICE

- Always operate, inspect and maintain this tool in accordance with all regulations (local, state, federal and country), that may apply to hand held/hand operated electric tools.
- Inspect tool cords periodically and if damaged, have them repaired by an authorized service facility.

- Do not remove any labels. Replace any damaged label.

USING THE TOOL

- Always wear eye protection when operating or performing maintenance on this tool.

(Continued on page 1-2)

NOTICE

The use of other than genuine Ingersoll-Rand replacement parts may result in personal injury, decreased tool performance and increased maintenance, and may invalidate all warranties.

Have your tool repaired by a qualified person. This electric tool is in accordance with the relevant safety requirements. Repairs should only be carried out by qualified persons using original spare parts, otherwise this may result in considerable danger to the user.

Repairs should be made only by authorized, trained personnel. Consult your nearest Ingersoll-Rand Authorized Servicer.

INGERSOLL-RAND®
PROFESSIONAL TOOLS

⚠ WARNING

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

USING THE TOOL (Continued)

- **Keep work area clean.**
Cluttered areas and benches invite injuries.
- **Consider the work environment.**
Don't expose the controller to water or moisture.
Keep work area well lighted.
- **Guard against electric shock.**
Prevent body contact with grounded surfaces such as pipes, metal structures or other electrical products.
- **Keep bystanders away.**
Do not permit unauthorized personnel to operate this Controller.
- **Store idle Controllers.**
When not in use, the Controller should be stored in a dry and secured area.
- **Don't abuse the cord.**
Never carry a Controller by its cord or yank the cord of the Controller to disconnect it from a receptacle.
Keep the cord away from heat, oil, solvent and sharp edges.
- **Maintain the Controller with care.**
Inspect the Controller cord periodically and if damaged, have it repaired by an authorized service facility.
- **This apparatus must be earth grounded.**
- **Every month, service personnel must test the earth fault protector with the test button.**
- **Should the earth fault disconnect the system, be sure to find the primary reason and correct the problem before resuming operation.**
- **There are no user serviceable parts inside this unit. Refer all servicing to qualified service personnel.**
- **The main power supply cord is a disconnecting device.**
Disconnect the Controller from the power supply by removing the plug from the Controller to render it powerless.
- **Always disconnect the power supply before opening the cabinet.**
- **If the power supply cable to this Controller is damaged, it must be replaced with a cable that meets the local electrical safety standards for this type of product.**
- **Do not install this Controller near water or other liquids.**
- **Do not install this Controller where it will be subject to vibration, shock, heating sources such as radiators or other devices that generate heat.**
- **Install this Controller as far away as possible from sources of electrical noise such as arc welding equipment.**



WARNING LABEL IDENTIFICATION

⚠ WARNING

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

	⚠ WARNING Always wear eye protection when operating or performing maintenance on this tool.
	⚠ WARNING Powered tools can vibrate in use. Vibration, repetitive motions or uncomfortable positions may be harmful to your hands and arms. Stop using any tool if discomfort, tingling feeling or pain occurs. Seek medical advice before resuming use.
	⚠ WARNING INDOOR USE ONLY.

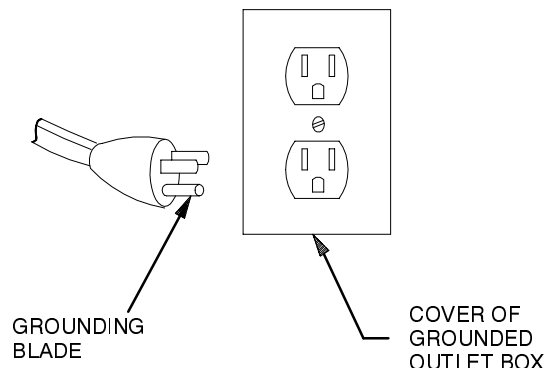
	⚠ WARNING Always wear hearing protection when operating this tool.
	⚠ WARNING Do not carry the tool by the cord.
	⚠ WARNING The Torque Reaction Bar must be positioned against a positive stop. Do not use the Bar as a dead handle and take all precautions to make certain the operator's hand cannot be pinched between the Bar and a solid object.

	⚠ WARNING Always turn off the electrical supply and disconnect the power cord before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.
	⚠ WARNING Do not use damaged, frayed or deteriorated power cords.
	⚠ WARNING Keep body stance balanced and firm. Do not overreach when operating this tool.

GROUNDING INSTRUCTIONS

⚠ WARNING

THE CONTROLLER MUST BE EARTH GROUNDED WHILE IN USE TO PROTECT THE OPERATOR FROM SHOCK. The Controller is equipped with a three-conductor cord and must be wired by qualified personnel to meet local electrical safety standards for connection to a 20 AMP circuit outlet. The green (or green and yellow) conductor in the cord is the ground wire. **NEVER CONNECT THE GROUND WIRE TO A LIVE TERMINAL.** The Controller is to be used on a 115 VAC, 60 Hz, 3-prong outlet as shown in drawing TPD1501. **DO NOT** use the Controller with a two prong outlet and an adapter. Always check that your ground is operating properly on the outlet by a qualified electrician before using the unit.



(Dwg. TPD1501)

⚠ WARNING

THIS APPARATUS MUST BE EARTH GROUNDED.

The three conductors of the power supply cord attached to this apparatus are identified with color as shown in the following table. When connecting the leads of the power supply cord to a plug, make certain each conductor is connected to the correct terminal as indicated.

Power Supply Cord	
Conductor	Color
Live	Brown
Neutral	Blue
Grounding	Green-Yellow

⚠ WARNING

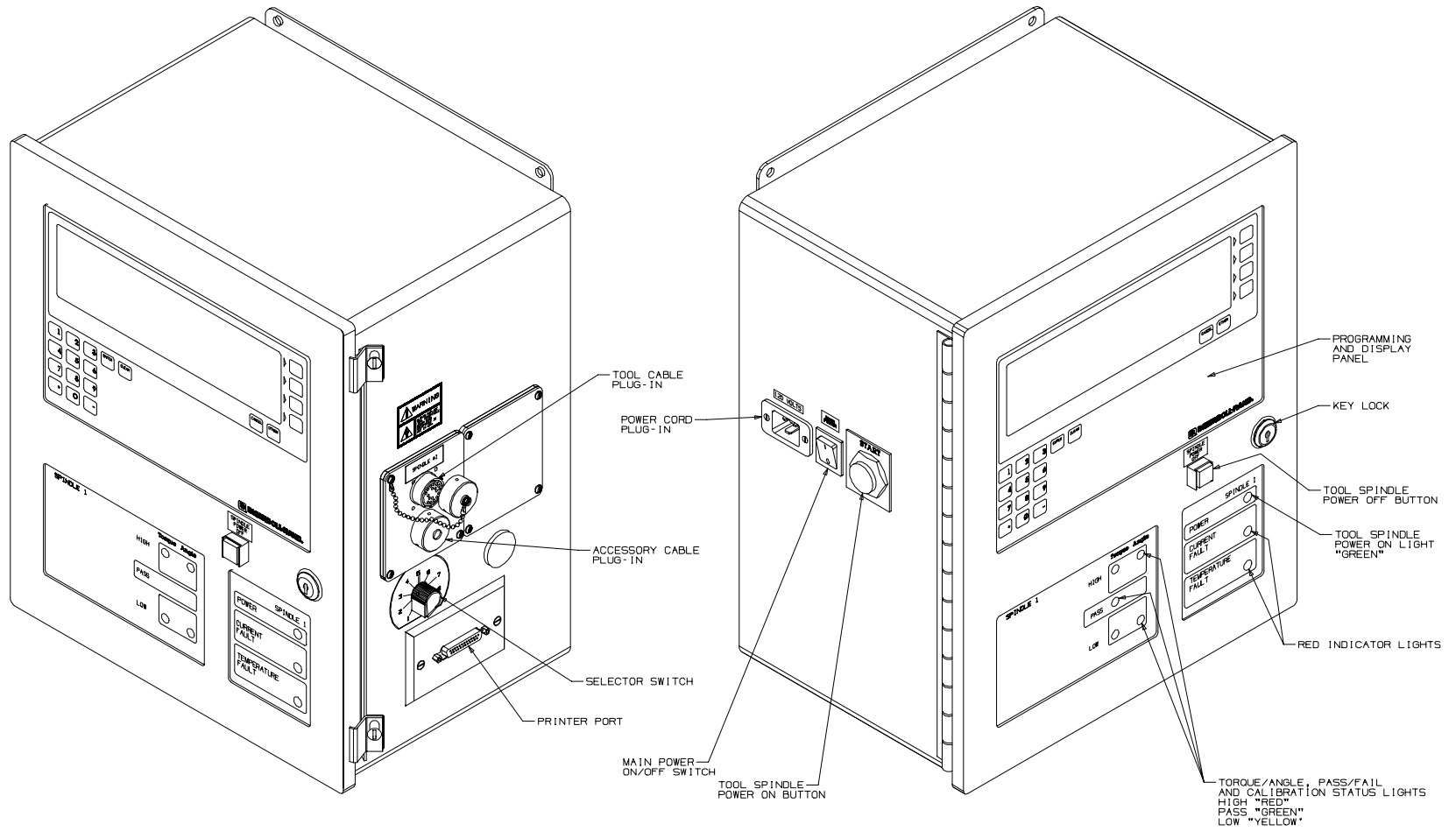
Use only three wire extension cords that have three prong grounded-type plugs and three-pole receptacles that accept the Controller's plug. Replace or repair damaged cords.

NOTICE

Ingersoll-Rand Company makes no warranty or implies any warranty or liabilities due to the misuse or damage resulting from the application of the information supplied in this manual. Liabilities due to errors in the manual are only limited to replacement of the manual. Ingersoll-Rand reserves the right to change information contained in this manual or the program without notice at any time.

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For warranty claims of the equipment contact your nearest Ingersoll-Rand Distributor.



(Dwg. TPA1593)

STARTING THE SYSTEM

This procedure requires all cabling, power tools and system modules to be in proper working order. The system must be setup and installed for the application by a qualified, trained service technician or tool application engineer.

Starting the Cabinet

The power switch for the TMAD Cabinet is located on the left side of the box when facing the Cabinet. Depress the upper portion of the “rocker type” switch marked with an “I” to initialize the Cabinet.

Tool Calibration

When power is supplied to the Cabinet, the system initiates a tool calibration sequence to determine if the tools are capable of generating the torque parameters specified by the system. During the calibration cycle, an “X” will be displayed next to the torque and angle readings on the LCD display window in the Cabinet door. In addition, both the red and yellow lights will be illuminated at the HIGH/PASS/LOW light display below the window.

When the calibration cycle is complete, a “C” will be displayed where the “X” was displayed next to the torque and angle readings on the LCD display window in the Cabinet door and only the two yellow lights labeled “LOW” at the HIGH/PASS/LOW light display will remain lighted.

CAUTION

If a “C” is not displayed after a few seconds to indicate proper calibration, call a trained service technician before running any tools. Running tools on an application without proper calibration could cause the tools to go into a stall condition.

When a “C” is displayed, the tools are ready for operation.

CAUTION

Any time a tool is in operation and both the yellow (LOW) light and red (HIGH) light are illuminated, an out of calibration condition exists. Have a qualified, trained service technician re-calibrate the unit before continuing to operate the tools.

STARTING THE TOOL

The tool power switch is located on the left side of the Cabinet next to the cabinet power rocker switch. Depress the black button (labeled “START”) to provide power to the tools after the calibration cycle has been completed.

When the “START” button is depressed, the light in the red button (labeled “SYSTEM STOP”) located on the front door of the Cabinet extinguishes and the green indicator light located on the spindle status display panel is illuminated.

OPERATING THE TOOL

⚠ WARNING

The operator must read the literature labeled “INSTRUCTIONS” for any tools connected to this Cabinet before putting this system into operation. Failure to do so could result in injury.

Throttles

The Throttle Switch for all models is designed for two finger operation which is an ergonomic enhancement. Currently, pistol grip tools have a single stage trigger while all others have a two stage throttle switch. Depressing the throttle switch half way actuates a slow speed start for ease

of positioning the socket on the fastener. Completely depressing the switch actuates full free speed to facilitate fastener run down and complete the fastening cycle.

Forward/Reverse

All hand held versions of the Series DE tools have Forward/Reverse Switches indicated by graphic symbols and “FWD” and “REV” lettering molded into the housing. Forward is spindle clockwise rotation and reverse is spindle counterclockwise rotation. Series DEA120 and Series DEP30 tools have “rocker type” switches. Series DEA40 tools have sliding bi-directional switches with one slide located on each side of the housing.

OPERATING THE TOOL (Continued)

Verification Lights

There is a red, yellow and green LED light window on each tool. These lights correspond to the red (HIGH), green (PASS) and yellow (LOW) lights on the TMAD Cabinet front door panel. When running down a fastener, these lights tell the operator of the tool if the tightening cycle passed specifications or failed specifications.

The specifications are programmed into the TMAD Cabinet as a torque and/or angle of rotation range. As each fastener is tightened, the final torque and/or angle value is read by sensors on the tool. If the fastener is tightened within the specified range, a green light will be illuminated on the tool and the Cabinet and that indicates a satisfactory joint. A red light on the tool and Cabinet indicates the fastener tightness exceeds the programmed, specified range while a yellow light on the tool and Cabinet indicates the fastener tightness is less than the minimum programmed, specified range.

Abnormal Occurrences

As with all mechanical and electrical devices, circumstances may require immediate stoppage of the tool to prevent damage to the equipment or product being produced. Conditions requiring an immediate shutdown may include, but are not limited to, current faults, temperature faults, over voltage and tool stalling conditions. There are four methods which will sever the power to the tool. The following list starts with the most desirable method of stopping the tool ends with the least desirable method.

1. With a hand held tool, release the Throttle Switch.
2. Depress the square, red Spindle Power Button located on the front door of the Control Cabinet.
3. Depress the lower portion of the “rocker type” switch on the left side of the Control Cabinet to the “OFF” position.
4. Disconnect the Power Supply Cord from the left side of the Control Cabinet.

CAUTION

Whenever the equipment is shut down for an abnormal occurrence, have a qualified, trained service technician determine the cause of the problem, rectify the condition and restart the equipment.

Normal Shut Down

1. Depress the square, red Spindle Power Button located on the front door of the Control Cabinet.
2. Depress the lower portion of the “rocker type” switch on the left side of the Control Cabinet to the “OFF” position.

NOTES

