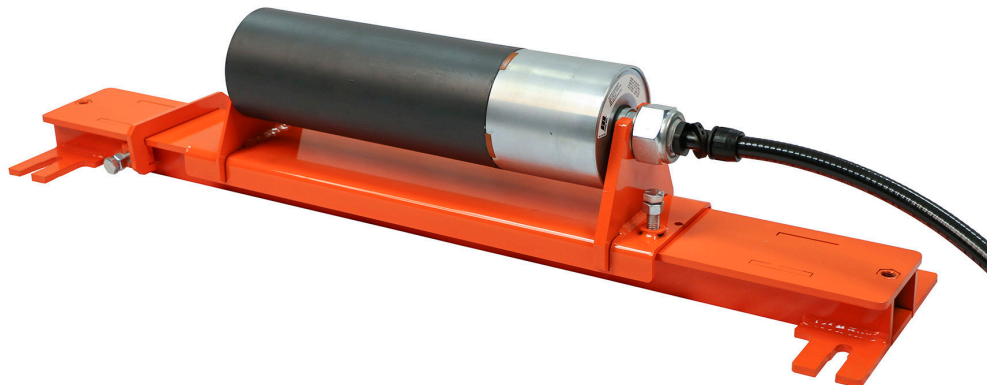


martin®

Martin®
Roll Generator



Operator's Manual
M4062

Important

MARTIN ENGINEERING HEREBY DISCLAIMS ANY LIABILITY FOR: DAMAGE DUE TO CONTAMINATION OF THE MATERIAL; USER'S FAILURE TO INSPECT, MAINTAIN AND TAKE REASONABLE CARE OF THE EQUIPMENT; INJURIES OR DAMAGE RESULTING FROM USE OR APPLICATION OF THIS PRODUCT CONTRARY TO INSTRUCTIONS AND SPECIFICATIONS CONTAINED HEREIN. MARTIN ENGINEERING'S LIABILITY SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF EQUIPMENT SHOWN TO BE DEFECTIVE.

Observe all safety rules given herein along with owner and Government standards and regulations. Know and understand lockout/tagout procedures as defined by American National Standards Institute (ANSI) z244.1-1982, *American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements* and Occupational Safety and Health Administration (OSHA) Federal Register, Part IV, 29 CFR Part 1910, *Control of Hazardous Energy Source (Lockout/Tagout); Final Rule*.

The following symbols may be used in this manual:



Danger: Immediate hazards that will result in severe personal injury or death.



Warning: Hazards or unsafe practices that could result in personal injury.



Caution: Hazards or unsafe practices that could result in product or property damages.



Important: Instructions that must be followed to ensure proper installation/operation of equipment.



Note: General statements to assist the reader.

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Introduction

General

The Martin[®] Roll Gen[™] Power Supply is a compact and self-contained power station that uses energy from a moving conveyor belt to provide 24-volt DC electricity that can be used to operate a wide variety of electronic systems, sensors, and safety mechanisms.

The Martin[®] Roll Generator attaches to a supplied idler to produce electricity. While it is not a net producer of energy, the Martin[®] Roll Generator creates an electric current that can be used at locations that are remote or otherwise challenging to provide power to operate a PLC or other systems.

References

The following documents are referenced in this manual:

- American National Standards Institute (ANSI) z244.1-1982, *American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements*, American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.
- Federal Register, Volume 54, Number 169, Part IV, 29 CFR Part 1910, *Control of Hazardous Energy Source (Lockout/Tagout); Final Rule*, Department of Labor, Occupational Safety and Health Administration (OSHA), 32nd Floor, Room 3244, 230 South Dearborn Street, Chicago, IL 60604.
- *The National Electrical Code (NEC)*, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

Materials required

Installation of this equipment requires the use of standard hand tools, grinder, welder, and cutting torch.

Safety

All safety rules defined in the above documents and all owner/employer safety rules must be strictly followed when working on the Martin® Roll Generator.



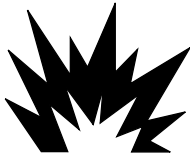
⚠ DANGER

Do not touch or go near the conveyor belt or conveyor accessories when the belt is running. Your body or clothing can get caught and you can be pulled into the conveyor, resulting in severe injury or death.



⚠ DANGER

Before installing, servicing, or adjusting the conveyor equipment, turn off and lockout / tagout / blockout / testout all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.



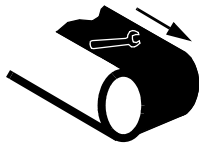
⚠ DANGER

If this equipment will be installed in an enclosed area, test the gas level or dust content before using a cutting torch or welding. Using a torch or welding in an area with gas or dust may cause an explosion resulting in serious injury or death. Follow local confined space procedures.



⚠ WARNING

Before using a cutting torch or welding, cover the conveyor belt with a fire retardant cover. Failure to do so can allow the belt to catch fire. Follow local fire watch procedures.



⚠ WARNING

Remove all tools from the installation area and conveyor belt before turning on the conveyor. Failure to do so can cause serious injury to personnel or damage to the belt and conveyor.

Before Installing Roll Generator

IMPORTANT

The delivery service is responsible for damage occurring in transit. Martin Engineering CANNOT enter claims for damages. Contact your transportation agent for more information.

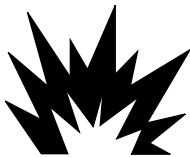
1. Inspect shipping container for damage. Report damage to delivery service immediately and fill out delivery service's claim form. Keep any damaged goods subject to examination.
2. Remove Martin[®] Roll Gen[™] Power Supply assembly from shipping container.
3. If anything is missing contact Martin Engineering or a representative.



⚠ DANGER

Before installing, servicing, or adjusting the conveyor equipment, turn off and lockout / tagout / blockout / testout all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.

4. Turn off and lockout / tagout / blockout / testout energy source according to ANSI standards (see "References").



⚠ DANGER

If this equipment will be installed in an enclosed area, test the gas level or dust content before using a cutting torch or welding. Using a torch or welding in an area with gas or dust may cause an explosion resulting in serious injury or death. Follow local confined space procedures.

5. If using a cutting torch or welding, test atmosphere for gas level or dust content. Cover conveyor belt with fire retardant cover.

IMPORTANT

Do not install Martin[®] Roll Generator in load zone.

Installing Roll Generator

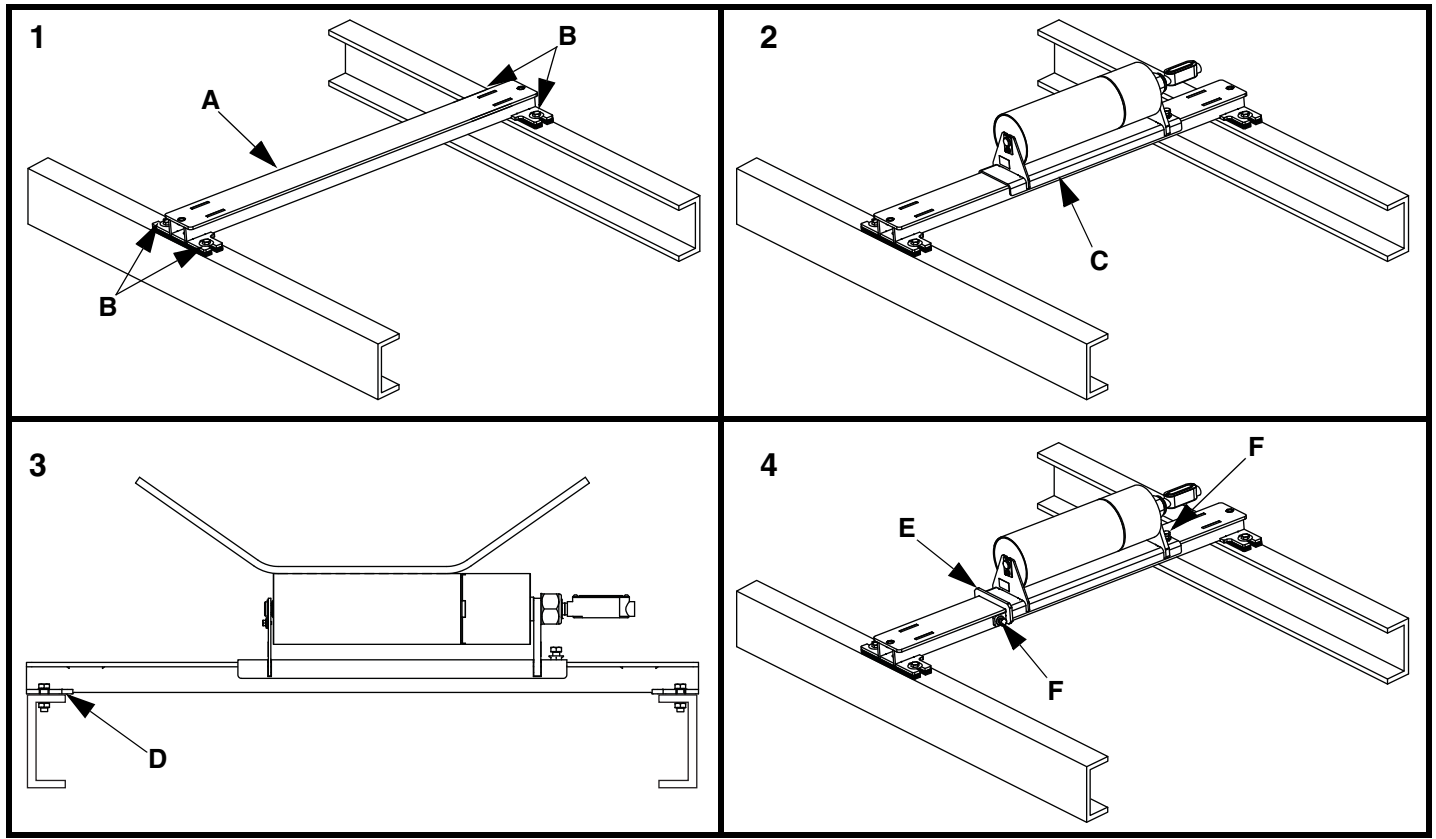


Figure 1. Installing Center Roll Assembly

Installing center roll assembly

1. Mount track weldment (A) on conveyor.
 - a. Determine desired mounting location depending on electrical usage and available conveyor space.
 - b. Position track weldment on stringer.
 - c. Make sure track weldment is 90° to belt travel.
 - d. Mark location of mounting holes.
 - e. Drill or cut two 5/8-in. holes in each stringer.
 - f. Remove burrs and sharp edges.
 - g. Fasten track weldment to stringer using supplied hardware (B). Hand tighten only.
2. Slide center roll weldment assembly (C) onto track weldment.

IMPORTANT

Roll must contact belt at all times to generate electricity, but generator housing must not come into contact with belt.

3. If necessary add shims (D) between track weldment and stringers. Tighten mounting hardware (B).
4. Slide end stop (E) onto track weldment. Tighten jam nuts (F) on center roll weldment and end stop.

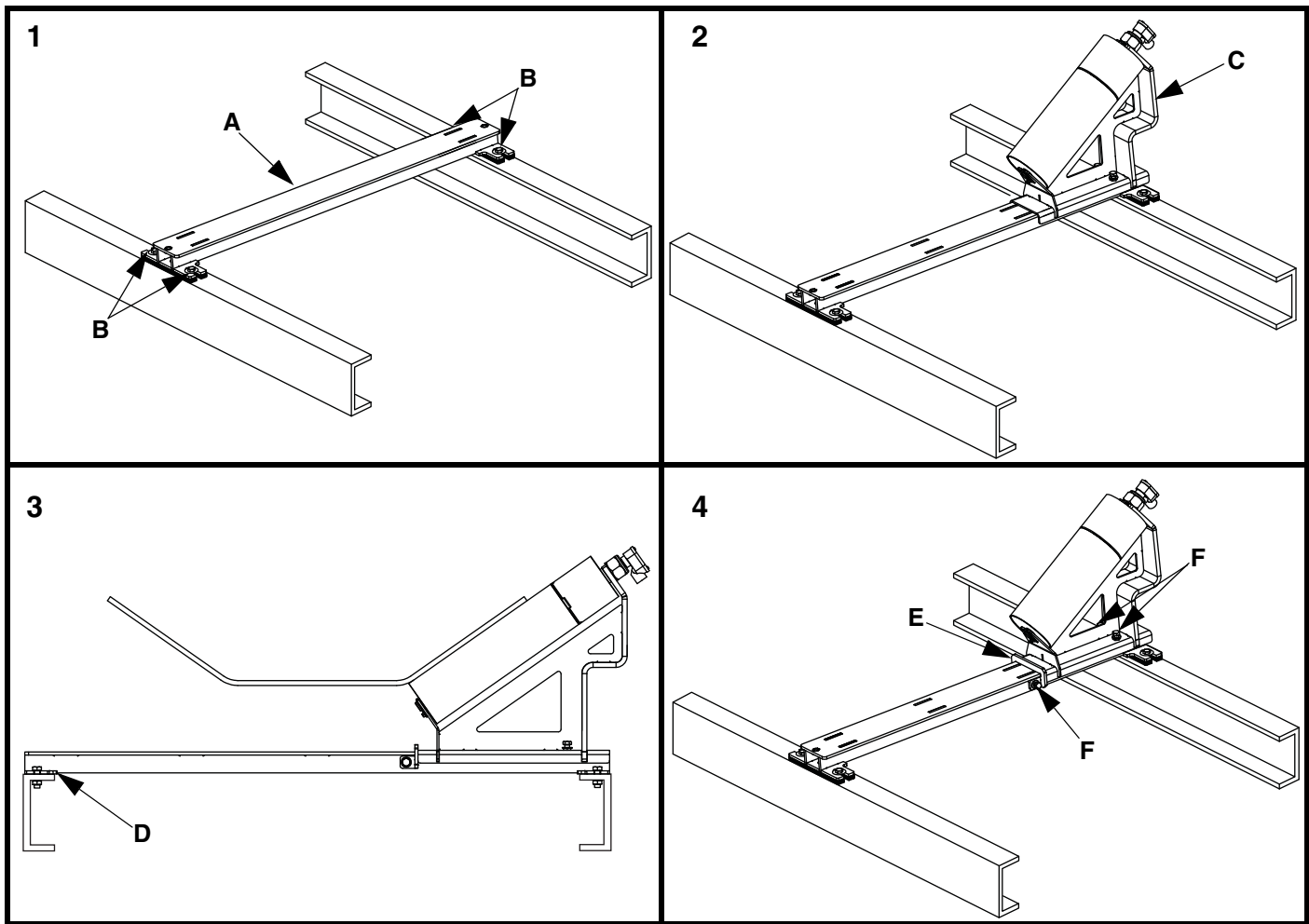


Figure 2. Installing Wing Roll Assembly

Installing wing roll assembly

1. Mount track weldment (A) on conveyor.
 - a. Determine desired mounting location depending on electrical usage and available conveyor space.
 - b. Position track weldment on stringer.
 - c. Make sure track weldment is 90° to belt travel.
 - d. Mark location of mounting holes.
 - e. Drill or cut two 5/8-in. holes in each stringer.
 - f. Remove burrs and sharp edges.
 - g. Fasten track weldment to stringer using supplied hardware (B). Hand tighten only.
2. Slide wing roll weldment assembly (C) onto track weldment until roll fully contacts belt.

IMPORTANT

Roll must contact belt at all times to generate electricity, but generator housing must not come into contact with belt.

3. If necessary add shims (D) between track weldment and stringers. Tighten mounting hardware (B).
4. Slide end stop (E) onto track weldment. Tighten jam nuts (F) on wing roll weldment and end stop.

Mounting power supply cabinet

⚠ WARNING

Before making any connections, lockout / tagout / blockout / testout electrical supply to controller according to ANSI standards (see “References”).

⚠ WARNING

All electrical work must be done to National Electrical Code (NEC) standards.

1. Determine location for power supply cabinet.

⚠ CAUTION

Do not mount power supply cabinet in area subject to shock, vibration, temperatures exceeding 130°F (55°C), or explosion. Damage to power supply cabinet circuitry could result.

2. Mount cabinet onto wall with fasteners.
3. Using electrical connectors, route wires from Martin® Roll Generator to power supply cabinet.

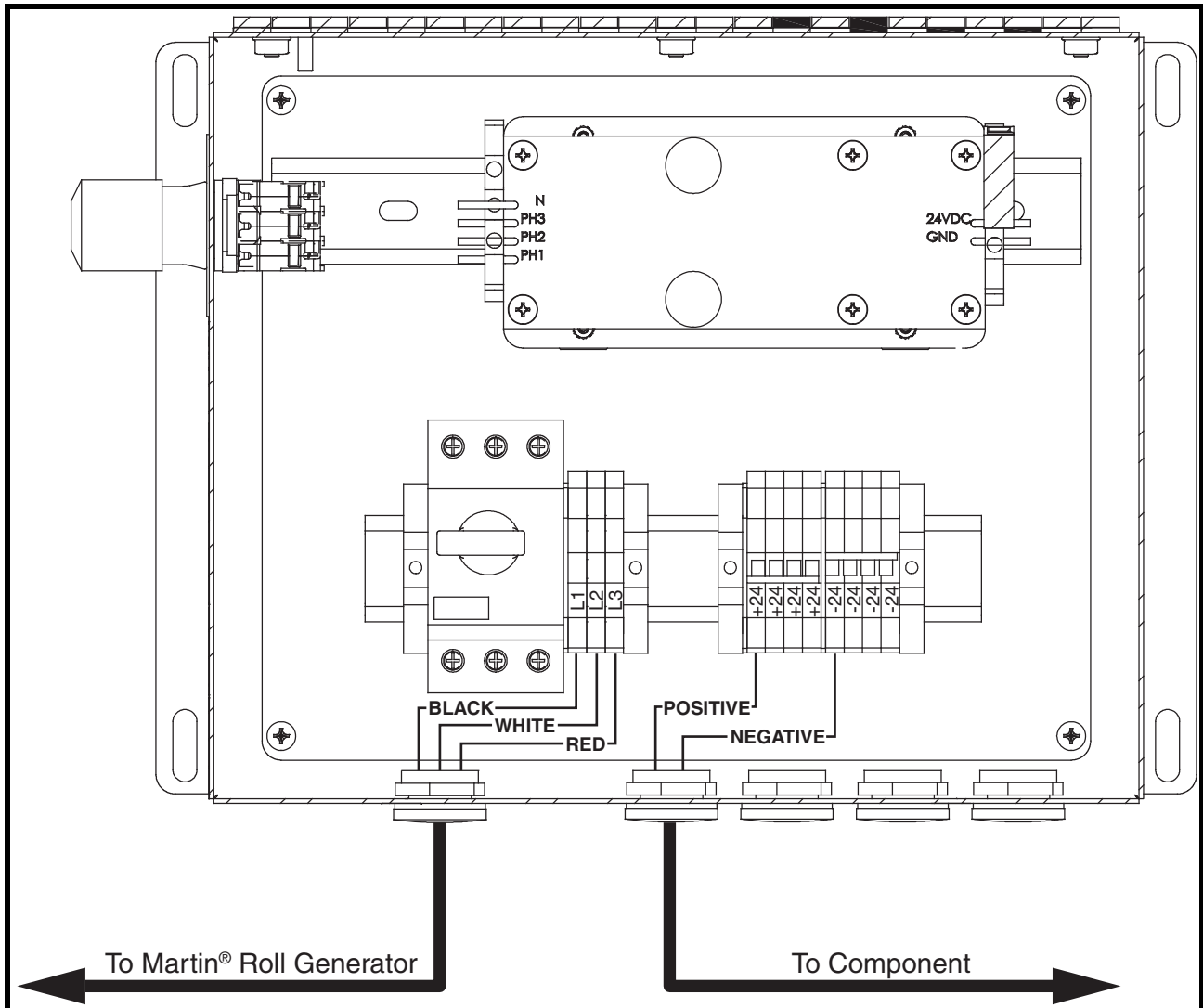


Figure 3. Power Supply Cabinet Layout

Wiring power supply cabinet

1. Connect wires from roll generator to terminal block (see Figure 3):
 - a. Black wire to L1 terminal.
 - b. White wire to L2 terminal.
 - c. Red wire to L3 terminal.

IMPORTANT

The power supply cabinet has terminals to connect four components. Calculate power requirements (watts) of components to be connected and refer to Figure 4 to determine if roll generator power output is sufficient.

2. Using electrical connectors, route wires from component to power supply cabinet.
3. Connect wires from component to terminal block (see Figure 3):
 - a. Positive wire to +24 terminal.
 - b. Negative wire to -24 terminal.
4. Repeat steps 2 and 3 for additional components.

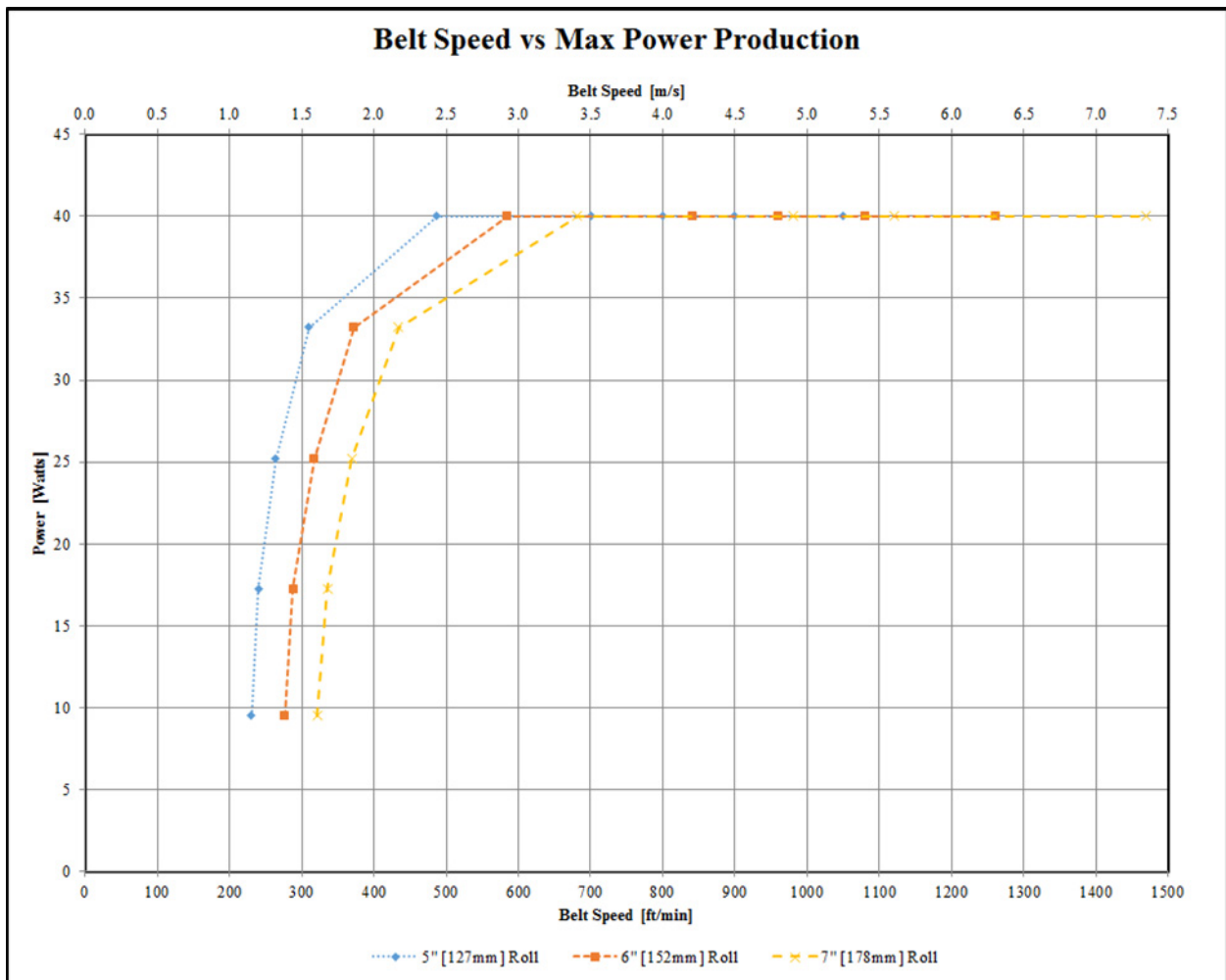
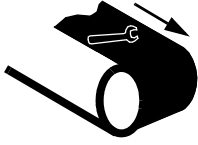


Figure 4. Roll Generator Power Output

After Installing Roll Generator



⚠ WARNING

Failure to remove tools from installation area and conveyor belt before turning on energy source can cause serious injury to personnel and damage to belt.



⚠ DANGER

Do not touch or go near conveyor belt or conveyor accessories when conveyor belt is running. Body or clothing can get caught and pull body into conveyor belt, causing severe injury or death.

1. Turn on conveyor belt for 1 hour, then turn off.



⚠ DANGER

Before installing, servicing, or adjusting the conveyor equipment, turn off and lockout / tagout / blockout / testout all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.

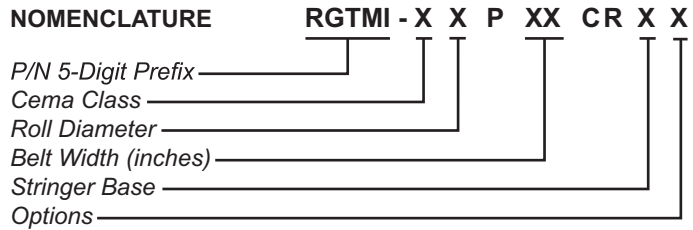
2. Make sure all fasteners are tight. Tighten if necessary.

Part Numbers

This section provides product names and corresponding part numbers for Martin® Roll Generator and related equipment. Please reference part numbers when ordering parts:

Martin® Power Supply Cabinet: P/N 39413

Martin® Roll Generator Center Roll Assembly



CEMA CLASS

- D:** Class D
- E:** Class E

STRINGER BASE

- S:** Standard Base
- W:** Wide Base

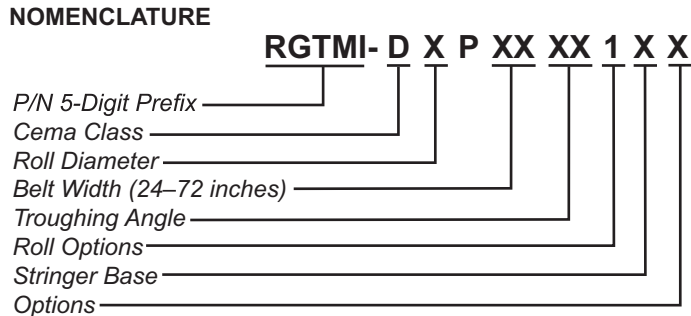
ROLL DIAMETER

- 5:** 5 inch
- 6:** 6 inch
- 7:** 7 inch

OPTIONS

- D:** Rotation Direction Sensor Kit

Martin® Roll Generator Wing Roll Assembly - CEMA D



ROLL DIAMETER

- 5:** 5 inch
- 6:** 6 inch

STRINGER BASE

- S:** Standard Base
- W:** Wide Base

TROUGHING ANGLE

- 20:** 20 Degrees
- 35:** 35 Degrees

OPTIONS

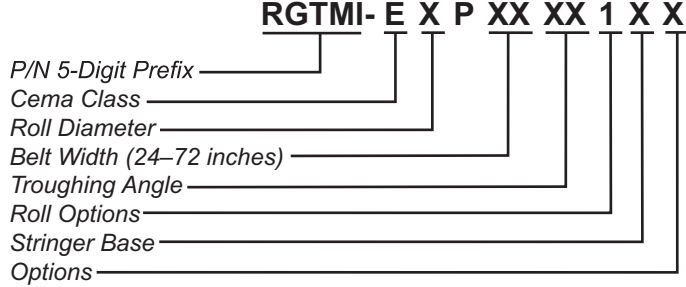
- D:** Rotation Direction Sensor Kit (6 inch rolls only)

ROLL OPTIONS

- 1:** Single Wing Roll

Martin® Roll Generator Wing Roll Assembly - CEMA E

NOMENCLATURE



ROLL DIAMETER

- 6:** 6 inch
- 7:** 7 inch

TROUGHING ANGLE

- 20:** 20 Degrees
- 35:** 35 Degrees

ROLL OPTIONS

- 1:** Single Wing Roll

STRINGER BASE

- S:** Standard Base
- W:** Wide Base

OPTIONS

- D:** Rotation Direction Sensor Kit

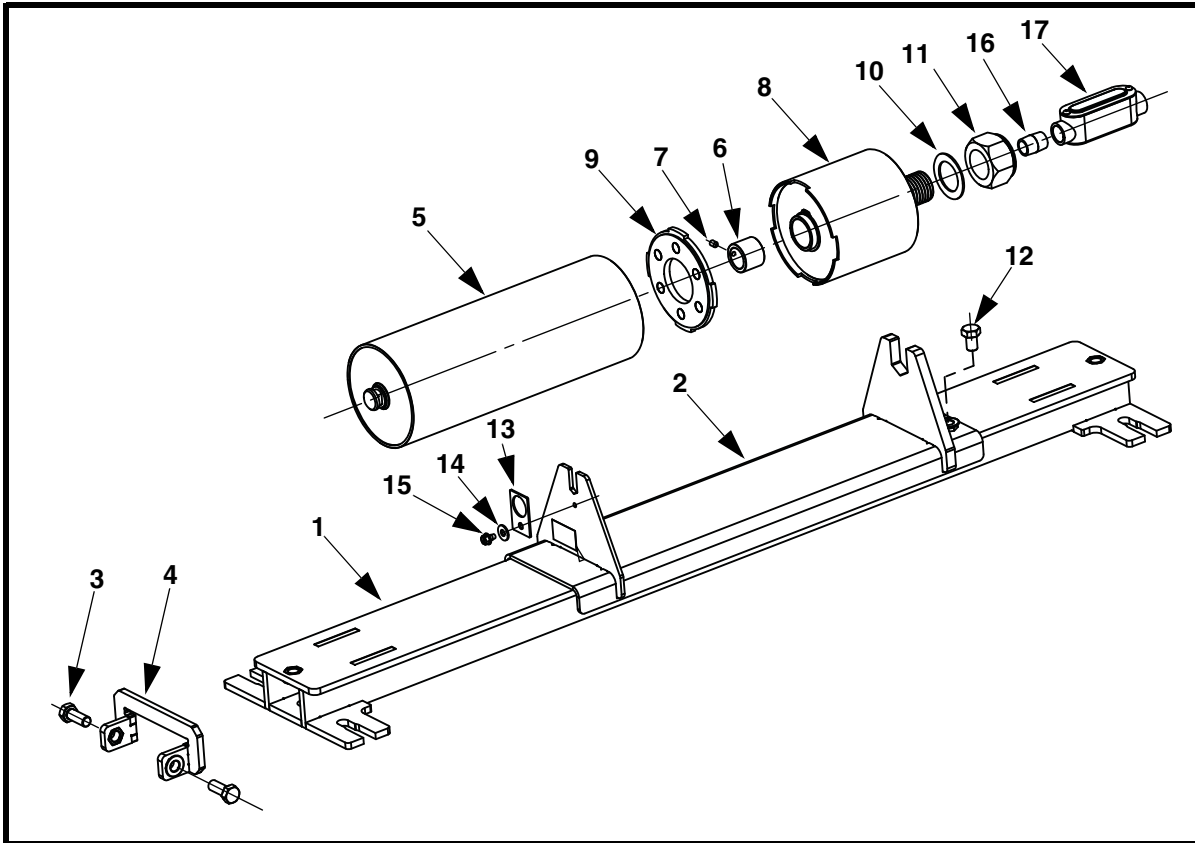


Figure 5. Martin® Roll Generator Assembly, P/N RGTMIXXP-XXCRXX

Item	Description	Part No.	Qty
1	Plate Type Track Weldment	TMI2-TW-XXXX*	1
2	Center Sleeve Weldment	RGTMI-CW-X1PX**	1
3	End Stop Weldment	Table I	1
4	Screw HHC 1/2-13NC x 1-1/4 SS	25463	2
5	Steel Roll	Table I	1
6	Shaft Adapter Bushing	RG1-010-0030-100	Table I
7	Screw Set Hex SOC Cup 1/4-20 x 3/8	11716	Table I
8	Roll Generator Sub Assembly for PPI Rolls	RG1-010-5P	1
9	Magnetic Drive Cog/Sleeve	Table I	1
10	Shaft Washer SS	RG-010-0032	1
11	Nut Elastic Lock M36 x 4.00 ZP	39400	1
12	Screw HHC 1/2-13NC x 3/4 SS	31294	1
13	Tie Tab	Table II	1
14	Washer Flat 1/4 Wide ZP	15073	1
15	Screw Tapping HWH 1/4-20NC x 3/8 Type C ZP	38608	1
16	Nipple Pipe 1/2-NPT SCH 40 x 12 Galv.	37140	1

Item	Description	Part No.	Qty
17	Inline Conduit Connector 1/2	39441	1
18 (NS)	TMI Foot Shim Plate .12 Thick	TMI2-FS-XX-12	4
19 (NS)	TMI Foot Shim Plate .18 Thick	TMI2-FS-XX-18	4
20 (NS)	Label Martin® Product Small	32238	2
21 (NS)	Mounting Hardware Kit	35283	1
22 (NS)	Operator's Manual	M4062	1
23 (NS)	Rotation Direction Sensor Mount Kit	Table I	Table I
24 (NS)	Rotation Direction Magnetic Disk for 5" Rolls	RGTMI-DS-0014DP	Table I

* First X indicates CEMA Class (D) or (E). Next XX indicates Belt Width. Last X indicates Standard (S) or Wide (W) Base.
 ** First X indicates CEMA Class (D) or (E). Last X indicates Rotation Direction Sensor Mount Kit (D) or Blank.
 NS = Not Shown

**Table I. Martin® Roll Generator Part Numbers and Quantities for Assembly
 P/N RGTMIXXP-XXCRXX**

Part No.	Part No. Item 3	Part No. Item 5	Part No. Item 9	Part No. Item 13	Qty Items 6 & 7
RGTMI5P-XXCR	RGTMI-ESW-D	TMIRD5-36SP	RG1-010-0050-5P	TMI-TT-100P	1
RGTMI6P-XXCR	RGTMI-ESW-D	TMIRD6-36SP	RG1-010-0050-6P	TMI-TT-100P	1
RGTMI6P-XXCR	RGTMI-ESW-E	TMIRE6-36SP	RG1-010-0050-6P	TMI-TT-138P	0
RGTMI7P-XXCR	RGTMI-ESW-E	TMIRE7-36SP	RG1-010-0050-7P	TMI-TT-138P	0

Part No.	Part No. Item 23	Qty Item 23	Qty Item 24
RGTMI5P-XXCRXD	RGTMI-DS-MK5	1	1
RGTMI6P-XXCRXD	RGTMI-DS-MK6	1	0
RGTMI6P-XXCRXD	RGTMI-DS-MK6	1	0
RGTMI7P-XXCRXD	RGTMI-DS-MK6	1	0

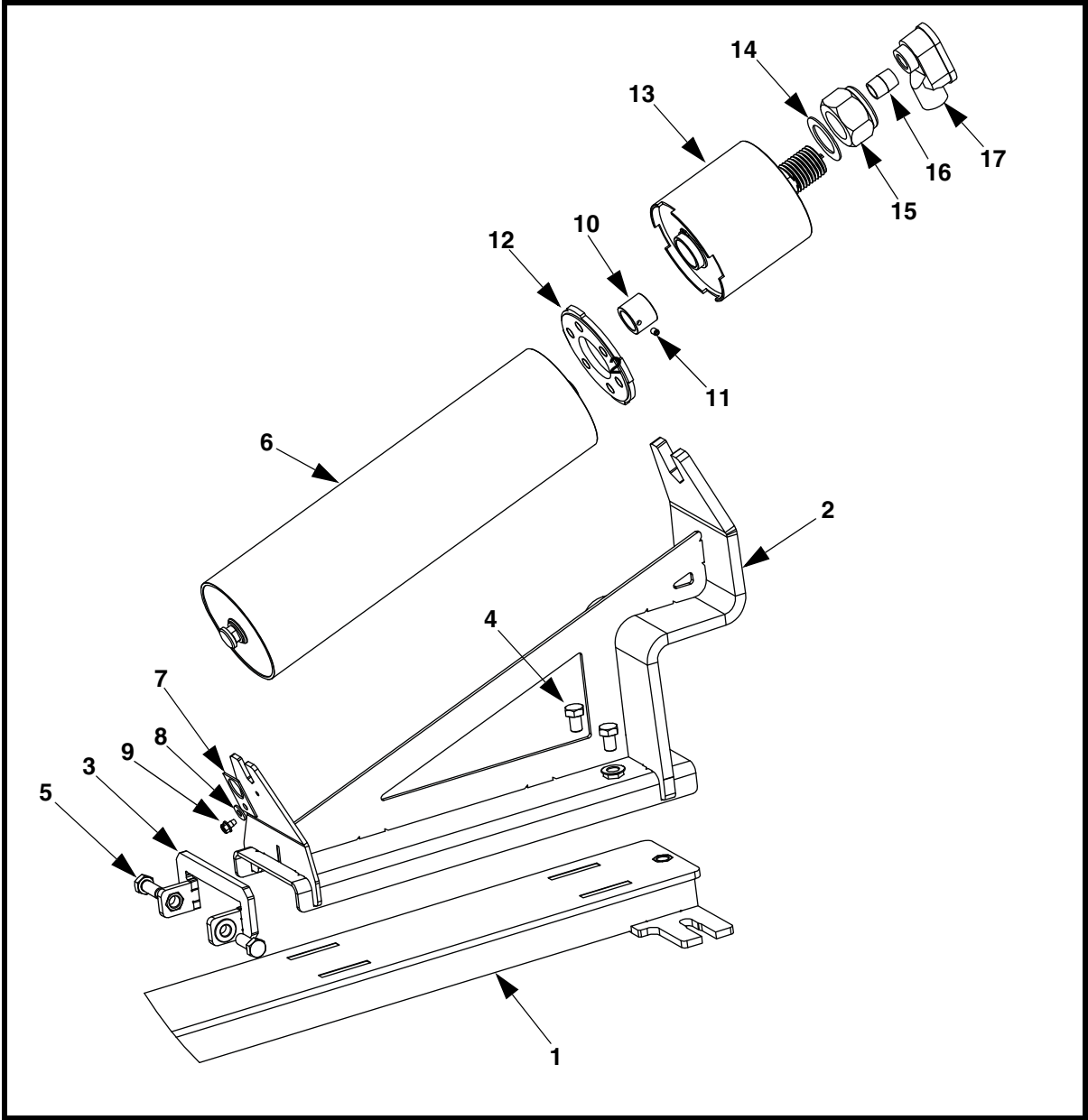


Figure 6. Martin® Roll Generator Assembly, P/N RGT MIDXP-XXXX1XX

Item	Description	Part no.	Qty
1	Plate Type Track Weldment	TMI2-TW-DXXX*	1
2	Wing Weldment	RGTMI-WW-DXXXXSPX**	1
3	End Stop Weldment	RGTMI-ESW-D	1
4	Screw HHC 1/2-13NC x 3/4 SS	31294	2
5	Screw HHC 1/2-13NC x 1-1/4 SS	25463	2
6	Steel Roll	Table II	1
7	Tie Tab	TMI-TT-100P	1
8	Washer Flat 1/4 Wide ZP	15073	1
9	Screw Tapping HWH 1/4-20NC x 3/8 Type C ZP	38608	1
10	Shaft Adapter Bushing	RG1-010-0030-100	1
11	Screw Set Hex SOC Cup 1/4-20 x 3/8	11716	1
12	Magnetic Drive Cog/Sleeve	Table II	1
13	Roll Generator Sub Assembly for PPI Rolls	RG1-010-5P	1
14	Shaft Washer SS	RG-010-0032	1
15	Nut Elastic Lock M36 x 4.00 ZP	39400	1
16	Nipple Pipe 1/2-NPT SCH 40 x 12 Galv.	37140	1
17	Conduit Connector 90° 1/2	38256-S	1
18 (NS)	TMI Foot Shim Plate .12 Thick	RGTMI-FS-XX-12	4
19 (NS)	TMI Foot Shim Plate .18 Thick	RGTMI-FS-XX-18	4
20 (NS)	Label Martin® Product Small	32238	1
21 (NS)	Mounting Hardware Kit	35283	1
22 (NS)	Operator's Manual	M4062	1
23 (NS)	Rotation Direction Sensor Mount Kit	RGTMI-DS-WWMK6	Table II

* First XX indicates Belt Width. Last X indicates Standard (S) or Wide (W) Base.

** First XX indicates Belt Width. Next XX indicates Troughing Angle (20) or (35). Last X indicates Rotation Direction Sensor Mount Kit (D) or Blank.

NS = Not Shown

Figure 6. Martin® Roll Generator Assembly, P/N RGT MIDXP-XXXX1XX

Table II. Martin® Roll Generator Part Numbers and Quantities for Assembly P/N RGT MIDXP-XXXX1XX

Part No.	Part No. Item 6
RGTMID5P-XXXX1XX	TMIRD5-XXSP
RGTMID6P-XXXX1XX	TMIRD6-XXSP

Part No.	Part No. Item 12	Qty Item 23
RGTMID5P-XXXX1XP	RG1-010-0050-5P	0
RGTMID6P-XXXX1XP	RG1-010-0050-6P	0
RGTMID6P-XXXX1XPD	RG1-010-0050-6PD	1

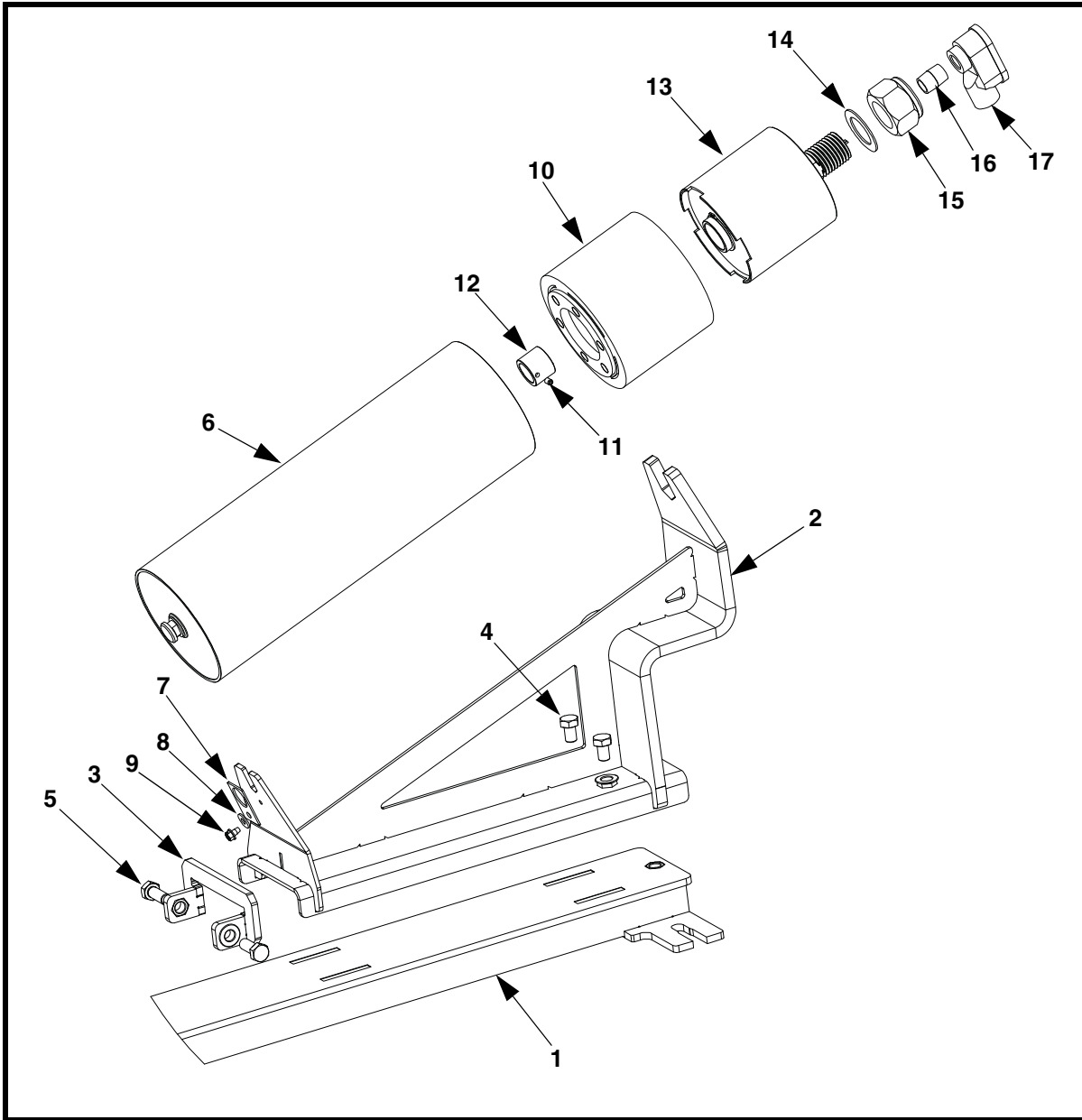


Figure 7. Martin[®] Roll Generator Assembly, P/N RGTMIEXP-XXXX1XX

Item	Description	Part no.	Qty
1	Plate Type Track Weldment	TMI2-TW-EXXX*	1
2	Wing Weldment	RGTMI-WW-EXXXXSPX**	1
3	End Stop Weldment	RGTMI-ESW-E	1
4	Screw HHC 1/2-13NC x 3/4 SS	31294	2
5	Screw HHC 1/2-13NC x 1-1/4 SS	25463	2
6	Steel Roll	Table III	1
7	Tie Tab	TMI-TT-138P2	1
8	Washer Compression 5/16	11452	1
9	Screw HHC 5/16-18NC x 1/2 ZP	39450	1
10	Magnetic Drive Cog/Sleeve	Table III	1
11	Roll Generator Sub Assembly for PPI Rolls	RG1-010-5P	1
12	Shaft Washer SS	RG1-010-0032	1
13	Nut Elastic Lock M36 x 4.00 ZP	39400	1
14	Nipple Pipe 1/2-NPT SCH 40 x 12 Galv.	37140	1
15	Conduit Connector 90° 1/2	38256-S	1
16	TMI Foot Shim Plate .12 Thick	RGTMI-FS-XX-12	4
17	TMI Foot Shim Plate .18 Thick	RGTMI-FS-XX-18	4
18 (NS)	Label Martin® Product Small	32238	1
19 (NS)	Mounting Hardware Kit	35283	1
20 (NS)	Operator's Manual	M4062	1
21 (NS)	Rotation Direction Sensor Mount Kit	RGTMI-DS-WWMK6	Table III

* First XX indicates Belt Width. Last X indicates Standard (S) or Wide (W) Base.

** First XX indicates Belt Width. Next XX indicates Troughing Angle (20) or (35). Last X indicates Rotation Direction Sensor Mount Kit (D) or Blank.

NS = Not Shown

Figure 7. Martin® Roll Generator Assembly, P/N RGTMIEXP-XXXX1XX

Table III. Martin® Roll Generator Part Numbers and Quantities for Assembly P/N RGTMIEXP-XXXX1XX

Part No.	Part No. Item 6
RGTMI6P-XXXX1XX	TMIRE6-XXSP
RGTMI7P-XXXX1XX	TMIRE7-XXSP

Part No.	Part No. Item 10	Qty Item 21
RGTMI6P-XXXX1XP	RG1-010-0050-6P	0
RGTMI7P-XXXX1XP	RG1-010-0050-7P	0
RGTMI6P-XXXX1XPD	RG1-010-0050-6PD	1
RGTMI7P-XXXX1XPD	RG1-010-0050-7PD	1

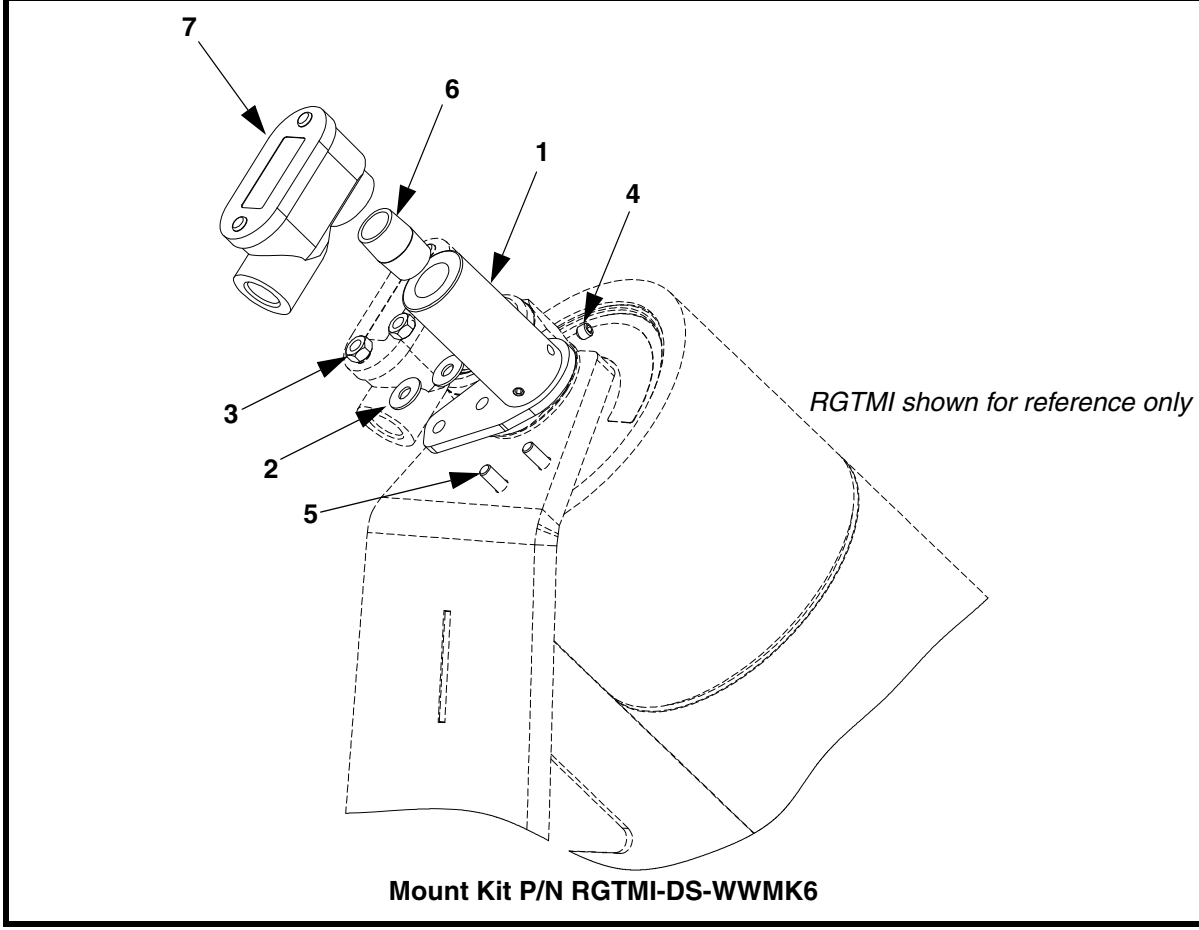
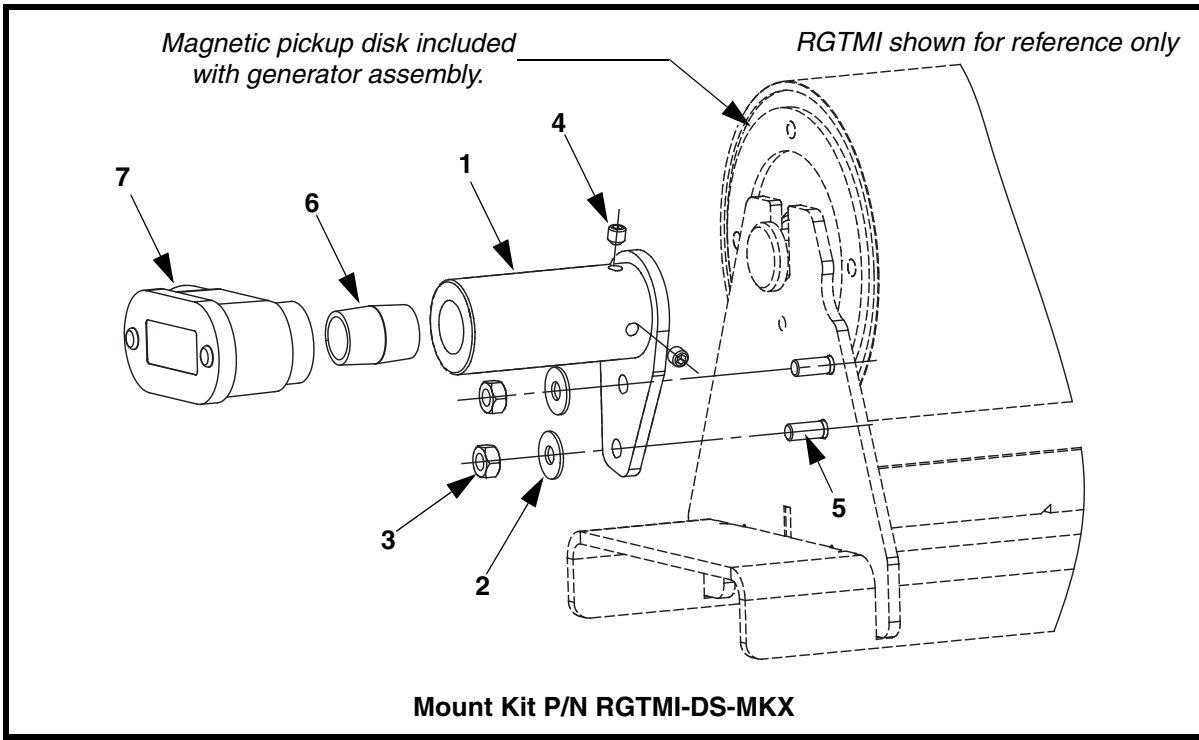


Figure 8. Martin® Roll Generator Direction Sensor Mount Kit

Item	Description	Part no.	Qty
1	Sensor Mount Weldment	RGTMI-DS-0010	1
2	Washer Compression 1/4	11521	2
3	Nut Hex 1/4-20NC ZP	11769	2
4	Screw Set Hex SOC CUP 1/4-20 x 1/4	13934	2
5	Screw SFCHC 1/4-20NC	Table IV	2
6	Nipple Pipe 1/2-NPT SCH 40 x 12 Galv.	37140	1
7	Conduit Elbow	Table IV	1

Figure 8. Martin[®] Roll Generator Direction Sensor Mount Kit

Table IV. Martin[®] Roll Generator Direction Sensor Mount Kit Part Numbers

Part No.	Part No. Item 5	Part No. Item 7
RGTMI-DS-MK5	30453	38256-S
RGTMI-DS-MK6	33552	39441
RGTMI-DS-WWMK6	33552	38256-S

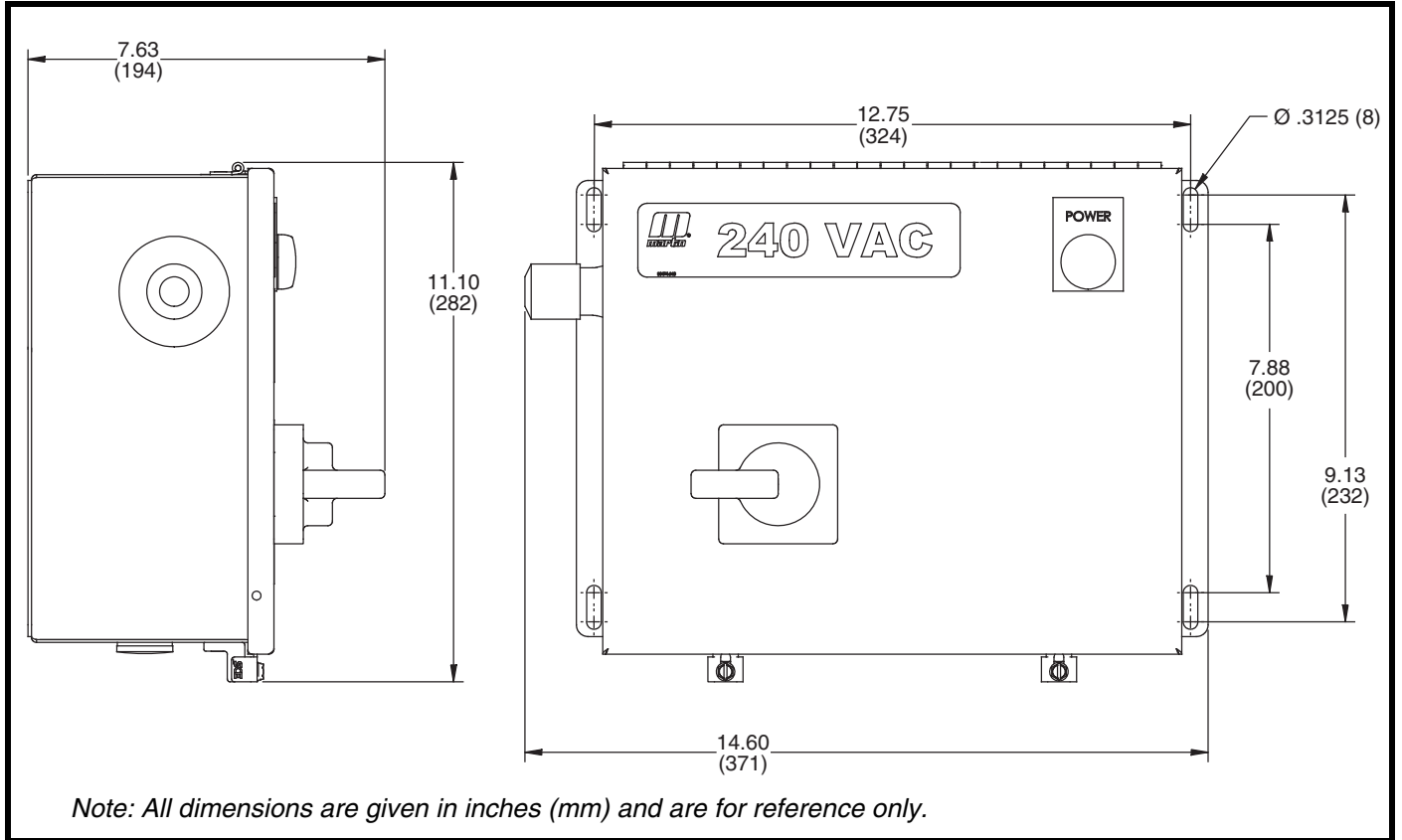


Figure 9. Martin® Power Supply Cabinet, P/N 39413

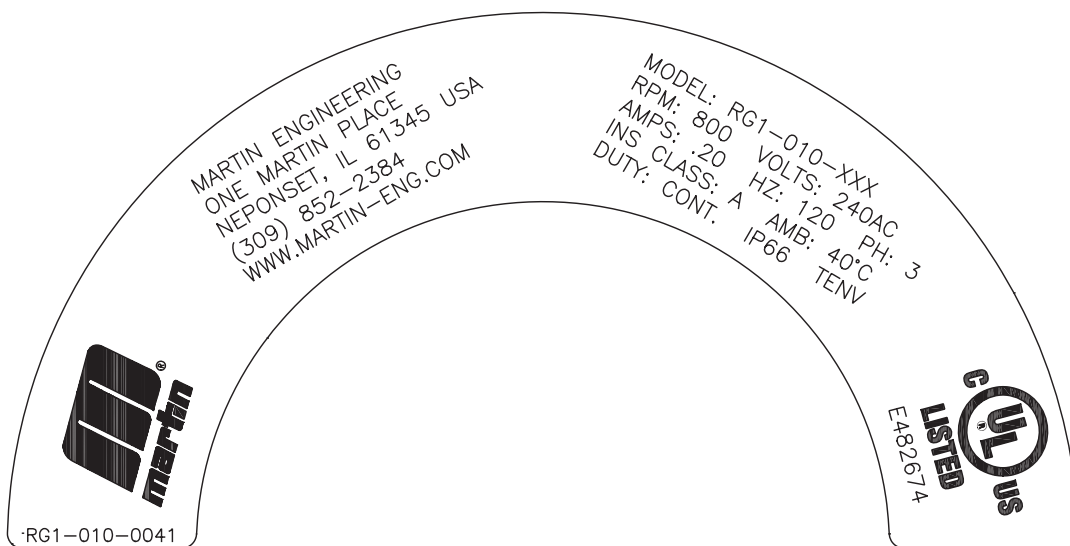
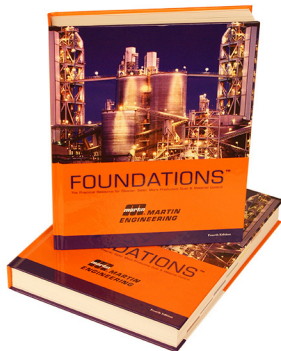


Figure 10. Martin® Roll Generator Label

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For nearly 20 years, Martin Engineering's Foundations™ Books have taught industry personnel to operate and maintain clean and safe belt conveyors. The Foundations™ Book, fourth edition, focuses on improving belt conveyors by controlling fugitive material. "The Practical Resource for Total Dust and Material Control," is a 576-page hard cover volume that provides information of value to industries where the efficient handling of bulk materials is a key to productivity and profitability.

Expanding upon the book, our Foundations™ Training Program addresses the design and development of more productive belt conveyors, and is offered in three customizable seminars. Attendees gain a better understanding of conveyor safety and performance, helping to justify upgrade investments and increase profitability.



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**COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV
= ISO 9001:2008 =**