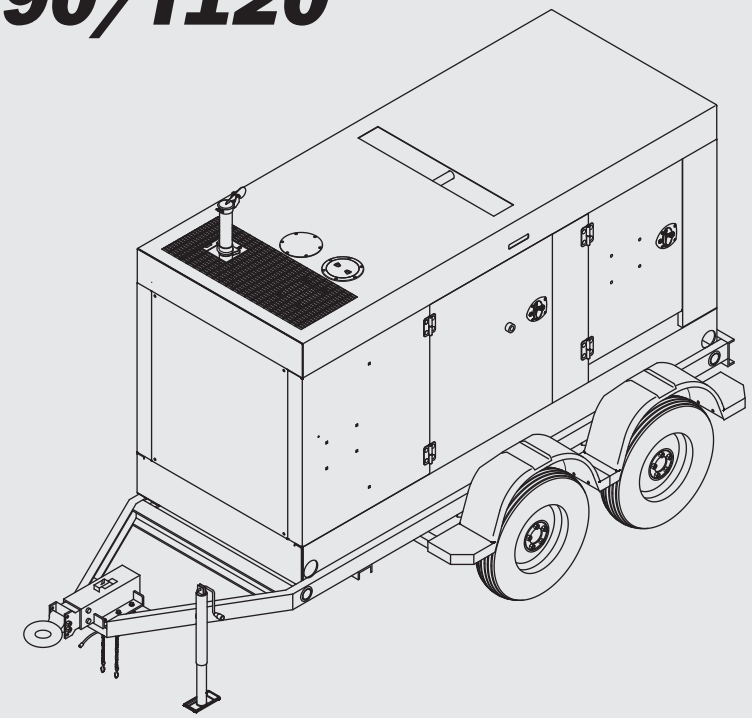
TEREX®

Service Manual

T90/T120



First Edition

Rev A

Part No. 134884

August 2008

TEREX

Introduction

REV A

Important

Read, understand and obey the safety rules and operating instructions in the appropriate Operator's Manual on your machine before attempting any maintenance procedure.

Basic mechanical, hydraulic and electrical skills are required to perform most procedures. However, several procedures require specialized skills, tools, lifting equipment and a suitable workshop. In these instances, we strongly recommend that maintenance and repair be performed at an authorized TEREX dealer service center.

Technical Publications

TEREX Corporation has endeavored to deliver the highest degree of accuracy possible. However, continuous improvement of our products is a TEREX policy. Therefore, product specifications are subject to change without notice.

Readers are encouraged to notify TEREX of errors and send in suggestions for improvement. All communications will be carefully considered for future printings of this and all other manuals.

Serial Number Information

TEREX Corporation offers the following manuals for these models:

Title	Part No.
TEREX T90 thru T360 Operator's Manual, First Edition	133005
TEREX T90 & T120 Service Manual, First Edition	134884
TEREX T90 & T120 Parts Manual,	134883
Newage Generator Manual	830005
John Deere Engine Manual	839018
Perkins Engine Manual	839019
Cummins Engine Manual	839059
Cummins Engine Manual	839060
iGuard Controller Manual	839058
Cascade Controller Manual	833011
Dexter Axle Manual	833014

Contact Us:

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134884 Rev A August 2008
First Edition, First Printing

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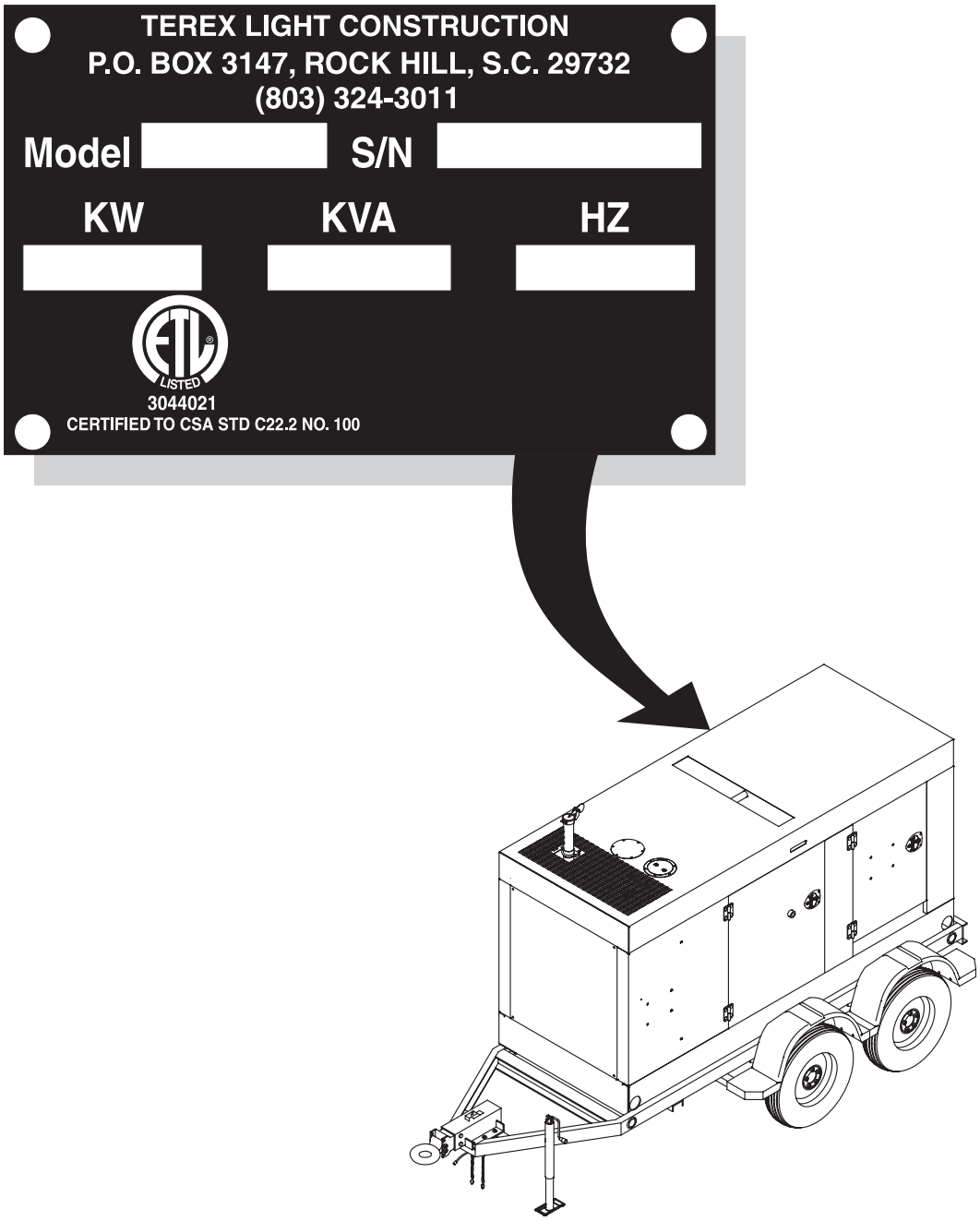
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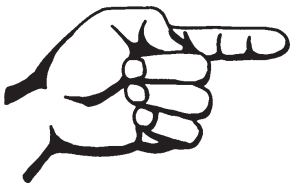
REV A

How to Read Your Serial Number

Serial Number Legend

The serial number plate on your T90 & T120 Super Quiet Generator is located on the twist lock area of the lower control panel.





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REV A

Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual and the appropriate Operator's Manual on your machine will result in death or serious injury.

Many of the hazards identified in the operator's manual are also safety hazards when maintenance and repair procedures are performed.

Do Not Perform Maintenance Unless:

- ☑ You are trained and qualified to perform maintenance on this machine.
- ☑ You read, understand and obey:
  - manufacturer's instructions and safety rules
  - employer's safety rules and worksite regulations
  - applicable governmental regulations
- ☑ You have the appropriate tools, lifting equipment and a suitable workshop.

Personal Safety

Any person working on or around a machine must be aware of all known safety hazards. Personal safety and the continued safe operation of the machine should be your top priority.



Read each procedure thoroughly. This manual and the decals on the machine, use signal words to identify the following:



Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Yellow with safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

CAUTION Yellow without safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE Green—used to indicate operation or maintenance information.



Be sure to wear protective eye wear and other protective clothing if the situation warrants it.



Be aware of potential crushing hazards such as moving parts, free swinging or unsecured components when lifting or placing loads. Always wear approved steel-toed shoes.

Workplace Safety



Be sure to keep sparks, flames and lighted tobacco away from flammable and combustible materials like battery gases and engine fuels. Always have an approved fire extinguisher within easy reach.



Be sure that all tools and working areas are properly maintained and ready for use. Keep work surfaces clean and free of debris that could get into machine components and cause damage.



Be sure that your workshop or work area is properly ventilated and well lit.



Be sure any forklift, overhead crane or other lifting or supporting device is fully capable of supporting and stabilizing the weight to be lifted. Use only chains or straps that are in good condition and of ample capacity.



Be sure that fasteners intended for one time use (i.e., cotter pins and self-locking nuts) are not reused. These components may fail if they are used a second time.



Be sure to properly dispose of old oil or other fluids. Use an approved container. Please be environmentally safe .

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Parts Stocking List

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Required Parts

The following parts are required to perform maintenance procedures as outlined in the *TEREX T90 & T120 Parts and Service Manual.*

Description	Part No.
Perkins 1104C.44TAG1 - T90P & 1104C-44TAG2 - T120P Models	
Oil Filter	741921
Air Filter	741926
Fuel Filter	741923
V-belt	866072
John Deere 6068TF275 - T120J Models	
Oil Filter	741915
Air Filter	C33100901 & C33100902
Fuel Filter	741944
V-belt	741945
Cummins 6BTA5.9G4 - T120C Models	
Oil Filter	839064
Air Filter	C33100507 & C33100508
Fuel Filter	839061
V-belt	839063

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How To Order Parts

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Please be prepared with the following information when ordering replacement parts for your TEREX product:

- ☑ Machine model number
- ☑ Machine serial number
- ☑ Terex part number
- ☑ Part description and quantity
- ☑ Purchase order number
- ☑ "Ship to" address
- ☑ Desired method of shipment
- ☑ Name and telephone number of the authorized TEREX Distributor in your area

Use the Service Parts Fax Order Form on the next page and fax your order to our Parts Department.

If you don't know the name of your authorized distributor, or if your area is not currently serviced by an authorized distributor, please call TEREX Corporation.

Genie Industries
18340 NE 76th Street
P.O. Box 97030
Redmond, WA 98073-9730
Telephone (877) 367-5606
Fax (888) 274-6102
genieindustries.com

Machine Information

Model

Serial Number

Date of Purchase

Authorized TEREX Distributor

Phone Number

TEREX

Service Parts fax Order Form

FAX TO: (800) 633-5534 OR TOLL FREE: 800-433-3026

Please fill out completely

Date _____ Account Number _____

Your Name _____ **Your Fax Number** _____

_____ Your Phone Number _____

Bill To _____ Ship To _____

_____ _____

_____ _____

_____ _____

Purchase Order Number _____ Ship Via _____

Model(s) _____ **Serial No.(s)** _____

Optional Equipment _____

Part Number	Description	Quantity	Price

All backordered parts will be shipped when available via the same ship method as the original order unless noted below:

- o Ship complete order only - no backorders
- o Ship all available parts and contact customer on disposition of backordered parts
- o Other (please specify)

_____

_____

FOR TEREX USE ONLY

Order Number _____ Origin Code _____ Comments _____

Date Scheduled _____ Ship Condition _____ _____

Order Total _____ Terms Code _____ _____

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Specifications

REV A

MODEL		T90P	T120C	T120J	T120P
POWER CAPABILITY-PRIME					
kVA (kilovolt-amps)		90	119	119	113
kW		72	95	95	90
3 Phase Amp Ratings					
	208V	250	330	330	250
	240V	217	286	286	217
	480V	108	143	143	108
POWER CAPABILITY-STANDBY					
kVA (kilovolt-amps)		100	132	132	100
kW (kilowatts)		80	106	106	80
3 Phase Amp Ratings	208V	278	366	366	278
	240V	241	318	318	241
	480V	120	159	159	120
VOLTAGE					
3 Phase 208, 220, 240, 416, 440, 480		Standard	Standard	Standard	Standard
600 Volt		Optional	Optional	Optional	Optional
1 Phase 120, 127, 139, 240, 254, 277		Standard	Standard	Standard	Standard
Max Motor Starting1	Hp	53	77	76	76
	kW	40	57	57	57
SKVA		311	460	460	460
DIESEL ENGINE					
Manufacturer		PERKINS	CUMMINS	JOHN DEERE	PERKINS
Model		1104C-44TAG1	6BTA5.9-G4	6068TF275	1104C-44TAG2
Cylinder		4	6	6	4
Air Intake (aspiration)		Turbo Charge Air Cooling	Turbo	Turbo	Turbo Charge Air Cooling
Cooling System		Radiator	Standard Radiator	Standard Radiator	Radiator
Fuel Capacity (gal)		196	196	196	196
Run Time (75% load)		44	31	33	37
Fuel Consumption, Prime Power (gal per hr)	100% load	5.8	8.2	7.7	7.1
	75% load	4.5	6.3	5.9	5.3
	50% load	3.1	4.5	4.1	3.7
	25% load	2.4	2.3	2.3	2.8
dBA		65	68	68	68
Controller Type		Digital/Analog	Digital/Analog	Digital	Digital/Analog
Start/Stop Controller		Cascade	Cascade	iGuard	Cascade
12V Battery (CCA)		750	1,000	1,000	1,000

SPECIFICATIONS REV A

MODEL		T90P	T120C	T120J	T120P
GENERATOR					
Brushless, 4 pole, Synchronous, Single-bearing		Standard	Standard	Standard	Standard
1,800 rpm, Class H Insulation Generator		Standard	Standard	Standard	Standard
High wye, Low wye, Zig-zag Voltage Selector		Standard	Standard	Standard	Standard
3 Phase Voltage: 208, 220, 240,416, 440, 480		Standard	Standard	Standard	Standard
600 Volt		Optional	Optional	Optional	Optional
1Phase Voltage: 120, 127, 139, 240, 254, 277		Standard	Standard	Standard	Standard
Convenience Receptacles:		Standard	Standard	Standard	Standard
2 - 20A, 120V GFCI Duplex Receptacles		Standard	Standard	Standard	Standard
2 - 50A Tempowers		Standard	Standard	Standard	Standard
AVR Voltage Regulation (+/- 1.5%)		Standard	Standard	Standard	Standard
Electronic (+/- 1/2%) Speed Control Governor		Standard	Standard	Standard	Standard
Murphy Cascade Start/Stop Controller		Standard	Standard	Standard	
Murphy iGuard Start/Stop Controller					Standard
TRAILER					
HydraulicBrakes		Standard	Standard	Standard	Standard
Electric Brakes		Optional	Optional	Optional	Optional
Pintle Rng, 3 inch		Standard	Standard	Standard	Standard
Coupler Hitch, 2 inch		Optional	Optional	Optional	Optional
Coupler Hitch, 2 5/16 inch		Optional	Optional	Optional	Optional
SKID MOUNT		Standard	Standard	Standard	Standard
DIM (L x W x H - in)		110x44x63	110x44x63	110x44x63	110x44x63
Weight Dry (lbs)		4157	5390	5390	5200
Weight Full (lbs)		4995	6782	6782	6592
TRAILER MOUNT		Optional	Optional	Optional	Optional
Dim (L x W x H)		177x75x80	177x75x80	177x75x80	177x75x80
Weight Dry (lbs)		6697	6887	6887	6697
Weight Full (lbs)		7535	8279	8279	8089
1 Maximum motor size is based on 35% voltage dip at 480V AC 3 phase 60Hz with a code G motor					

SAE FASTENER TORQUE CHART

• This chart is to be used as a guide only unless noted elsewhere in this manual •

SIZE	THREAD	Grade 5				Grade 8				A574 High Strength Black Oxide Bolts	
		LUBED		DRY		LUBED		DRY		LUBED	
		in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
1/4	20	100	11.3	80	9	140	15.8	110	12.4	130	14.7
	28	90	10.1	120	13.5	120	13.5	160	18	140	15.8
		LUBED		DRY		LUBED		DRY		LUBED	
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5/16	18	13	17.6	17	23	18	24	25	33.9	21	28.4
	24	14	19	19	25.7	20	27.1	27	36.6	24	32.5
3/8	16	23	31.2	31	42	33	44.7	44	59.6	38	51.5
	24	26	35.2	35	47.4	37	50.1	49	66.4	43	58.3
7/16	14	37	50.1	49	66.4	50	67.8	70	94.7	61	82.7
	20	41	55.5	55	74.5	60	81.3	80	108.4	68	92.1
1/2	13	57	77.3	75	101.6	80	108.4	110	149	93	126
	20	64	86.7	85	115	90	122	120	162	105	142
9/16	12	80	108.4	110	149	120	162	150	203	130	176
	18	90	122	120	162	130	176	170	230	140	189
5/8	11	110	149	150	203	160	217	210	284	180	244
	18	130	176	170	230	180	244	240	325	200	271
3/4	10	200	271	270	366	280	379	380	515	320	433
	16	220	298	300	406	310	420	420	569	350	474
7/8	9	320	433	430	583	450	610	610	827	510	691
	14	350	474	470	637	500	678	670	908	560	759
1	8	480	650	640	867	680	922	910	1233	770	1044
	12	530	718	710	962	750	1016	990	1342	840	1139
1.125	7	590	800	790	1071	970	1315	1290	1749	1090	1477
	12	670	908	890	1206	1080	1464	1440	1952	1220	1654
1.25	7	840	1138	1120	1518	1360	1844	1820	2467	1530	2074
	12	930	1260	1240	1681	1510	2047	2010	2725	1700	2304
1.5	6	1460	1979	1950	2643	2370	3213	3160	4284	2670	3620
	12	1640	2223	2190	2969	2670	3620	3560	4826	3000	4067

METRIC FASTENER TORQUE CHART

• This chart is to be used as a guide only unless noted elsewhere in this manual •

Size (mm)	Class 4.6				Class 8.8				Class 10.9				Class 12.9			
	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
5	16	1.8	21	2.4	41	4.63	54	6.18	58	6.63	78	8.84	68	7.75	91	10.3
6	19	3.05	36	4.07	69	7.87	93	10.5	100	11.3	132	15	116	13.2	155	17.6
7	45	5.12	60	6.83	116	13.2	155	17.6	167	18.9	223	25.2	1.95	22.1	260	29.4
	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
8	5.4	7.41	7.2	9.88	14	19.1	18.8	25.5	20.1	27.3	26.9	36.5	23.6	32	31.4	42.6
10	10.8	14.7	14.4	19.6	27.9	37.8	37.2	50.5	39.9	54.1	53.2	72.2	46.7	63.3	62.3	84.4
12	18.9	25.6	25.1	34.1	48.6	66	64.9	88	69.7	94.5	92.2	125	81	110	108	147
14	30.1	40.8	40	54.3	77.4	105	103	140	110	150	147	200	129	175	172	234
16	46.9	63.6	62.5	84.8	125	170	166	226	173	235	230	313	202	274	269	365
18	64.5	87.5	86.2	117	171	233	229	311	238	323	317	430	278	377	371	503
20	91	124	121	165	243	330	325	441	337	458	450	610	394	535	525	713
22	124	169	166	225	331	450	442	600	458	622	612	830	536	727	715	970
24	157	214	210	285	420	570	562	762	583	791	778	1055	682	925	909	1233

GENERATOR TORQUE SPECIFICATIONS

Generator	FT*LB
Flex Plate to Flywheel	32-44
Generator Case to Bellhousing	60
1/2" Socket Head Cap Screws for Lifting Channel	126
1/2" Hex Head Screws for Lifting Channel	120
Genset Isolators	78

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REV A

Scheduled Maintenance Procedures



Observe and Obey:

- ☑ Maintenance inspections shall be completed by a person trained and qualified on the maintenance of this machine.
- ☑ Scheduled maintenance inspections shall be completed as specified using the supplied *Lubrication and Maintenance Service Interval Charts* provided in this section.

⚠WARNING Failure to perform each procedure as presented and scheduled could result in death, serious injury or substantial damage.

- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.
- ☑ Keep records on all inspections for three years.
- ☑ Machines that have been out of service for a period longer than 3 months must complete the quarterly inspection.
- ☑ Unless otherwise specified, perform each maintenance procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Toggle switch in the **"OFF"** position
  - Wheels chocked

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

Each procedure includes a description, safety warnings and step-by-step instructions.

Symbols Legend



Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Yellow with safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

CAUTION Yellow without safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE Green—used to indicate operation or maintenance information.

⊙ Indicates that a specific result is expected after performing a series of steps.

⊠ Indicates that an incorrect result has occurred after performing a series of steps.

Pre-Delivery Preparation

Fundamentals

It is the responsibility of the dealer to perform the Pre-delivery Preparation.

The Pre-delivery Preparation is performed prior to each delivery. The inspection is designed to discover if anything is apparently wrong with a machine before it is put into service.

A damaged or modified machine must never be used. If damage or any variation from factory delivered condition is discovered, the machine must be tagged and removed from service.

Repairs to the machine may only be made by a qualified service technician, according to the manufacturer's specifications.

Scheduled maintenance inspections shall be performed by qualified service technicians, according to the manufacturer's specifications and the requirements listed in the responsibilities manual.

Instructions

Use the operator's manual on your machine.

The Pre-delivery Preparation consists of completing the Pre-operation Inspection, the Maintenance items and the Function Tests.

Use this form to record the results. Place a check in the appropriate box after each part is completed. Follow the instructions in the operator's manual.

If any inspection receives an N, remove the machine from service, repair and re-inspect it. After repair, place a check in the R box.

Legend

Y = yes, completed
N = no, unable to complete
R = repaired

Comments

Pre-Delivery Preparation	Y	N	R
Pre-operation inspection completed			
Maintenance items completed			
Function tests completed			

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

TEREX

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Rock Hill, SC 29732 USA
Toll Free (800) 433-3026 in U.S.A. and Canada

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Rev B

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Maintenance Schedules

REV A

Perkins & Cummins Lubrication and Maintenance Service Intervals

ITEM	DAILY	50 Hrs or Wkly	500 Hrs or 12 Mths	1000 Hrs	2000 Hrs
Inspect, adjust or replace alternator or fan belt	•				
Check cooling system coolant level	•				
Check driven equipment	•				
Inspect engine air cleaner service indicator	•				
Check engine oil level	•				
Drain fuel system primary filter/water separator	•				
Walk around inspection	•				
Drain tank water and sediment		•			
Check battery electrolyte level			•		
Clean/replace engine air cleaner element			•		
Inspect/clean engine ground			•		
Change engine oil and filter			•		
Replace water separator element			•		
Replace fuel system secondary filter			•		
Inspect/replace hoses and clamps			•		
Inspect/adjust engine valve lash				•	
Inspect aftercooler core					•
Inspect alternator					•
Inspect engine mounts					•
Inspect starting motor					•
Inspect turbocharger					•
Inspect water pump					•

ITEM	2 Yrs	3000 Hrs	3000 Hrs or 2 Yrs	4000 Hrs	6000 Hrs or 3 Yrs	12000 Hrs or 6 Yrs
Change cooling system coolant	•					
Test/change fuel injector		•				
Change cooling system coolant						
(commercial heavy duty)			•			
Clean/test aftercooler core				•		
Add cooling system coolant extender (ELC)					•	
Change cooling system coolant (ELC)						•

MAINTENANCE SCHEDULES CONTINUED

REV A

John Deere Lubrication and Maintenance Service Intervals

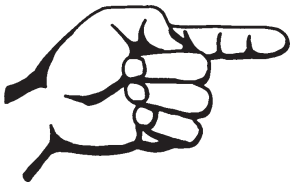
ITEM	Every 2 Weeks	250 Hrs or 12 Mths	500 Hrs or 12 Mths	2000 Hrs or 12 Mths	As Req.
Operate engine at rated speed and 50%-70% load a minium of 30 minutes	•				
Check engine oil and coolant level	•				
Check fuel filter/water separator bowl	•				
Check air cleaner dust unloader valve and indicator	•				
Perform visual walk around inspection	•				
Change engine oil and replace filter		•			
Check engine mounts		•			
Service battery		•			
Clean crankcase vent tube			•		
Check air intake hoses, connections and system			•		
Replace single or dual fuel filter elements			•		
Check belt tensioner and belt wear			•		
Check engine speeds			•		
Check engine electrical ground connection			•		
Check cooling system			•		
Coolant solution analysis-add SCAs as required			•		
Pressure test cooling system			•		
Check variable speed (droop) (gensets)				•	
Flush cooling system				•	
Test thermostats				•	
Check and adjust engine valve clearance				•	
Add coolant					•
Replace air cleaner elements					•
Replace poly-vee belt					•
Check fuses					•
Check air compressor (if equipped)					•
Bleed fuel system					•

Newage Generators Maintenance Schedule

ITEM	DAILY	250 Hours or 3 Months	1500 Hours or 12 Months	4500 Hours or 3 Years	15000 Hours or 19 Years
Visual inspection	•				
Visual inspection plus running audible check		•			
Measure stator winding insulation resistance and record			•		
Monitor bearing/s condition			•		
Remove terminal box lid and check connections			•		
Re-grease bearings				•	
Measure vibration levels					•
Replace bearing/s					•
Replace NDE o-ring					•
Inspect bearing housings					•
Inspect winding conditions					•
Inspect rotating diode assembly					•

*Refer to the manufacturers manuals for detailed maintence intervals and instructions. If the information in the manufacturer's manual differs from that in this manual the manufacturer's manual should take precedence.

REV A



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Troubleshooting

REV A



Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - · Machine parked on a firm, level surface.
  - · Wheels chocked.
  - · Toggle switch to "OFF" position.

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

⚠DANGER Electrocution hazard. Exposure to electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

⚠DANGER Electrocution hazard. Attempting to sevice the machine before the capacitors are fully discharged will result in death or serious injury.

⚠DANGER High voltage. Exposure to electrical wires or electrical current will result in death or serious injury. Remove all rings, watches and other jewelry. Turn off all power when not needed for testing. Use extreme caution when working with high voltage electrical components.

⚠CAUTION Burn hazard. Contact with hot engine components may cause severe burns. Use caution when working around a hot engine.

Troubleshooting Guide

The engine/generator set is tested and set at the factory for proper operation in the field. These units should never require additional adjustments in the field. If needed, adjustments should only be made by a qualified service technician, otherwise the manufacturer's warranty may become void.

FAULT	POSSIBLE CAUSE	SOLUTION
No generator output voltage	Circuit breaker tripped	Reset circuit breaker
	Voltage regulator	Check voltage regulator wiring
	Defective voltage regulator	Replace voltage regulator
	Defective Selector Switch	By pass by hardwiring generator
	Defective generator	Refer to generator manual
Low generator output voltage	Voltage adjustment set too low	Adjust voltage potentiometer
	Defective potentiometer	By pass or replace
	Low engine speed	Call TEREX Service
	Loose wire on voltage selector switch	Check wiring
	Fluctuating or surging engine speed	Check engine fuel, oil, and air filters
	Loose wire on voltage regulator sensing circuit	Check wiring
	Defective voltage regulator	Replace voltage regulator
High generator output voltage	Voltage adjustment potentiometer	Adjust potentiometer
	High engine speed	Call TEREX Service

FAULT	POSSIBLE CAUSE	SOLUTION
High generator output voltage	Defective automatic voltage regulator	Replace voltage regulator
	Loose wire on voltage adjustment potentiometer	Check wiring
Fluctuating generator output voltage	An “ON/OFF” type load may be the cause	Redistribute load if possible
	Fluctuating or surging engine speed	Check engine fuel, oil, and air filters
	Loose wiring in generator	Check connections
	Automatic voltage regulator stability setting may be wrong	Call TEREX Service
	Loose wire on the automatic voltage regulator sensing lead	Check wiring
Low engine speed	Engine speed adjustment has slipped	Call TEREX Service
	Clogged fuel system	Check for air leaks, clogged fuel filter, kinked fuel line, or clogged fuel pick-up tube
	Blocked air intake	Check air filter
	Blocked exhaust system	Check engine exhaust system, remove obstructions
	Contaminated fuel	Check fuel/water separator and fuel tank for contamination. Replace fuel if needed
	Defective governor on engine	Call TEREX Service

TROUBLESHOOTING REV A

FAULT	POSSIBLE CAUSE	SOLUTION
Low Speed	Defective injectors on engine	Have injectors checked by a qualified technician
	"Surging" engine speed	Check engine fuel, oil, and air filters
Engine turns over (cranks), but won't run	Unit out of fuel	Check fuel level in tank, fill as needed
	Loose or broken wire in control circuit fuel injection pump solenoid	Check wiring to verify 12V DC is being supplied to the pump solenoid
	Defective solenoid	Replace solenoid
	Magnetic Pick-up	Adjust for 2.5-3.0 VAC
	Clogged fuel system	Check fuel system
	Air in fuel system	"Bleed" fuel system
	Defective fuel pump	Check and replace if defective
	Clogged air intake	Check air cleaner
	Clogged exhaust	Check exhaust system
	Contaminated fuel	Check fuel/water separator and tank for contamination
	Defective injectors	Have injection system checked by a trained technician
	Lost engine compression	Have compression checked by a trained technician
Engine won't crank	Loose battery cable or discharged battery	Check cables and battery electrolyte level. Recharge as necessary

FAULT	POSSIBLE CAUSE	SOLUTION
Engine won't crank	Engine "ON/OFF" switch set in "OFF" position	Check switch position
	Blown fuse in DC control circuit	Replace with 25 Amp. SLO-BLO TYPE fuse if needed.
	E-Stop	Check to see if engaged
	Defective starter solenoid	Replace solenoid
	Defective starter	Replace starter
	Oil Pressure or Hi temp switch defective	Check or call TEREX Service
	Seized engine	Have engine checked by a qualified technician
Engine runs, but loses speed	Unit is overloaded	Reduce load
	Improper connection	Check or Call TEREX Service
Engine runs, but loses power under load	Clogged fuel system	Check fuel system air in fuel lines
	Blocked air intake	Check air cleaner
	Blocked exhaust	Check exhaust system
	Contaminated fuel	Check fuel/water separator and fuel tank for contamination
	Faulty governor, defective injectors, or defective fuel pump	Have unit checked by a trained service technician for all of these items
Engine shuts down automatically and TROUBLE LIGHT on CONTROL PANEL is illuminated	Oil Pressure Switch	Not opening
	Improper coolant level	Use a 50/50 on mix of water and anti-freeze only

TROUBLESHOOTING REV A

FAULT	POSSIBLE CAUSE	SOLUTION
Engine shuts down automatically and TROUBLE LIGHT on CONTROL PANEL is illuminated	Overloaded engine	Reduce load
	Broken fan belt	Inspect fan belt and replace as needed
	Defective thermostat or thermocouple switch	Inspect thermostat switch
	Defective water pump	Inspect water pump and replace if needed
	Blocked cooling air inlet or exhaust	Inspect and remove any obstructions
	Defective or grounded temperature switch	Inspect switch and repair or replace
	Defective injectors or injector pump	Have the engine inspected by a trained service technician
	Low crankcase oil level	Check oil level and refill as required
	Defective oil pump	Have the engine inspected by a trained service technician
	Defective or grounded oil pressure switch	Inspect switch and repair or replace

IF YOU FEEL AN ELECTRIC SHOCK AT ANY TIME WHILE OPERATING THIS UNIT, SHUT IT DOWN IMMEDIATELY! HAVE THE UNIT INSPECTED BY A TRAINED ELECTRICIAN.

THIS ENGINE/GENERATOR SET IS FACTORY INSTALLED, TESTED, AND SET FOR FIELD OPERATION. ANY DAMAGE TO THE ENGINE OR GENERATOR UNITS OCCURRING AFTER ADJUSTMENTS ARE MADE IN THE FIELD BY UNAUTHORIZED PERSONNEL WILL NOT BE COVERED BY YOUR MANUFACTURER'S WARRANTY AND WILL ALSO VOID THE MANUFACTURER'S WARRANTY ON THIS PARTICULAR UNIT. IF YOU CAN NOT REACH YOUR LOCAL DEALER, CONTACT THE FACTORY SERVICE MANAGER TOLL FREE AT 1-800-433-3026.

Electrical Troubleshooting

5 Components that cause voltage related problems

Potentiometer

Connects to voltage regulator. Bypass potentiometer by unplugging from voltage regulator and installing jumper on 2 male spades on regulator.

Voltage Regulator

(Located inside the upper control panel behind the gauges.)

Measure DC voltage at F1 & F2. Normal voltage is 10 to 12 V DC. Remove 2 wires marked (F1, X)(F2, X X) from voltage regulator. Connect wire marked F1 to positive and F2 to negative of a 12 volt battery. Start unit and measure voltage. If unit produces close to maximum output, replace Automatic Voltage Regulator.

Voltage Selector Switch

The correct way to test is to disconnect from generator and hard wire the generator into one configuration. This will eliminate the switch from the circuit and verify that the generator is functioning properly. All contacts should be checked following the proper schematic with the switch disconnected from the generator set. Actual loads can cause failures in contacts that cannot be duplicated using a meter.

Overcurrent Relay

This device causes the 3-phase breaker to trip that supplies AC power to the distribution lugs if uneven or excessive current is measured at the distribution lugs. It is also connected to the 3-phase door switch and will automatically trip the 3-phase breaker when the door is open and prevents the breaker from being reset while it is open.

Generator

Test resistance of field, stator and exciter windings. Contact **TEREX** for procedures or repair facility recommended by generator manufacturer.

⚠ Procedure for testing generator with no output

THIS EQUIPMENT USES HIGH VOLTAGE CIRCUITS CAPABLE OF CAUSING SERIOUS INJURY OR DEATH! EXCERCISE EXTREME CAUTION AROUND ANY ELECTRICAL COMPONENT WHEN OPERATING THIS UNIT.

IT IS ESSENTIAL THAT ALL TEST INSTRUMENTS ARE REGULARLY CHECKED FOR SAFETY, AND ANY CONNECTION LEADS, PROBES, OR CLIPS, ARE CHECKED TO ENSURE THAT THEY ARE SUITABLE FOR THE VOLTAGE LEVELS BEING TESTED.

NEVER ATTEMPT TO TEST A "LIVE" GENERATOR UNLESS THERE IS ANOTHER COMPETENT PERSON PRESENT WHO CAN SWITCH OFF THE POWER SUPPLY OR SHUT DOWN THE ENGINE IN AN EMERGENCY.

NEVER EXPOSE "LIVE" CONNECTIONS UNLESS YOU HAVE CREATED A SAFE WORKING AREA AROUND YOU. MAKE SURE YOU HAVE MADE ALL OTHER PERSONS IN THE IMMEDIATE AREA FULLY AWARE OF WHAT YOU ARE DOING.

- When a new generator is not producing voltage, the testing or wiring personnel should first verify that the unit is wired correctly! The voltage selector switch and generator leads should all be checked as well as the breaker and sensing leads. If the unit was not wired correctly and you flashed the generator, you could burn up the unit. (**Do not forget to check the sensing leads!**).

Procedure for testing generator with no output (cont.)

- After performing the initial checks above, remove the field wires from the voltage regulator (F1 or X is positive and F2 or XX is negative). Connect the battery + to the F1 or X wire and battery - to the F2 or XX wire. Start the engine and check for the rated voltage. **Hooking this up incorrectly will reverse polarity and could damage the voltage regulator and /or generator end.** This check should correct any voltage problems. If your voltage does not come up to the rated voltage, this indicates an internal problem with the generator end. The output should be close to proper voltage. Also, if the unit comes up to voltage, check for even reading across the lines if they are not this would mean you probably have a problem with the wiring of the switch or generator. If the generator voltage reads correctly you know there is not a problem with the generator end. Your problem is more than likely with the voltage regulator. In this case, you should contact the **TEREX** service department.

- If the voltage is uneven between the legs when you apply 12 volts to the field wires you need to recheck your wiring connections. **(If you can not find the problem hard wire the generator!)** After you have the field wire connected start the unit again and check your output voltage. It may still be necessary to flash the fields to restore residual voltage. This needs to be done with the unit off and the field wires removed. **(Do not flash the regulator, flash the field wires)**

- As with any electrical device use extreme caution when working around a running generator it could cost you your life. Observe proper polarity when working with the regulator so you don't break something that is not broken to begin with, and if you are ever in doubt, ask.

INSTALLATION AND ANY WORK PERFORMED ON THIS UNIT SHOULD BE DONE ONLY BY A QUALIFIED ELECTRICIAN.

Procedure for changing the magnetic pick-up sensor

THIS EQUIPMENT USES HIGH VOLTAGE CIRCUITS CAPABLE OF CAUSING SERIOUS INJURY OR DEATH! EXCERCISE EXTREME CAUTION AROUND ANY ELECTRICAL COMPONENT WHEN OPERATING THIS UNIT.

INSTALLATION AND ANY WORK PERFORMED ON THIS UNIT SHOULD BE DONE ONLY BY A QUALIFIED ELECTRICIAN.

- Make sure generator is turned off and e-stop is engaged before opening control panel.

- Locate the two wires going to the speed controller mounted on the inside of the control pan marked MPU + and MPU -.

- Both wires are isolated in their own shielded cable.

- Once the wires are loose, pull them through the back of the control box until they are completely free from all ty-wraps and wire harnesses.

- Unscrew and remove the old sensor.

- Align the flywheel tooth to the center of the sensor hole.

- Install new sensor until it bottoms out on flywheel tooth and then back it off ¼ turn.

- To insure proper installation, the sensor must

Procedure for changing the magnetic pick-up sensor (cont.)

be checked with a voltage meter. With the engine in a starting sequence check for 2.5 to 3 VAC between the red and black wire. Adjust the sensor in or out to obtain the correct voltage.

- Once the voltage is correct, reinstall the shielded cable through the control box opening and reattach the wire leads to the speed controller. Also, secure the new cable through the housing with ty-wraps where needed.

If any further adjustment is needed to the voltage of the generator please call **Terex** at 1-800-433-3026 for assistance.

Procedure for changing the voltage potentiometer

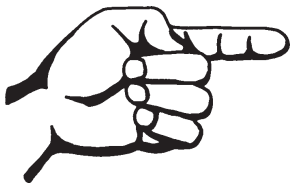
THIS EQUIPMENT USES HIGH VOLTAGE CIRCUITS CAPABLE OF CAUSING SERIOUS INJURY OR DEATH! EXCERCISE EXTREME CAUTION AROUND ANY ELECTRICAL COMPONENT WHEN OPERATING THIS UNIT.

INSTALLATION AND ANY WORK PERFORMED ON THIS UNIT SHOULD BE DONE ONLY BY A QUALIFIED ELECTRICIAN.

- Make sure generator is turned off and e-stop is engaged before opening control panel.
- Locate the two wires going to the back of the potentiometer. Both wires will be white with a red stripe.
- Disconnect the wires.
- Once the wires are loose, go to the front of the control panel and loosen the lock nut holding the potentiometer.
- Put the new potentiometer in its place and retighten lock nut.
- Reconnect the wires.
- After completing the installation of the new potentiometer go back and check all connections to make sure everything is tight and that no connections are loose, this includes all other wiring on the back of the control panel and on the inside of the control box.
- You should now be able to restart the generator and check for proper operation.

If any further adjustment is needed to the voltage of the generator please call **TEREX** at 1-800-433-3026 for assistance.

REV A



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TEREX

Schematics

REV A

Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

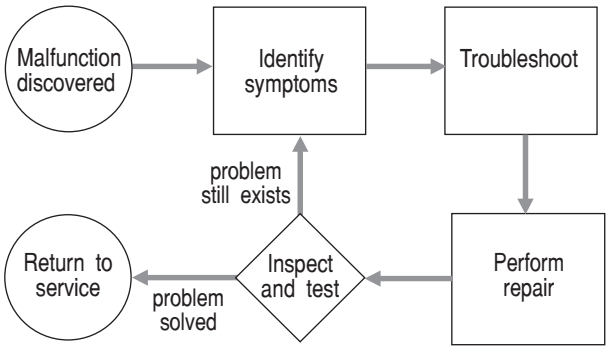
About This Section

There are two groups of schematics in this section. An illustration legend precedes each group of drawings.

Electrical Schematics

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

General Repair Process

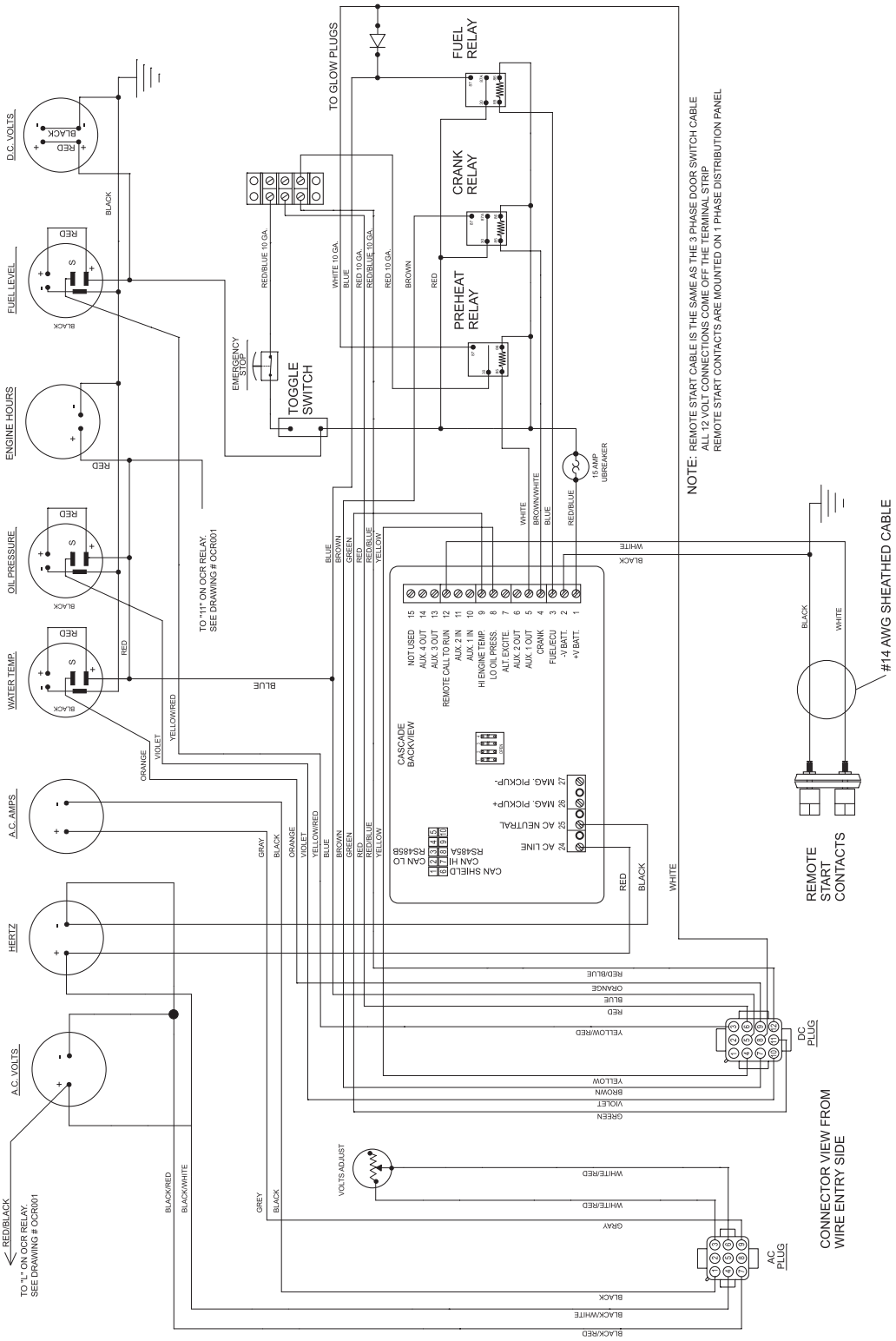


TEREX

Control Panel Wiring

for Murphy Cascade Controller
Drawing #ES100019 (Standard)

REV A

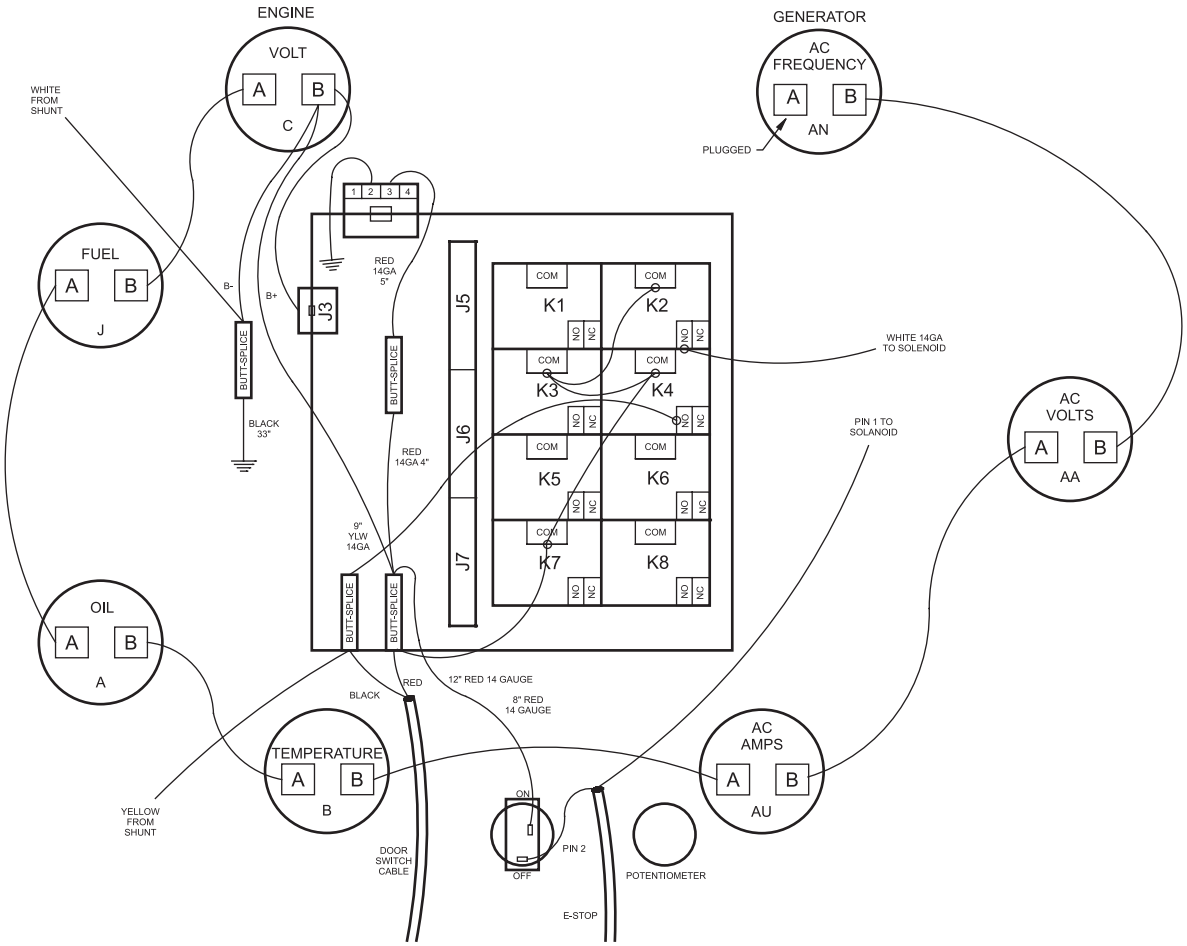


TEREX

Control Panel Wiring

for Murphy iGuard Controller
Drawing #EU0004

REV A

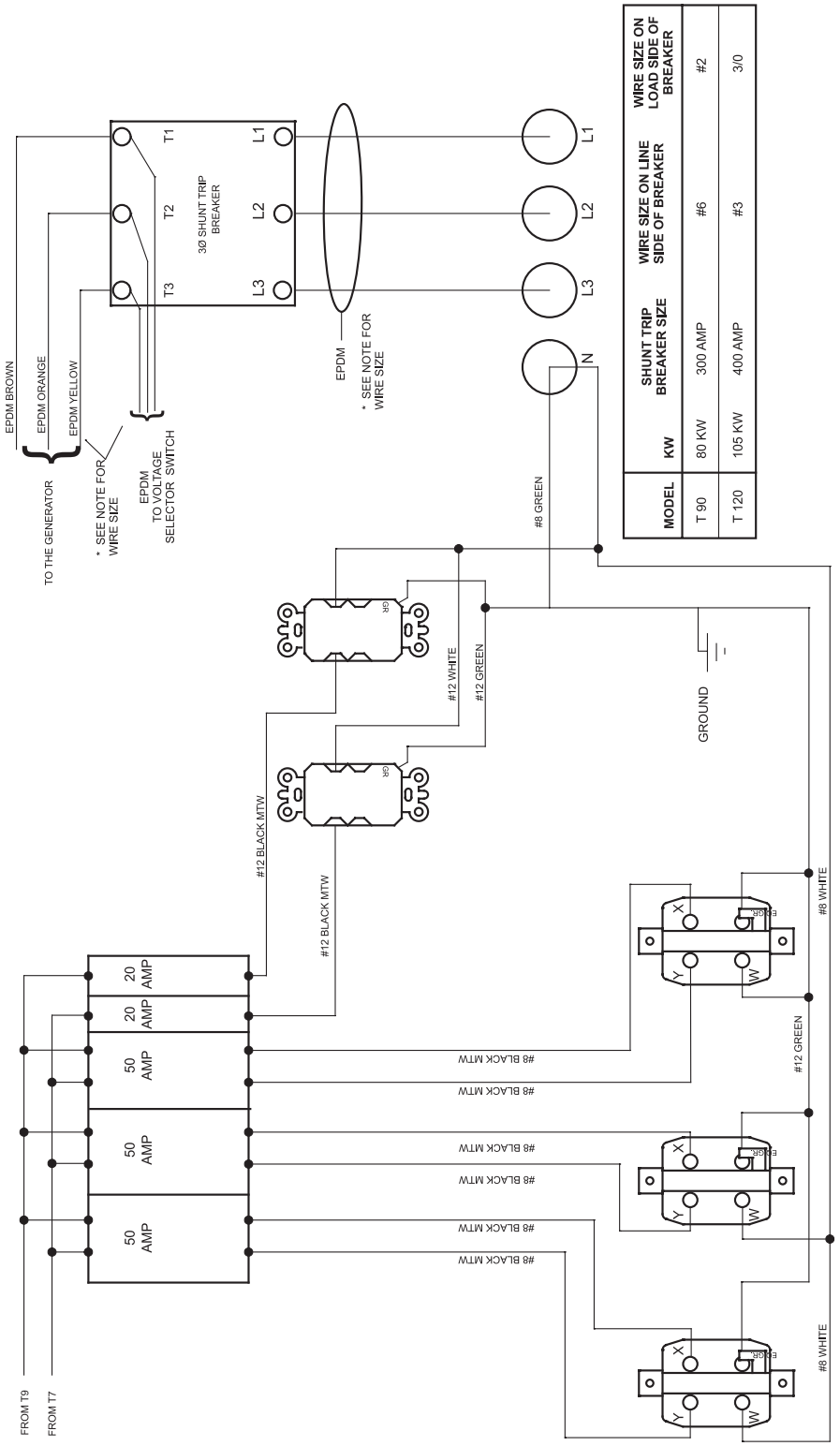


TEREX

Distribution Panel Wiring

for "F" Series Single Phase Control
Drawing #ES100010

REV A

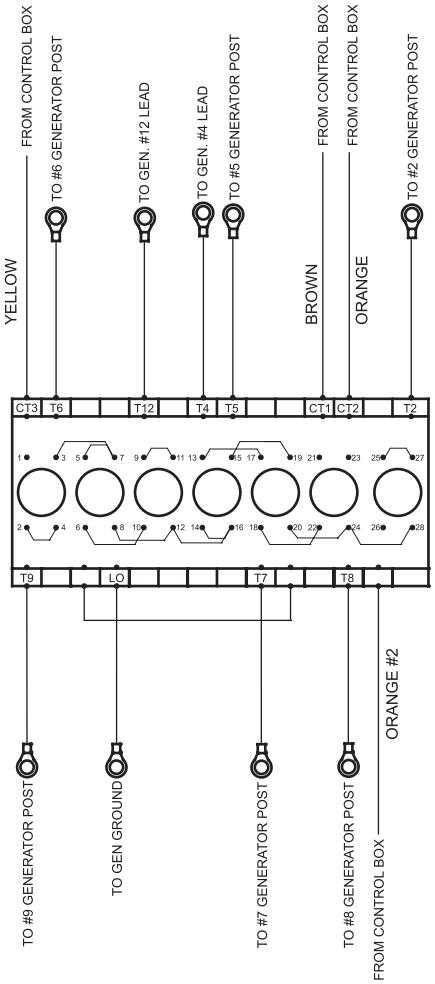


MODEL	KW	SHUNT TRIP BREAKER SIZE	WIRE SIZE ON LINE SIDE OF BREAKER	WIRE SIZE ON LOAD SIDE OF BREAKER
T 90	80 KW	300 AMP	#6	#2
T 120	105 KW	400 AMP	#3	3/0

Three Position Voltage Selector Switch Wiring

REV A

Drawing #ES100005



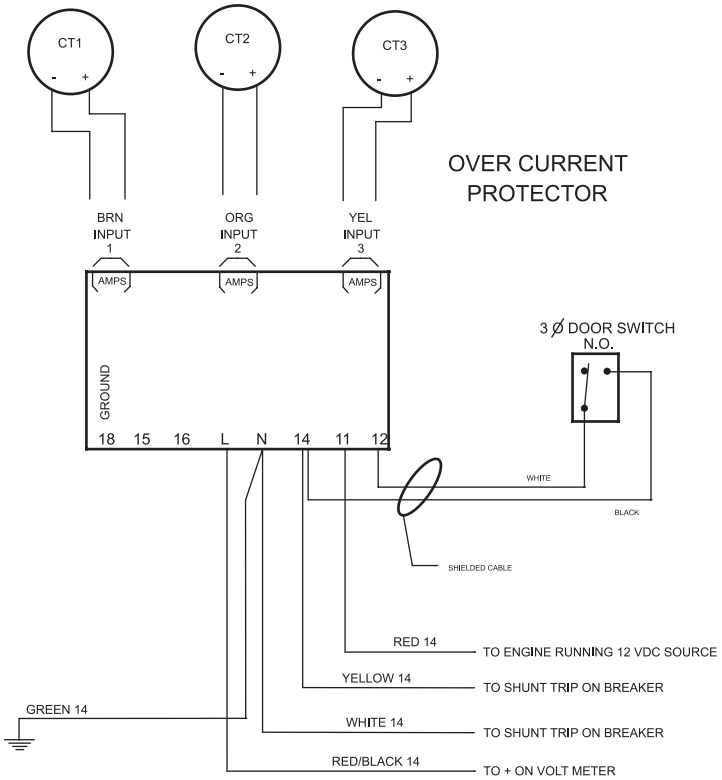
GENERATOR	STACK SWITCH #	WIRE SIZE
T90	C42204002	4 GA. EPDM
T120 (ALL)	C42204002	2 GA. EPDM

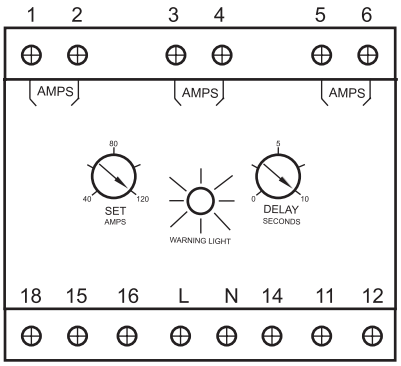
NOTE: FOR REFERENCE SEE DRAWINGS #ES100007 & ES100008

TEREX

Overcurrent Relay Wiring

Drawing #ES100006 REV A





OVER CURRENT RELAY
FACE PLATE

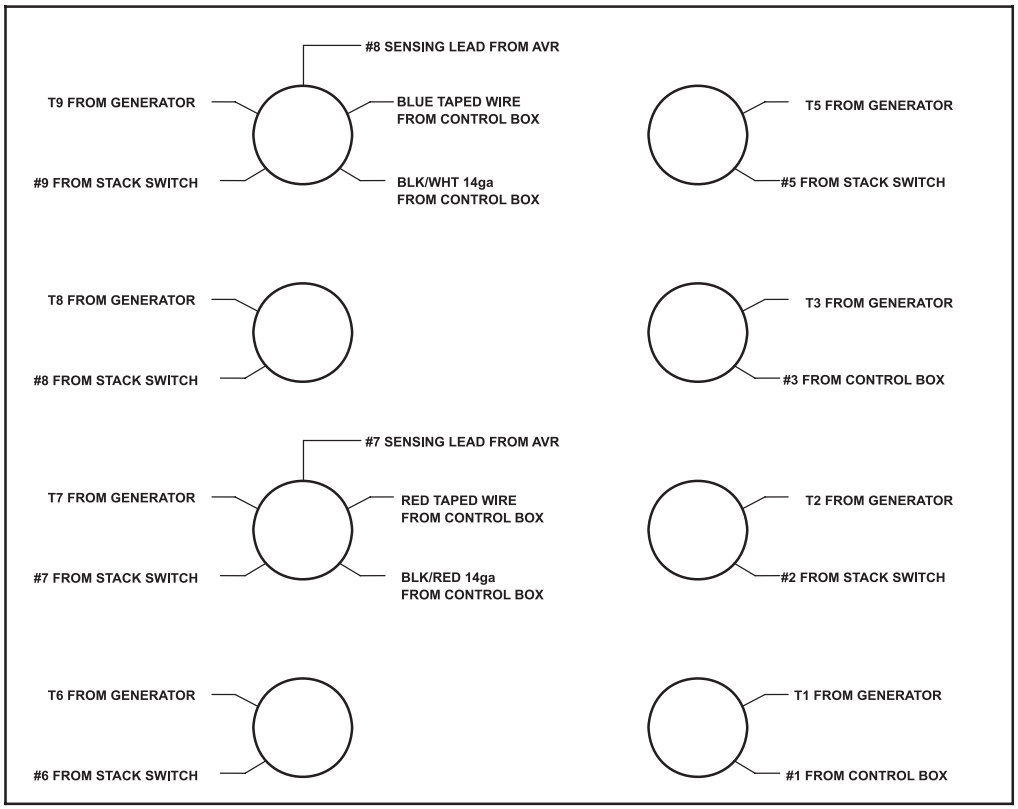
THE CT'S FOR EACH UNIT WITH THE OVERCURRENT RELAY
ARE AS FOLLOWS:
T25I, T25G = (4) 100:5
T45I, T50(J,P) & T70(J,C,P) = (3) 100:5 & (1) 200:5
T90P & T120(C,P) = (3) 200:5 & (1) 400:5
T180C = (3) 400:5 & (1) 600:5
T270C = (3) 600:5 (1)1000:5

TEREX

Generator Wiring Breakdown

REV A

Drawing #ES100007



F1 AND F2 FROM GENERATOR TO AVR

#4 FROM GENERATOR TO #4 FROM STACK SWITCH

#12 FROM GENERATOR TO #12 FROM STACK SWITCH

BROWN TAPED WIRE FROM CONTROL BOX TO #21 POSITION ON STACK SWITCH

ORANGE TAPED WIRE FROM CONTROL BOX TO #23 POSITION ON STACK SWITCH

YELLOW TAPED WIRE FROM CONTROL BOX TO #1 POSITION ON STACK SWITCH

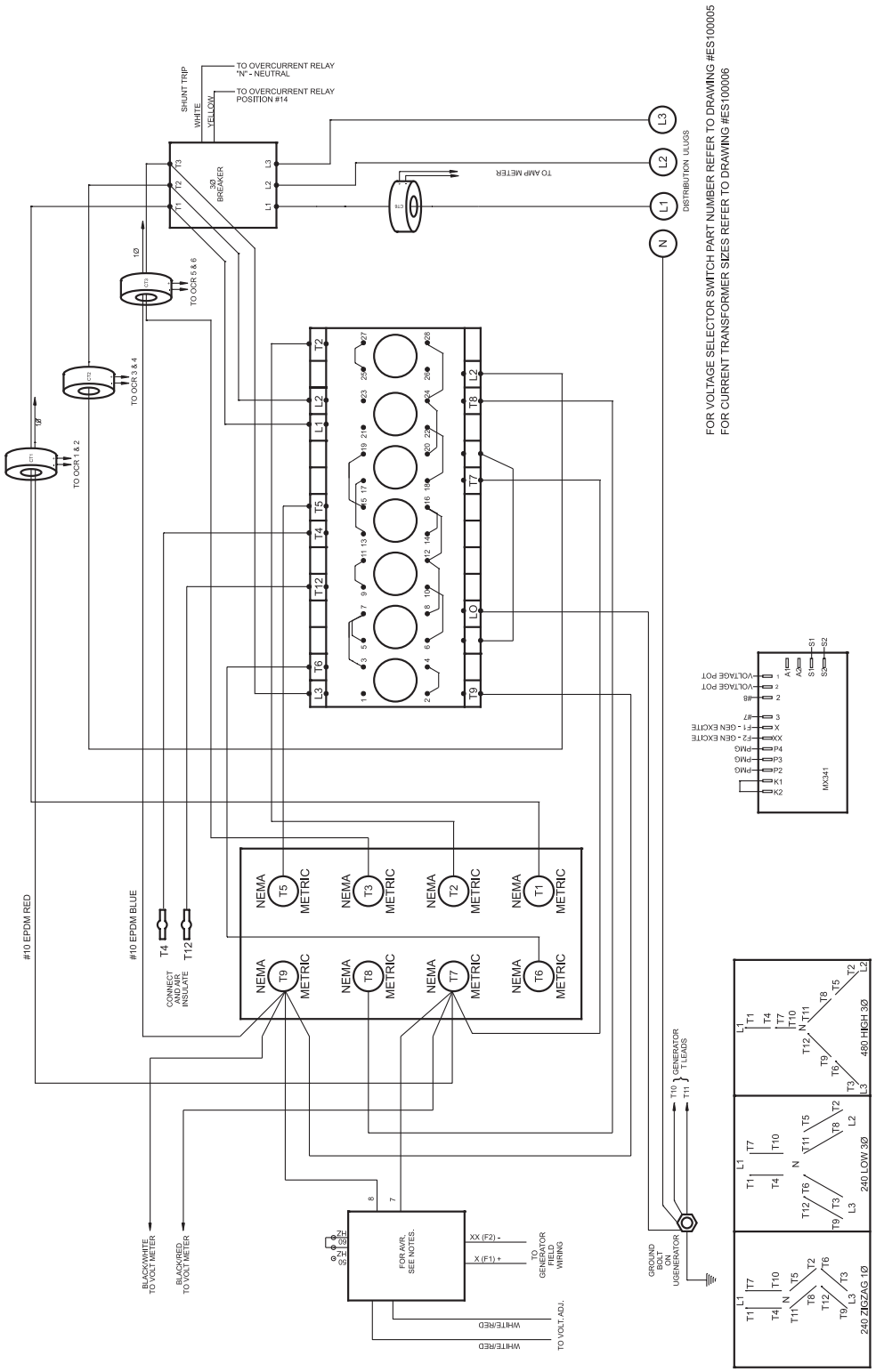
#2 ORANGE TAPED WIRE FROM CONTROL BOX TO #26 POSITION ON STACK SWITCH

TEREX

Standard Generator Wiring

for "F" Series
Drawing #ES100009

REV A



California Proposition 65

Warning

The exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Towing Checklist

(Use at each stop)

Before Towing	· Towing hitch is properly secured to tow vehicle · Safety chains (if required) are properly attached and secure (chains are crossed below hitch) · All lights are connected and working · Tires are properly inflated
Before Driving	· Fasten safety restraints · Properly adjust mirrors
On The Road	· Do not exceed 60 mph / 97 km/h. Obey all local and national towing speed laws · Check connections and tire pressure at each stop · Slow down for hazardous conditions · Allow extra distance for following and passing other vehicles

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