

INSTRUCTIONS
MODEL KB-20 ELECTRIC HORN
KAHLENBERG INDUSTRIES, INC.

1.) GENERAL: The Kahlenberg KB-20 is an Electric Horn system for marine use that produces in excess of 130 dB (1/3 Octave Band) @ 1 Meter, as required by IMO Regulations for vessels up to 75 meters in length.

The KB-20 Horn System consists of two major components being the KB-20 Horn, and the M-478A Oscillator Unit. The function of the KB-20 Horn is that of a high powered speaker. The function of the M-478A Oscillator is to provide a 300 Hz signal to the speaker driver within the KB-20 Horn. In order to sound the horn, the M-478A Oscillator is switched on and off by a control circuit connected to a push button contact closure or automated signal timer located at the control station.

In addition, a third item, the M-477 Power Supply is optionally included with the KB-20 Horn and M-478A Oscillator Unit. The M-477 Power Supply is a power converter used to convert 110-240 volt A.C. input power to 24 Volt D.C. power as required by the M-478A Oscillator and KB-20 Horn. If 24 volt, 25 amp D.C. onboard power is available for use by the M-478A Oscillator unit, the M-477 Power Supply is not required.

2.) CONTENTS:

Contents of the KB-20 Horn System Include:

- (1) KB-20 Horn Assembly, per Drg. 3-5346
- (1) M-478A Oscillator Unit, per Drg. 3-5325
- (1) M-477 Power Supply per Drg. 3-5362 (Optional as required)

3.) OPERATION:

• **D.C. VOLTAGE REQUIREMENTS:**

- **KB-20 Horn w/M-478A Oscillator**___24-32 Volts D.C. (500 watts)

• **A.C. VOLTAGE REQUIREMENTS**

- **KB-20 Heater:** 110/240 Volts, 150 watts
- **M-477 Power Supply (if used)**___110/240 Volts A.C., 50/60 Hz
 - (5.5 amps@ 110 volts, 2.6 amps@ 230 Volts) 600 watts

IMPORTANT: EM SHIELDED, MARINE GRADE CABLE OF ADEQUATE SIZE MUST BE CALCULATED AND INSTALLED BASED ON ABOVE REQUIREMENTS WHEN CONNECTING ALL EQUIPMENT. INADEQUATE WIRING DIAMETER WILL RESULT IN DIMINISHED HORN OUTPUT AND POTENTIAL DAMAGE TO EQUIPMENT.

4.) SITING OF THE HORN:

The whistle should be fitted to a suitable structure and clear of obstructions, directed straight forward. **The KB-20 Horn should not be mounted upside down. More specifically, the mounting feet should be mounted BELOW the horn on a horizontal surface. The horn is designed to be drain condensation and spray in this position. Mounting the horn upside down may result in collection of water in the sounding mechanism, damaging the horn, and voiding warranty.** Anti-vibration mountings are provided. The M-478A Oscillator Unit and M-477 Power Supply unit if used should be mounted in a protected position not exposed to the weather.

5.) INSTALLATION:

WARNING: These air horns produce extreme loudness, which can cause permanent hearing damage. All personnel involved in the operation and maintenance of this equipment must wear hearing protectors when testing near horns. Permanent hearing loss may occur if testing near the horn without hearing protection.

WARNING: HIGH VOLTAGE MAY BE PRESENT INSIDE ENCLOSURES. BE SURE TO SHUT OFF POWER, TAG OUT, AND VERIFY NO VOLTAGE IS PRESENT BEFORE INSTALLING OR ATTEMPTING TO SERVICE THIS UNIT!! FAILURE TO FOLLOW THIS WARNING COULD RESULT IN SERIOUS INJURY OR DEATH.

1. Electrical wiring for the KB-20 Horn and the M-478A Oscillator Unit should be connected as shown on the wiring diagram 3-6144.
2. If 24 Volt D.C. supply is not available, and M-477 is supplied, see Drg. 3-5362 and 3-5324 for connecting M-477 Power Supply to M-478A Oscillator Unit.
3. Ensure that the electric supply cables are proper shielded marine type, of suitable capacity to provide 25 amps at 24 volts D.C. to M-478A Oscillator and KB-20 Horn. For the M-477 Power Supply if installed, use shielded cable capable of supplying 600 watts A.C. to this unit. **THIS IS CRITICAL. INADEQUATE WIRE DIAMETER WILL RESULT IN SIGNAL OUTPUT LOSS AND POTENTIAL DAMAGE TO EQUIPMENT.**
4. For connection of Kahlenberg Signal Controls such as M-511C, M-522, or M-611, see wiring diagrams provided with these control units, or custom wiring diagrams included for this specific vessel.
5. Remove cover fixing bolts on KB-20 Horn (item 10, per Drg. 3-5345) to gain access to terminal connections. Insure that cables are sited well clear of the enclosed heating element (item#17, Drg. 3-5925). After wiring, ensure that cover is replaced correctly.

6. Ensure that cable glands are weatherproof and that the equipment is grounded.
7. **ENSURE THAT THE POLARITY OF THE D.C. SUPPLY IS CORRECT. REVERSE POLARITY WILL DAMAGE THIS EQUIPMENT.**
8. A thermostatically controlled heater is provided in the KB-20 Horn to prevent the diaphragm from freezing in low temperature conditions. The heater operates on 100 or 240 volts A.C. (as specified), 150 watts and must be connected not only to prevent freezing but also condensation.

ELECTRICAL OVERLOADS:

1. A solid state overload circuit breaker with Red L.E.D. is included inside the M-478A Oscillator Unit on the circuit board per Drg. 3-5325. Should the circuit breaker trip, power must be disconnected to reset the breaker.
2. Two overloads are provided on the M-477 Power Supply unit. Should the overloads trip, check circuit before re-setting by pushing the reset buttons on the breakers on the outside of the unit.

6.) TROUBLESHOOTING:

If horn sounds, but sound is weak or distorted:

- 1.) Remove the KB-20 Horn Cover. Check the sounding diaphragm for cracks if the unit has been in service for some time. If cracks are observed, refer to the section below entitled **REPLACEMENT OF WHISTLE DIAPHRAGM.**
- 2.) If whistle diaphragm is intact, while horn is activated, check the voltage coming into KB-20 Horn driver unit. Meter the voltage between terminals (A) & (C) and (B) & (C) at the horn. Voltage should read between 55 and 65 V.A.C at approximately 11 to 12 amps when the horn is operating properly. If the voltage is low at the horn, check voltage on the same terminals at the M-478A Oscillator Unit. If voltage drop is occurring between M-478A Oscillator Unit and KB-20 Horn, wire size is inadequate for the length of the connection and must be replaced with larger gage wire. If no voltage drop is observed, and voltage is also low at the M-478A oscillator unit, check voltage and amperage coming into the M-478A oscillator unit when operating. If it is low, wiring between M-478A Oscillator Unit and power source is inadequate, or power source is inadequate.
- 3.) If the D.C. power is being supplied to the M-478A Oscillator Unit from the optional M-477 Power Supply, the output of the M-477 can be adjusted by means of an internal rheostat, (see Item 23, Drg. 3-5324). This rheostat must be adjusted while the horn is sounding until 24 Volt D.C. output is observed to the M-478A Oscillator Unit.

If horn does not sound:

1. Remove KB-20 Horn Cover. While horn is activated, check the voltage coming into the driver unit. Meter the voltage between terminals (A) & (C) and (B) & (C). Voltage should be between 55 and 65 V.A.C @ 12 Amps typically. If no voltage is detected, check the same terminals at the M-478A oscillator unit. If voltage is found at the oscillator unit when the horn is activated, the cables between the horn and oscillator unit need to be replaced.

If correct voltage is not found at the M-478A Oscillator between the terminals (A) & (C) and (B) & (C) when the horn is activated, check the 24 V.D.C. coming into the oscillator unit. If incoming voltage is correct, send oscillator unit to Kahlenberg Brothers Co. for repair or exchange.

If the voltage coming into the M-478A oscillator unit is absent or incorrect, check voltage at the power source.

3. Confirm correct D.C. polarity coming into M-478A oscillator.

REPLACEMENT OF WHISTLE DIAPHRAGM:

1. Insure that all electrical supplies to the whistle are isolated.
2. Remove cover.
3. Remove eight fixing bolts holding magnetic assembly to primary casting and lift clear.
4. Remove diaphragm-retaining nut being careful to note the position of the spacing washers on either side of the diaphragm.
5. Fit new diaphragm and new sealing gaskets. Insure that all spacing washers are replaced in correct position to front and rear of diaphragm. Insure holding nut is tight.
6. Replace magnetic assembly with new sealing gasket. Replace cover.
7. Spare whistle parts can be obtained from Kahlenberg. Reference Parts List Drawings.

SOME IMPORTANT NOTES:

1. **Proper replacement of the horn cover is very important. It should not allow the penetration of salt air mist or salt water. Tighten the bolts securing the cover so that it seats evenly on the neoprene gasket.**
2. **Depending on ambient temperature, continuous sounding of this horn for more than twenty seconds may trip one of the circuit breakers in the oscillator or power supply. This should be considered normal and is to prevent overheating of electromagnet assemblies in the horn driver unit.**

Reference Drawings:

KB-20 Horn:

Outline Dimensions: 3-5346, Parts List: 3-5345, Driver Unit Parts List: 3-5925

M-478A Oscillator Unit:

Outline Dimensions and Internal Details: 3-5325

M-477 Power Supply:

Outline Dimensions and Terminal Connections: 3-5362, Internal Details: 3-5363

Internal Wiring Diagram: 3-5324

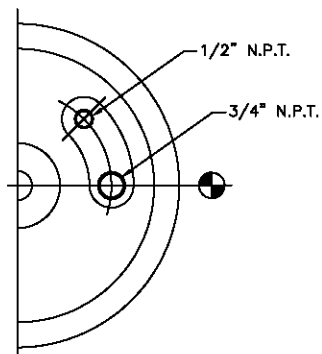
Control Wiring Diagrams:

3-6144 (with push buttons only), 3-6741 (with M-511C), 3-6742 (with M-522)

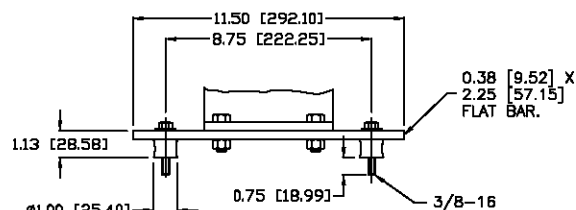
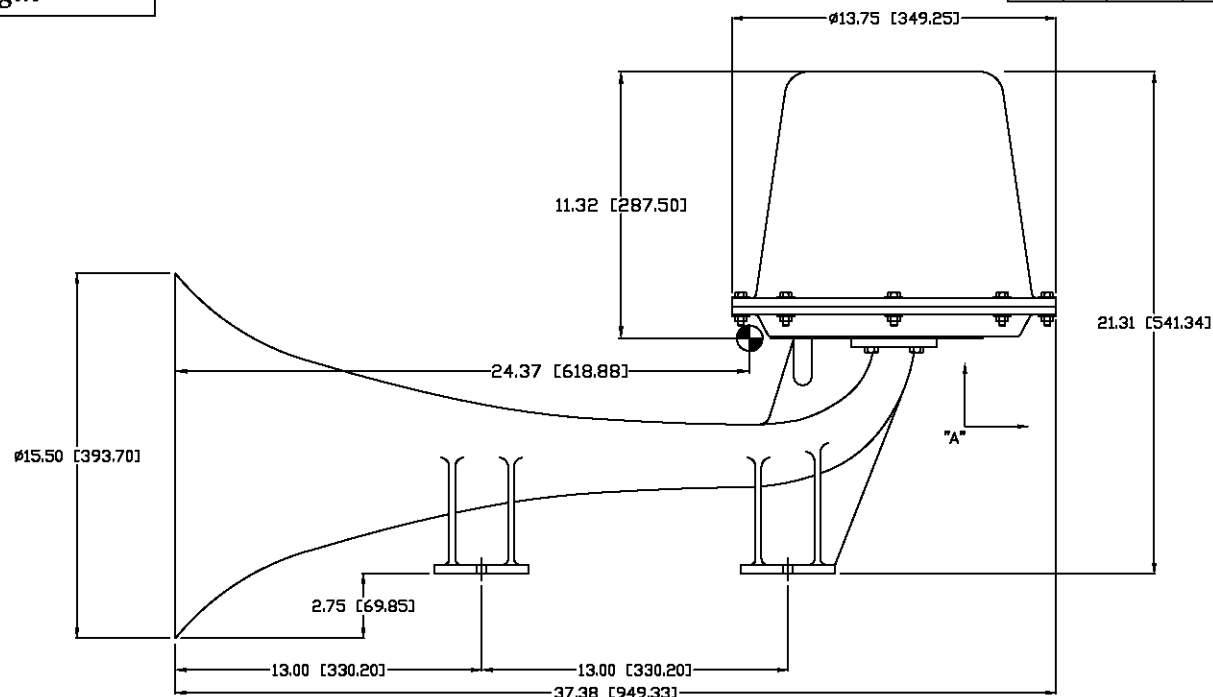
Kahlenberg Industries Inc.
P.O. Box 358, 1700 12th St.
Two Rivers, WI 54241 USA
Ph: 920-793-4507
Fx: 920-793-1346
www.kahlenberg.com

Conforming to International Maritime Regulations
For Vessels Less Than 75 Meters in Length

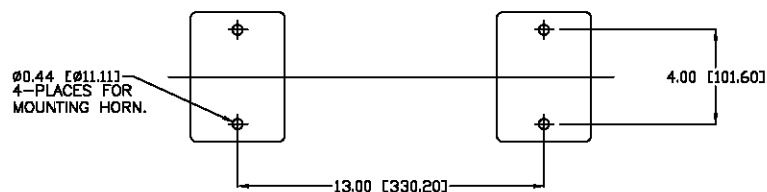
REV.	BY	DATE	DESCRIPTION	APP'D.
A	ZN	07/13/05	ADDED CENTER OF GRAVITY	EMK



VIEW "A" SHOWING
CABLE ENTRANCES.



VIEW SHOWING ANTI-
VIBRATION MOUNTS
FITTED TO WHISTLE
MOUNTING HOLES.



TECHNICAL DATA

Frequency: 300 Hz
Sound Pressure Level (dB(A) at 1 meter): 132.2dB
Sound Pressure Level (1/3 octave at 1 meter): 131dB
Electric Power: 24 V.D.C.
Power Consumption: 500 W
Material: Type 356 anodized cast aluminum
Finish: Grey or white enamel
Net Weight: 49 Lbs.
Shipping Weight: 90.00 Lbs.

Price: \$ _____ U.S.D. Net. Ea.
(Valid for 60 days, F.O.B. Two Rivers, WI. U.S.A.)

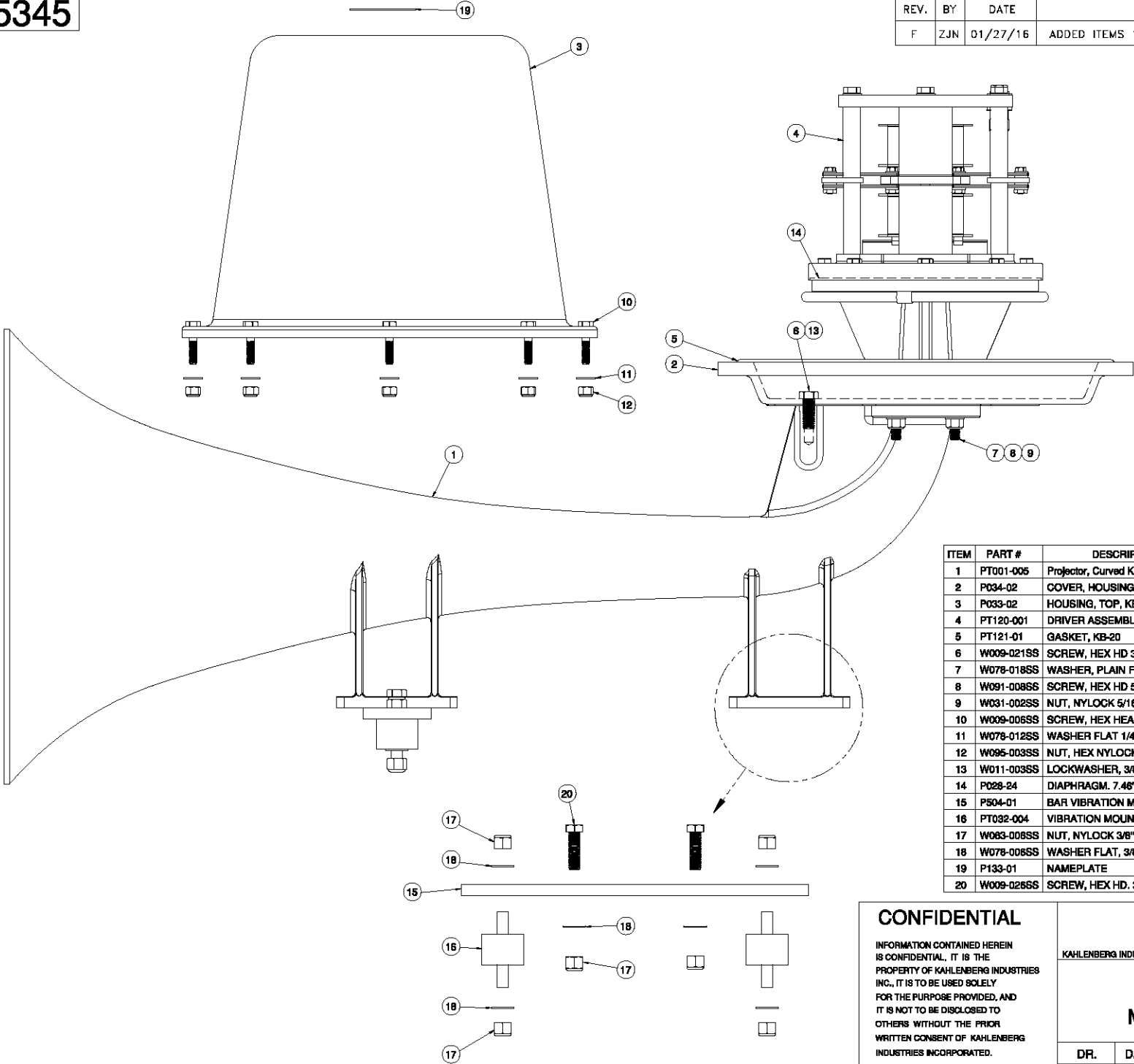
Kahlenberg

KAHLENBERG BROS. CO. TWO RIVERS, WI. U.S.A.

OUTLINE DIMENSIONS
MODEL KB-20
ELECTRIC HORN

DATE	DRWG. NO.	REV.
04/26/01	3-5346	A

REV.	BY	DATE	DESCRIPTION	APP'D.
F	ZJN	01/27/16	ADDED ITEMS 19 & 20	EMK



ITEM	PART #	DESCRIPTION	QUAN.
1	PT001-005	Projector, Curved KB-20	1
2	P034-02	COVER, HOUSING, BOTTOM, KB-20	1
3	P033-02	HOUSING, TOP, KB-20	1
4	PT120-001	DRIVER ASSEMBLY, WITH 120 V. HEATER	1
5	PT121-01	GASKET, KB-20	1
6	W009-021SS	SCREW, HEX HD 3/8-16 X 1 316 STAINLESS STEEL	1
7	W078-018SS	WASHER, PLAIN FLAT, 5/16" 316 STAINLESS STEEL	4
8	W091-008SS	SCREW, HEX HD 5/16-24 X 2" STAINLESS STEEL	4
9	W031-002SS	NUT, NYLOCK 5/16-24 STAINLESS STEEL	4
10	W009-006SS	SCREW, HEX HEAD 1/4-20 X 1-1/4 316 STAINLESS STEEL	8
11	W078-012SS	WASHER FLAT 1/4", 316 STAINLESS STEEL	8
12	W095-003SS	NUT, HEX NYLOCK, 1/4-20 316 STAINLESS STEEL	8
13	W011-003SS	LOCKWASHER, 3/8" STAINLESS 316 STAINLESS STEEL	1
14	P028-24	DIAPHRAGM. 7.48"O.D. KB-20	1
15	P504-01	BAR VIBRATION MT,KB-20	2
16	PT032-004	VIBRATION MOUNT, KB-20,	4
17	W063-008SS	NUT, NYLOCK 3/8"-16 316 S.S.	12
18	W078-008SS	WASHER FLAT, 3/8" 316 S.S.	12
19	P133-01	NAMEPLATE	1
20	W009-026SS	SCREW, HEX HD. 3/8-16 X 1-1/2 316 SS	4

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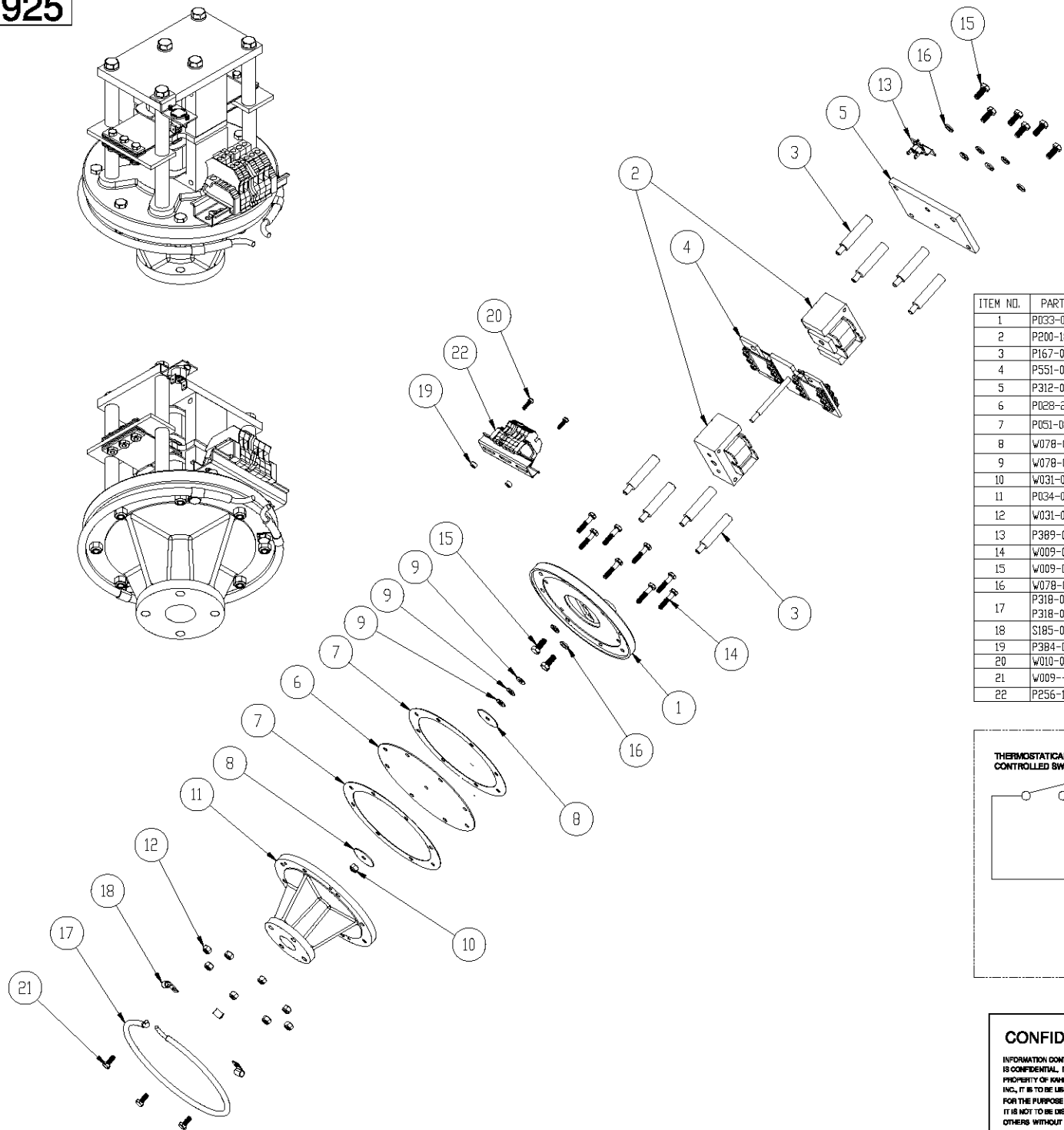


KAHLBERG INDUSTRIES INC. TWO RIVERS, WISCONSIN 54241

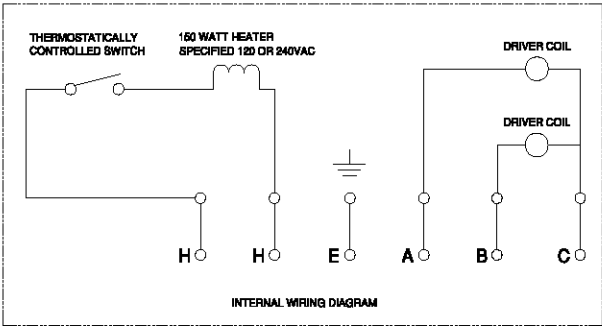
PARTS LIST
MODEL KB-20 ELECTRIC HORN

DR.	DATE	CKD.	SCALE	DRWG. NO.	REV.
ZJN	12/17/15	EMK	N.T.S.	3-5345	F

REV.	BY	DATE	DESCRIPTION	APP'D.
A	ZN	0/13/13	ADDED ITEM 13, P389-04 THERMOSTAT	EMK
B	ZN	06/12/13	GROUPED ALL ITEM #9's TOGETHER	EMK



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	P033-03	DRIVER PLATE, KB-20 DRIVER PER DRG. 3-5924	1
2	P200-18	COIL ASSEMBLY, KB-20 DRIVER	1
3	P167-05	STUD, RISER, KB-20 DRIVER UNIT PER DRW. 3-5926	8
4	P551-01	DRIVER SYSTEM SUB-ASSEMBLY	1
5	P312-03	PLATE, COIL MOUNTING, KB-20 PER DRG. 3-5926	1
6	P028-24	DIAPHRAGM, 7.46" O.D. KB-20 PER DRG. 2-4957	1
7	P051-08	GASKET, KB-20 DRIVER UNIT	2
8	W078-036SS	WASHER, FENDER, 1/4"X1-1/2" 1B-B STAINLESS STEEL	2
9	W078-012SS	FLAT WASHER 265 ID X .500 OD X 1/32	3
10	W031-013SS	NUT, NYLOCK 1/4-28 S.S.	1
11	P034-03	DRIVER CONE, KB-20 DRIVER UNIT PER DRG. 3-5923	1
12	W031-005SS	NUT, HEX 5/16-18 NYLOCK 316 STAINLESS STEEL	8
13	P389-04	THERMOSTAT WITH MOUNTING BRACKET, CLOSE 60 DEG., OPEN 75 DEG.	1
14	W009-006SS	SCREW, HEX HEAD 1/4-20 x 1-1/4 316 STAINLESS STEEL	8
15	W009-012SS	SCREW, HEX. HD. 5/16"-18X3/4"SS STAINLESS STEEL	8
16	W078-018SS	WASHER, FLAT, 5/16" 316 STAINLESS STEEL	8
17	P318-04	Heater Element, Tubular KB-20 150 WATT, 120 VOLT A.C.	1
18	P318-05	Heater Element, Tubular KB-20 150 WATT, 240 VOLT A.C.	1
19	S185-05	CLAMP, HEATER ELEMENT KB-20	3
20	P384-01	WASHER, INSULATING	2
21	W010-094SS	SCREW, FIL HD 10-24 x 5/8"	2
22	W009--002SS	Screw, Hex Hd 1/4-20 x 5/8	3
	P256-12	TERMINAL BLOCK ASSY.	1



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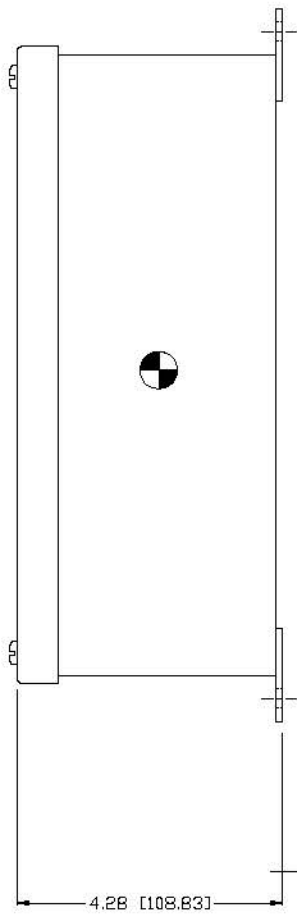
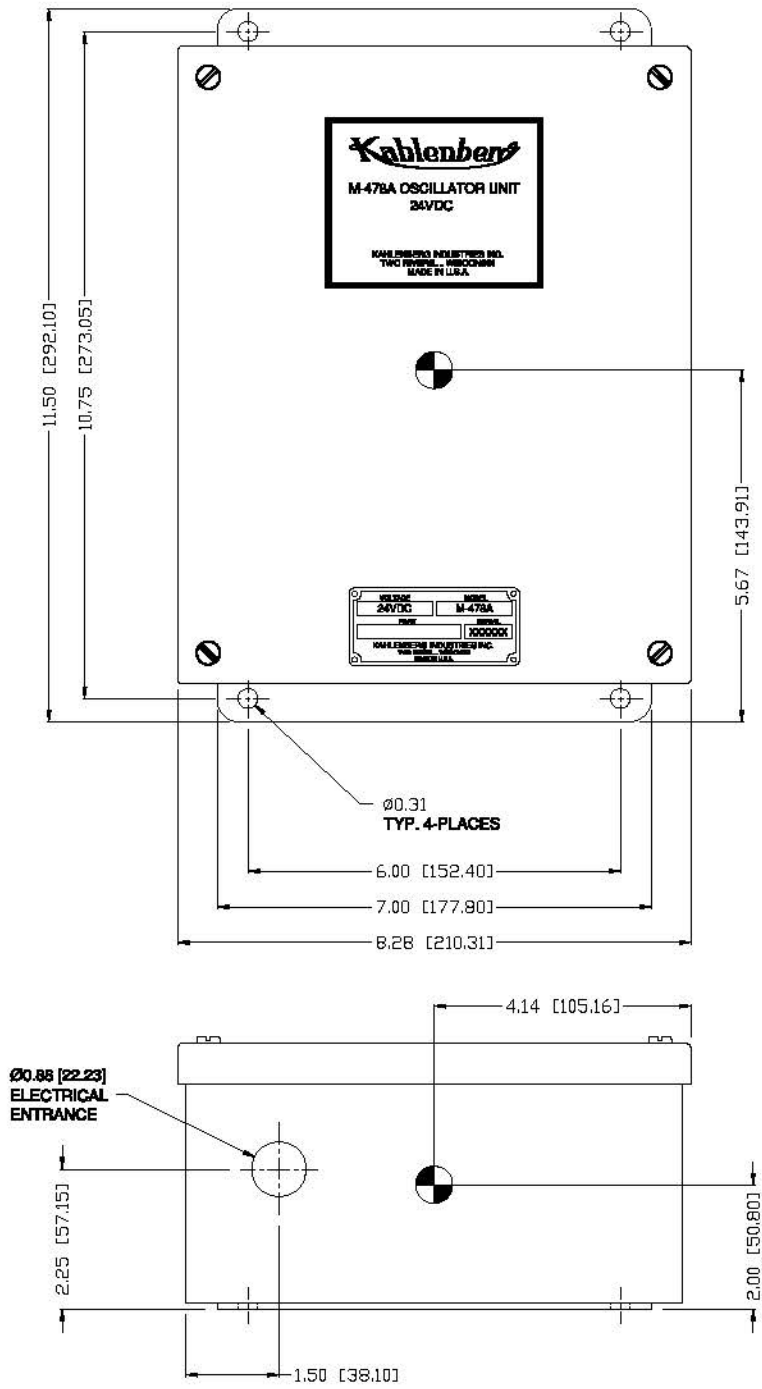
KAHLENBERG INDUSTRIES INC. TWO RIVERS, WISCONSIN 54981

PARTS LIST
PT120-001 DRIVER UNIT

DR.	DATE	CKD.	SCALE	DRWG. NO.	REV.
ZJN	08/03/98	EMK	N.T.S.	3-5925	B

3-5325

REV.	BY	DATE	DESCRIPTION	APP'D.
I	ZN	01/08/13	ADDED INFORMATION BOX	EMK
J	ZN	12/12/18	ADDED MYLAR NAMEPLATE, TEMPERATURE RATING WAS -40°C TO 85°C	EMK



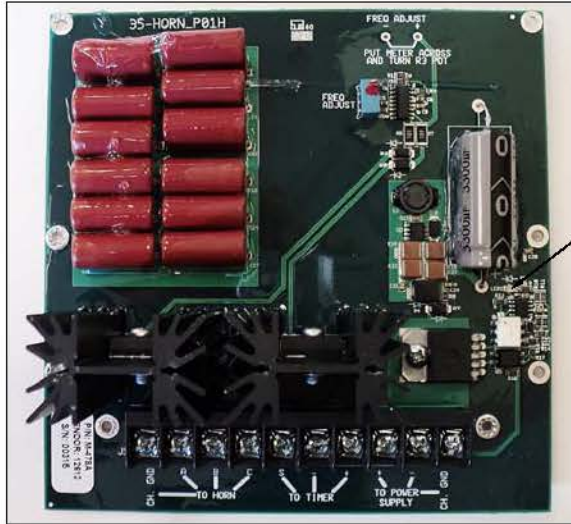
MATERIALS & FINISHES
ENCLOSURE: 14 AWG STEEL, ANSI GRAY POLYESTER POWDER COAT INSIDE AND OUT.

ELECTRICAL RATINGS
INPUT: 24 V.D.C.
25 AMPS MAXIMUM
OUTPUT: 56 V.A.C. 300Hz
11-12 AMPS
WIRE SIZE: 22-14AWG
TERMINALS: SCREW TYPE

ENVIRONMENTAL RATINGS
INGRESS RATING: IP60
TEMPERATURE RATING: 0° TO 70° CELSIUS

WEIGHT
9 lbs. (4kgs.)


— CENTER OF GRAVITY



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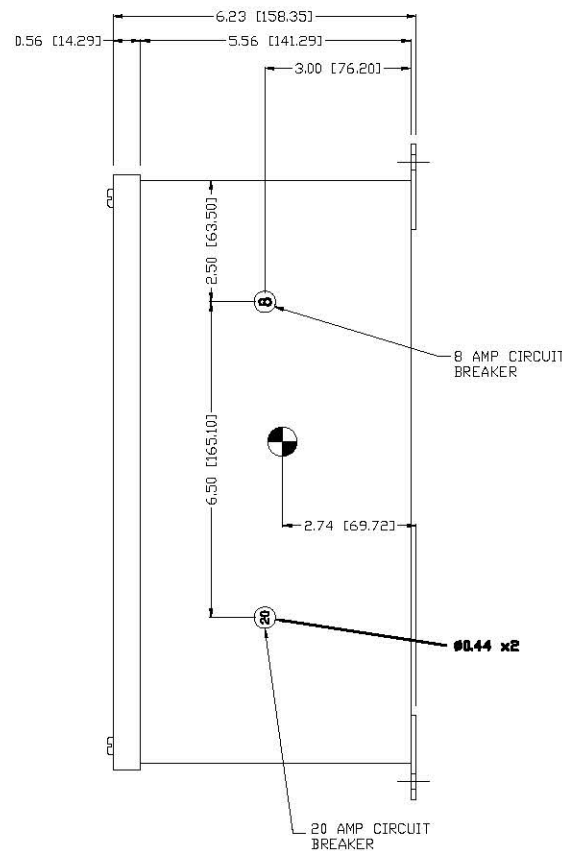
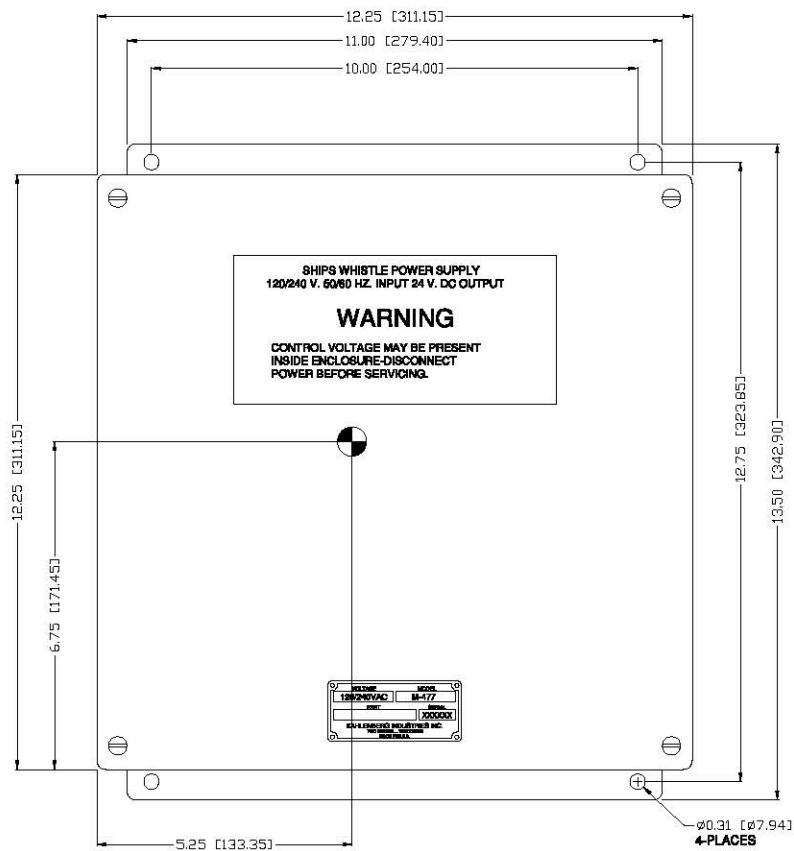
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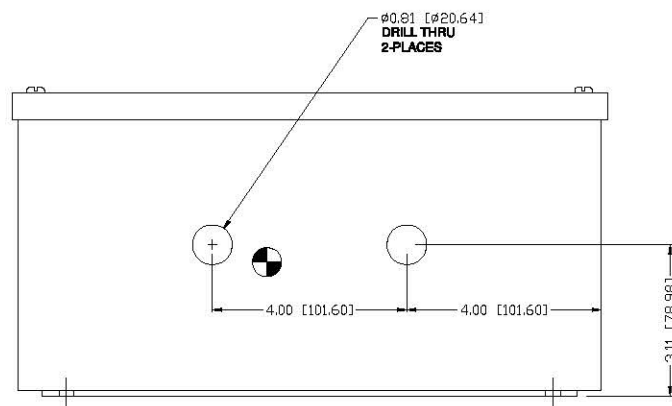
					
KAHLBERG INDUSTRIES INC.			TWO RIVERS, WISCONSIN 54241		
OUTLINE DIMENSIONS OSCILLATOR UNIT FIGURE M-478A FOR KB-20 ELECTRIC WHISTLE					
DR.	DATE	CKD.	SCALE	DRWG. NO.	REV.
ZJN	12/13/98	EMK	N.T.S.	3-5325	J

3-5362

REV.	BY	DATE	DESCRIPTION	APP'D.
A	ZN	01/08/13	ADDED INFORMATION BOX	EMK
B	ZN	12/18/18	ADDED NAMEPLATE P133-06	EMK



MATERIALS & FINISHES	
ENCLOSURE: 14 AWG STEEL, ANSI GRAY POLYESTER POWDER COAT INSIDE AND OUT.	
ELECTRICAL RATINGS	
INPUT: 120/240 V.A.C. 50/60 Hz 8 AMPS MAXIMUM	
OUTPUT: 24 V.D.C. 25 AMPS MAXIMUM	
WIRE SIZE: 22-14AWG	
TERMINALS: SCREW TYPE	
ENVIRONMENTAL RATINGS	
INGRESS RATING: IP50 TEMPERATURE RATING: -40° TO 85° CELCIUS	
WEIGHT	
38lbs. (18.4kgs.)	
 - CENTER OF GRAVITY	



P.L. 3-5363 W.D. 3-5324

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KAHLENBERG INDUSTRIES INC.

TWO RIVERS, WISCONSIN 54241

OUTLINE DIMENSIONS
M-477 POWER SUPPLY
120/240 V. 50/60 HZ. INPUT
24 V. D.C. OUTPUT

DR.	DATE	CKD.	SCALE	DRWG. NO.	REV.
ZJN	12/13/96	EMK	N.T.S.	3-5362	B

REV.	BY	DATE	DESCRIPTION	APP'D.
F	JO	1/92	WAS 25A.	JK
G	ZV	6/98	WAS P502-1	JK
A	JO	2/86	1. WAS 2 PCS. 2. WAS 4 PCS.	JK
B	JO	10/87	1. WAS P503-1 2. WAS P503-2	JK
C	JO	6/88	WAS P503-6	JK
D	JO	7/89	1. WAS 1 PC. 2. WAS 2 PC	JK
E	JO	9/89	1. WAS 20A. 2. DELETED P523-1 3. ADDED VOLT. ADJ. ASS'Y.	JK

NO.	REQ.	PART NO.	DESCRIPTION	MAT'L.	DRG. NO.
1	1	P436-7	ENCLOSURE	STEEL	3-5362
2	1	P248-15	PANEL	STEEL	2-4955
3	1	P490-1	TRANSFORMER	VARIOUS	
4	1	P256-7	END BARRIER	NYLON	
5	6	P256-6	TERMINAL BLOCK	NYLON/STEEL	
6	2	P256-8	RETAINING CLIP	STEEL	
7	1	P256-9	MOUNTING CHANNEL, 4"	STEEL	
8	1	P502-4	RECTIFIER, FULL WAVE BRIDGE, 35 AMP	VARIOUS	
9	2	P500-1	CAPACITOR	VARIOUS	
10	2	P501-1	CAPACITOR MOUNT	STEEL	
11	1	P503-5	CIRCUIT BREAKER, 8A.	VARIOUS	
12	1	P503-2	CIRCUIT BREAKER, 20A.	VARIOUS	
13	4	W38-2	6-32 x 1/2" R.H.M.S.	S.S.	
14	4	W27-12	#6 LOCKWASHER	S.S.	
15	4	W43-14	1/4"-20 x 5/8" HEX. HD. M.S.	S.S.	
16	1	W38-51	8-32 x 3/4" R.H.M.S.	S.S.	
17	3	W27-10	#8 LOCKWASHER	S.S.	
18	2	W38-51	8-32 x 3/4" R.H.M.S.	S.S.	
19	5	W27-2	1/4" LOCKWASHER	S.S.	
20	4	W40-9	1/4" HEX NUT	S.S.	
21	1	P256-10	JUMPER	STEEL	
22	1	P357-23	NAMEPLATE	PLASTIC	2-4956
23	1	P524-1	VOLTAGE ADJ. ASS'Y.	VARIOUS	2-5118
24	1	W009-00735	1/4"-20 x 1 1/2" HEX. HD. M.S.	S.S.	

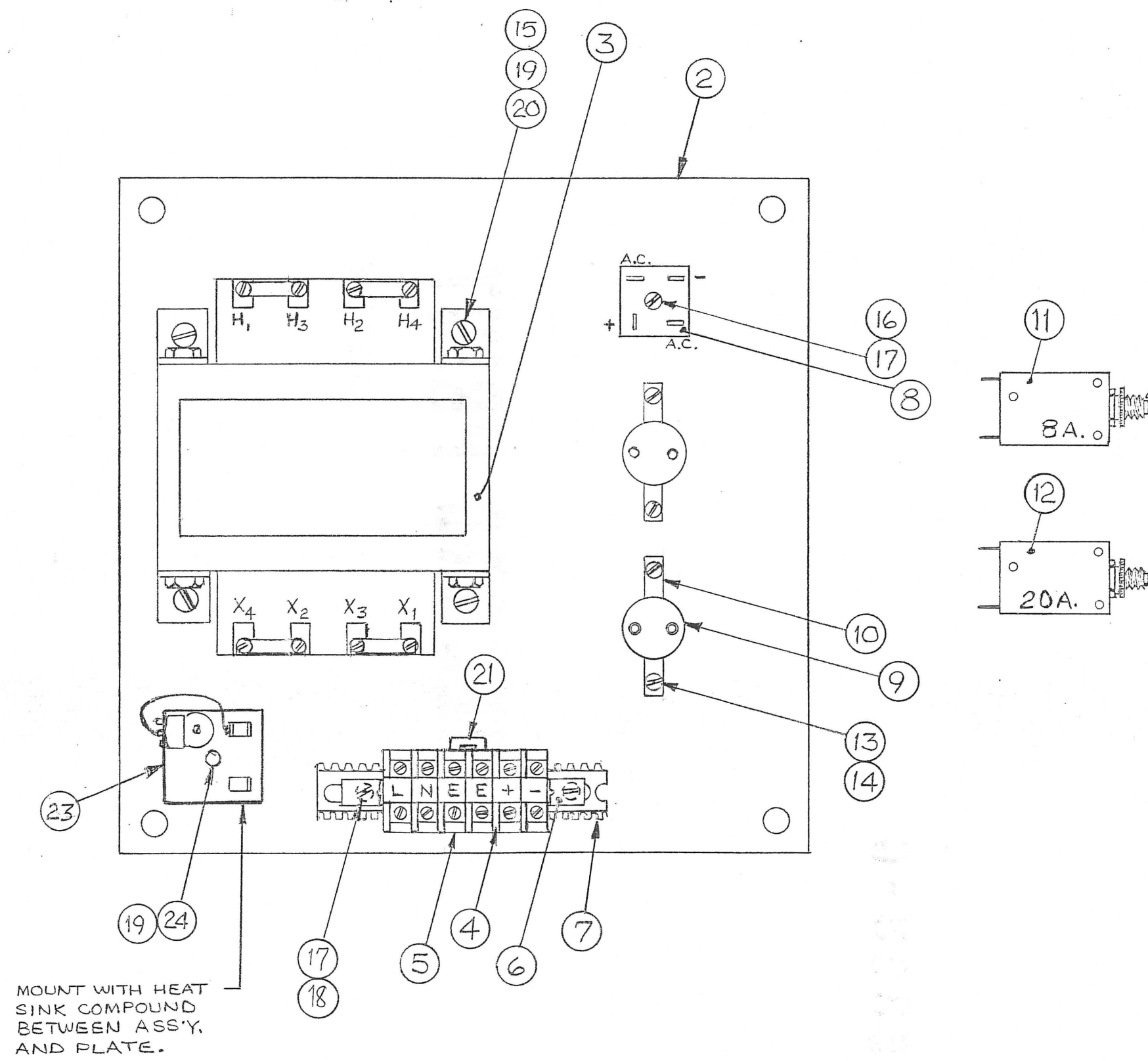
TOLERANCES UNLESS OTHERWISE SPECIFIED			
DECIMAL	FRACTIONAL	ANGULAR	METRIC
.X ±.015"			
.XX ±.010"	± 1/32"	± 1 DEGREE	± .1 MM
.XXX ±.005"			

KAHLENBERG BROS. CO.
TWO RIVERS, WISCONSIN 54241

PARTS LIST
POWER SUPPLY
M-477

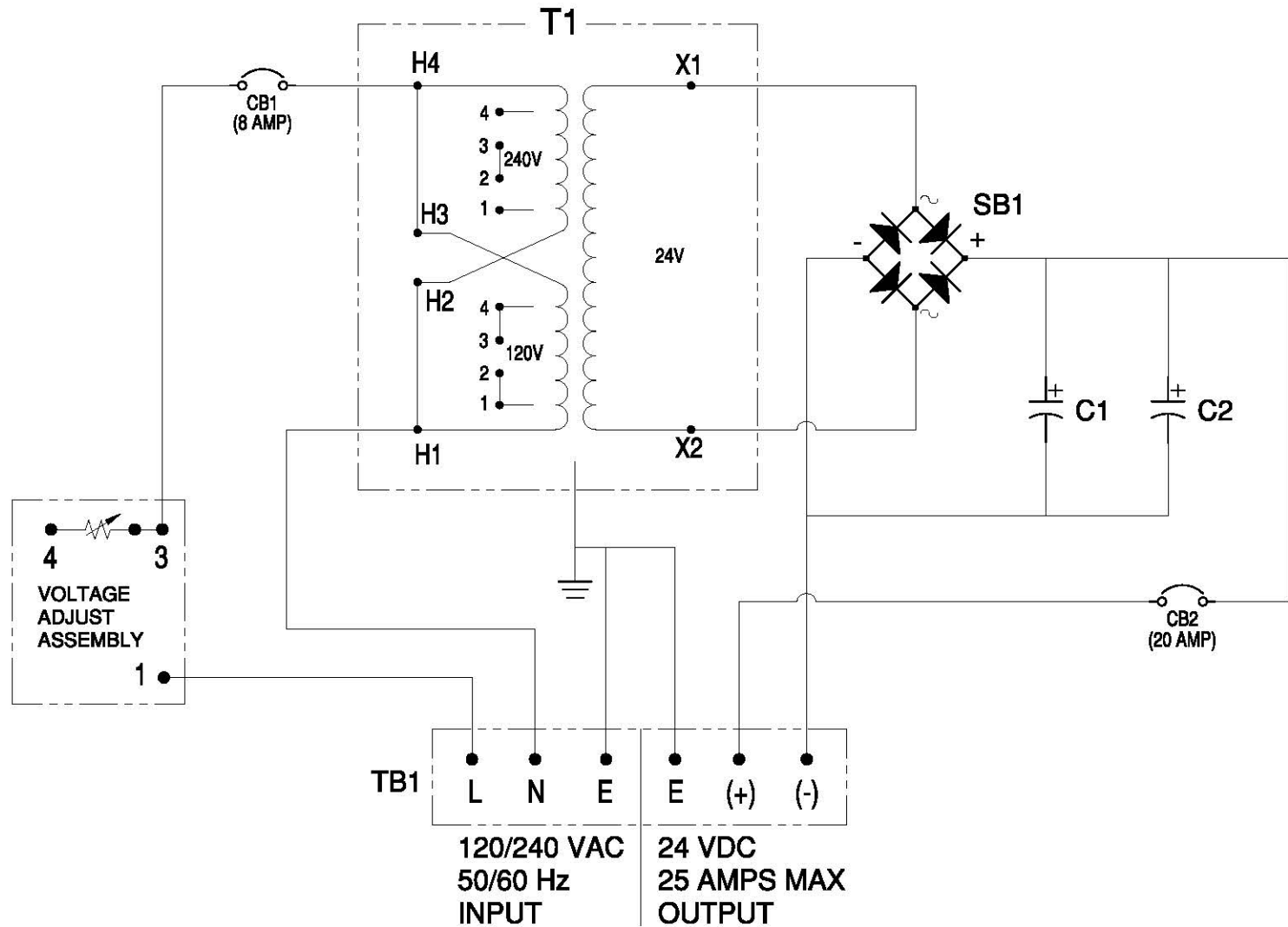
DR.	DATE	CKD.	SCALE	DRG. NO.	REV.
JO	MAR. 18, 1985	JK	1" = 1"	3-5363	G

O.D. 3-5362
W.D. 3-5324



REV.	BY	DATE	DESCRIPTION	APP'D.
F	ZN	01/10/12	REMOVED NOTE FOR "AT WILL" POWER SUPPLY	EMK

FACTORY ADJUSTED TO
24 V.D.C. WHILE HORN
IS SOUNDING



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Kahlenberg

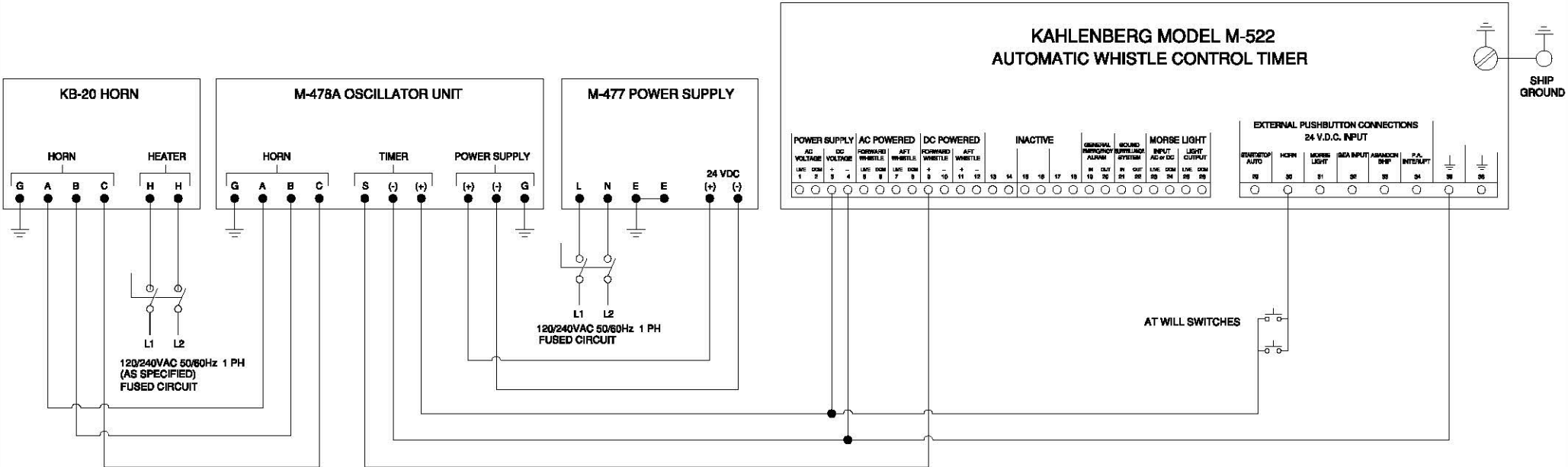
KAHLBERG INDUSTRIES INC.

TWO RIVERS, WI. U.S.A.

**WIRING DIAGRAM
M-477 POWER SUPPLY
KB-20 ELECTRIC WHISTLE**

DR.	DATE	CKD.	SCALE	DRWG. NO.	REV.
ZJN	08/31/84	FK	N.T.S.	3-5324	F

REV.	BY	DATE	DESCRIPTION	APP'D.



CURRENT REQUIREMENTS
KB-20 CONTROL: 24VDC 21AMPS
KB-20 HEATER: 120/240VAC 50/60Hz (AS SPECIFIED), 1PH, 150 WATTS
M-478A: 24VDC 25 AMPS MAXIMUM OUTPUT

NOTE: WHEN USED IN CONJUNCTION WITH THE M-478A OSCILLATOR UNIT JUMPER J6 (LOCATED INSIDE THE M-522 TIMER ON THE TOP CIRCUIT BOARD) MUST BE SET TO CONNECT THE MIDDLE PIN AND THE PIN LABELED "GND".

CAUTION: OBSERVE CORRECT D.C. (24 V.) POLARITY, OR DAMAGE TO EQUIPMENT MAY RESULT.

NOTE: THE M-477 POWER SUPPLY OPTION (SHOWN) IS USED TO CONVERT 120/240 VAC TO 24 VDC TO POWER THE M-478A. IT IS NOT REQUIRED WHEN 24 VDC POWER IS AVAILABLE.

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KAHLENBERG INDUSTRIES INC. TWO RIVERS, WISCONSIN 54241

WIRING DIAGRAM

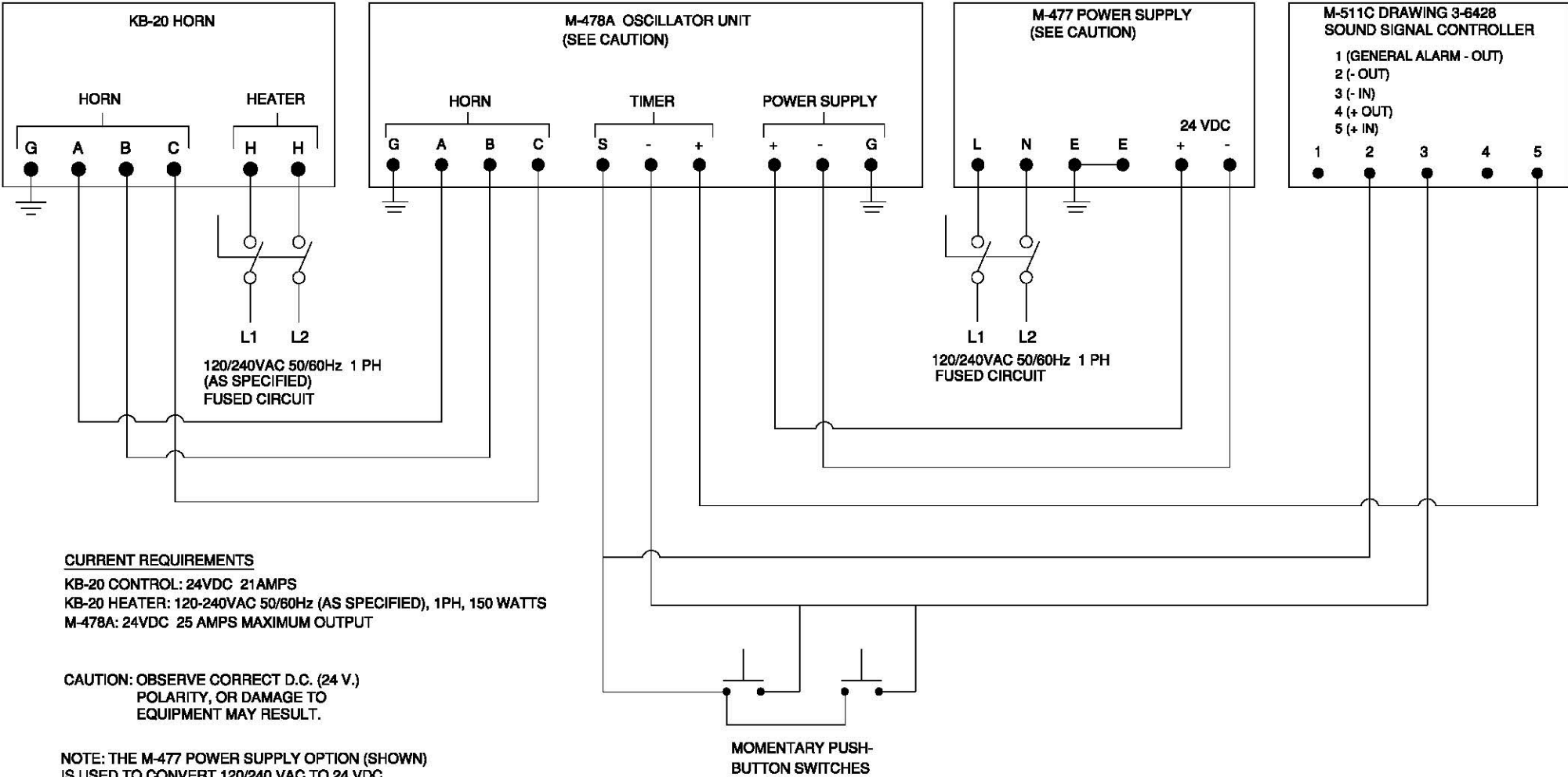
KB-20 ELECTRIC HORN
M-478A OSCILLATOR UNIT
M-522 SOUND SIGNAL CONTROLLER

DR.	DATE	CKD.	SCALE	DRWG. NO.	REV.
ZJN	02/06/13	EMK	N.T.S.	3-6742	

CAGE: 75214

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REV.	BY	DATE	DESCRIPTION	APP'D.



CURRENT REQUIREMENTS
KB-20 CONTROL: 24VDC 21AMPS
KB-20 HEATER: 120-240VAC 50/60Hz (AS SPECIFIED), 1PH, 150 WATTS
M-478A: 24VDC 25 AMPS MAXIMUM OUTPUT

CAUTION: OBSERVE CORRECT D.C. (24 V.)
POLARITY, OR DAMAGE TO
EQUIPMENT MAY RESULT.

NOTE: THE M-477 POWER SUPPLY OPTION (SHOWN)
IS USED TO CONVERT 120/240 VAC TO 24 VDC
TO POWER THE M-478A. IT IS NOT REQUIRED
WHEN 24 VDC POWER IS AVAILABLE.

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KAHLBERG

KAHLBERG INDUSTRIES INC. TWO RIVERS, WISCONSIN 54241

WIRING DIAGRAM

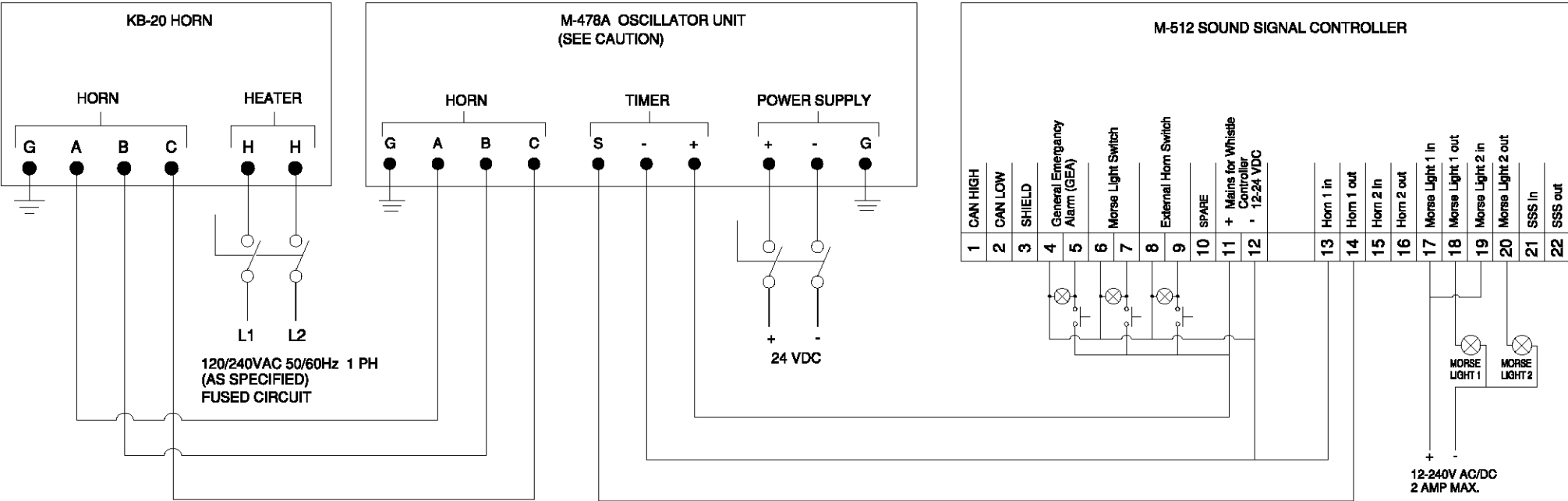
KB-20 ELECTRIC HORN
M-478A OSCILLATOR UNIT
M-511C SOUND SIGNAL CONTROLLER

DR.	DATE	CKD.	SCALE	DRWG. NO.	REV.
ZJN	02/06/13	EMK	N.T.S.	3-6741	

CAGE: 75214

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REV.	BY	DATE	DESCRIPTION	APP'D.



CURRENT REQUIREMENTS

KB-20 CONTROL: 24VDC 21AMPS
KB-20 HEATER: 120/240VAC 50/60Hz (AS SPECIFIED), 1PH, 150 WATTS
M-478A: 24VDC 25 AMPS MAXIMUM OUTPUT

CAUTION: OBSERVE CORRECT D.C. (24 V.)
POLARITY, OR DAMAGE TO
EQUIPMENT MAY RESULT.

CONFIDENTIAL

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KAHLBERG INDUSTRIES INC. TWO RIVERS, WISCONSIN 54241

WIRING DIAGRAM

KB-20 ELECTRIC HORN

M-478A OSCILLATOR UNIT

M-512 SOUND SIGNAL CONTROLLER

DR.	DATE	CKD.	SCALE	DRWG. NO.	REV.
ZJN	06/18/15	EMK	N.T.S.	3-6961	

U.S. Department
of Transportation

United States
Coast Guard



Commandant
United States Coast Guard

Washington, DC 20593
Staff Symbol: G-MTH-2
Phone: (202) 426-2206

16672.2A/ANNEX III

MAR 18 1985

Kahlenberg Bros. Co.
Attn: Mr. F. M. Kahlenberg
P.O. Box 358
Two Rivers, WI 54241

Subj: Approval of Ships' Whistles

Gentlemen:

Your letter of February 21, 1985 submitted information on your Model KB-20 electric horn and requested U.S. Coast Guard approval. Based on the data submitted your Model KB-20 horn meets the International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS) and the Inland Navigation Rules. Your Model KB-20 electric horn is acceptable for use on Coast Guard certificated vessels of an overall length of less than 75 meters.

All installations shall be in accordance with the manufacturer's instructions and shall be to the satisfaction of the cognizant Officer-in-Charge, Marine Inspection.

Sincerely,

A handwritten signature in cursive script, appearing to read "P. J. Pluta".

P. J. PLUTA
Commander, U.S. Coast Guard
Chief, Engineering Branch
Marine Technical and Hazardous
Materials Division
By direction of the Commandant

Copy to: All mmt's
All OCMI's
All MSO's
ABS, NY



Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product. This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 15/SEP/2014. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until 31/MAR/2018 subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Ship Sound Signal, Horn
Model Name(s): KB-20

Presented to:
KAHLENBERG INDUSTRIES, INC.
1700 12TH STREET
P.O. BOX 358
TWO RIVERS
United States

Intended Service:	Marine & Offshore Application - Navigation Electric Horn for use Onboard Marine Vessels over 20 meters but under 75 Meters in Length
Description:	Marine Electronic Horn
Ratings:	Frequency: 300 Hz \pm 20 Hz Sound Pressure Level (dB(A) at 1m): 132.2dB; Sound Pressure Level: (1/3 octave at 1m): 131 dB; Electric Power: 24 VDC; Power Consumption: 500 W; Degree of Protection: IP 56 Temperature Range: -40°C to +45°C (-22°F to +113°F); Weight: 49 lbs. (22 kg)
Service Restrictions:	Unit Certification is not required for this product. If the manufacturer or purchaser's request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
Comments:	The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product. Satisfies the International Regulations for Preventing Collisions at Sea, 1972, Rules 32.
Notes / Documentation:	Supporting Data: Dwg No. 3-5346, Rev.A, Outline Dimensions Model KB-20 Electric Horn; Brochure Model KB-20 Electric Horn; ABS Survey Kahlenberg Sound Signal Test and Certification dated 2/13/2013, 3 shts;
Term of Validity:	This Product Design Assessment (PDA) Certificate 13-HS1001711-PDA, dated

01/Apr/2013 remains valid until 31/Mar/2018 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

ABS Rules:

2013 Steel Vessels Rules 1-1-4/7.7, 1-1-Appendix 3, 4-8-3/Table 2

National Standards:**International Standards:**

International Regulations for Preventing Collisions at Sea, 1972, (Consolidated 2003)

Government Authority:

UK Maritime and Coastguard Agency (MCA)

EUMED:**Others:**

Model Certificate	Model Certificate No	Issue Date	Expiry Date
PDA	13-HS1001711-PDA	01/APR/2013	31/MAR/2018



ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.