



WORKING DRAWING

工作图

**WHISTLE
SARACOM/KOREA**

PENGLAI ZHONGBAI JINGLU SHIPYARD

75200 DWT BULKER

HULL NO. JL-0019(B)/0020(B)

SHIPOWNER:NGM

DATE 12/05/2008

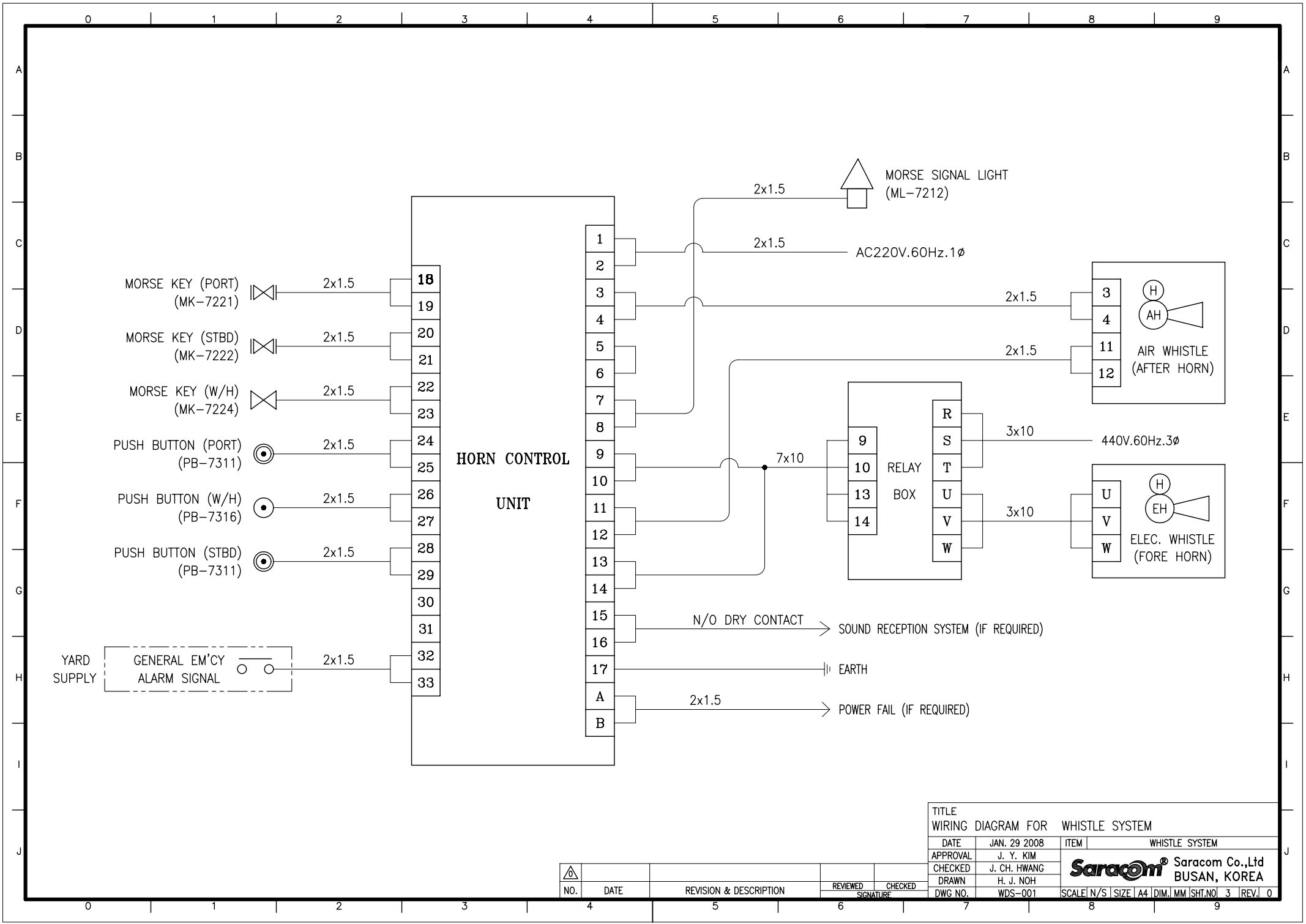
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NO.	DESCRIPTION	MODEL NO.	SPECIFICATION	Q'TY	REMARKS
1	AIR WHISTLE	WA-15/143	* CLASS I * SOUND LEVEL(1/3 OCT.BAND.1M)-143dB * SOUND FREQUENCY - 100Hz * AIR PRESSURE - 7 kg/cm ² * AIR CONSUMPTION - 50 l/s * DIAPHRAGM - Φ 200 * SOURCE - VOLT. : AC220V. 60Hz.1Φ CURRENT : 0.35A * HEATER - VOLT. : AC220V.60Hz.1Φ CURRENT : 25W(110mA) * WEIGHT - Abt.50 kg * LOCATION - RADAR MAST	1	
2	ELECTRIC WHISTLE	WE-16/143	* CLASS I * SOUND LEVEL(1/3 OCT.BAND.1M)-143dB * SOUND FREQUENCY - 90Hz * SOURCE - VOLT. : AC440V.60Hz.3Φ CURRENT : 5.5kw, 9.7A(±10%) * HEATER - 38VAC, 4A * WEIGHT - Abt.165 kg * LOCATION - FORE MAST * IP GRADE - 56	1	
3	HORN CONTROL UNIT	HC-7123	* CONSOLE MOUNTING TYPE * AC220V.60Hz.1Φ * COLOR : BLACK	1	
4	RELAY BOX	RB-7712A	* WALL MOUNTING TYPE	1	
5	PUSH BUTTON S/W	PB-7311	* W.T WALL MOUNTING TYPE	2	
6	PUSH BUTTON S/W	PB-7316	* N.W.T FLUSH MOUNTING TYPE	1	
7	MORSE SIGNAL KEY	MK-7221	* W.T PORT, WALL MOUNTING TYPE	1	
8	MORSE SIGNAL KEY	MK-7222	* W.T ST'BD, WALL MOUNTING TYPE	1	
9	MORSE SIGNAL KEY	MK-7224	* N.W.T CONSOLE FLUSH MOUNTING TYPE	1	
10	MORSE SIGNAL LIGHT	ML-7212	* AC220V, 20W x 3	1	
11	AIR FILTER	FL-7A12	* 16K - 20A	1	
12	STANDARD SPARE PART	SP-781Z	* STEEL BOX	1	

* UNLESS OTHERWISE SPECIFIED, PAINTING COLOR WILL BE MUNSELL NO. 7.5 BG 7/2



TITLE WIRING DIAGRAM FOR WHISTLE SYSTEM											
DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM								
APPROVAL	J. Y. KIM	 Saracom Co.,Ltd BUSAN, KOREA									
CHECKED	J. CH. HWANG										
DRAWN	H. J. NOH										
DWG NO.	WDS-001	SCALE	N/S	SIZE	A4	DIM.	MM	SHT.NO	3	REV.	0

NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
			SIGNATURE	

INSTRUCTION FOR "WA" SERIES AIR WHISTLE

(공기 기적 사용설명서)

1. Construction

- a. Horn
- b. Body
- c. Coupler
- d. Solenoid valve and Manual valve
- e. Air filter
- f. Heater and Thermostat

1. 구 성

- 가. 나 팔
- 나. 본 체
- 다. 연결쇠
- 라. 전자밸브(솔레노이드) 및 수동밸브
- 마. 공기휠터
- 바. 가열기 및 온도스위치

2. Principle

The compressed air, which supplied from engine room, flows into body through the valve operated by electric / manually and the air vibrates diaphragm and exhaust to the horn, when the diaphragm vibrate which generates the sound. The characteristic of diaphragm, thickness, diameter, and supporter and trumpet length determine the frequency of the sound and sound pressure level.

The air filter protect the diaphragm from dirt and damage.

2. 작동원리

기관실에서 공급된 압축공기는 전기적으로 혹은 수동으로 개폐되는 밸브에 의해 본체의 다이아프램에 전달되고, 다이아프램을 진동시킨 공기는 나팔을 통해 배출되며, 다이아프램이 진동할 때 소리가 발생합니다. 이때에 다이아프램의 물리적 성질, 두께와 외경, 지지점 및 나팔의 길이에 의해 소리의 주파수와 음압이 결정됩니다. 다이아프램에 프램에 안정된 양의 공기를 보내기 위하여 공기 조절기를 거치게 하며 공기휠터는 찌꺼기등으로부터 다이아프램을 보호합니다.

3. Instructions

Whistle is constructed with horn, body, valve and air trap. The valve unit is designed to be small and equipped with manual control valve and solenoid valve. Manual control valve may

3. 사용방법

기적은 나팔, 본체, 밸브 및 공기휠터로 구성되었으며 밸브 유닛은 작게 만들어졌으며 수동작동 및 솔레노이드 밸브로 작동이 가능합니다. 수동 작동 밸브는 조정 밸브레바의 줄을 당기면 작동되며, 솔레노이드 밸브는 AC 110/220V의

open by pulling the line of control valve lever, solenoid valve may be opened by electric source of AC110V/220V. The regulator can regulate the air pressure by size of the hole.

전원으로 작동됩니다.

조절기는 조절기 구멍의 크기에 의하여 공기 압력을 조절합니다.

4. Installation

a. Don't forget to air blow before installation for preventing valve seizing and diaphragm damage from dirty air.

b. The air pressure should be confirmed so as to be within the range given on the specification.

c. The air filter should be cleaned periodically.

d. Pay attention not to clog the exhaust hole by painting, etc.

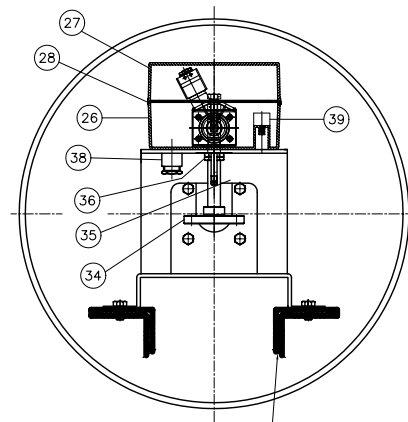
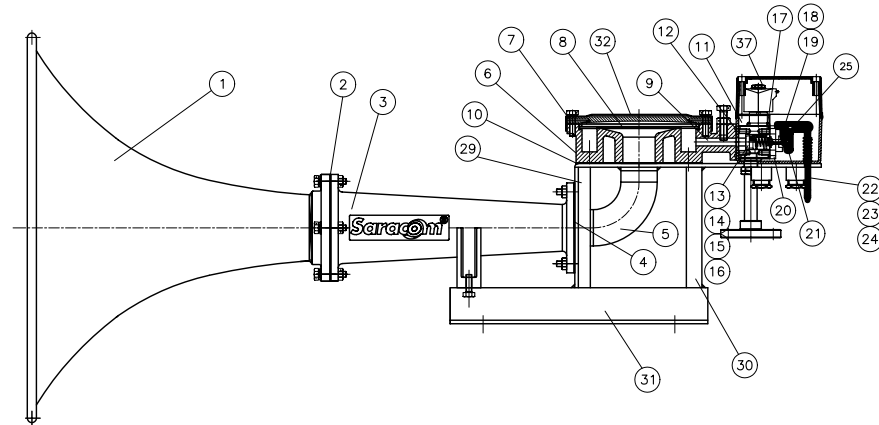
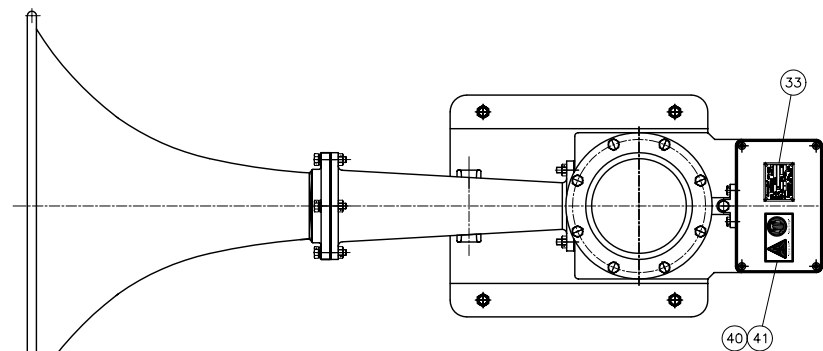
4. 설 치

가. 기적을 설치하기 전에 필히 공기관계통을 충분히 불어내어 찌꺼기, 드레인 등으로 인한 전자밸브 (혹은 수동밸브)의 고착이나 다이어프램의 손상을 막도록해야 합니다.

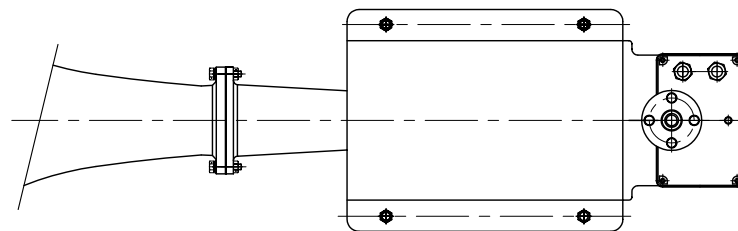
나. 공급되는 공기의 압력은 사양서에 표시된 압력을 초과하지 않도록 확인해야 합니다.

다. 공기필터는 정기적으로 소제해야 합니다.

라. 배출구 (나팔의 내부)등에 페인트를 칠하지 않도록 해야 합니다.



YARD BRACKET



NOTE

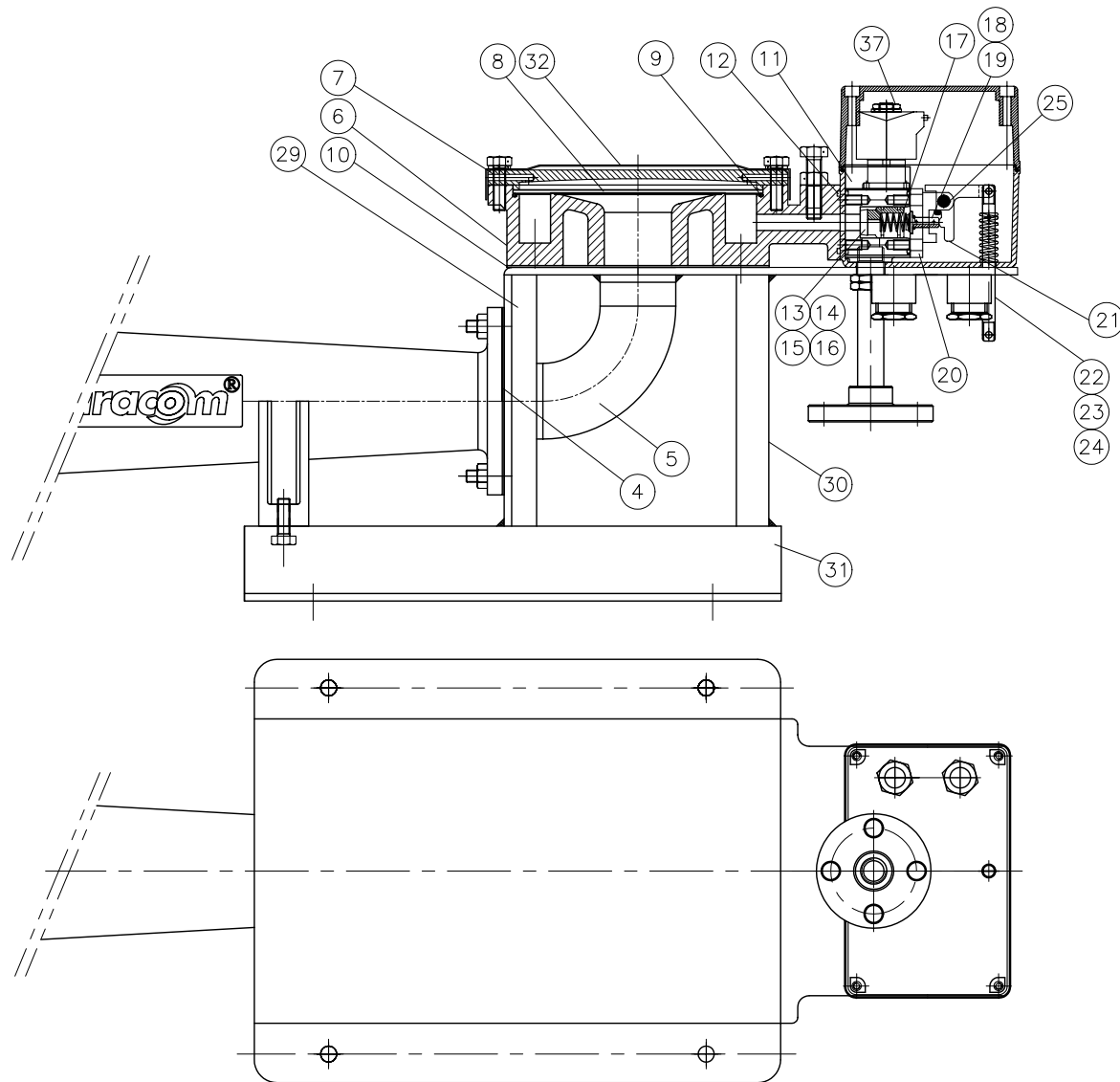
1. IP GRADE : IP56
2. WEIGHT : 50Kg
3. PAINTING COLOR : MUNSELL NO . 7.5 BG 7/2

41	SOUND SAFETY STICKER		1 EA	STICKER	WA-15-041
40	ELECTRIC SAFETY STICKER		1 EA	STICKER	WA-15-040
39	TERMINAL BLOCK	PURCH.	1 EA	6P	WA-15-039
38	CABLE GLAND	PURCH.	2 EA	OSNJ-M20x2EA	WA-15-038
37	SOLENOID VALVE	PURCH.	2 EA	CKD	WA-15-037
36	JOINT NUT	BC	2 EA		WA-15-036
35	CONNECTING PIECE PIPE	BC	1 EA	15A, PT1/2", PF1/2"	WA-15-035
34	FLANGE 15A/20A/25A	BC1	1 EA	10K ~ 20A	WA-15-034
33	NAME PLATE	SUS304	1 EA		WA-15-033
32	DIAPHRAGM COVER SUS304	SUS304	1 EA		WA-15-032
31	BASE PANEL	SS400	1 EA	WELD MENT	WA-15-031
30	FRAME SUB PLATE	SS400	1 EA	WELD MENT	WA-15-030
29	HORN&HEATR BOX FRAME	SS400	1 EA	WELD MENT	WA-15-029
28	HEATER BOX O-RING	NBR	1 EA		WA-15-028
27	HEATER BOX TOP COVER	ABS	1 EA	INJECTION MOLD	WA-15-027
26	HEATER BOX DOWN COVER	ABS	1 EA	INJECTION MOLD	WA-15-026
25	AIR VENT LEVER STOP PIN	STS304	1 EA		WA-15-025
24	LEVER SHAFT SPRING	PW3	1 EA		WA-15-024
23	LEVER SHAFT PIN	STS304	1 EA	3ø PIN	WA-15-023
22	LEVER SHAFT	BC	1 EA		WA-15-022
21	AIR VENT LEVER	BøC 3	1 EA		WA-15-021
20	SOLENOID VALVE COVER	BøC 3	1 EA		WA-15-020
19	SLIDE SHAFT O-RING	NBR	1 EA		WA-15-019
18	PISTON SLIDE SHAFT	STS304	1 EA		WA-15-018
17	SOLENOID VALVE SPRING	PW3	1 EA		WA-15-017
16	PISTON RUBBER WASHER	STS304	1 EA		WA-15-016
15	PISTON RUBBER	NBR	1 EA		WA-15-015
14	PISTON RING	CARBON TEFLON	2 EA		WA-15-014
13	SOLENOID VALVE PISTON	STS304	1 EA		WA-15-013
12	SOLENOID VALVE BODY O-RING	NBR	3 EA	G45	WA-15-012
11	SOLENOID VALVE BODY	BøC 3	1 EA		WA-15-011
10	DIAPHRAGM GASKET	NON- ASBESTOS	1 EA		WA-15-010
9	DIAPHRAGM O-RING	SILICON	1 EA		WA-15-009
8	DIAPHRAGM PLATE	TITANIUM	1 EA		WA-15-008
7	DIAPHRAGM BODY COVER	BøC 3	1 EA		WA-15-007
6	DIAPHRAGM BODY	BøC 3	1 EA		WA-15-006
5	HORN BODY PIPE	SS400	1 EA	50A S20	WA-15-005
4	HORN BODY GASKET	NON- ASBESTOS	1 EA		WA-15-004
3	HORN BODY	AL 5083	1 EA	AL CAST	WA-15-003
2	HORN PIPE GASKET	NON- ASBESTOS	1 EA		WA-15-002
1	HORN PIPE	AL	1 EA		WA-15-001
NO.	DESCRIPTION	MATERIAL	QUANTITY	REMARK'S	PART CODE

TITLE CONSTRUCTION OF AIR WHISTLE

DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM
APPROVAL	J. Y. KIM	 Saracom Co.,Ltd BUSAN, KOREA	
CHECKED	J. CH. HWANG		
DRAWN	H. J. NOH		
DWG NO.	WA15-001	SCALE	N/S SIZE A4 DIM. MM SHT. NO. 6 REV. 0

NO.	DATE	REVISION & DESCRIPTION	REVIEWED SIGNATURE	CHECKED SIGNATURE

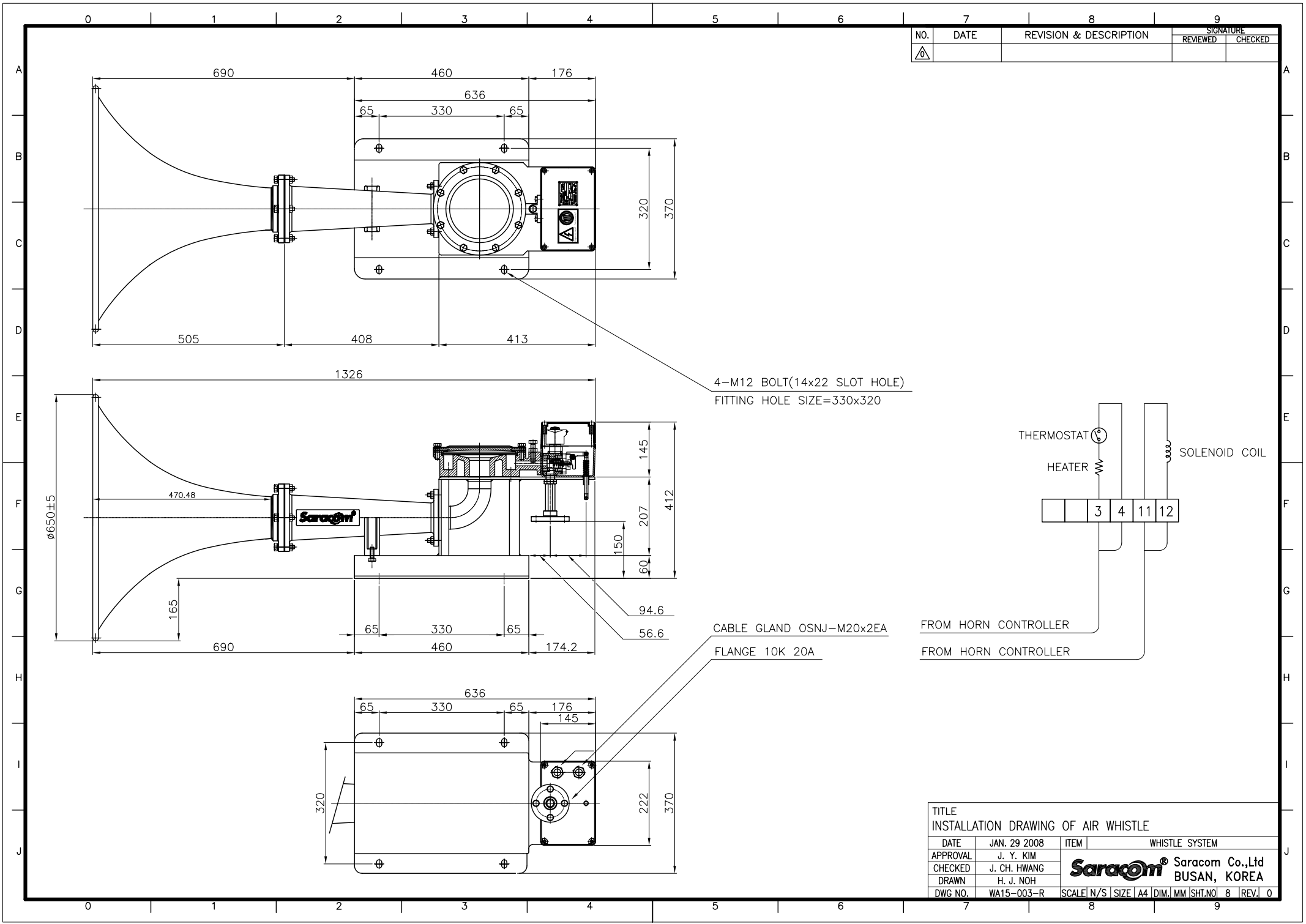


41	SOUND SAFETY STICKER		1 EA	STICKER	WA-15-041
40	ELECTRIC SAFETY STICKER		1 EA	STICKER	WA-15-040
39	TERMINAL BLOCK	PURCH.	1 EA	6P	WA-15-039
38	CABLE GLAND	PURCH.	2 EA	OSNJ-M20x2EA	WA-15-038
37	SOLENOID VALVE	PURCH.	2 EA	CKD	WA-15-037
36	JOINT NUT	BC	2 EA		WA-15-036
35	CONNECTING PIECE PIPE	BC	1 EA	15A, PT1/2", PF1/2"	WA-15-035
34	FLANGE 15A/20A/25A	BC1	1 EA		WA-15-034
33	NAME PLATE	SUS304	1 EA		WA-15-033
32	DIAPHRAGM COVER SUS304	SUS304	1 EA		WA-15-032
31	BASE PANEL	SS400	1 EA	WELD MENT	WA-15-031
30	FRAME SUB PLATE	SS400	1 EA	WELD MENT	WA-15-030
29	HORN&HEATR BOX FRAME	SS400	1 EA	WELD MENT	WA-15-029
28	HEATER BOX O-RING	NBR	1 EA		WA-15-028
27	HEATER BOX TOP COVER	ABS	1 EA	INJECTION MOLD	WA-15-027
26	HEATER BOX DOWN COVER	ABS	1 EA	INJECTION MOLD	WA-15-026
25	AIR VENT LEVER STOP PIN	STS304	1 EA		WA-15-025
24	LEVER SHAFT SPRING	PW3	1 EA		WA-15-024
23	LEVER SHAFT PIN	STS304	1 EA	3ø PIN	WA-15-023
22	LEVER SHAFT	BC	1 EA		WA-15-022
21	AIR VENT LEVER	BøC 3	1 EA		WA-15-021
20	SOLENOID VALVE COVER	BøC 3	1 EA		WA-15-020
19	SLIDE SHAFT O-RING	NBR	1 EA		WA-15-019
18	PISTON SLIDE SHAFT	STS304	1 EA		WA-15-018
17	SOLENOID VALVE SPRING	PW3	1 EA		WA-15-017
16	PISTON RUBBER WASHER	STS304	1 EA		WA-15-016
15	PISTON RUBBER	NBR	1 EA		WA-15-015
14	PISTON RING	CARBON TEFLON	2 EA		WA-15-014
13	SOLENOID VALVE PISTON	STS304	1 EA		WA-15-013
12	SOLENOID VALVE BODY O-RING	NBR	3 EA	G45	WA-15-012
11	SOLENOID VALVE BODY	BøC 3	1 EA		WA-15-011
10	DIAPHRAGM GASKET	NON- ASBSTOS	1 EA		WA-15-010
9	DIAPHRAGM O-RING	SILICON	1 EA		WA-15-009
8	DIAPHRAGM PLATE	TITANIUM	1 EA		WA-15-008
7	DIAPHRAGM BODY COVER	BøC 3	1 EA		WA-15-007
6	DIAPHRAGM BODY	BøC 3	1 EA		WA-15-006
5	HORN BODY PIPE	SS400	1 EA	50A S20	WA-15-005
4	HORN BODY GASKET	NON- ASBSTOS	1 EA		WA-15-004
3	HORN BODY	AL 5083	1 EA	AL CAST	WA-15-003
2	HORN PIPE GASKET	NON- ASBSTOS	1 EA		WA-15-002
1	HORN PIPE	AL	1 EA		WA-15-001
NO.	DESCRIPTION	MATERIAL	QUANTITY	REMARK'S	PART CODE

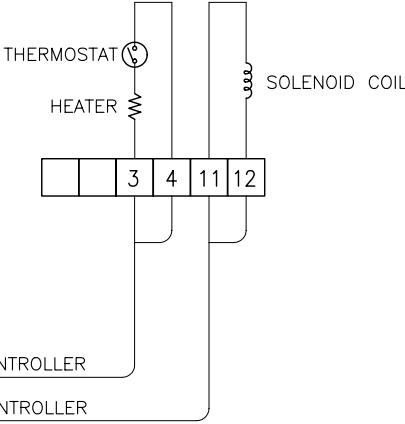
TITLE
CONSTRUCTION OF AIR WHISTLE


DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM
APPROVAL	J. Y. KIM	Saracom ® Saracom Co.,Ltd BUSAN, KOREA	
CHECKED	J. CH. HWANG		
DRAWN	H. J. NOH		
DWG NO.	WA15-002	SCALE	N/S SIZE A4 DIM. MM SHT. NO. 7 REV. 0

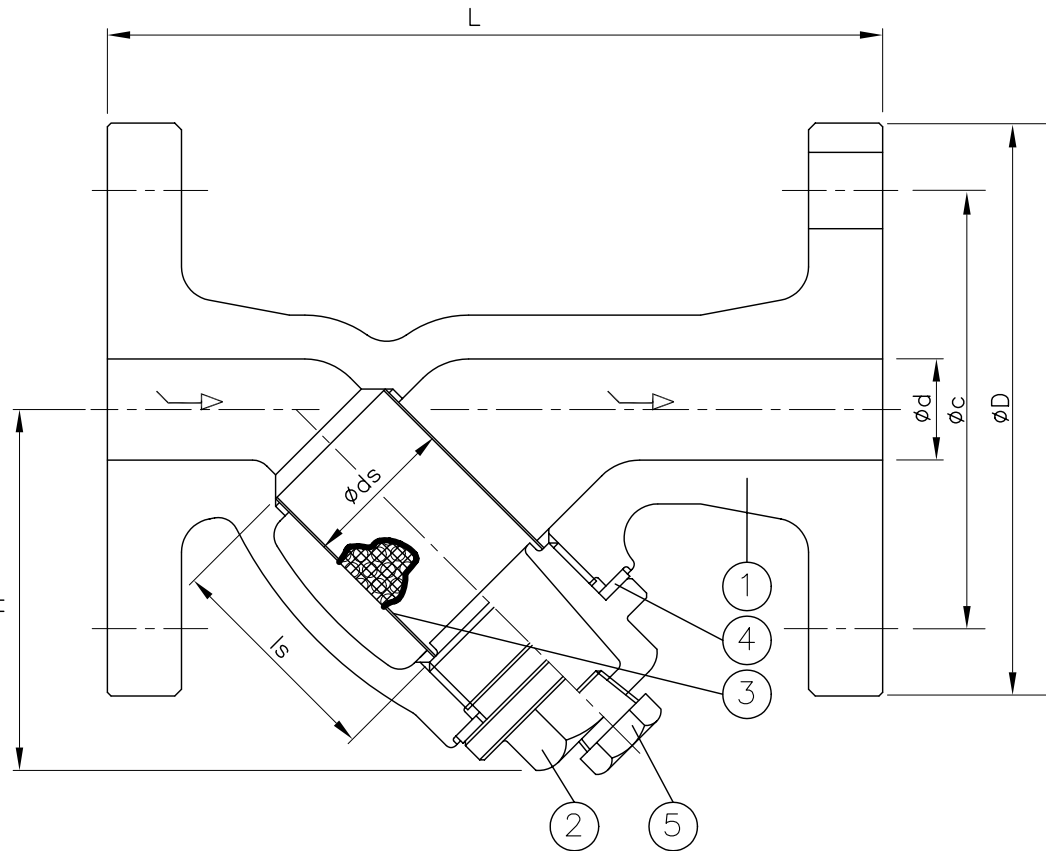
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			REVIEWED	CHECKED
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TITLE										
INSTALLATION DRAWING OF AIR WHISTLE										
DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM							
APPROVAL	J. Y. KIM	 Saracom® Saracom Co.,Ltd BUSAN, KOREA								
CHECKED	J. CH. HWANG									
DRAWN	H. J. NOH									
DWG NO.	WA15-003-R									
		SCALE	N/S	SIZE	A4	DIM. MM	SHT.NO	8	REV.	0



SPECIFICATIONS

1. NOMINAL PRESSURE : 16 kg/cm²
2. DESIGN TEMPERATURE : 180 °C
3. APPLICABLE STD. : KS B 1538
4. HYDROSTATIC PRESSURE : 24 kg/cm²
(Holding Time : Min. 5 Minute)

DIMENSION

Unit : mm

SIZE	d	c	D	L	H	Is	ds	FLANGE
15A	15.0	70	95	125.0	60.0	34.3	23.0	JIS B 2210 16K FF
20A	20.0	75	100	130.0	75.0	49.0	28.0	
25A	25.0	90	125	165.0	85.0	63.0	38.0	

SCREEN HOLDER DIMENSION

SIZE	t	PUNCHING HOLE	PITCH
15A~50A	0.5	ø3.0	4.0

MESH SIZE

150 MESH

5	PLUG	C 3604	1					
4	GASKET	PTFE	1					
3	SCREEN	SUS304	1				SEE TABLE	
2	CAP	C 3604	1					
1	BODY	BC 6	1					
NO.	DESCRIPTION	MAT'(KS)	PEREST QUANTITY	TOTAL WEIGHT(KG)	PEREST QUANTITY	TOTAL WEIGHT(KG)	REMARK'S	PART CODE

TITLE AIR FILTER (16K)

DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM
APPROVAL	J. Y. KIM	Saracom ® Saracom Co.,Ltd BUSAN, KOREA	
CHECKED	J. CH. HWANG		
DRAWN	H. J. NOH		
DWG NO.	FL7A12-001	SCALE	N/S
SIZE	A4	DIM.	MM
SHT.NO	9	REV.	0

NO.	DATE	REVISION & DESCRIPTION	REVIEWED SIGNATURE	CHECKED SIGNATURE
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INSTRUCTION MANUAL FOR ELECTRIC WHISTLE (WE-16/143)

1. Construction

- a. Horn
- b. Body
- c. Crank case
- d. Motor
- e. Relay box

2. Principle

The SARACOM Electric Whistle is electrically operated and the piston emits high intensity sound through a resonance action.

The motor rotation is transmitted over a crank shaft to drive the piston reciprocating motion.

Vibration damper between horn body and base plate at four place are installed to absorb the mechanical vibration caused by crank rotation.

When electrical power is supplied to relay box of whistle system as 3-phase, its motor is kept heating status always except operating. If the motor is operating, heating mode will be paused.

Grease is used to decrease made high-temp. and reduce friction in operating. It is drained as gas through shaft, piston and horn.

3. Inspection and maintenance

Electric whistle consumes lubrication oil at operating. So user has to refuel it through pouring hole after opening the HEX BOLT periodically.

1. 구 성

- 가. 나 발
- 나. 본 체
- 다. 크랭크 케이스
- 라. 모 터
- 마. 릴레이 박스

2. 동작 원리

SARACOM의 전기 기적은 전기적으로 작동되고 피스톤은 왕복운동에 의해 큰 음을 발생한다.

모터의 회전은 크랭크에 전달되어 피스톤을 왕복운동 시키고 피스톤은 공기를 밀어 내는 작용을 통해 음을 발생시키며 HORN을 통해 공명하여 큰 음을 발생된다.

크랭크 회전에 의해 발생하는 기계적 진동을 흡수하기 위해 HORN 본체와 베이스간에 4개소의 방진 댐퍼가 설치되어 있다.

기적은 릴레이 박스에 AC 3상 전원이 인가되면 약 AC38V의 전압이 모터에 공급되어 항상 예열 상태가 되며 작동시에는 자동으로 예열이 중지되도록 설계되어 있다.

또한 충전된 그리스는 기적 동작시 발생하는 열에 의해 샤프트, 피스톤, 나발을 통해 기체상태로 공기중에 배출되도록 설계되었다.

3. 운용시 주의사항 및 보수 점검

본 전식식 기적은 급유 방식으로서 사용하는 그리스는 기적 운용시간에 따라 주기적으로 그리스 주입구의 HEX BOLT를 열어서 잔량을 확인하고 보충해야 한다

Maximum capacity(Grease) : 1.8 L

전기식 기적 그리스 최대 용량 : 1.8 L

Grease spec. :

only **Shell, Alvania EP(LF) 00**

그리스 사양 : **Shell, Alvania EP(LF) 00**

Auto mode operating of electric whistle
consumes grease for 1 hour as follow –

기적 자동모드 운용시 1시간당 대략적인
그리스 소모량 및 완전충전시 대략적인
연속 운행가능 시간은 아래와 같다

1 cycle : 60 sec

1 주기 : 60초 기준

1 BLOW : 0.012 L

1 BLOW : 0.012 L

2 BLOW : 0.016 L

2 BLOW : 0.016 L

3 BLOW : 0.014 L

3 BLOW : 0.014 L

When grease is charged full, continuous
operating time is such as –

그리스 만 충전시 연속운행 가능시간

1 BLOW : 125 hours

1 BLOW : 125 시간

2 BLOW : 94 hours

2 BLOW : 94 시간

3 BLOW : 107 hours

3 BLOW : 107 시간

[WARNING]

[경 고]

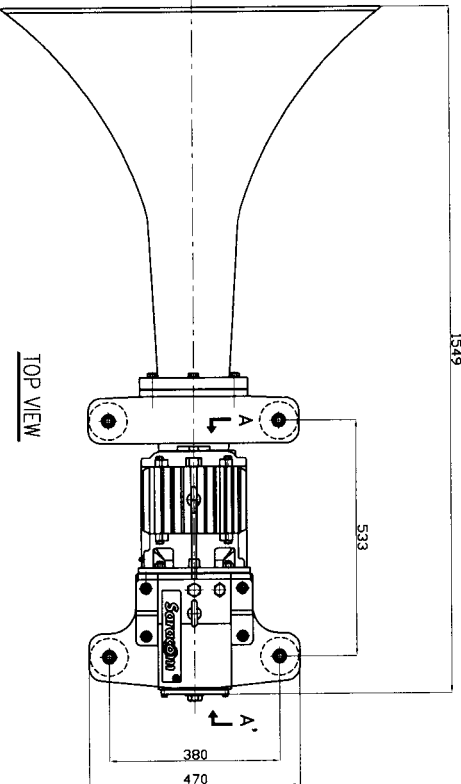
For best operation and protect the
equipment(to avoid piston rod damage),
**Please only apply the lubrication grease
viscosity EP(LF)00.**

**Recommended lubrication grease :
Shell, Alvania EP(LF)00"**

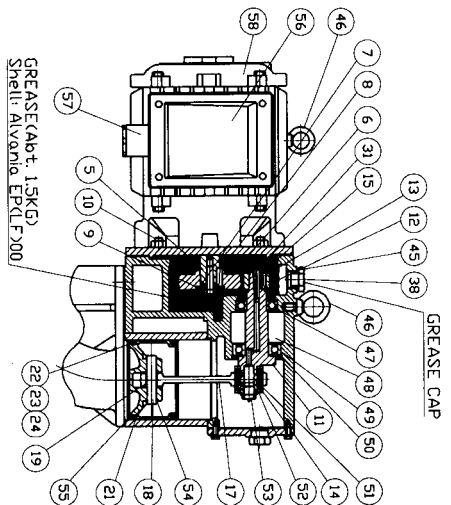
The damage due to using other viscosity
lubrication oil cannot be proceeded under-
warranty.

기적 및 피스톤의 손상을 막고 최적의 작
동을 위하여 반드시 지정 그리스를 사용
해야 하며 타 그리스 사용으로 인한 장비
손상/파손에 대해서는 무상 보증기간이 라
도, 무상보증으로 처리될 수 없습니다.

* YARD FITTING HOLE SIZE = 533*380(4-Ø25 HOLE)

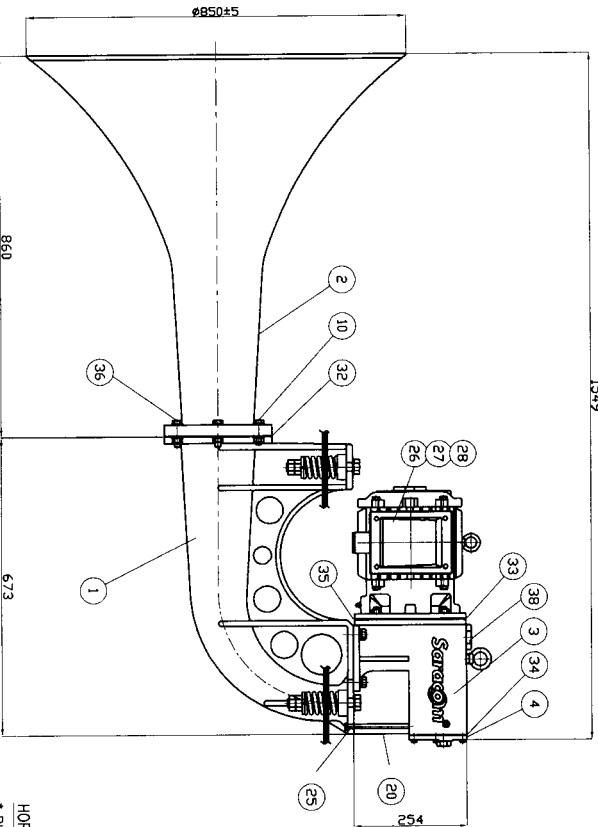


TOP VIEW

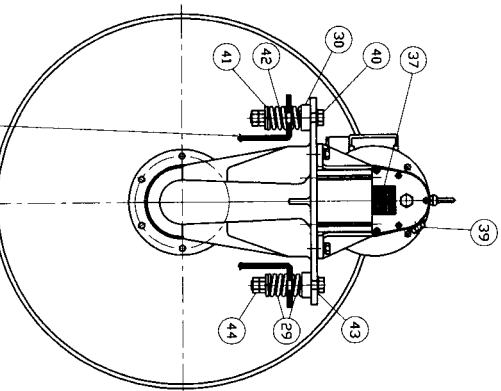


SECTION ASS'Y A-A'

GREASE SEAL: 1.5KG
Shell Alvania EPGL7000



SIDE VIEW



REAR VIEW

HORN BASE BRACKET (YARD SUPPLY)
* PLEASE REFER TO OUR DRAWING NO. WE-16-003-C

NOTE

1. PAINTING COLOR : MUNSELL NO. 7.5 BG 7/2

NO	DESCRIPTION	MATERIAL	QUANTITY	REMARKS	PART CODE
58	MOTOR (HORN) ISLAND	-	1 EA	5.5KV, 3500RPM	BMT-000013
57	CABLE GLAND	-	1 EA	30B	-
56	JOINT BOX	-	1 EA	TB6A43P	BCH-000003
55	CYLINDER D-RING	VTION	1 EA	G125	-
54	SWAP RING	-	2 EA	SHAFT #14	-
53	GREASE NIPPLE	-	1 EA	PT3/8 A-TYPE	BZZ-000153
52	SWAP RING	-	1 EA	SHAFT #25	BMC-000166
51	MIDDLE ROLLER (L&S) BEARING	-	1 EA	RMW V040232	BMC-000166
50	SWAP RING	-	1 EA	HELIX #72	-
49	BEARING (6207-2RS1/C3)	-	1 EA	SKF	BMC-000178
48	SWAP RING	-	1 EA	SHAFT #35	-
47	BEARING (6206-2RS1/C3)	-	1 EA	SKF	BMC-000229
46	EYE BOLT	SUS304	1 EA	M12	-
45	GREASE CAP D-RING	NBR	2 EA	G25	-
44	DAMPER FITTING NUT	SUS316	8 EA	M20 NUT	-
43	DAMPER WASHER	SUS316	8 EA	M20	-
42	DAMPER SUPPORT RING	NBR	8 EA	#30A35	-
41	DAMPER WASHER	SUS304	4 EA	57X65	WTE2A-030
40	DAMPER FITTING BOLT	SUS316	4 EA	M20X150L	-
39	GREASE CAP SIDE	BC	1 EA	PT 3/4"	BMC-000410
38	GREASE CAP TOP	BC	1 EA	PT 3/4"	BMC-000408
37	NAME PLATE	SUS304	1 EA	64X50X0.5T	-
36	HORN PIPE FITTING BOLT	SUS316	4 EA	M12X60	-
35	CRANK CASE JOINT GASKET	ASBESTOS	2 EA	15T	BGS-000082
34	CRANK CASE GASKET	ASBESTOS	1 EA	147X51.5X1.5T	BGS-000081
33	MOTOR GASKET	ASBESTOS	1 EA	#24.5X180X1.5T	BGS-000065
32	HORN BODY GASKET	ASBESTOS	1 EA	#24.0X145X1.5T	BGS-000066
31	GREASE BOLT	S45C	1 EA	HB-45X83HOLE	-
30	VIBRATION DAMPER COVER	SUS304	4 EA	11.457.5x20	WTE2A-100
29	VIBRATION DAMPER SPRING	SUS304	8 EA	-	-
28	JOINT BOX D-RING	NBR	1 EA	G120	BMC-000182
27	JOINT BOX COVER	BC6	1 EA	Cast-iron	BMC-000181
26	MOTOR JOINT BOX	BC6	1 EA	Cast-iron	-
25	CYLINDER FITTING BOLT	SUS304	2 EA	M10X150L	-
24	PISTON SPRING	SUS304	2 EA	TOTAL L=338.6X21	BST-000016
23	PISTON FLAT SPRING	SUS304	2 EA	TOTAL L=338.6X21	BST-000015
22	PISTON RING	GRAPHITE	2 EA	#120x81	BGS-000016
21	PISTON	CA7A	1 EA	AMOLDING	BMC-000473
20	CYLINDER	AL6063	1 EA	CERAMIC COATING	BMC-000472
19	DX-BUSH (DXB1420)	-	1 EA	GRAPHITE COATING	BMC-000473
18	CON. ROD PIN	S45C	1 EA	#14	BMC-000400
17	CON. ROD	ST490	1 EA	145X20	BMC-000399
16	SHAFT STOP WASHER	SS400	1 EA	#22X10T	-
15	SHAFT GEAR STOPPER	S45C	1 EA	#30X.50T	BMC-000618
14	SHAFT BEARING BUSHING	SUS304	2 EA	#42X.81T	BMC-000620
13	SHAFT GEAR KEY	S45C	1 EA	56X62.75L	-
12	CRANK SHAFT HELICAL GEAR	SCM415	1 EA	M129X41.75	BMC-000640
11	CRANK SHAFT	S45C	1 EA	185.120W	BMC-000639
10	MOTOR STOP BOLT	SUS304	6 EA	M12	-
9	MOTOR STOP WASHER	SS400	1 EA	#26X10T	-
8	MOTOR GEAR KEY	S45C	1 EA	100X64.29L	-
7	MOTOR GEAR STOPPER	S45C	1 EA	#38X4.21	BMC-000619
6	MOTOR HELICAL GEAR	SCM415	1 EA	M146X41.75	BMC-000638
5	MOTOR SHAFT	S45C	1 EA	-	-
4	CRANK CASE COVER	SC46	1 EA	Cast-iron	BMC-000396
3	CRANK CASE	SC46	1 EA	Cast-iron	BMC-000636
2	HORN PIPE	FRP	1 EA	#850X5466UL	BMC-000635
1	HORN BODY	SC46	1 EA	Cast-iron	BMC-000634

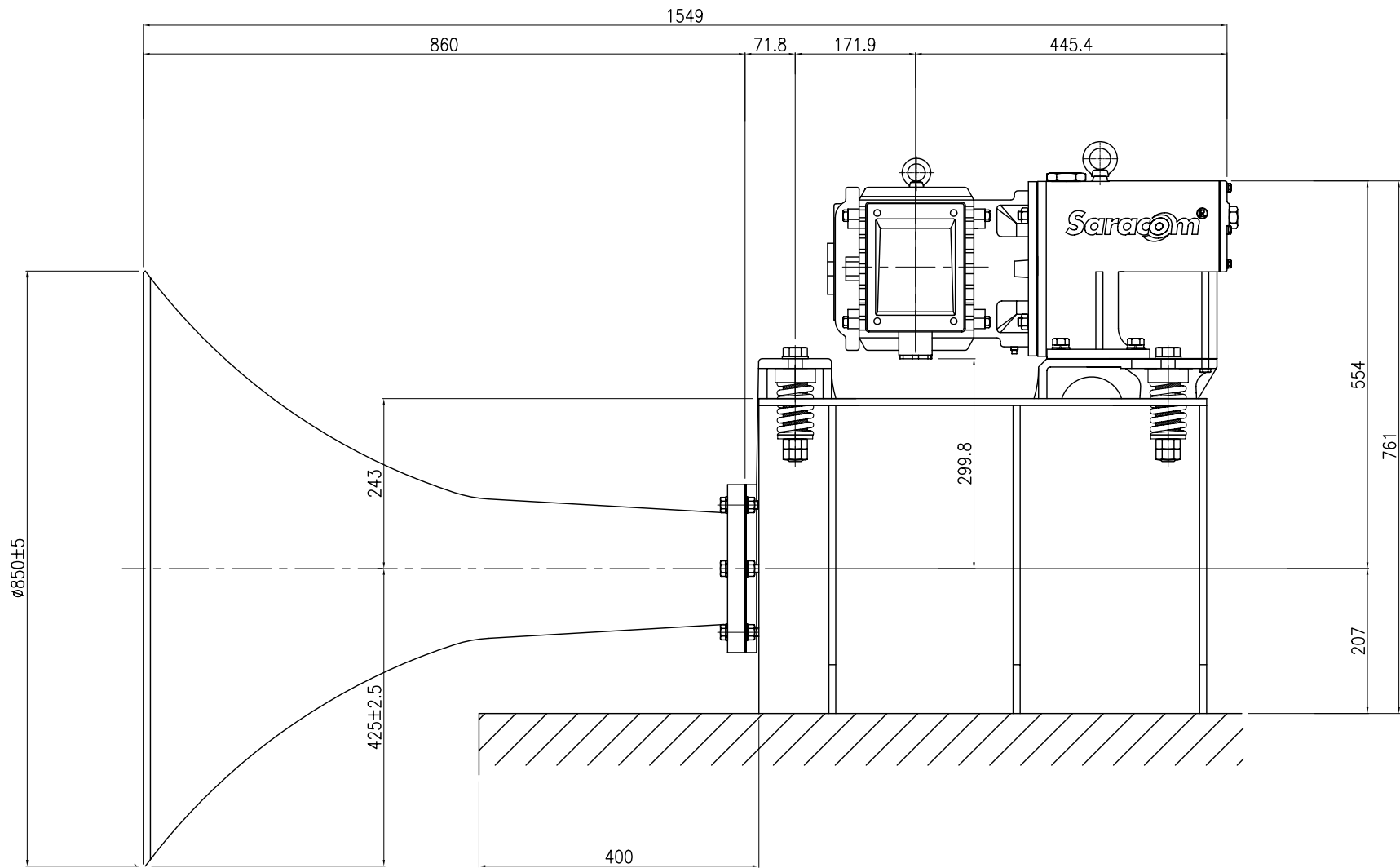
TITLE
CONSTRUCTION OF ELECTRIC WHISTLE


DATE	ITEM	WHISTLE SYSTEM
JAN. 17 2007	J. Y. KIM	
CHECKED	J. CH. HYANG	
DRAWN	H. J. NOH	

Saracon® Saracon Co. Ltd
BUSAN, KOREA

SCALE: 1/2 SIZE 1:1
DWG NO. WE-16-003-C
SCALE: 1/2 SIZE 1:1
DWG NO. WE-16-003-C
SCALE: 1/2 SIZE 1:1
DWG NO. WE-16-003-C

NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
1				



TITLE												
OUTLINE DIMENSION FOR ELECTRIC WHISTLE												
DATE	JAN. 29 2008		ITEM	WHISTLE SYSTEM								
APPROVAL	J. Y. KIM		 Saracom Co.,Ltd BUSAN, KOREA									
CHECKED	J. CH. HWANG											
DRAWN	H. J. NOH											
DWG NO.	WE16-002-C		SCALE	1/9	SIZE	A4	DIM.	MM	SHT.NO	13	REV.	0

NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
			SIGNATURE	

F.W.D

A.F.D

TOP VIEW


FRONT VIEW

SIDE VIEW

REAR VIEW

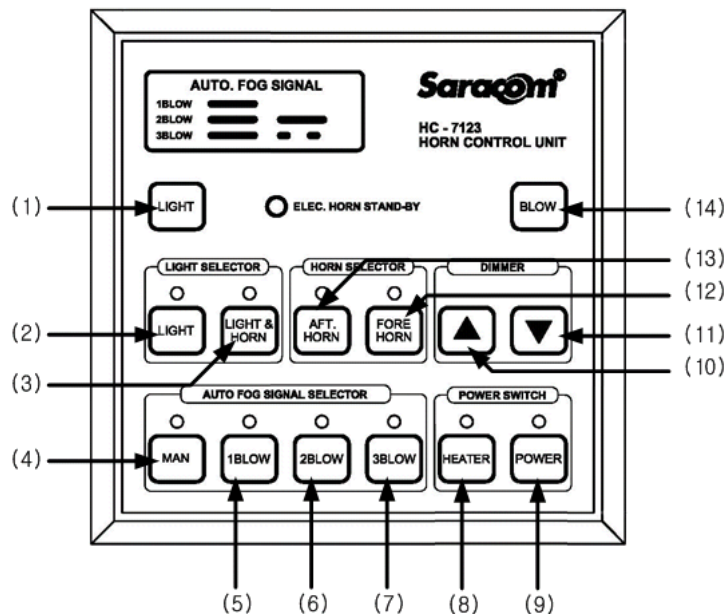
NOTE

1. YARD FITTING HOLE SIZE= 533*380(4-Ø25 HOLE)
2. BRACKET THICKNESS : 10T

TITLE		CONSTRUCTION OF MOUNT BED FOR ELECTRIC WHISTLE (YARD SUPPLY)																					
DATE		JAN. 29 2008		ITEM		WHISTLE SYSTEM																	
APPROVAL		J. Y. KIM		 Saracom Co.,Ltd BUSAN, KOREA																			
CHECKED		J. CH. HWANG																					
DRAWN		H. J. NOH																					
DWG NO.		WE16-003-C		SCALE		N/S		SIZE		A4		DIM.		MM		SHT.NO		14		REV.		0	

NO.	DATE	REVISION & DESCRIPTION	REVIEWED SIGNATURE	CHECKED SIGNATURE

I. OPERATION.



1.ELEC. HORN STAND-BY :

LED is indicated when input of 3 phase power for motion of Electric Horn Motor.

ELECTRIC HORN MOTOR 구동용 3상 전원 입력시 LED가 INDICATING 됨

2. LIGHT :

Light operation push button.

- 1) In order to operate light only, "Light (2)" selector switch is to be selected primarily and then just press "Light (1)" operation push button.
- 2) "Light(1)" operation push button will not be operated under the selector of "Light/Horn (3)" selector switch.

LIGHT 작동용 PUSH BUTTON.

- 1) Light 만을 작동시키기 위해서는 Light (2)"선택 버튼을 ON 시킨 후 Light(1)" 작동 Push Button을 누르면 됨.
- 2) "Light (1)" 작동 Push Button은 Light/Horn (3) 선택 버튼 ON 상태에서는 작동하지 않음.

3. BLOW :

Horn only or Horn & Light operation push button.

- 1) In order to operate horn only, "Light (2)" selector switch is to be selected primarily and just press "Blow" operation push button. Then the selected horn will be operated.
- 2) In order to operate Light & Horn at the same time, "Light/Horn (3)" selector switch is to be selected primarily and then just press "Blow" operation push button. Then Light and the selected horn will be operated simultaneously.

HORN 작동 또는 Horn & Light를 동시에 작동시키기 위한 Push button.

- 1) Horn만을 동작시키기 위해서는 Light (2)" 선택 버튼을 ON 시킨 후 "Blow" 동작 Push Button을 누르면 선택된 Horn이 작동 함.
- 2) Light와 Horn을 동시에 작동시키기 위해서는 Light/Horn (3)" 선택 버튼 ON 상태에서 Blow" 동작 Push Button을 누르면 Light 및 기 선택된 Horn이 동시에 작동함.

4.5 LIGHT SELECTOR SW

4. LIGHT (LED) :

Light selection sw

- 1) In order Light only, just press this selection sw and then LED of "Light" selector sw is on.
- 2) Morse key is only operated order selection of "Light (2)" selector sw.

Light 선택 스위치

- 1) Light만을 작동시키기 위한 선택 스위치로, 선택을 위해 누르면 LED가 ON 됨.
- 2) Morse Key는 "Light (2)" 선택 스위치 ON 하에서만 작동함.

5. LIGHT/HORN :

Light/Horn selection sw.

- 1) In order to operate Light & Horn at the same time, just press this selection sw and LED of "Light/Horn (3)" selector sw is on.

6,7 HORN SELECTOR SW

6. AFTER HORN :

- 1) In order to operate Horn on AFT.(radar mast), just press this selection sw and then LED of "AFTER HORN (13)" selector sw turns on

7. FORE HORN :

- 1) In order to operate Horn on fore mast, just press this selection sw and then LED of "FORE HORN (12)" selector sw turns on

8,9 DIMMER

8. UP :

When pushing button (10), LED is getting brighter.
(When continuous push, brightened speed is faster)

9. DOWN :

When pushing button (11), LED is getting darker.
(When continuous push, darkened speed is faster)

NOTE.

For the LAMP(LED) test of Horn control unit, just press both buttons simultaneously.

10,11,12,13 AUTO FOG SIGNAL SELECTOR

10. MAN

- 1) In order to operate whistle manually, just press this selection switch and then LED of "MAN (4)" selector switch turns on

11. 1BLOW (5) :

In order to operate whistle automatically by one prolonged blast at intervals of not more than 2 minutes, just press this button and then LED turns on.

12. 2BLOW (6) :

In order to operate whistle automatically by two prolonged blasts in succession with an interval of about 2 seconds between them at intervals, just press this button and then LED turns on.

13. 3BLOW (7) :

In order to operate whistle automatically by one prolonged blast, two short blasts in succession with an interval of about 2 seconds between them at intervals of not more than 2 minutes, just press this button and then LED turns on.

14,15 POWER SWITCH

14. HEATER :

Light 및 Horn을 동시에 작동시키기 위한 선택 스위치.

- 1) Light 및 Horn을 동시에 작동시키기 위한 선택 스위치로, 선택을 위해 누르면 LED가 ON됨.

AFT.(Radar Mast)의 Horn을 작동시키기 위한 선택 스위치로, 선택을 위해 누르면 LED가 ON 됨.

Fore Mast상의 Horn을 작동시키기 위한 선택 스위치로, 선택을 위해 누르면 LED가 ON 됨.

BUTTON을 누를시 LED가 밝아진다.

(연속적으로 누르고 있을시 밝아지는 속도가 빨라진다.)

BUTTON을 누를시 LED가 어두워진다.

(연속적으로 누르고 있을시 어두워지는 속도가 빨라진다.)

NOTE.

LAMP(LED) Test를 위해서는 Button을 동시에 누르면 됨.

기적을 수동으로 작동하기 위한 선택 스위치로 선택을 위해 누르면 LED가 ON 됨.

기적을 자동으로 장음 1호를 울리기 위한 선택 스위치를 누르면 LED가 ON 되고 2분을 초과하지 않는 시간 간격으로 장음 1호를 발함.

기적을 자동으로 장음 간격을 약 2초로 하여 장음 2회를 울리기 위한 선택 스위치로 누르면 LED가 ON 되고 2분을 초과하지 않는 시간 간격으로 장음 2호를 발함.

기적을 자동으로 장음 간격을 약 2초로 하여 장음 1회, 단음 2회를 울리기 위한 선택 스위치를 누르면 LED가 ON되고 2분을 초과하지 않는 시간간격으로 장음 1회, 단음 2회를 발함.

In order to operate heater inside air whistle, just press this button and then LED turns on and power is fed to heater. If you push "heater" button when LED is on, LED turns off and the power supply into heater is stopped.

NOTE.

1. Heater inside air whistle is operated automatically at less than +5°C by temperature sensing of thermostat.
** If it is more than +5°C of temperature, Heater is not operating although Power is supplying to Heater.
2. Heating system of electric whistle
electric whistle uses its motor coil for its heating. while electric whistle is not operated, one of three coils inside motor is used for heating by AC38V transformed from AC440V by down-transformer.
During operation of electric whistle, AC38V is open and electric whistle is heated by radiation heat of motor coils.
3. Continuous seven(7) short blasts followed by one(1) prolonged blast will be blown automatically from only air whistle regardless of horn selection when general em'cy alarm is activated.

15. POWER :

In order to operate whistle system, just press this button and then LED turns on and power is supplied. If you push the power button when power button LED is on, LED turns off and the HC-7123 can not control to whistle system no longer.

Air Whistle의 Heater를 작동시키기 위한 Button 누르면 LED가 ON 되면서 Heater 동작을 위해 전원이 공급됨. Heater button의 LED가 점등된 상태에서 Heater Button을 누르면 LED는 소등되고 Heater로 공급되는 전원 공급이 중단됨.

NOTE.

1. Air Whistle의 Heater는 Thermostat의 온도 Sensing에 의해 +5°C이하에서 자동으로 동작함.
** 영상 +5°C이상 일 때에는 Heater전원이 공급되어도 Heater가 동작하지 않음.
2. Electric Whistle Heating System
Electric Whistle의 Heating은 Motor 전선을 이용함. 전기 기적이 작동하지 않을 때는 Motor 3상 전선 중 단상의 전선에 AC38V Power Input에 의해 전기 기적은 Heating되며, 전기 기적이 동작중에는 Motor 동작 자체 발열을 이용해서 Heating 됨.
3. G/E/A 발생시, Horn 선택에 상관없이 단음 7회 후 장음 1회가 Air Whistle에 의해 자동으로 발함.

Whistle System을 작동시키기 위하여 HC-7123의 POWER Button 누르면 LED가 ON되고 전원이 공급되면서 STAND-BY 상태가 됨. POWER Button의 LED가 점등된 상태에서 POWER Button을 누르면 LED가 소등되고 HC-7123은 더 이상 Whistle System을 제어할 수 없다.

Time period setting method in auto-mode

Auto-mode period of HC-7123 is set at 60 sec as default value. If user wants to change it, refer to next sequence.

- 1) Release 4 bolts on rear side of case.
- 2) Disassemble rear case from main body.
- 3) Using DIP S/W located in PCB of Front Case, can change to setting time period. Refer to DIP S/W setting method.
- 4) Assemble HC-7123

** User can select to 60 sec, 90 sec and 120 set

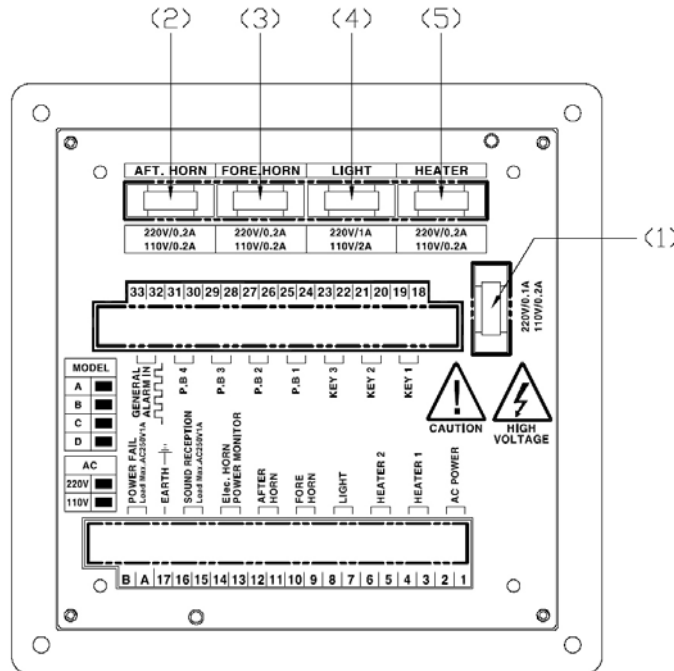
자동모드 시간 주기 변경 방법

HC-7123의 자동모드 주기는 60초로 설정되어 공장에서 출하됨.

- 1) 후면 케이스의 외각 볼트 4개를 푼다.
- 2) 후면 케이스를 전면 케이스와 분리한다.
- 3) 전면 케이스의 PCB에 실장되어 있는 DIP S/W의 설정방법을 참고하여 변경하고자 하는 시간으로 수정한다.
- 4) 조립은 분해의 역순으로 하면 된다.

** 설정 가능한 주기는 60초, 90초, 120초이다.

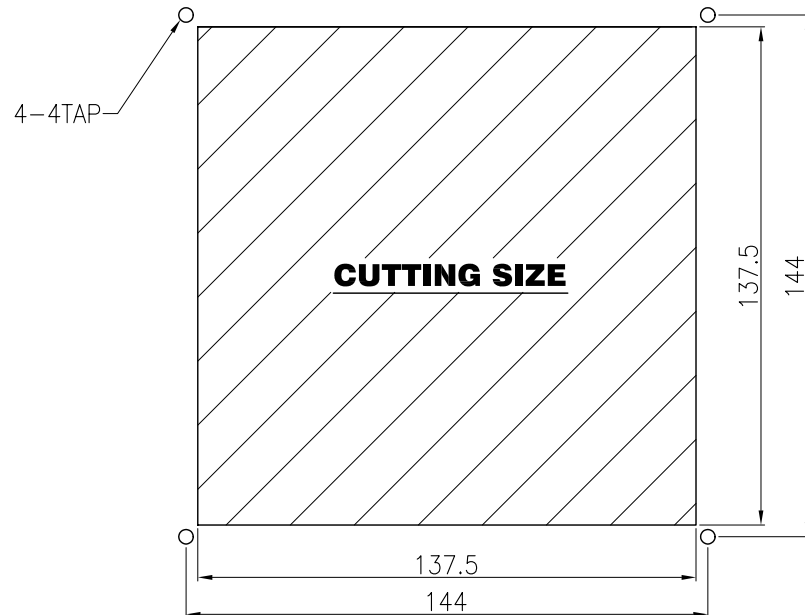
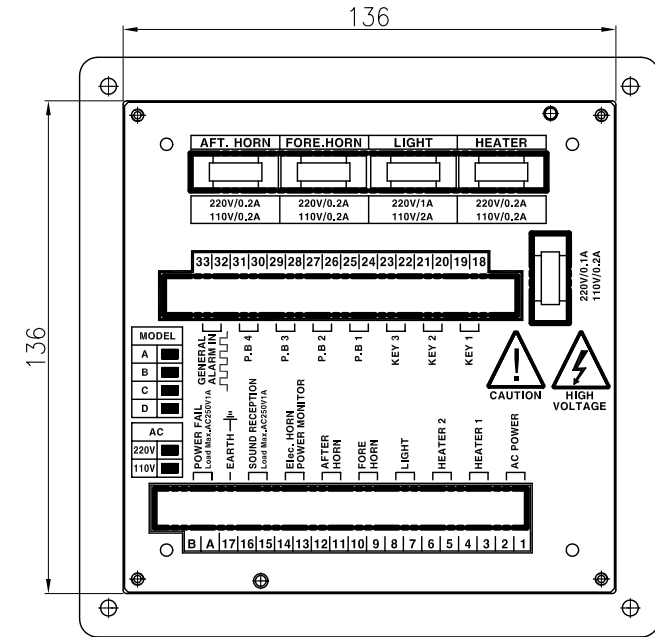
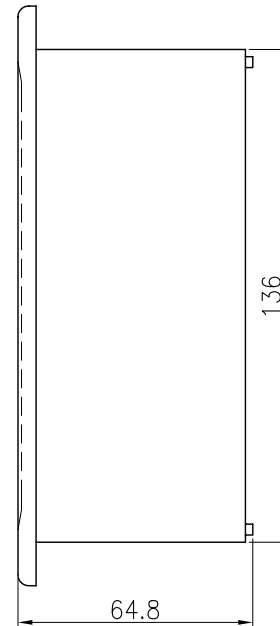
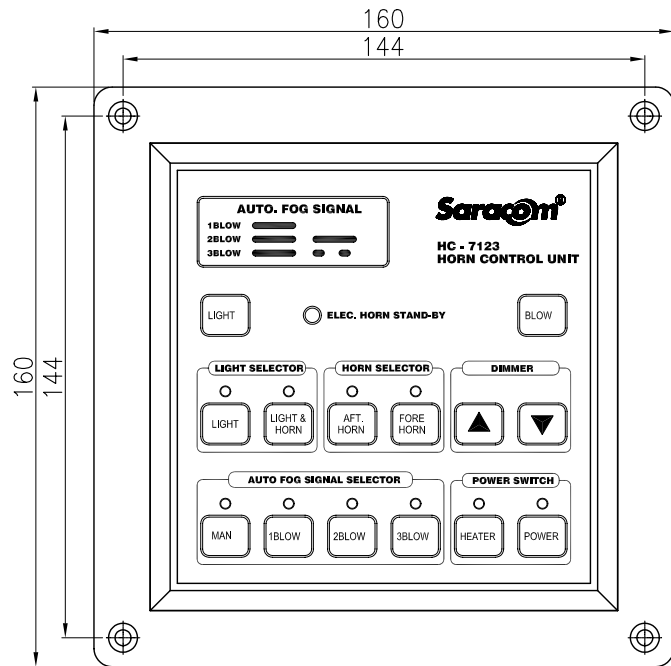
I. TROUBLE SHOOTING GUIDE



- **When HC-7123 can not TURN ON**
 Check input power to be supply to HC-7123
 Check whether (1)MAIN Fuse has any wrong.
 If input power & Main Fuse are not any problems,
 contact to manufacturer.
- **When After Horn is not operated**
 Check whether (2)AFT.HORN Fuse has any wrong.
 Check output power that HC-7123 supplies for AFT.HORN. If output power is any problem,
 contact to manufacturer.
 But Fuse & Output Power have not any problems,
 you have to check other parts to solve the problem.
- **When Fore Horn is not operated**
 Check same method to check After Horn
- **When LIGHT is not operated**
 Check same method to check After Horn
- **Checking whether control signal is operating for Heater**
 Confirm through checking (5)HEATER Fuse's status and Output. Power of interfaces for HEATER.
- HC-7123 Power가 ON되지 않을 때 입력전원을 확인한다.
 (1)의 Main fuse가 잘못되었는지 확인한다.
 만약 입력전원이나 Main Fuse가 문제가 없다면 Maker에 연락한다.
- After horn이 작동하지 않을 때.
 (2)의 AFT.HORN fuse가 잘못되었는지 확인한다.
 HC-7123에서 AFT.HORN으로 공급되는 전원을 확인한다. 만약 문제가 있을 경우, Maker에 연락한다.
 그러나, Fuse나 출력 전원이 문제가 없을 경우, 다른 Part를 찾아 문제를 확인한다.
- Fore Horn이 작동하지 않을 때
 After Horn과 같은 방법으로 확인한다.
- LIGHT 가 작동하지 않을 때
 After Horn과 같은 방법으로 확인한다.
- 히터의 제어 신호가 작동되는지 확인 할 때
 (5) Heater Fuse의 상태를 확인하고, Heater로의 출력 전원을 확인한다.
- 주의 : 모든 출력전원의 확인은 Analogue Test Meter를 사용하여 측정한다.
- 만약 문제가 일어날 경우, Maker에 연락한다.

NOTE – Output power of each interfaces have been checked by Analog Test Meter

- If other problems occur, contact to manufacturer.

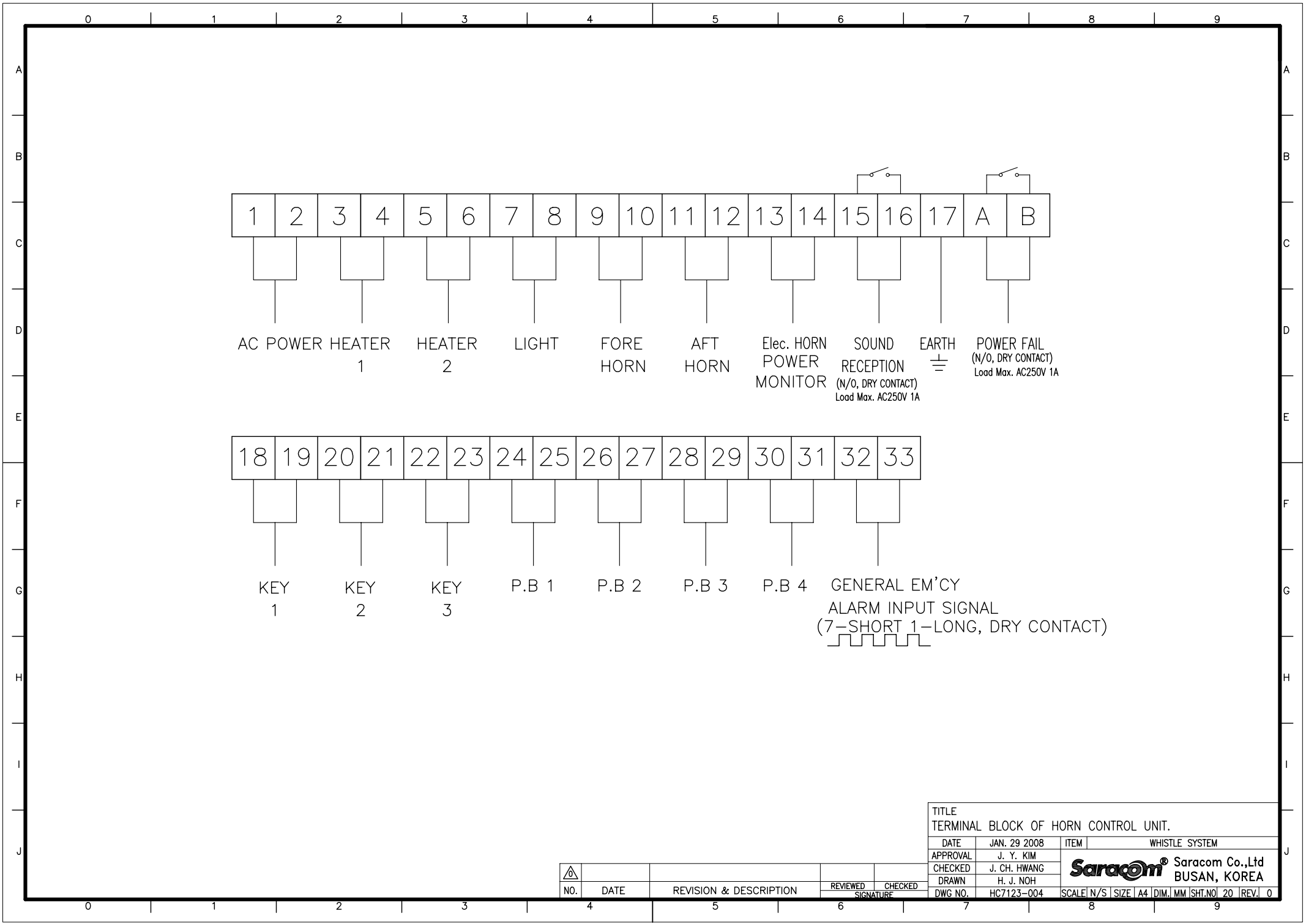


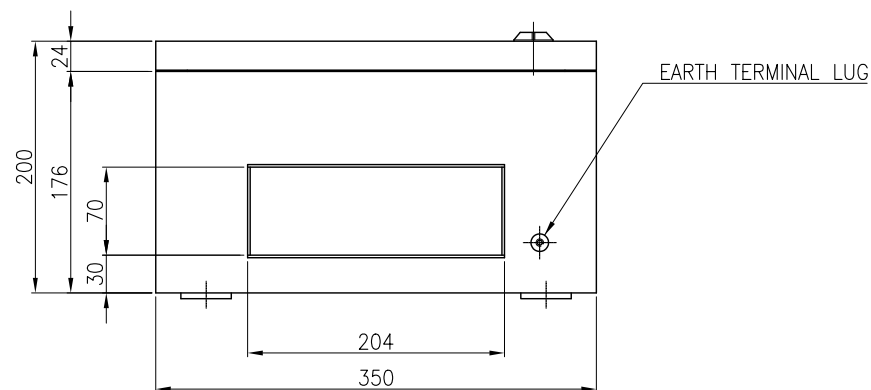
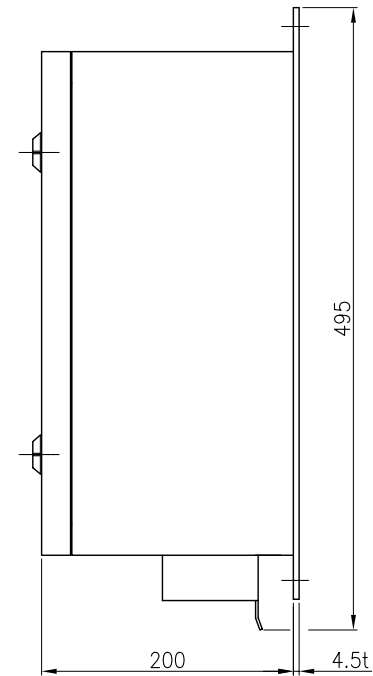
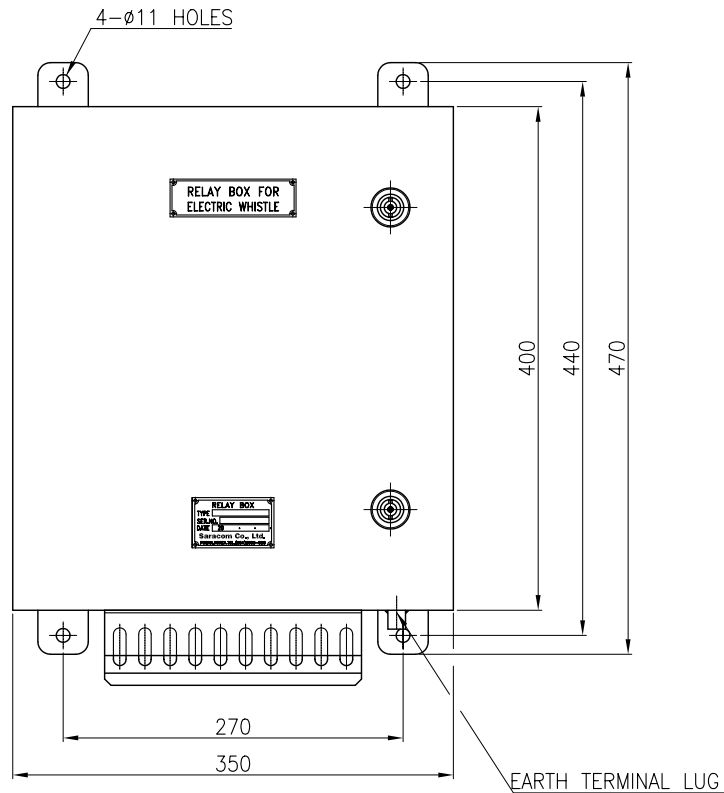
NOTE.

1. WEIGHT : 1Kg
2. COLOR : RAL9011(BLACK)
3. SIZE : 160 x 160 x 64.8

TITLE DIMENSION FOR HORN CONTROL UNIT			
DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM
APPROVAL	J. Y. KIM	Saracom ® Saracom Co.,Ltd BUSAN, KOREA	
CHECKED	J. CH. HWANG		
DRAWN	H. J. NOH		
DWG NO.	HC7123-001	SCALE	N/S
		SIZE	A4
		DIM.	MM
		SHT.	NO. 19
		REV.	0


NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
			SIGNATURE	



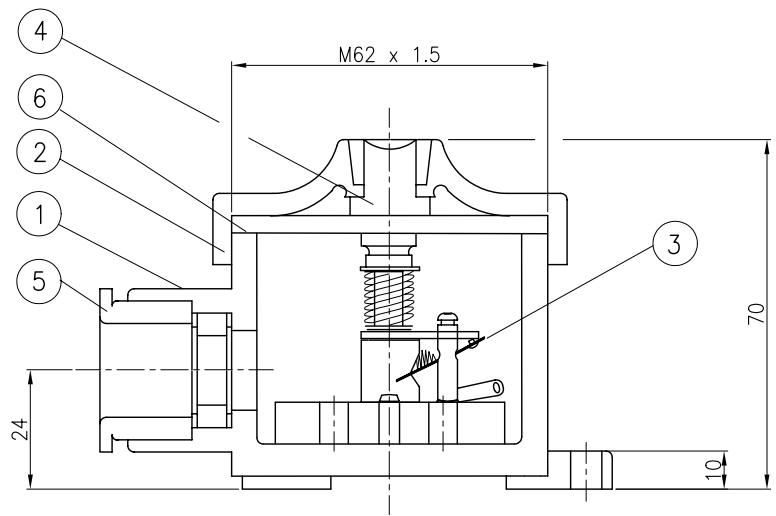
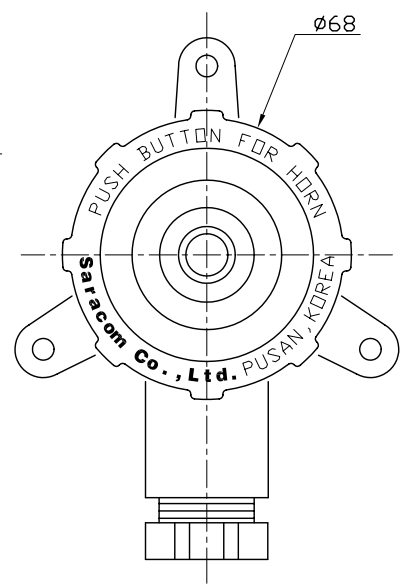
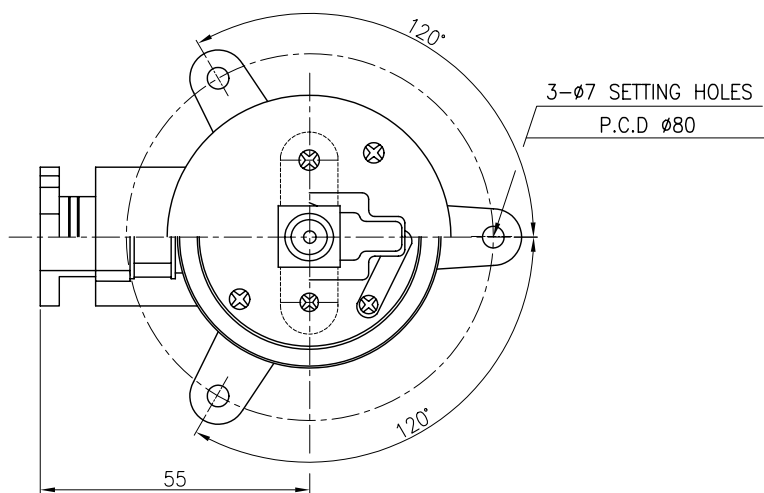


NOTE.

1. TYPE : WALL MOUNTING TYPE
2. WEIGHT : 10kg
3. IP : 31
4. PAINTING COLOR : MUNSELL NO. 7.5 BG 7/2

TITLE RELAY BOX FOR ELECTRIC WHISTLE			
DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM
APPROVAL	J. Y. KIM	 Saracom Co.,Ltd BUSAN, KOREA	
CHECKED	J. CH. HWANG		
DRAWN	H. J. NOH		
DWG NO.	RB7712A-001	SCALE	N/S
		SIZE	A4
		DIM.	MM
		SHT.	NO. 21
		REV.	0


NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
			SIGNATURE	



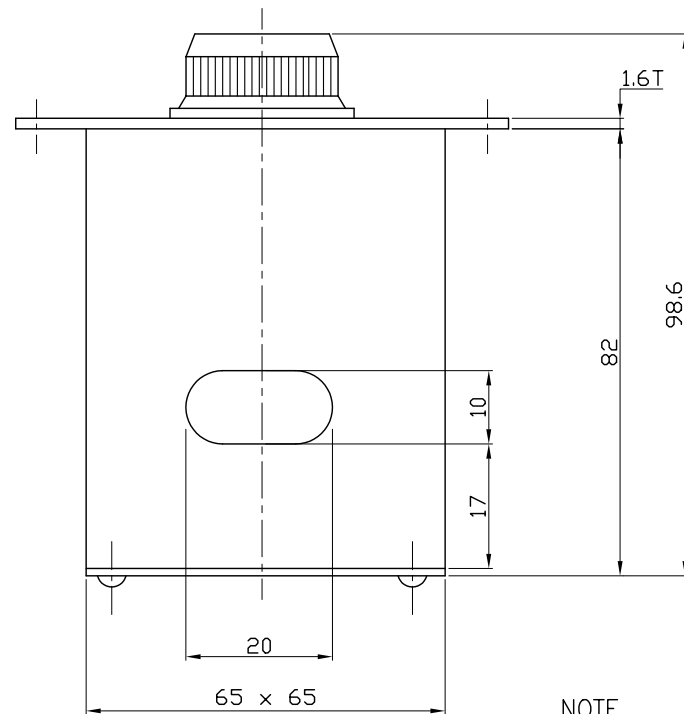
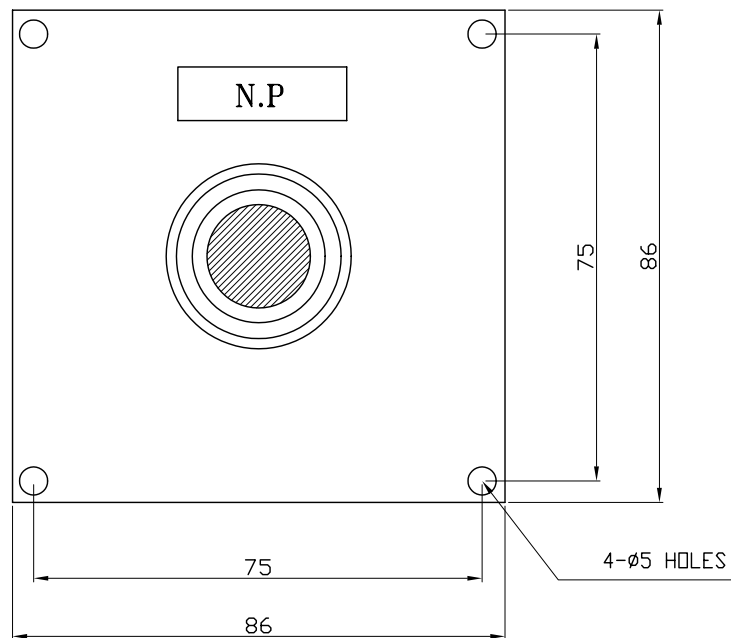
NOTE.

1. TYPE : W.T WALL MOUNTING TYPE
2. WEIGHT : 1 Kg
3. IP : 56
4. PAINTING COLOR : MUNSELL NO. 7.5 BG 7/2

6	GASKET	SILICONE	1	2.0T
5	CABLE GLAND	BRASS	1	OSNJ-M20
4	BUTTON	ABS	1	
3	PUSH BUTTON SWITCH	-	1	
2	COVER	NYLONGLASS	1	
1	BODY	NYLONGLASS	1	
NO.	DESCRIPTION	MAT'(KS)	PEREST QUANTITY	TOTAL REMARK'S

TITLE PUSH BUTTON (W.T) FOR MARINE USE											
DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM								
APPROVAL	J. Y. KIM	 Saracom Co.,Ltd BUSAN, KOREA									
CHECKED	J. CH. HWANG										
DRAWN	H. J. NOH										
DWG NO.	PB7311-002				SCALE	N/S	SIZE	A4	DIM.	MM	SHT.

NO.	DATE	REVISION & DESCRIPTION	REVIEWED SIGNATURE	CHECKED SIGNATURE

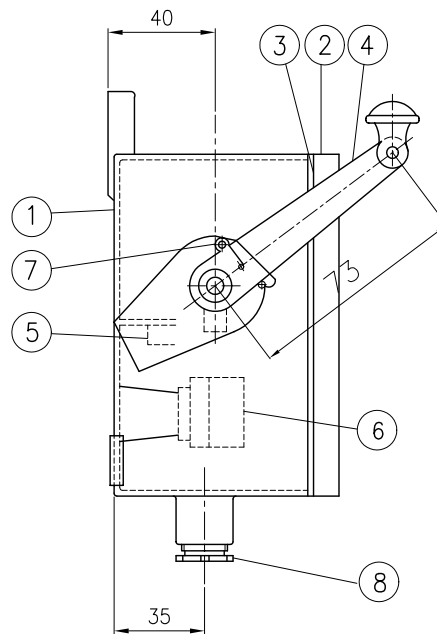
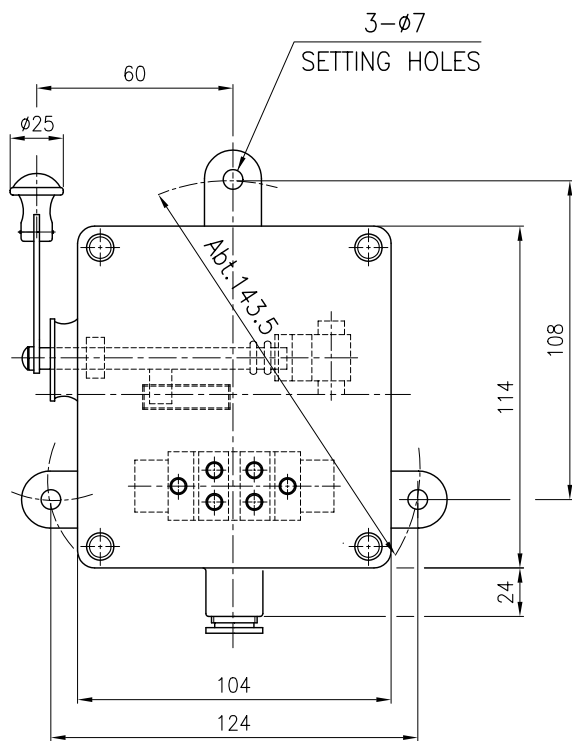


NOTE.

1. NAME PLATE : PUSH BUTTON FOR WHISTLE
2. TYPE : N.W.T FLUSH MOUNTING TYPE
3. WEIGHT : 0.35Kg
4. PAINTING COLOR : MUNSELL NO. 7.5 BG 7/2

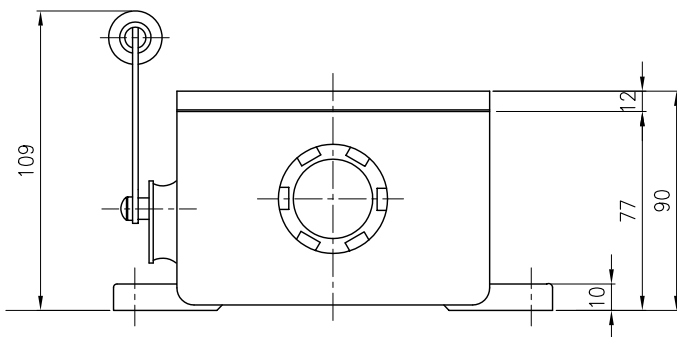
TITLE PUSH BUTTON SWITCH FOR WHISTLE SYSTEM			
DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM
APPROVAL	J. Y. KIM	Saracom ® Saracom Co.,Ltd BUSAN, KOREA	
CHECKED	J. CH. HWANG		
DRAWN	H. J. NOH		
DWG NO.	PB7316-001	SCALE	N/S
		SIZE	A4
		DIM.	MM
		SHT.	NO. 24
		REV.	0

NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
			SIGNATURE	



NAME PLATE

MORSE KEY(PORT)
MODEL:MK-7221
FOR MARINE USE(W.T)
Saracom Co., Ltd.
PUSAN, KOREA



NOTE.

1. TYPE : W.T WALL MOUNTING TYPE
2. WEIGHT : 2.5 Kg
3. IP : 56
4. PAINTING COLOR : MUNSELL NO. 7.5 BG 7/2

8	CABLE GLAND	BRASS	1	OSNJ-M20
7	HOOK	BRASS	1	
6	TERMINAL BLOCK	PHENOLRESIN	1	300V.20A.2P
5	CONDENSER	-	1	0.1UF.660V
4	HANDLE	BRASS	1	
3	GASKET	SILICONE	1	
2	COVER	NYLONGLASS	1	
1	BODY	NYLONGLASS	1	
NO.	DESCRIPTION	MAT(ks)	PEREST QUANTITY	TOTAL REMARK'S

TITLE
MORSE SIGNAL KEY(PORT)

DATE JAN. 29 2008 ITEM WHISTLE SYSTEM

APPROVAL J. Y. KIM

CHECKED J. CH. HWANG

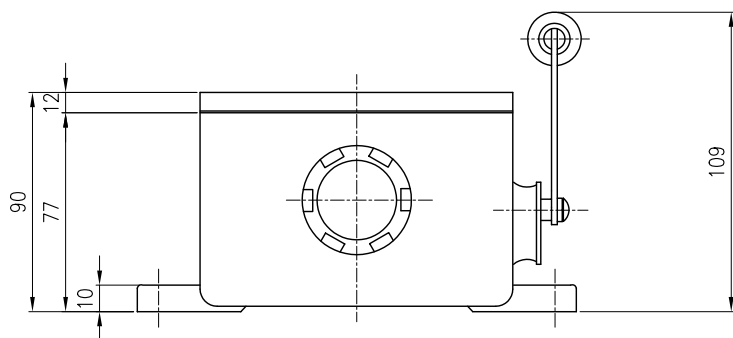
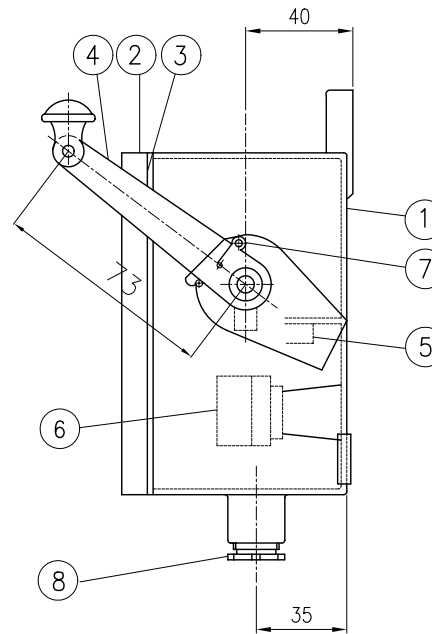
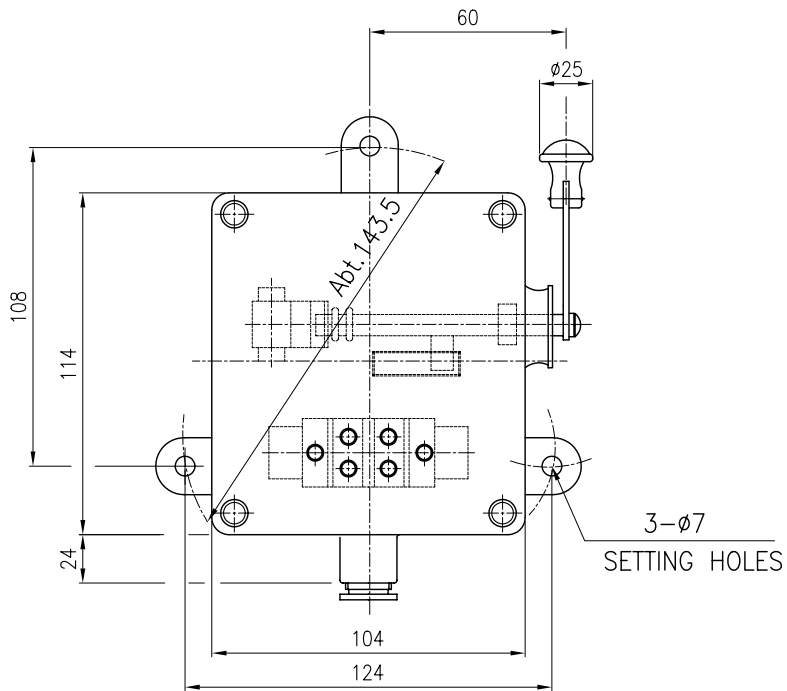
DRAWN H. J. NOH

DWG NO. MK7221-002

Saracom® Saracom Co.,Ltd
BUSAN, KOREA

SCALE N/S SIZE A4 DIM. MM SHT. NO. 25 REV. 0

NO.	DATE	REVISION & DESCRIPTION	REVIEWED SIGNATURE	CHECKED SIGNATURE
4				
5				
6				



NOTE.

1. TYPE : W.T WALL MOUNTING TYPE
2. WEIGHT : 2.5 Kg
3. IP : 56
4. PAINTING COLOR : MUNSELL NO. 7.5 BG 7/2

NAME PLATE

MORSE KEY(STBD)
MODEL:MK-7222
FOR MARINE USE(W.T)
Saracom Co., Ltd.
PUSAN, KOREA

8	CABLE GLAND	BRASS	1	OSNJ-M20
7	HOOK	BRASS	1	
6	TERMINAL BLOCK	PHENOLRESIN	1	300V.20A.2P
5	CONDENSER	-	1	0.1UF.660V
4	HANDLE	BRASS	1	
3	GASKET	SILICONE	1	
2	COVER	NYLONGLASS	1	
1	BODY	NYLONGLASS	1	
NO.	DESCRIPTION	MAT'(ks)	PEREST QUANTITY	TOTAL REMARK'S

TITLE
MORSE SIGNAL KEY(STBD)

DATE JAN. 29 2008 ITEM WHISTLE SYSTEM

APPROVAL J. Y. KIM

CHECKED J. CH. HWANG

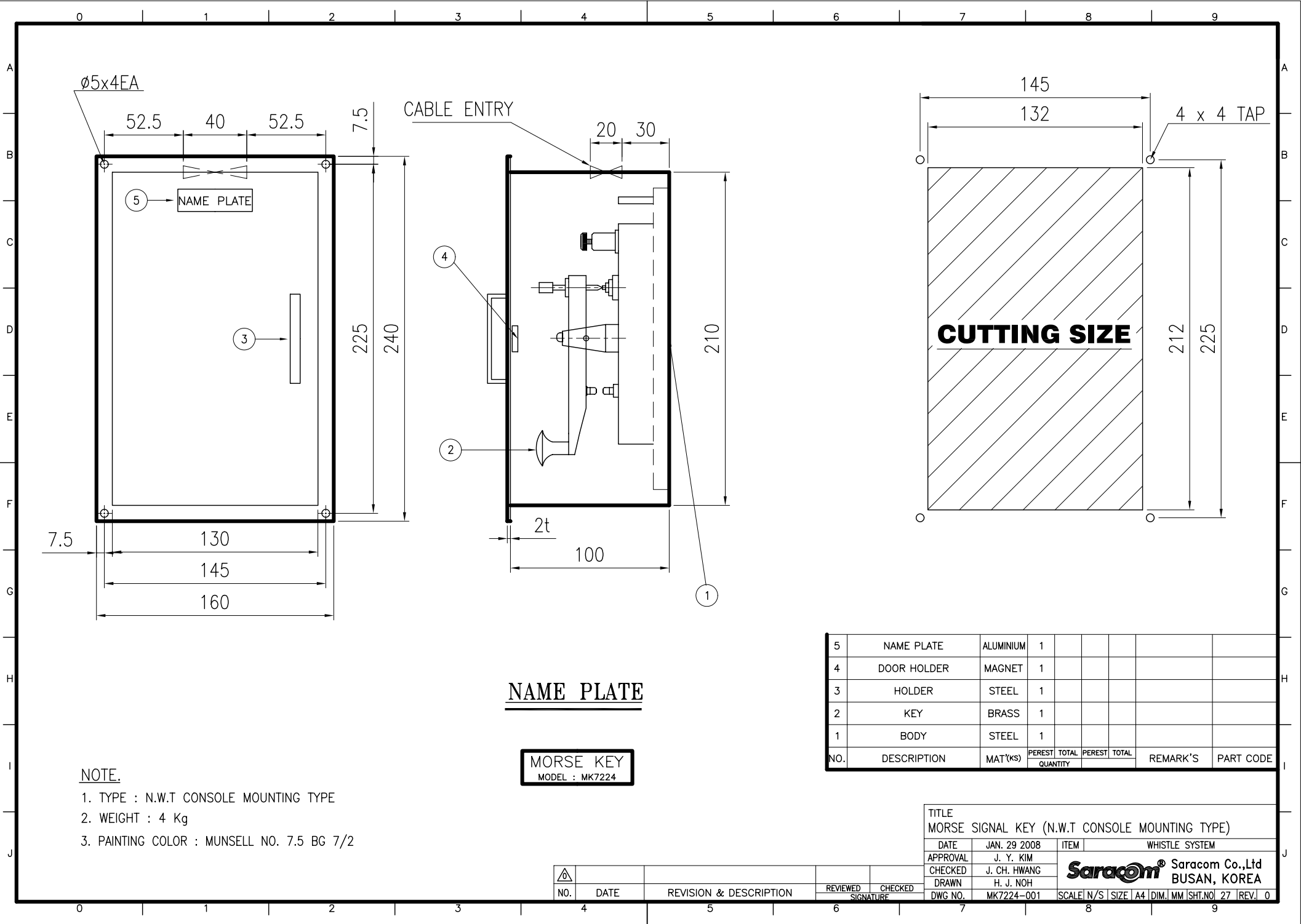
DRAWN H. J. NOH

DWG NO. MK7222-002

Saracom® Saracom Co.,Ltd
BUSAN, KOREA

SCALE N/S SIZE A4 DIM. MM SHT. NO. 26 REV. 0

NO.	DATE	REVISION & DESCRIPTION	REVIEWED SIGNATURE	CHECKED
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NAME PLATE

MORSE KEY
MODEL : MK7224

NOTE.

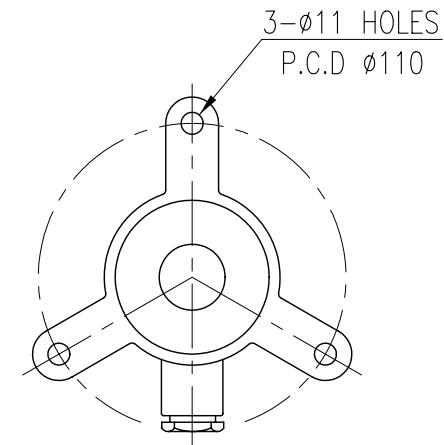
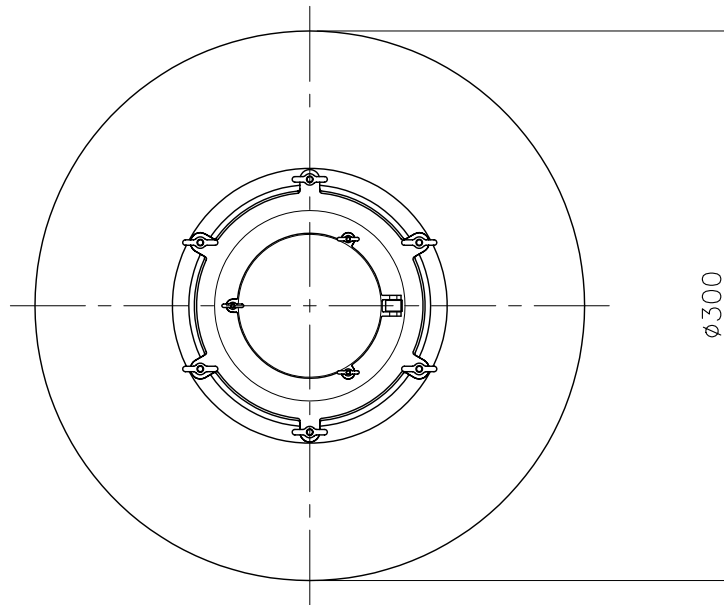
- 1. TYPE : N.W.T CONSOLE MOUNTING TYPE
- 2. WEIGHT : 4 Kg
- 3. PAINTING COLOR : MUNSELL NO. 7.5 BG 7/2

5	NAME PLATE	ALUMINIUM	1						
4	DOOR HOLDER	MAGNET	1						
3	HOLDER	STEEL	1						
2	KEY	BRASS	1						
1	BODY	STEEL	1						
NO.	DESCRIPTION	MAT'(KS)	PEREST QUANTITY	TOTAL PEREST	TOTAL QUANTITY	REMARK'S		PART CODE	

TITLE
MORSE SIGNAL KEY (N.W.T CONSOLE MOUNTING TYPE)

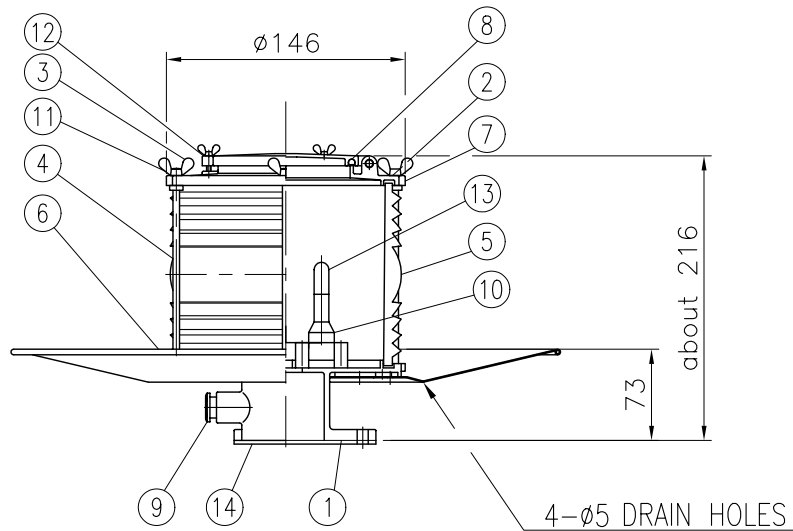
DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM							
APPROVAL	J. Y. KIM	<div> Saracom Co.,Ltd BUSAN, KOREA</div>								
CHECKED	J. CH. HWANG									
DRAWN	H. J. NOH									
DWG NO.	MK7224-001									
		SCALE	N/S	SIZE	A4	DIM. MM	SHT.NO	27	REV.	0

					
NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED	SIGNATURE



SETTING DIMENSION

PROTECTION GRADE : IP56



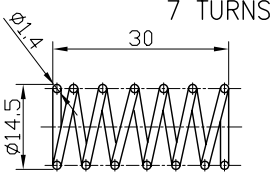
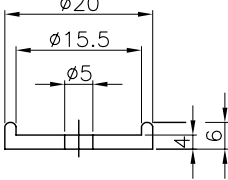
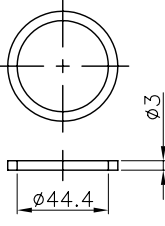
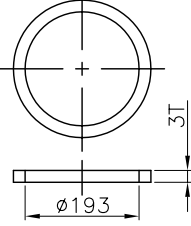
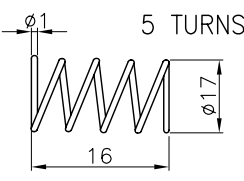
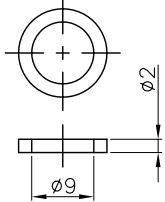
14	MOUNTING PACKING	EPDM	1	3.0t
13	INCAN LAMP		3	
12	BUTTERFLY BOLT	BRASS	1	M4
11	BUTTERFLY NUT	BRASS	1	M6
10	LAMP HOLDER	ASS'Y	1	FB15
9	GLAND NIPPLE	BRASS	1	M24x1.5
8	O-RING	EPDM	2	
7	BODT PACKING	SILCON	2	
6	SCREEN	BRASS	1	
5	LENS	GLASS	1	
4	FRAME BAR	BRASS	4	
3	COVER	CAST BRASS	1	
2	UPPER BODY	CAST BRASS	1	
1	LOWER BODY	CAST BRASS	1	
NO.	DESCRIPTION	MAT'Y(KS)	Q'TY	REMARK'S

TITLE
MORSE SIGNAL LIGHT(20W X 3)

DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM
APPROVAL	J. Y. KIM	Saracom ® Saracom Co.,Ltd BUSAN, KOREA	
CHECKED	J. CH. HWANG		
DRAWN	H. J. NOH		
DWG NO.	ML7212-001	SCALE	N/S
SIZE	A4	DIM.	MM
SHT.	NO. 28	REV.	0

NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
			SIGNATURE	

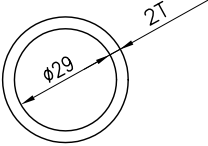
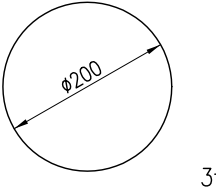
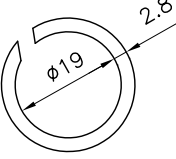
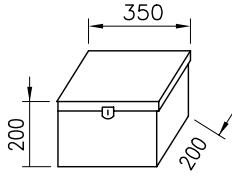
SPARE PARTS LIST FOR AIR WHISTLE


NO.	NAME	SKETCH	MATERIAL	SUPPLY PER SHIP		PART CODE (DWG. NO.)	MAKER
				WORKING	SPARE		
1	PISTON SPRING		SUS304	1	1	WA-15-017 (WA15-001)	SARACOM (KOREA)
2	PISTON VALVE		RUBBER	1	1	WA-15-015 (WA15-001)	SARACOM (KOREA)
3	VALVE COVER O-RING		RUBBER	1	1	WA-15-012 (WA15-001)	SARACOM (KOREA)
4	DIAPHRAGM O-RING		RUBBER	1	1	WA-15-009 (WA15-001)	SARACOM (KOREA)
5	CONTROL VALVE SPRING		SUS304	1	1	WA-15-037A (WA15-001)	SARACOM (KOREA)
6	CONTROL VALVE O-RING		RUBBER	1	1	WA-15-037B (WA15-001)	SARACOM (KOREA)

TITLE			
SPARE PARTS LIST FOR AIR WHISTLE			
DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM
APPROVAL	J. Y. KIM	 Saracom Co.,Ltd BUSAN, KOREA	
CHECKED	J. CH. HWANG		
DRAWN	H. J. NOH		
DWG NO.	WA15-004-A		
SCALE		N/S	SIZE A4
DIM.		MM	SHT.NO. 29
REV.		0	

NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
			SIGNATURE	

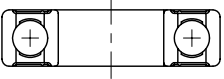

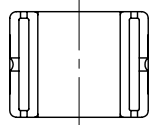
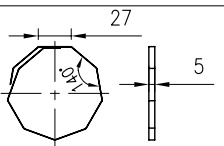
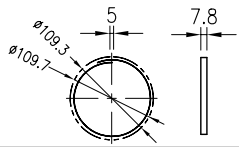
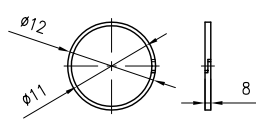
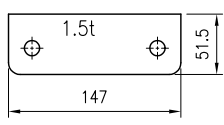
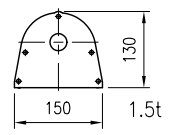
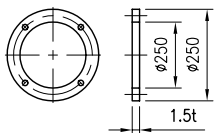
SPARE PARTS LIST FOR AIR WHISTLE


NO.	NAME	SKETCH	MATERIAL	SUPPLY PER SHIP		PART CODE (DWG. NO.)	MAKER
				WORKING	SPARE		
7	CONTROL VALVE O-RING		RUBBER	1	1	WA-15-037C (WA15-001)	SARACOM (KOREA)
8	DIAPHRAGM		TITANIUM	1	1	WA-15-008 (WA15-001)	SARACOM (KOREA)
9	PISTON RING		TBC	2	2	WA-15-014 (WA15-001)	SARACOM (KOREA)
10	SPARE BOX		STEEL		1	—	SARACOM (KOREA)

TITLE SPARE PARTS LIST FOR AIR WHISTLE			
DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM
APPROVAL	J. Y. KIM	 Saracom® Saracom Co.,Ltd BUSAN, KOREA	
CHECKED	J. CH. HWANG		
DRAWN	H. J. NOH		
DWG NO.	WA15-005-A	SCALE	N/S SIZE A4 DIM. MM SHT. NO 30 REV. 0

NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
			SIGNATURE	

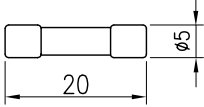
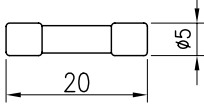
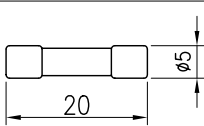
SPARE PARTS LIST FOR ELECTRIC WHISTLE


NO.	NAME	SKETCH	MATERIAL	SUPPLY PER SHIP		PART CODE (DWG. NO.)	REMARKS
				WORKING	SPARE		
1	CRANKSHAFT BEARING		SC	1	1	BMG-000229	
2	CRANKSHAFT BEARING		SC	1	1	BMG-000178	
3	CON ROD BEARING		SC	1	1	BMG-000186	
4	SPRING		SUS304	2	2	BSR-000015	
5	SPRING		SUS304	2	2	BSR-000016	
6	PISTON RING		GRAPHITE	2	2	BGS-000016	
7	CRANK CASE GASKET		NON-ASBESTOS	2	2	BGS-000081	
8	CRANK CASE COVER GASKET		NON-ASBESTOS	1	1	BGS-000082	
9	MOTOR GASKET		NON-ASBESTOS	1	1	BGS-000085	

TITLE SPARE PARTS LIST FOR ELECTRIC WHISTLE											
DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM								
APPROVAL	J. Y. KIM	 Saracom Co.,Ltd BUSAN, KOREA									
CHECKED	J. CH. HWANG										
DRAWN	H. J. NOH										
DWG NO.	WE16-004										
SCALE		N/S	SIZE	A4	DIM.	MM	SHT.	NO.	31	REV.	0

NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
			SIGNATURE	

SPARE PARTS LIST FOR HORN CONTROL UNIT

NO.	NAME	SKETCH	WEIGHT (Q'TY/g)	SUPPLY PER SHIP		PART CODE	MAKER
				WORKING	SPARE		
1	FUSE (0.2A) GLASS TUBE TYPE		1.4	3	3	BFU-000028	SARACOM (KOREA)
2	FUSE (1A) GLASS TUBE TYPE		1.4	1	2	BFU-000001	SARACOM (KOREA)
3	FUSE (0.1A) GLASS TUBE TYPE		1.4	1	2	BFU-000033	SARACOM (KOREA)

TITLE SPARE PARTS LIST FOR HORN CONTROL UNIT											
DATE	JAN. 29 2008	ITEM	WHISTLE SYSTEM								
APPROVAL	J. Y. KIM	 Saracom Co.,Ltd BUSAN, KOREA									
CHECKED	J. CH. HWANG										
DRAWN	H. J. NOH										
DWG NO.	HC7123-005										
SCALE		N/S	SIZE	A4	DIM.	MM	SHT.	NO	32	REV.	0

NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED	SIGNATURE