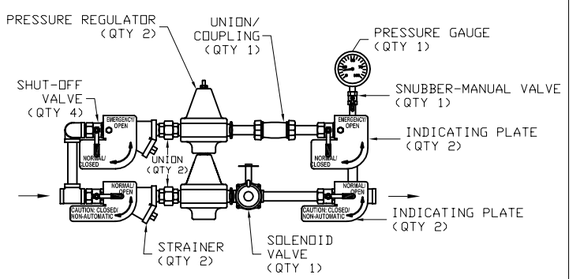
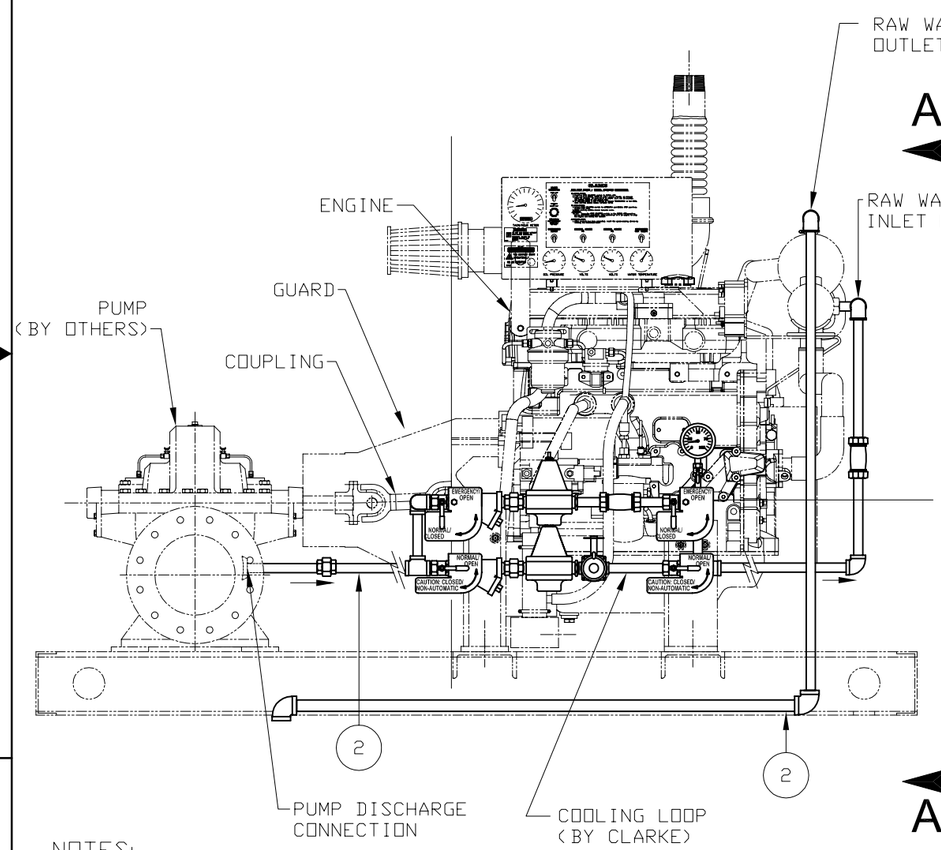
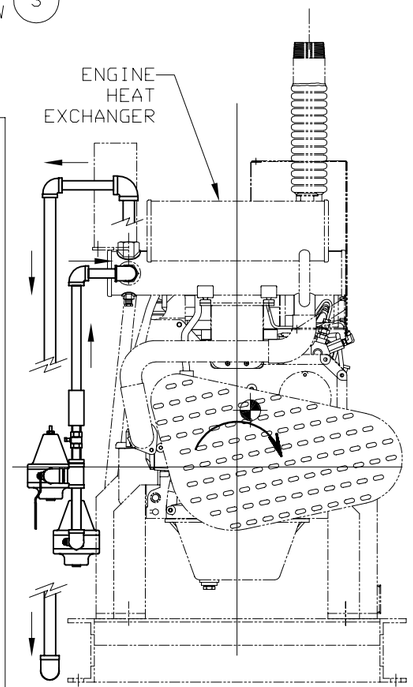
REV	DESCRIPTION	ECN#	DWN	APVD	DATE
A	ISSUED ENGINEERING DRAWING	N/A	MAL	KRW	14AUG03
B	ADDED VALVE INDICATOR OPEN/CLOSED TO LOOP	540	JJW	KRW	04APR06

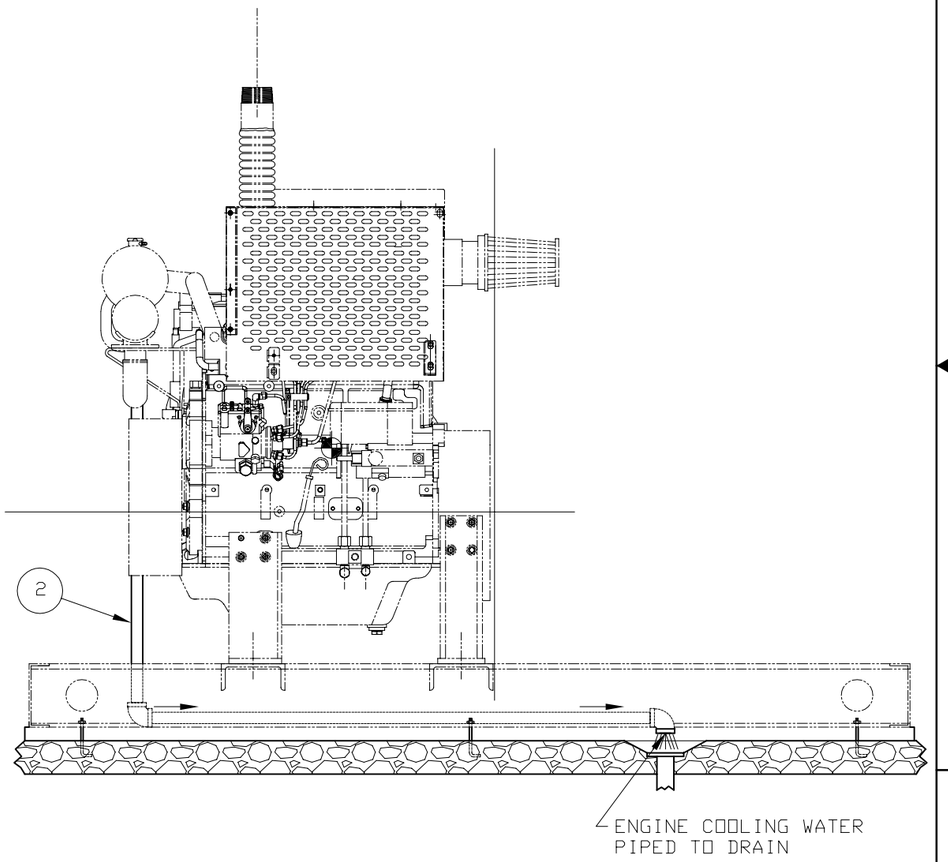


STANDARD COOLING LOOP





VIEW A-A
(FRONT OF ENGINE)



NOTES:

1. PIPING ARRANGEMENT PER NFPA-20.
2. PIPING BY OTHERS.
3. DISCHARGE PIPING FROM HEAT EXCHANGER OUTLET IS ONE PIPE SIZE LARGER THAN THE INLET PIPING TO THE HEAT EXCHANGER.

→ COOLING LOOP WATER - DIRECTION OF FLOW

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:

	MM	IN
DECIMAL		
.X	±1.5	±0.06
.XX	±0.8	±0.03
.XXX	±0.25	±0.01
FRACTIONAL	±1/32	
ANGULAR	±.5°	

SIMILAR TO

CONTROLLED DRAWING

CLARKE
Fire Protection Products, Inc.

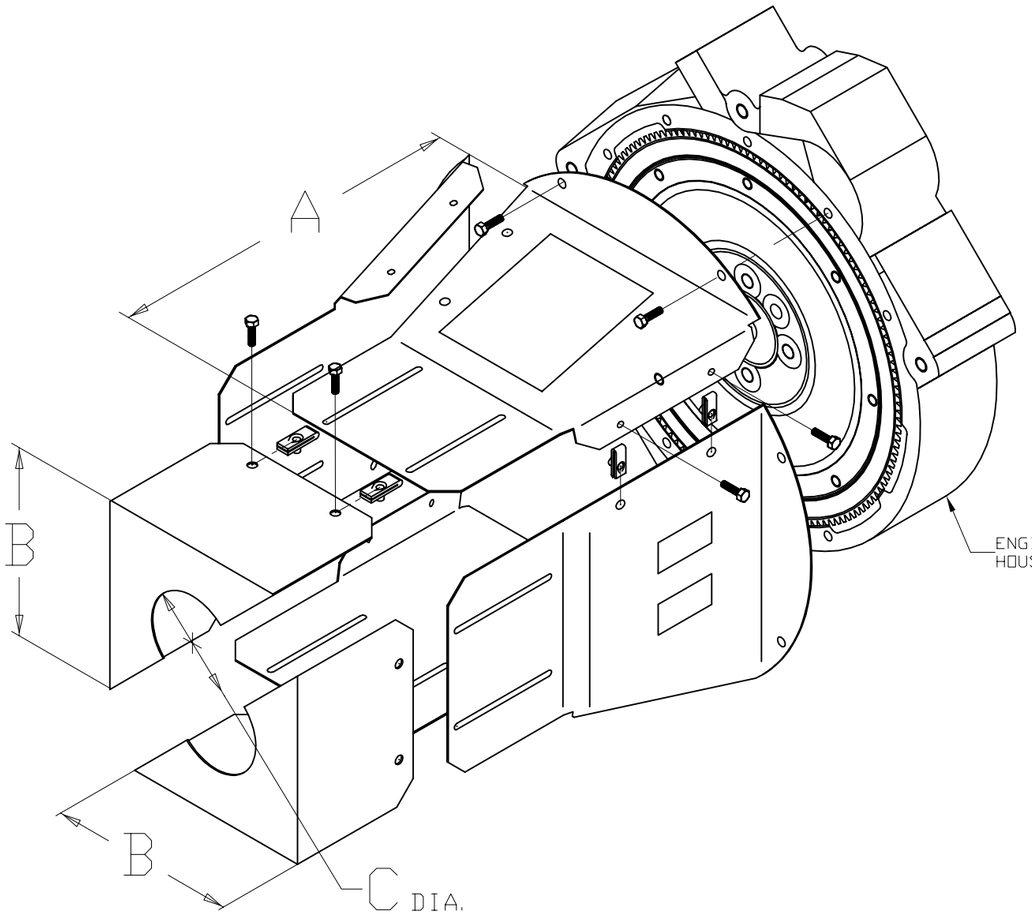
DRWN	MALAUER
DATE	14AUG03
ENGR	KRWAULIGMAN
MATERIAL	

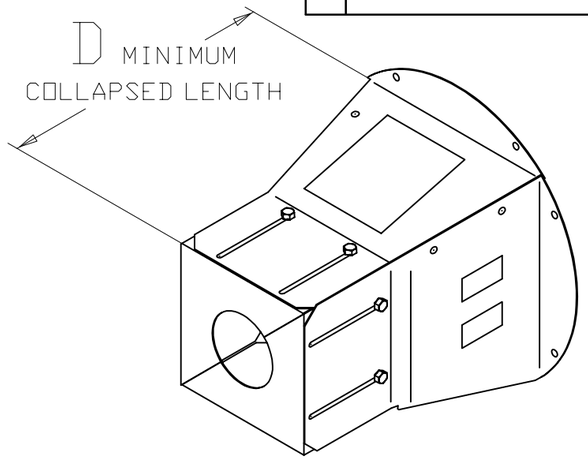
NAME: NFPA-20 COOLING LOOP PIPING DETAIL

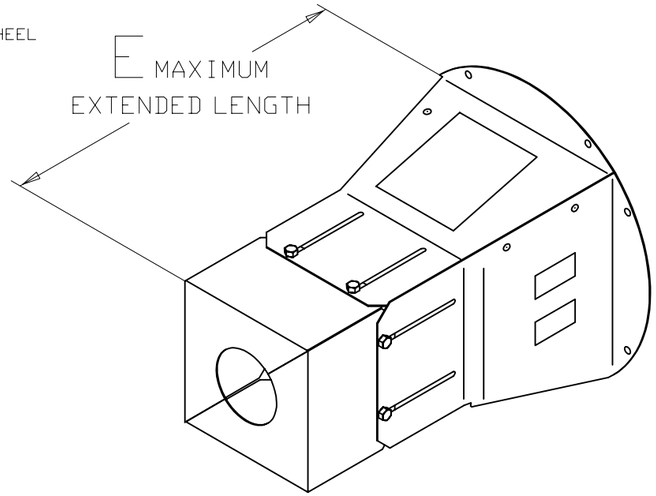
PART NO. C13977 REV B

SCALE NTS | UNITS MM [INCH] | PAGE 1 OF 1

REV	DESCRIPTION	ECN#	DWN	APVD	DATE
A	ISSUED ENGINEERING DRAWING	979	JJW	KRW	31MAR06







DRIVE SHAFT KIT P/N	USED ON	DIMENSIONS A	B	C	D	E	SAE FLY' HSG NUMBER
C10382	JU4H	247.7 [9.75]	222.5 [8.76]	109.5 [4.31]	296.1 [11.66]	372.3 [14.66]	#3
C10383	JU6H	381.0 [15.00]	222.5 [8.76]	109.5 [4.31]	381.8 [15.03]	505.7 [19.91]	#3
C10384	JW6H	381.0 [15.00]	222.5 [8.76]	109.5 [4.31]	381.8 [15.03]	505.7 [19.91]	#3
✔ C10385	JX6H	475.0 [18.70]	270.0 [10.63]	125.0 [4.92]	475.0 [18.70]	619.0 [24.37]	#2

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:

	MM	IN
DECIMAL .X	±1.5	±0.06
.XX	±0.8	±0.03
.XXX	±0.25	±0.01
FRACTIONAL	±1/32	
ANGULAR	±.5°	

SIMILAR TO D438

YES NO CONTROLLED DRAWING

CLARKE *Fire Protection Products, Inc.*

DRWN JWOJTKIEWICZ

DATE 31MAR06

ENGR KWAULIGMAN

MATERIAL

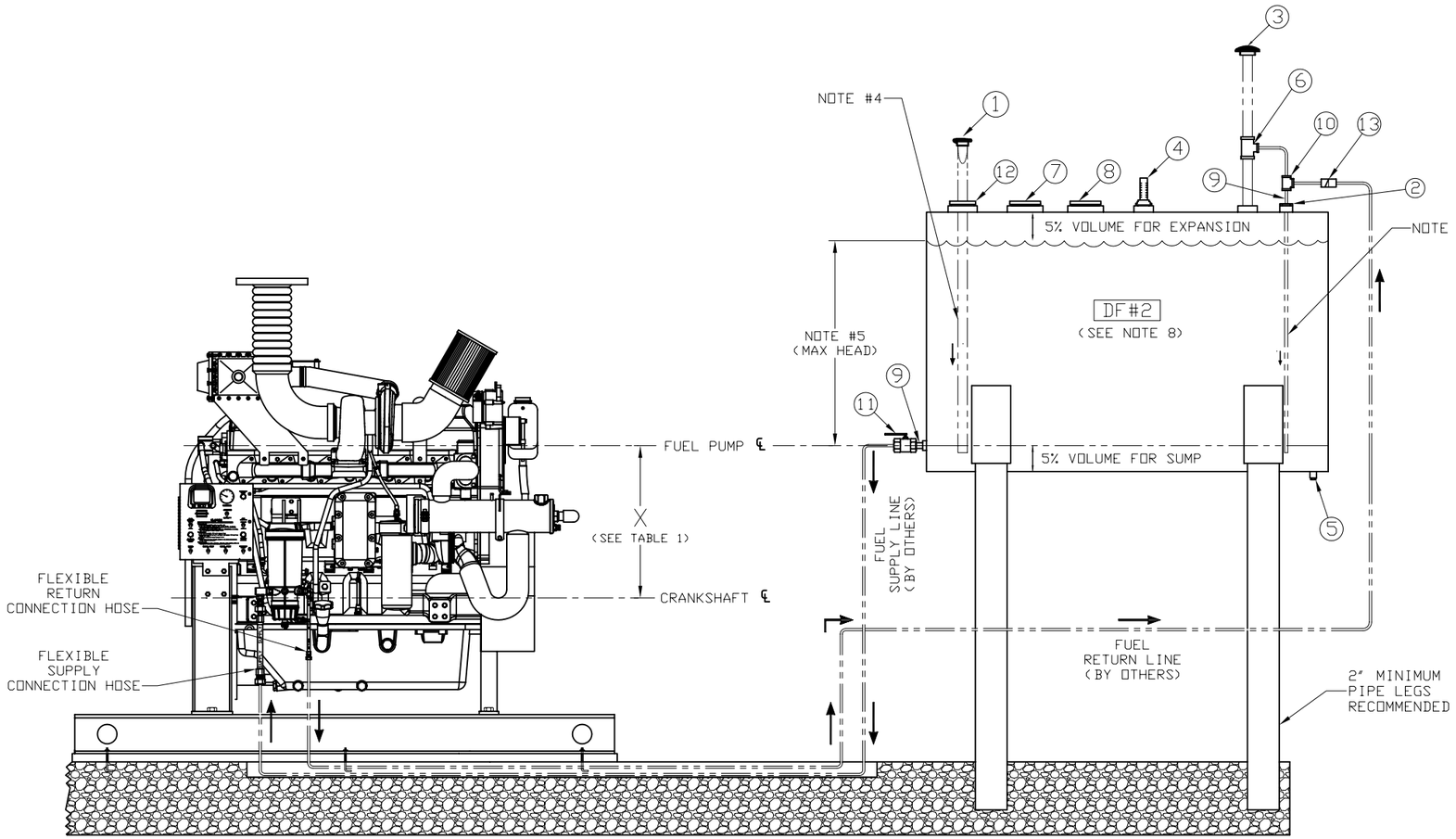
USED ON / LAYOUT PART NO.

NAME INSTALLATION DWG. - DRIVE SHAFT/ FLYWHEEL GUARD

PART NO. D556 REV A

SCALE NTS UNITS MM [INCH] PAGE 1 OF 1

REV	DESCRIPTION	ECN#	DWN	APVD	DATE
A	ISSUED ENGINEERING DRAWING	1022	JJW	KRW	28NOV06
B	REVISED FOR CLARITY	1022	MWL	KRW	10JAN07
C	ADDED TABLE 2	1022	MWL	KRW	08JUN07



JX6H SHOWN
WITH SINGLE WALL FUEL TANK

TABLE 1	
ENGINE MODEL	X
JU4H	14.33" [364.0]
JU6H	14.33" [364.0]
JW6H	8.52" [216.4]
✔ JX6H	23.50" [597.0]

TABLE 2		
ENGINE MODEL	MINIMUM FUEL SUPPLY SIZE IN [MM]	MINIMUM FUEL RETURN SIZE IN [MM]
JU4H	1/2"	3/8"
JU6H	1/2"	3/8"
JW6H	1/2"	3/8"
✔ JX6H	3/4"	1/2"

- TYPICAL -

NOTES:

1. REFER TO THE LATEST EDITION OF NFPA 20 FOR ADDITIONAL REQUIREMENTS. ALSO, INSTALL TANK IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION
2. FUEL SUPPLY TANK SHALL HAVE A CAPACITY AT LEAST EQUAL TO 1 GAL PER HP (5.07L PER kW), PLUS 5 PERCENT VOLUME FOR EXPANSION AND 5 PERCENT VOLUME FOR SUMP
3. DOWNPIPE RECOMMENDED FOR FUEL RETURN LINE TO PREVENT FOAMING INSIDE TANK. TERMINATE 3"-6"[76.2mm-152.4mm] FROM TANK BOTTOM
4. DOWNPIPE RECOMMENDED FOR FUEL LINE TO PREVENT FOAMING INSIDE TANK. TERMINATE 3"-6"[76.2mm-152.4mm] FROM TANK BOTTOM
5. THE ENGINE MANUFACTURER'S FUEL PUMP STATIC HEAD PRESSURE LIMITS SHALL NOT BE EXCEEDED WHEN THE LEVEL OF FUEL IN THE TANK IS AT A MAXIMUM
6. FUEL PIPING SHALL NOT BE GALVANIZED STEEL OR COPPER
7. THE FUEL SUPPLY TANK AND FUEL SHALL BE RESERVED EXCLUSIVLY FOR THE FIRE PUMP DIESEL ENGINE
8. THE FUEL RETURN LINE SHALL BE INSTALLED ACCORDING TO THE ENGINE MANUFACTURER'S RECOMMENDATION. IN ZONES WHERE FREEZING TEMPERATURES [32°F (0°C)] COULD BE ENCOUNTERED, THE FUEL TANK SHALL BE LOCATED IN THE PUMP ROOM
9. IN AREAS WHERE LOCAL AIR QUALITY MANAGEMENT REGULATIONS ONLY ALLOW THE USE OF DF#1 FUEL, AND NO DIESEL FIRE PUMP DRIVER IS AVAILABLE LISTED FOR USE WITH DF#1 FUEL, AN ENGINE LISTED FOR DF#2 SHALL BE PERMITTED TO BE USED BUT SHALL HAVE THE NAMEPLATE RATED HORSEPOWER DERATED 10 PERCENT, PROVIDED THE ENGINE MANUFACTURER APPROVES THE USE OF DF#1 FUEL
10. THE GRADE OF THE FUEL OIL SHALL BE INDICATED ON THE FUEL TANK BY LETTERS THAT ARE A MINIMUM OF 6" (152mm) IN HEIGHT AND IN CONTRASTING COLOR TO THE TANK
11. CONSULT ENGINE MANUFACTURE'S INSTALLATION AND OPERATION DATA SHEET FOR THE SPECIFIC ENGINE MODEL TO DETERMINE MINIMUM FUEL SUPPLY AND RETURN PIPE DIAMETERS.

ITEM	QTY.	DESCRIPTION (ALL FITTINGS BY OTHERS)
1	1	2" FILL CAP- WITH PROVISION FOR PADLOCK, COMBINED WITH REMOVABLE STRAINER (MAX. .06 MESH)
2	1	DOUBLE TAP BUSHING, 1" X .50"
3	1	VENT CAP, 1.25" NPT
4	1	DIRECT READING TANK GAUGE, 2" NPT
5	1	PIPE PLUG FOR DRAIN, 1" NPT
6	1	PIPE TEE, 1.25" x 1.25" x TABLE 2 (MIN. FUEL RETURN SIZE)
7	1	PIPE PLUG, 4" NPT (PROVISION FOR EMERGENCY RELEIF VENT)
8	1	PIPE PLUG, 2" NPT (PROVISION FOR LOW FUEL ALARM ACCESS)
9	1	PIPE NIPPLE, TABLE 2 (MIN. FUEL SUPPLY SIZE) x CLOSE
10	1	PIPE TEE, .50" x .50" x TABLE 2 (MIN. FUEL RETURN SIZE)
11	1	STOP COCK, TABLE 2 (MIN. FUEL SUPPLY SIZE) (WITH PROVISION FOR PADLOCK)
12	1	DOUBLE TAP BUSHING, 3" x 2"
13	1	CHECK VALVE, TABLE 2 (MIN. FUEL RETURN SIZE) (PREVENTS SIPHONING)

SIMILAR TO: ---

CLARKE
Fire Protection Products, Inc.

DRWN: JWOJTKIEWICZ
DATE: 28NOV06
ENGR: KRWAULIGMAN

INSTALLATION TOLERANCE

DECIMAL	mm
.X	±12.0
.XX	±6.0
ANGULAR	±.5°

DECIMAL	inch
.X	±0.50
.XX	±0.25
ANGULAR	±.5°

NAME: FUEL TANK AND FUEL SUPPLY SCHEMATIC PER NFPA 20

DWG. NO.: C132026 REV: C

SCALE: NTS UNITS: INCH [MM] PAGE: 1 OF: 1