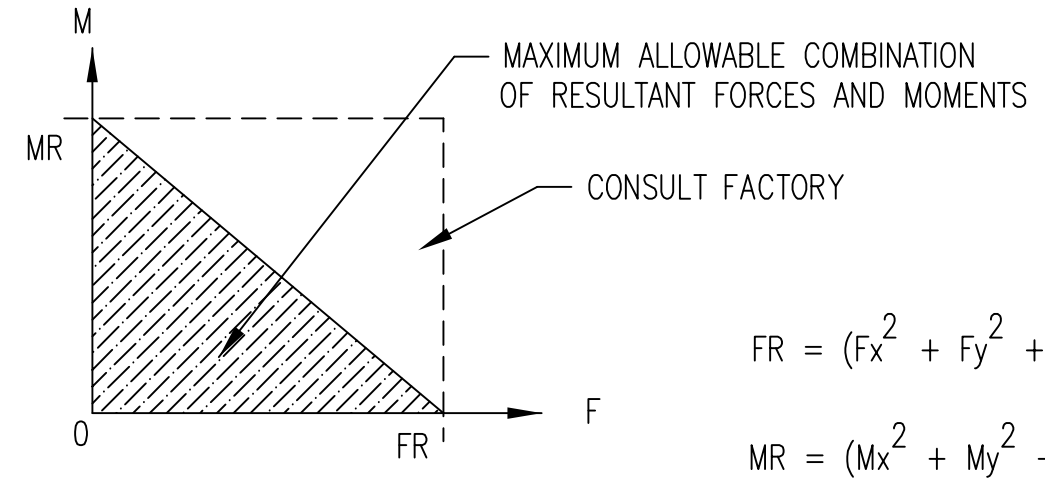
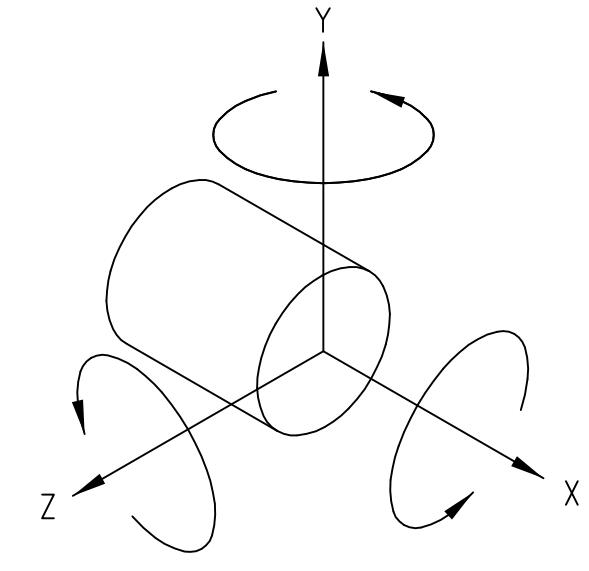


- A. ALLOW ADJUSTMENT IN EACH PLANE FOR EXTERNALLY PREFABRICATED PIPING.
- B. VERIFY BUILDING DIMENSIONS PERTAINING TO EQUIPMENT LOCATION. INSPECT ALL EQUIPMENT BEFORE ERECTING. USE ONLY CERTIFIED OR APPROVED PRINTS. REMOVE TESTING AND SHIPPING MATERIALS PER INSTALLATION, OPERATING AND MAINTENANCE (IOM) INSTRUCTIONS. USE SPREADER BARS WHEN LIFTING UNIT. LIFT BY BASE LIFTING LUGS ONLY. SPREADER BARS AND BALANCING CHAINS MUST BE USED TO PREVENT INSTABILITY OR DAMAGING OR STRAINING SYSTEM PIPING, INSTRUMENTATION OR SHELLS.
- WARNING: THE PACKAGED UNIT IS SHIPPED WITH 5-15 PSIG HOLDING CHARGE OF NITROGEN. OPEN CONNECTIONS CAREFULLY TO PREVENT HAZARD.
- WARNING: UNIT MAY BE TOP HEAVY. LIFTING OPERATORS MUST USE EXTREME CARE TO CHECK THE LEVEL AND STABILITY OF THE LOAD BEFORE LIFTING THE LOAD MORE THAN A FEW INCHES. IMPOSE AN IMBALANCE BY SEQUENTIALLY ADDING WEIGHT TO CH CORNER AND CAREFULLY OBSERVING THE LOAD REACTION TO MAKE SURE THE LOAD DOES NOT TEND TO SHIFT. BALANCING CHAINS, CABLES, OR STRAPS ARE ESSENTIAL IN BOTH DIRECTIONS TO PREVENT LOAD SHIFT DURING RIGGING. CALL YORK PRS ENGINEERING FOR AN ESTIMATE OF THE LOCATION OF THE CENTER OF GRAVITY OF THE PACKAGE IF ONE IS NOT GIVEN.
- C. YORK REFRIGERATION RECOMMENDED LONG TERM STORAGE INSTRUCTIONS MUST BE ADHERED TO IN ORDER TO PRESERVE WARRANTY DURING STORAGE OF EQUIPMENT GREATER THAN SIX MONTHS.
- D. A FLAT AND LEVEL CONCRETE FOUNDATION, CAPABLE OF SUPPORTING THE OPERATING WEIGHT OF THE EQUIPMENT, MUST BE PROVIDED TO SERVE AS A PLATFORM ON WHICH TO MOUNT EACH UNIT. SCREW COMPRESSORS ARE SUBJECT TO VIBRATION DUE TO GAS PULSATION IN THE RANGE OF 200 TO 600 Hz DEPENDING ON THE DRIVE SPEED AND THE COMPRESSOR MODEL. ENGINE DRIVES REQUIRE SUBSTANTIAL FOUNDATION MASS. A LICENCED CIVIL ENGINEER SHOULD BE CONSULTED TO DETERMINE THE PROPER FOUNDATION REQUIREMENTS.
- E. STEEL DRIVE LINE BASE LEVELING OF CENTRIFUGAL AND VERTICAL SEPARATOR SCREW COMPRESSORS
THE YORK REFRIGERATION FACTORY PERFORMS A ROUGH ALIGNMENT PRIOR TO SHIPPING A DRIVE LINE BASE (IF FACTORY MOUNTED DRIVER). IT IS IMPORTANT THAT THE DRIVE LINE BE RESTORED TO THE SAME REFERENCE PLANE BY LEVELING AND SHIMMING IN THE FIELD AS WAS USED DURING FACTORY ALIGNMENT. EVEN A SLIGHT TWIST OR BEND IN THE BASE CAN AND WILL RESULT IN LARGE CHANGES TO THE DRIVE LINE ALIGNMENT.
- TARGETS ARE PROVIDED BY THE FACTORY ON THE TOP SURFACE OF THE DRIVE BASE STRUCTURE. THESE TARGETS ARE STEEL BAR STOCK WHICH ARE MACHINED PARALLEL TO THE EQUIPMENT MOUNTING PADS. YORK REFRIGERATION ASSEMBLY PERSONNEL SET THE BASE ON THE FLOOR, WITH VARIED SHIMS UNDER THE BASE TO KEEP THE TARGETS ESSENTIALLY FLAT AND LEVEL. A TRANSIT IS USED TO MEASURE THE DEVIATION IN ELEVATION OF THE TARGETS AFTER MOUNTING OF THE COMPONENTS, AND THE DEVIATION IS STAMPED ON THE TOP SURFACE OF THE TARGET FOR FUTURE REFERENCE. THE TARGETS ARE STAMPED ACCORDING TO THE READING ON THE ENGINEERING SCALE STORY POLE, IN DECIMAL INCH FORMAT IN INCREMENTS OF 0.06" (HALF A DIVISION ON THE STORY POLE, WHICH IS HALF OF A HUNDRETH OF A FOOT). A MINUS READING INDICATES A RISING TREND AT THE BASE. THE VALUE EQUALS THE DEVIATION FROM THE REFERENCE PLANE.
- IT IS IMPORTANT THAT THE STEEL BASE BE LEVELLED USING SHIMS AND RESTORED TO THE SAME FLAT PLANE STATE IN THE FIELD AS IT WAS DURING FACTORY ROUGH ALIGNMENT. THE TARGETS MUST BE USED FOR LEVELING PURPOSE, PREFERABLY USING A TRANSIT TO A MAXIMUM DEVIATION OF 0.12 INCHES OVERALL AND 0.060" TARGET TO TARGET. CONTACT YORK REFRIGERATION FACTORY IF ANY DIFFICULTY IS ENCOUNTERED DURING THIS PROCESS. CONCRETE PADS ARE NOT COMPLETELY LEVEL AND THE BOTTOM OF THE BASEFRAME MAY NOT BE FLAT, VARIOUS THICKNESSES OF TEMPORARY SHIM MATERIAL WILL BE NEEDED.
- NOTE: IN THE CASE OF VERTICAL SEPARATOR SCREW COMPRESSOR OR CENTRIFUGAL COMPRESSOR DRIVELINES, THE BASE MUST BE LEVELLED, USING THE MACHINED TARGETS, DURING INSTALLATION OR PRIOR TO STORAGE FOR MORE THAN SIX MONTHS.
- CAUTION: NEVER USE THE TOP OR BOTTOM OF THE STRUCTURAL STEEL AS A LEVELING REFERENCE. ONLY USE THE MACHINED TARGET PADS.
- NOTE: PRELIMINARY COLD ALIGNMENT (±0.005) MUST BE COMPLETED PRIOR TO CONNECTION OF ANY MAJOR PIPING TO DRIVELINE COMPONENTS. PIPING STRAIN MUST BE RELIEVED PRIOR TO FINAL COLD ALIGNMENT AS DESCRIBED IN THE IOM.
- FIELD COLD ALIGNMENT MUST ONLY BE DONE AFTER PROPER TARGET LEVELING IS COMPLETE. ALIGNMENT SHOULD BE DONE AFTER ALL CONDUIT AND TUBING SUPPORTS ARE WELDED TO THE BASE, SINCE WELDING HEAT CAN CAUSE BASE DISTORTION AND CHANGE ALIGNMENT. INSTALLATION METHOD:
- BOLTED TO FOUNDATION:** GROUTING MUST BE DONE AFTER SHIMMING AND LEVELING THE BASE.
- SPRING ISOLATORS:** WHEN FURNISHED HAVE VERTICAL ADJUSTMENT SCREWS. THE SPRINGS SHOULD BE ADJUSTED TO JUST BARELY RAISE THE BASE OFF EACH SHIM BLOCK EQUALLY. THE ADJUSTMENT SHOULD ONLY BE DONE WHEN ALL PIPING AND ELECTRICAL CONDUIT ARE INSTALLED. COUPLING ALIGNMENT SHOULD BE DONE AFTER SPRING ADJUSTMENTS ARE MADE.
- NOTE: ALIGNMENT AND FOOT PLANE PROCEDURES TAKE TIME TO ACCOMPLISH. LARGE DRIVELINE BASES ARE INHERENTLY FLEXIBLE. BECAUSE IT IS NOT FEASIBLE TO REPRODUCE THE "AS MACHINED" FLATNESS OF A LARGE BASE WITHIN TEN THOUSANDTHS OF AN INCH AT THE SITE, IT SHOULD BE RECOGNIZED THAT THE TIME WILL BE NEEDED TO ACCOMPLISH A PROPER ALIGNMENT AT THE JOBSITE. UP TO A WEEK MAY BE NEEDED IN SOME CASES. STEPPED OR TAPERED SHIMS MAY BE NEEDED TO COMPENSATE FOR ANY ALIGNMENT OR SOFT FOOT PROBLEMS RESULTING FROM BASE FLEXIBILITY, COMPONENT FOOT PLANE VARIATIONS OR AN INTENTIONAL COLD ANGULAR MISALIGNMENT TO COMPENSATE FOR NON-UNIFORM THERMAL GROWTH.
- F. WHEN THE UNIT IS IN PLACE OVER THE FOUNDATION PAD, IT SHOULD BE SHIMMED AT THE ANCHOR BOLT LOCATIONS. ALLOW FOR A NON-SHRINK GROUT THICKNESS OF AT LEAST 1" UNDER ALL FULL DEPTH MEMBERS. THE STEEL BASE SHOULD BE BOLTED DOWN TO CONCRETE SUBSTRUCTURE WITH ANCHOR BOLTS AT LOCATIONS SHOWN ON THE DRAWINGS. THE FOUNDATION SHOULD BE FLAT AND LEVEL. ANCHOR BOLTS SHOULD ALLOW FOR SOME FLEXIBILITY IN ALIGNING BOLTS WITH HOLES (APPROX. 1/2" FROM CENTER IN ALL DIRECTIONS) USING ADJUSTABLE ANCHORS FABRICATED FOR THE PURPOSE (DECO OR EQUIVALENT). THE FERRULE SHOULD BE FLUSH WITH THE SURFACE OF THE ROUGH LEVEL. SOFT WADDING MAY BE USED TO CENTER THE BOLT IN THE FERRULE DURING PLACEMENT OF THE PACKAGE UNIT. THIS PROVIDES SOME FLEXIBILITY TO ALLOW FOR FINAL POSITION AND MANUFACTURING TOLERANCES. AFTER FINAL POSITION HAS BEEN OBTAINED, GROUT SHOULD BE APPLIED SO IT FLOWS INTO THE FERRULES AND LOCKS THE ANCHOR BOLTS INTO POSITION. IT IS RECOMMENDED THAT THE STEEL BASE BE FILLED WITH CONCRETE TO TOP OF EACH BASE IN ALL POCKETS THAT ARE ACCESSIBLE AND FREE OF PIPING. POCKETS THAT CANNOT BE FILLED SHOULD BE PROVIDED WITH DRAINAGE AS APPLICABLE. ALL JACKBOLTS MAY BE REMOVED AFTER THE GROUT HAS SET AND CURED.

- G. CARE MUST BE TAKEN TO PREVENT DIRT AND MOISTURE FROM ENTERING THE SYSTEM DURING INSTALLATION. SHIPPING CLOSURES AND NITROGEN PURGE SHOULD BE MAINTAINED AS MUCH AS POSSIBLE. ALL SYSTEM PIPING MUST BE FREE OF OBJECTS, SCALE, AND MOISTURE, AND BE PRESSURE AND VACUUM TESTED AS SPECIFIED IN THE IOM BEFORE INSULATING AND CHARGING THE SYSTEM. DO NOT HYDROTEST YORK REFRIGERATION PACKAGE PIPING OR COMPRESSOR.
- H. PIPE WELDING SHALL BE IN ACCORDANCE WITH THE ANSI/ASME "REFRIGERATION PIPING" CODE, B31.5, PARA 527 OR "CHEMICAL PLANT AND PETROLEUM REFINERY PIPING" CODE, B31.3, PARA 328, AS APPLICABLE. THE QUALIFICATION OF PROCEDURES AND WELDER'S PERFORMANCE SHALL BE IN ACCORDANCE WITH SECTION IX OF THE ASME BPV CODE. CAUTION: IMPROPER GROUNDING DURING WELDING PROCESSES WILL RESULT IN DAMAGED COMPONENTS (MOTOR WINDINGS, BEARINGS, SEALS ETC.) AND ELECTRONIC CONTROLS. WELDING GROUND MUST BE LOCATED AS CLOSE AS POSSIBLE TO THE WELD BEING MADE.
- I. NOZZLE FORCES AND MOMENTS IMPOSED BY FIELD INTERCONNECTING PIPING SHALL GENERALLY NOT EXCEED THOSE SPECIFIED BELOW. WHERE UNSUPPORTED YORK REFRIGERATION PIPING EXISTS BETWEEN THE COMPRESSOR CASING, OR VESSEL NOZZLE, AND THE CUSTOMER CONNECTION, MAXIMUM ALLOWABLE FORCES & MOMENTS APPLY AT THE COMPRESSOR CASING, OR VESSEL NOZZLE. PIPING FLEXIBILITY ANALYSIS FOR EXTERNAL PIPING IS "BY OTHERS". PIPE HANGERS SHOULD BE USED AS NECESSARY TO AVOID EXCESS STRESS IN PIPE AND COMPONENTS. SUPPORTS SUPPLIED AND INSTALLED "BY OTHERS". SPECIAL CASES MAY BE REFERRED TO YORK REFRIGERATION PRS ENGINEERING:

SIZE	NOZZLE MAXIMUM ALLOWABLE RESULTANT FORCES & MOMENTS			
	ENGLISH UNITS		METRIC UNITS	
	FR (LBS)	MR (FT-LBS)	FR (N)	MR (Nm)
1	90	40	400	54
1 1/4	90	40	400	54
1 1/2	140	140	623	190
2	230	140	1,023	190
2 1/2	320	240	1,423	326
3	410	350	1,824	475
4	640	490	2,847	664
5	700	750	3,114	1,017
6	1,100	1,400	4,893	1,898
8	1,900	1,900	8,451	2,576
10	2,200	2,200	9,786	2,983
12	2,500	2,500	11,120	3,389
14	3,300	3,200	14,679	4,339
16	4,500	4,500	20,016	6,102
18	5,500	5,500	24,464	7,458
20	6,600	6,600	29,357	8,950
24	10,000	10,000	44,480	13,560



$$FR = (F_x^2 + F_y^2 + F_z^2)^{1/2}$$

$$MR = (M_x^2 + M_y^2 + M_z^2)^{1/2}$$

WHEN CONNECTING DIRECTLY TO A CENTRIFUGAL COMPRESSOR, REFER TO THE COMPRESSOR GENERAL ARRANGEMENT DRAWING FOR ALLOWABLE FORCES AND MOMENTS.

- J. REFER TO THE "PRE-STARTUP TRANSMITTAL PACKAGE" MAILED UNDER SEPARATE COVER FOR ADDITIONAL ESSENTIAL INFORMATION.
- K. CUSTOMER CONNECTION DIMENSION TOLERANCE: ±1/2.
- L. APPROXIMATE CENTER OF GRAVITY.
- M. (PSV) ARE APPROXIMATE AND FOR REFERENCE ONLY. EXACT LOCATIONS ARE NOT AVAILABLE.
- N. RELIEF VALVE VENT PIPING MUST BE PROVIDED "BY OTHERS", PER ANSI/ASHRAE STD 15. PRESSURE-RELIEF DEVICES SHALL DISCHARGE TO THE ATMOSPHERE AT A LOCATION NOT LESS THAN 15 FT [4.57 METERS] ABOVE THE ADJOINING GROUND LEVEL AND NOT LESS THAN 20 FT [6.1 METERS] FROM ANY WINDOW, VENTILATION OPENING, OR EXIT IN ANY BUILDING. THE DISCHARGE SHALL BE TERMINATED IN A MANNER THAT WILL PREVENT THE DISCHARGED REFRIGERANT FROM BEING SPRAYED DIRECTLY ON PERSONNEL IN THE VICINITY AND FOREIGN MATERIAL OR DEBRIS FROM ENTERING THE DISCHARGE PIPING.
- O. STARTERS MUST BE COMMISSIONED BY A CERTIFIED ELECTRICIAN. REFER TO THE DRAWINGS TO DETERMINE WHETHER STARTERS WERE SUPPLIED BY YORK REFRIGERATION. CLEARING AND TESTING OF HIGH VOLTAGE STARTERS MUST BE PROVIDED "BY OTHERS".
- P. EVERY EFFORT HAS BEEN MADE TO DESIGN THIS PACKAGE TO ALLOW FOR INSULATION CLEARANCE. THE CUSTOM FABRICATION TECHNIQUE ALLOWS FOR INSULATION CLEARANCE WHERE POSSIBLE. ONLY WHEN UNAVOIDABLE, INSULATION ZONES MAY OVERLAP AND SMALL PIPING, TUBING, AND/OR CONDUIT RUNS MAY INTERFERE WITH THE INSULATION ZONES. REFER TO BULLETIN "GUIDELINES FOR INSULATION CONTRACTORS, BULLETIN GEN. 981106.
- Q. YORK REFRIGERATION USES TEMPORARY SHIPPING CLOSURES ON EXTERNAL FLANGED CONNECTIONS. **WARNING:** MAKE CERTAIN THAT ALL CLOSURES ARE RATED FOR TEST PRESSURE. TEMPORARY SHIPPING CLOSURES MUST BE REPLACED BY FLANGED CONNECTIONS OR BLIND FLANGES RATED FOR THE DUTY.

REVISION HISTORY						
ZONE	REV	ECN	DESCRIPTION	DATE	DR	CHK
B-8	A	.	REVISED NOTE "H" ADDING INFO FOR FLEX ANALYSIS AND PIPE HANGERS. CHANGED CUST TOLERANCE; WAS 1/4".	11/12/96	DET	HWK
C-8	B	.	REVISED AND RELABELED NOTES. ADDED NOTE E	10/10/97	DET	HWK
B-6	C	.	ADDED NOTES O, P, & Q PER ENGINEERING AND CORRECTED NOTES E, F AND I.	12/2/98	DET	HWK
.	D	.	UPDATED TO NEW DWG. FORMAT & STANDARDS	6/28/99	MAR	DET
B-8	E	7978	COMBINED NOTE D WITH NOTE F. ADDED INFO TO NOTE E ABOVE CAUTION AND AFTER SPRING ISOLATOR SECTIONS. RE-ORIENTED NOTES TO ACCOMMODATE ADDITIONAL INFO PER RDR #R798.	11/23/99	DET	HWK
.	F	8064	UPDATED TO NEW DWG. FORMAT	2/21/00	LA	REL
.	G	8639	ADD: NOTE "D" & "MAXIMUM ALLOWABLE FORCES & MOMENTS APPLY AT THE COMPRESSOR CASING." TO NOTE "I" DELETE "RECO", REPLACE "FRICK" WITH "YORK REFRIGERATION" (9 PLACES)	2/13/02	DAH	MDC
.	H	8750	REVISED NOTE E. (ADD: "PRELIMINARY COLD ALIGNMENT... ..AS DESCRIBED IN THE IOM.")	5/10/12	DAH	MDC
.	J	8950	ADDED CAUTION FOR WELDING GROUNDING.	8/15/03	JRF	HWK

THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DO NOT SCALE	YORK Refrigeration		York International Refrigeration - Frick Waynesboro, PA 17268	
	UNLESS OTHERWISE SPECIFIED TOLERANCES PER QWP-16		TITLE INSTRUCTIONS TO ERECTING ENGINEER		
DR D. TURNER	DEC 3PL	DEC 3PL	FRACT	ANGLE	DATE 10/13/95
CHK H. W. KUTZ	±	±	±	±	DATE 10/19/95
APPD K. W. KUTZ	±	±	±	±	DATE 10/19/95
CODE	SCALE NONE	SIZE D	CAGE CODE 23587	DWG NO 560D0124	REV J
			SHEET 1 OF 1		