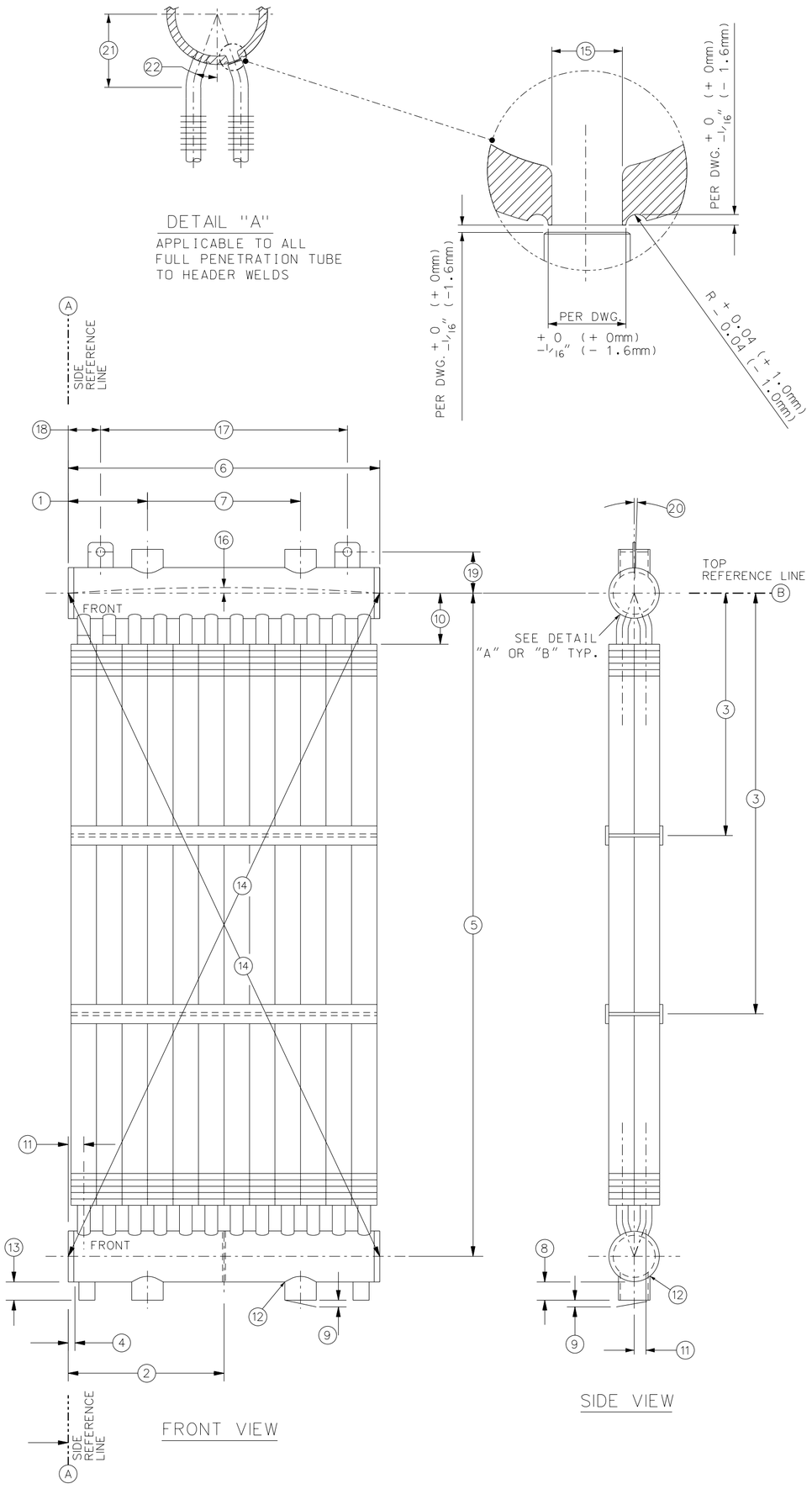


UNLESS OTHERWISE SPECIFIED FOR A PARTICULAR MODULE, TOLERANCES SHALL BE IN ACCORDANCE WITH THE LATEST ADDENDA OF THE ASME BOILER AND PRESSURE VESSEL CODE, SECTION 1, AND THE REQUIREMENTS LISTED BELOW.

(A) ALL LONGITUDINAL LOCATING DIMENSIONS SHALL BE MEASURED FROM A REFERENCE LINE. THE REFERENCE LINE SHALL COINCIDE WITH THE END CLOSEST TO THE FRONT STAMP OF THE UPPER OR LOWER MODULE HEADER.

(B) ALL VERTICAL LOCATING DIMENSIONS SHALL BE MEASURED FROM A REFERENCE LINE.
- A. THE REFERENCE LINE FOR MODULES SHALL COINCIDE WITH THE ℄ OF THE UPPER MODULE HEADER.
- B. THE REFERENCE LINE FOR HEADERS SHALL COINCIDE WITH THE SURFACE OF THE HEADER PIPE.

(1) LOCATION OF NOZZLE FROM REFERENCE LINE ± 1/8" (± 3.2mm).

(2) LOCATION OF DIVISION PLATES FROM THE REFERENCE LINE ± 1/4" (± 6.4mm). DIVISION PLATES IN ANY CASE ARE NOT TO INTERFERE WITH TUBE HOLES.

(3) LOCATION OF MODULE SPACERS FROM THE REFERENCE LINE SHALL BE WITHIN ± 1/4" (± 6.4mm) OF THE SPECIFIED DIMENSION.

(4) LOCATION OF END PLATE FROM THE REFERENCE LINE + 1/8" (± 3.2mm), -0 (-0mm); END PLATES IN ANY CASE ARE NOT TO INTERFERE WITH TUBE HOLES.

TOLERANCES

(5) THE HEIGHT OF A MODULE SHALL BE WITHIN ± 1/8" (± 3.2mm) OF THE SPECIFIED DIMENSION UP TO 35'-0" (10668mm) OR ± 1/4" (± 6.4mm) OF THE SPECIFIED DIMENSION OVER 35'-0" (10668mm).

(6) THE LENGTH OF A MODULE HEADER SHALL BE WITHIN ± 1/8" (± 3.2mm) OF THE SPECIFIED DIMENSION.

(7) BETWEEN CENTER LINES OF NOZZLES IN A MODULE HEADER ± 1/8" (± 3.2mm).

(8) PROJECTION OF NOZZLE FACE FROM THE HEADER SURFACE ± 1/16" (± 1.6mm).

(9) ALIGNMENTS OF FACES OF NOZZLES AND CONNECTIONS ± 1/16" (± 1.6mm).

(10) LOCATION OF TUBE FINS FROM MODULE HEADER ℄ WITHIN +1" (+ 25.4mm), -1/4" (- 6.4mm) OF THE SPECIFIED DIMENSION.

(11) LOCATION OF FINNED TUBES FROM REFERENCE LINE ± 1/16" (± 1.6mm).

(12) HOLE DIAMETER TOLERANCES FOR ALL CARBON STEEL AND AUSTENITIC STAINLESS STEEL MATERIALS:
- A. HOLE DIA. FOR WELDED PIPE + 3/32" (+ 2.4mm), -0" (-0mm).
- B. HOLE DIA. FOR WELDED COUPLING + 3/32" (+ 2.4mm), -0" (-0mm).

HOLE DIAMETER TOLERANCES FOR ALL OTHER MATERIALS SUCH AS 1 1/4 Cr-1/2 Mo, 2 1/4 Cr-1 Mo, TYPE 430SS:
- A. HOLE DIA. FOR WELDED PIPE + 1/16" (+ 1.6mm), -0" (-0mm).
- B. HOLE DIA. FOR WELDED COUPLING + 1/16" (+ 1.6mm), -0" (-0mm).

(13) LOCATION OF SUPPORT LUGS FROM SURFACE OF THE HEADER ± 1/16" (± 1.6mm).

(14) DIAGONAL DIMENSIONS TO BE WITHIN ± 1/4" (± 6.4mm) OF EACH OTHER FOR MODULES UP TO 35'-0" (10668mm) LG. & ± 1/2" (± 12.7mm) FOR MODULES OVER 35'-0" (10668mm) LG.

(15) TOLERANCES FOR DRILLED TUBE HOLES IN HEADERS: (+0.015" (+ 0.4mm), -0.012" (-0.3mm)) FROM NOM. HOLE DIA. WITH A FINISH OF 500 RMS OR LESS.
NOM. TUBE HOLE DIA. TO BE 1/32" (0.8mm) OVER TUBE O.D. FOR FULL STRENGTH WELD CONNECTION AND 1/32" (0.8mm) UNDER TUBE I.D. FOR FULL PENETRATION WELD CONNECTION.

(16) AFTER WELDING OF ALL NOZZLES AND FITTINGS, THE AMOUNT OF HEADER BOW SHALL NOT EXCEED ± 1/4" (± 6.4mm).

(17) BETWEEN CENTER LINES OF SUPPORT LUGS ± 1/8" (± 3.2mm).

(18) LOCATION OF SUPPORT LUGS TO REF. LINE ± 1/8" (± 3.2mm).

(19) LOCATION OF SUPPORT LUGS FROM CENTER LINE OF HEADER ± 1/16" (± 1.6mm).

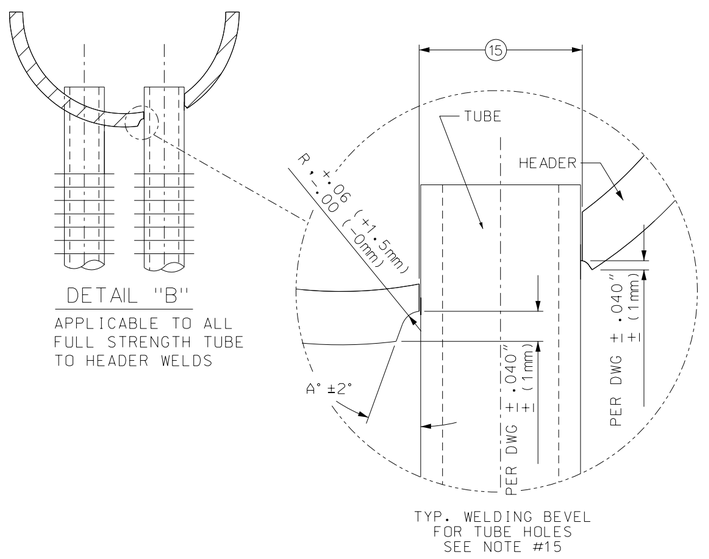
(20) ALIGNMENT OF NOZZLES AND SUPPORT LUGS TO CENTER LINE ± 1.5°.

(21) LOCATION OF BEND TUBES FROM CENTER LINE OF HEADER ± 1/8" (± 3.2mm).

(22) ALIGNMENT ANGLE OF TUBE TO CENTER LINE ± 1.0°.

(23) TOLERANCE ON ANY DIMENSION NOT SPECIFIED ABOVE OR IN THE CODE SHALL BE ± 1/8" (± 3.2mm).

APPLIES TO:
V17494 MIDDLETOWN PROJECT
V17495 KINGS MOUNTAIN PROJECT



TYP. WELDING BEVEL
FOR TUBE HOLES
SEE NOTE #15

NOTE:
MOST TOLERANCES ARE FOR FINISHED WELDED PRODUCT WHICH MAY NOT BE APPLICABLE FOR FIT-UP TOLERANCES PRIOR TO WELDING.

Rev.	Description	Date	Drawn	Chkd. 1	Chkd. 2	Appr.
00	INITIAL ISSUE	21-JUL-15	MAY	REEVES		FRY

Revisions

MIDDLETOWN ENERGY CENTER
and
KINGS MOUNTAIN ENERGY CENTER
for
NTE ENERGY and GEMMA POWER SYSTEMS
VOGT POWER PROJECTS V17494 & V17495

3rd ANGLE PROJECTION

Scale: NONE

Title
STANDARD FABRICATION TOLERANCES
FOR
MODULES

Vogt Power International
13551 Triton Park Blvd
Suite 2000
Louisville, Ky. 40223 USA
WWW.VogtPower.com

Internal Drawing Status	Size	Drawing No.	Rev.
FOR RECORD	C	510030-EBND-0106	00