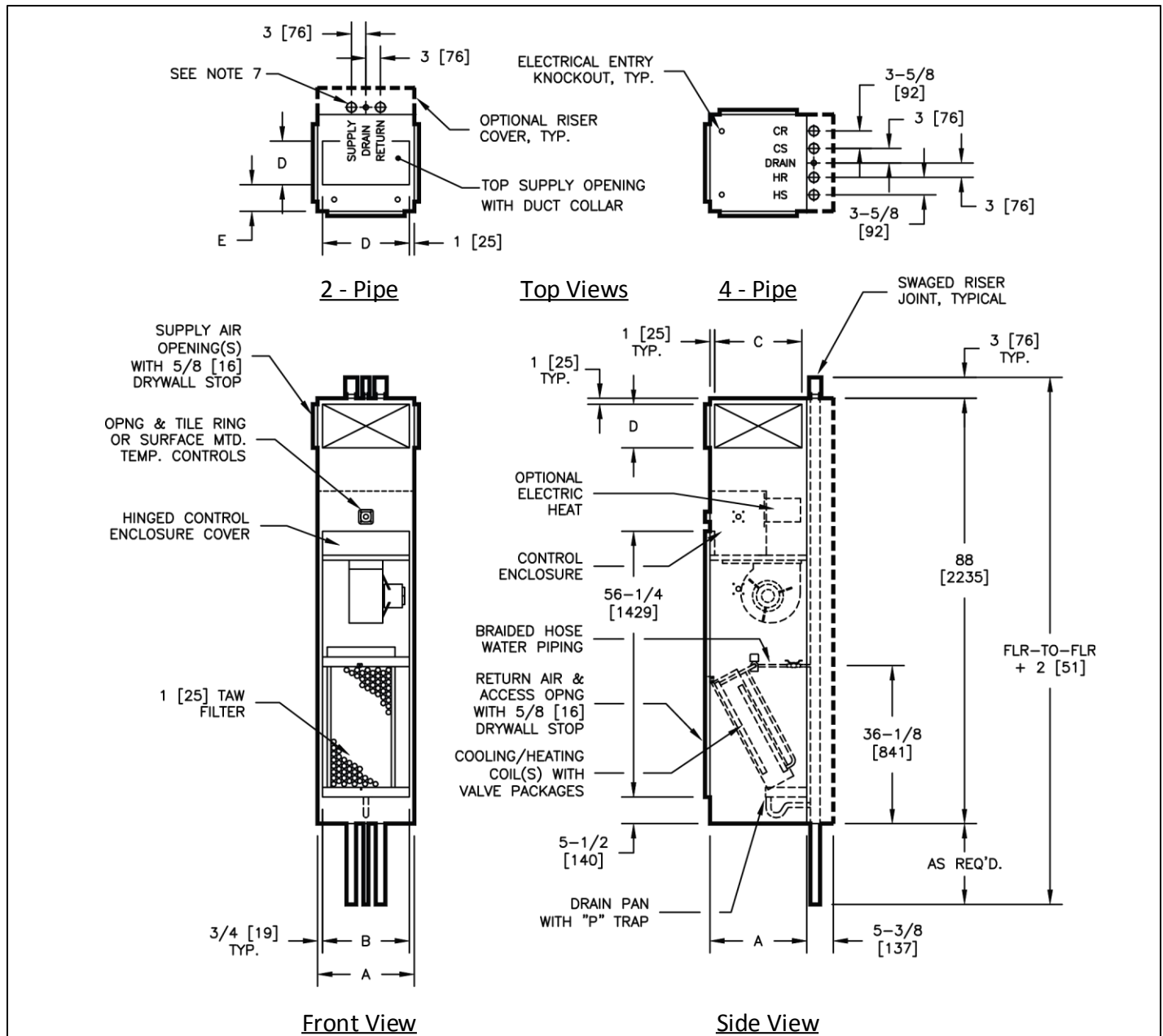


TVSR

Vertical High Rise Recessed Stand Alone Fan Coil Unit

(Do not Include Risers – See note 8)



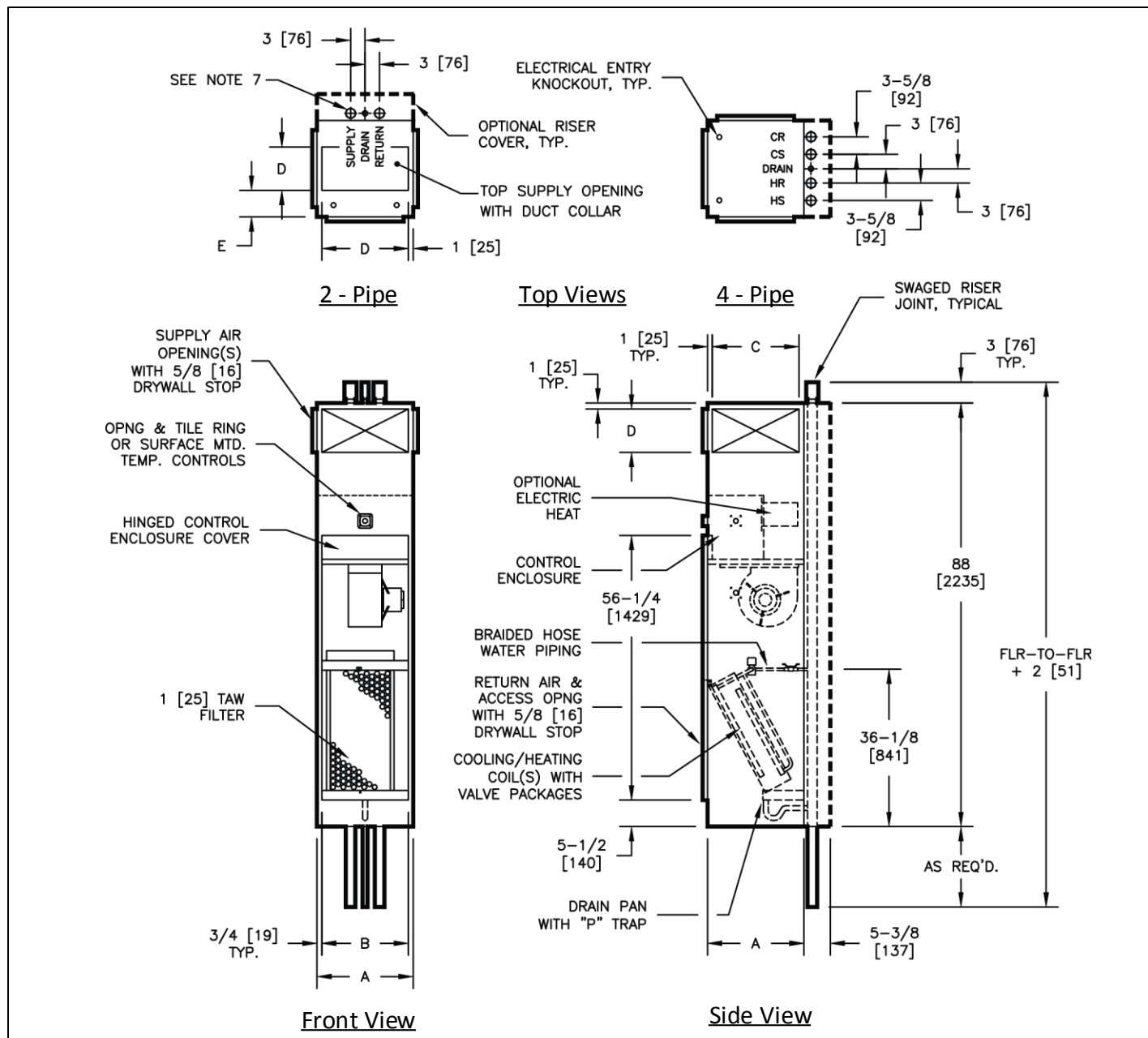
NOTES:

1. All dimension are Inches [mm]. Metric values are soft conversions.
2. All dimensions are $\pm 1/4$ [6mm].
3. The ring is installed on front of unit as shown, and may be moved to left or right side of unit in field. The ring omitted on units with "ADA" control mounting location.
4. Wiring from electrical entry point to control enclosure is furnished and installed by others in field.
5. Risers available from $3/4$ " [19mm] to 3" [76mm] diameter with $1/2$ " [13mm] thick insulation, and $3/4$ " [19mm] to 2 $1/2$ " [64mm] diameter with $3/4$ " [19mm] thick insulation.
6. Riser length is 120" [3048mm] max, 100" [2540mm] min.
7. Back riser location shown. See arrangement drawings for available unit configurations.
8. Factory mounted risers shown. TVSR do not include Risers. For Risers order TVRP.
9. For Primary-Secondary Shipped separate units order TVRM and TVRS.

Unit Size	A	B	SINGLE/DOUBLE SUPPLY		E
			C	D	
03 & 04	18 [457]	16 1/2 [419]	16 [406]	8 [203]	6 [152]
06 & 08	20 [508]	18 1/2 [470]	18 [457]	12 [305]	6 [152]
10 & 12	24 [610]	22 1/2 [572]	22 [559]	14 [356]	8 [203]

TVRM

Vertical High Rise Primary Shipped Separate Unit
(Do not Include Risers – See note 8)



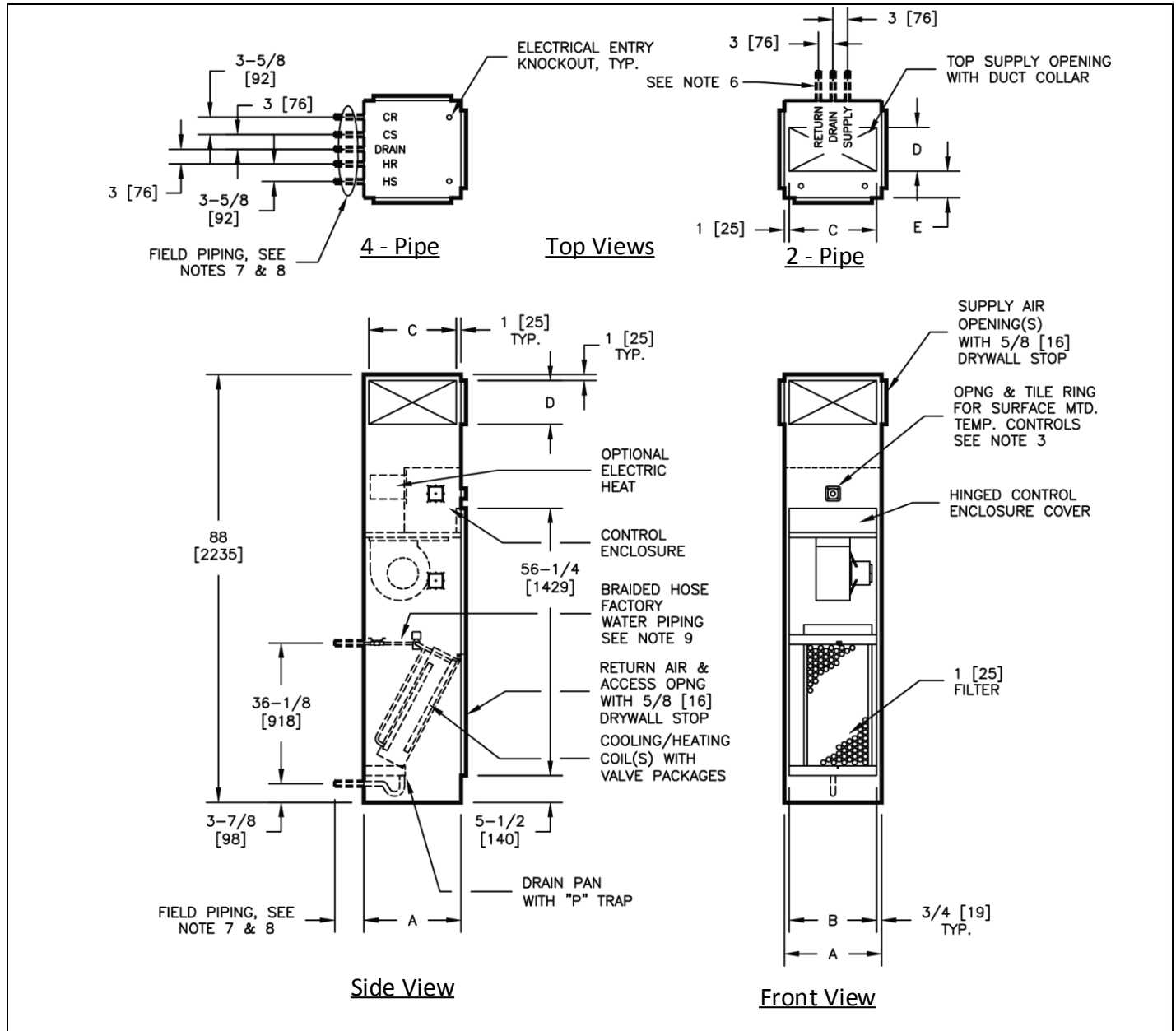
NOTES:

1. All dimension are Inches [mm]. Metric values are soft conversions.
2. All dimensions are $\pm \frac{1}{4}$ [6mm].
3. The ring is installed on front of unit as shown, and may be moved to left or right side of unit in field. The ring omitted on units with "ADA" control mounting location.
4. Wiring from electrical entry point to control enclosure is furnished and installed by others in field.
5. Risers available from $\frac{3}{4}$ " [19mm] to 3" [76mm] diameter with $\frac{1}{2}$ " [13mm] thick insulation, and $\frac{3}{4}$ " [19mm] to 2 $\frac{1}{2}$ " [64mm] diameter with $\frac{3}{4}$ " [19mm] thick insulation.
6. Riser length is 120" [3048mm] max, 100" [2540mm] min.
7. Back riser location shown. See arrangement drawings for available unit configurations.
8. Factory mounted risers shown. TVSR do not include Risers. For Risers order TVRP.
9. For Primary-Secondary Shipped separate units order TVRM and TVRS.

Unit Size	A	B	SINGLE/DOUBLE SUPPLY		E
			C	D	
03 & 04	18 [457]	16 ½ [419]	16 [406]	8 [203]	6 [152]
06 & 08	20 [508]	18 ½ [470]	18 [457]	12 [305]	6 [152]
10 & 12	24 [610]	22 ½ [572]	22 [559]	14 [356]	8 [203]

TVRS

Vertical High Rise Secondary Shipped Separate Fan Coil Unit
(Do not Include Risers)



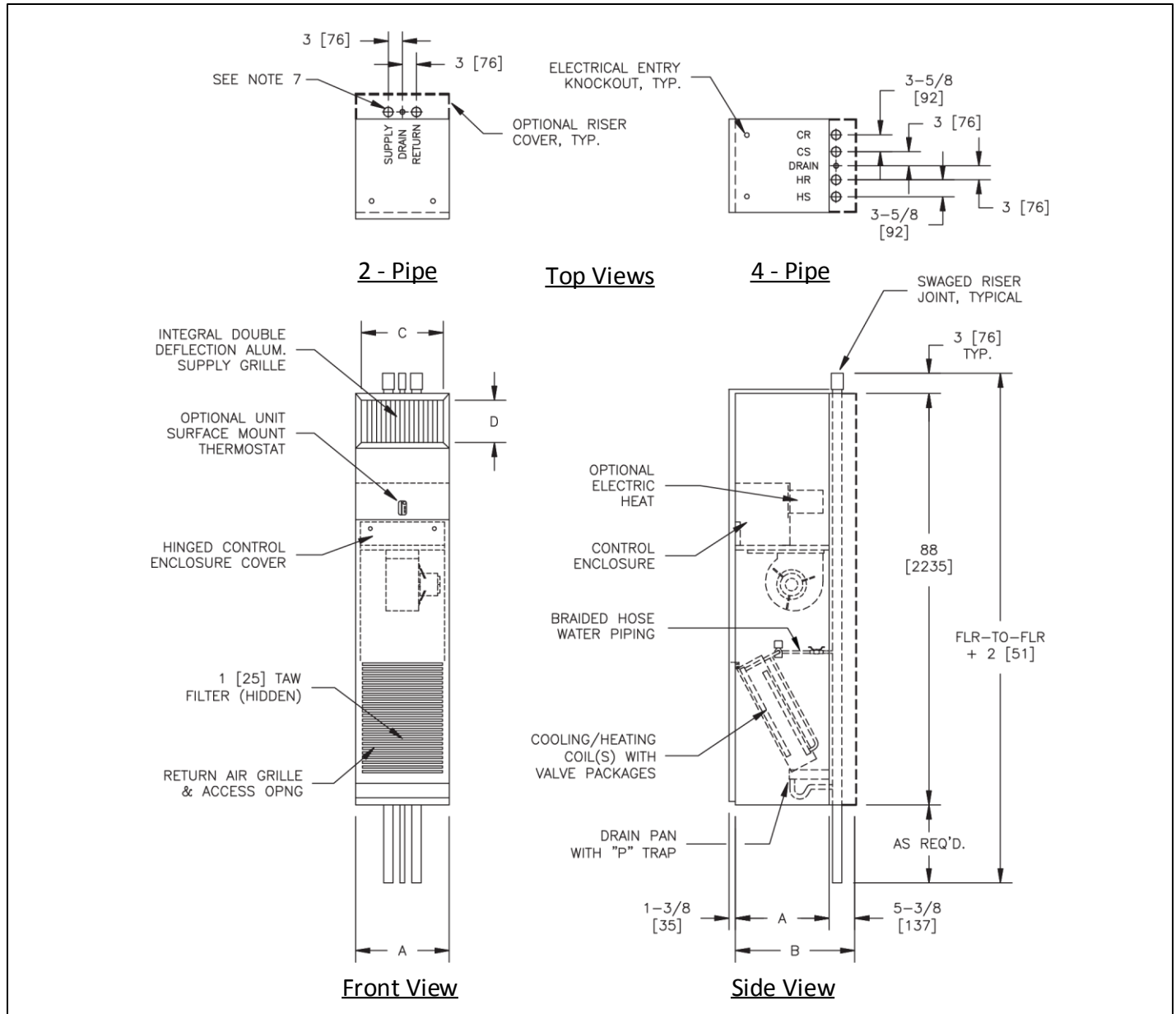
NOTES:

1. All dimension are Inches [mm]. Metric values are soft conversions.
2. All dimensions are $\pm 1/4$ [6mm].
3. Tile ring is installed on front of unit as shown, and may be moved to left or right side of unit in field. The ring omitted on units with "ADA" control mounting location.
4. Wiring from electrical entry point to control enclosure is furnished and installed by others in field.
5. All piping and insulation between Primary and secondary units is furnished and installed in the field by others.
6. Back riser location shown. See arrangement drawings for available unit configurations.
7. All coil and drain connections are "retracted" and braced internally for shipment.
8. Coil connections are 5/8" [16mm] O.D. female sweat. Drain "P-trap" is designed to accept 7/8" [22mm] O.D copper tube.
9. Secondary units are furnished with factory installed shutoff valves and field connection tubes, unless Primary unit risers are shipped loose. Risers may be shipped separately.

Unit Size	A	B	SINGLE SUPPLY		E
			C	D	
03 & 04	18 [457]	16 1/2 [419]	16 [406]	8 [203]	6 [152]
06 & 08	20 [508]	18 1/2 [470]	18 [457]	12 [305]	6 [152]
10 & 12	24 [610]	22 1/2 [572]	22 [559]	14 [356]	8 [203]

TVSE

Vertical High Rise Exposed Fan Coil Unit
(Do not Include Risers – See note 9)



NOTES:

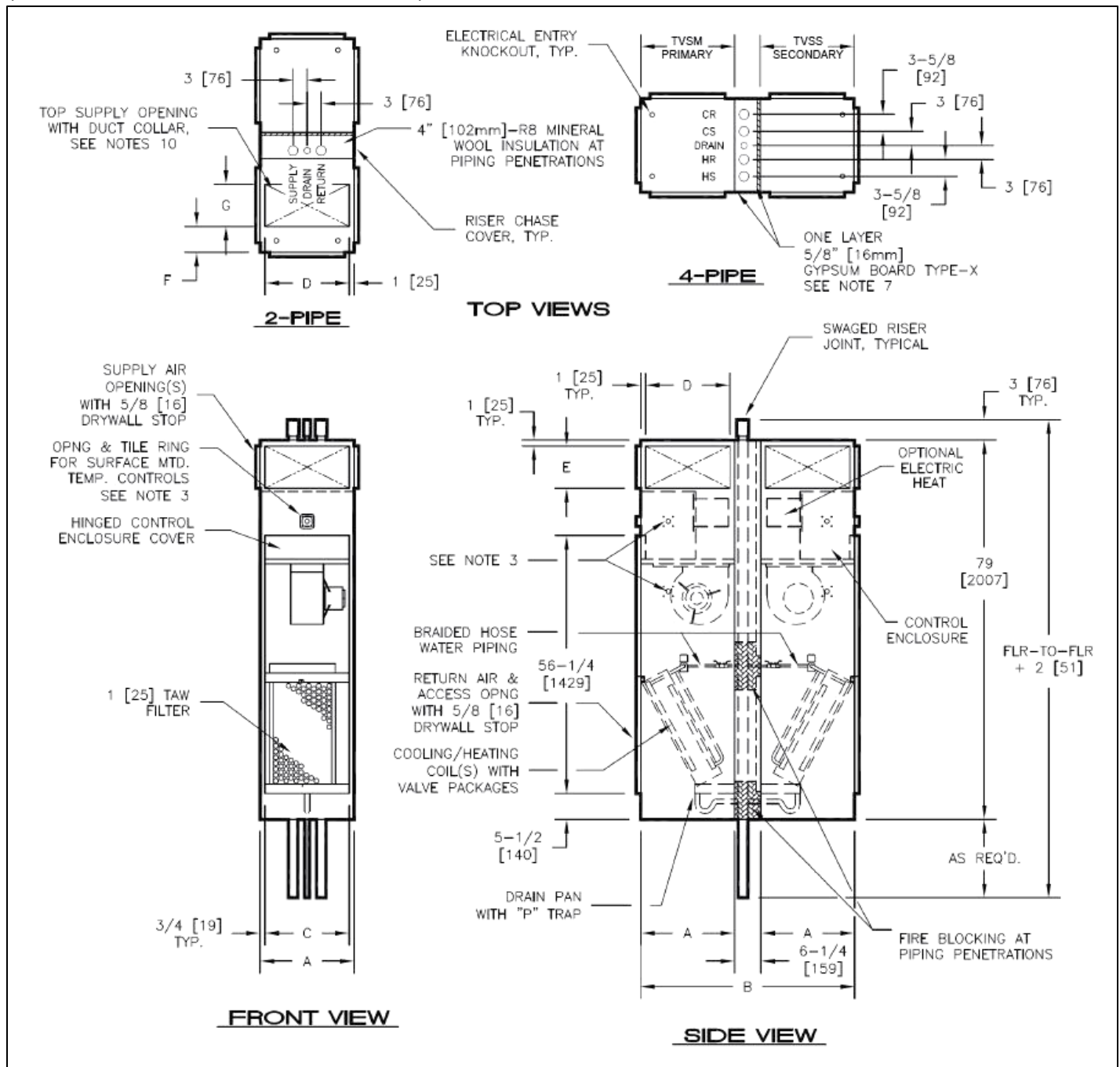
1. All dimension are Inches [mm]. Metric values are soft conversions.
2. All dimensions are $\pm \frac{1}{4}$ [6mm] .
3. Tile ring is installed on front of unit as shown, and may be moved to left or right side of unit in field. The ring omitted on units with "ADA" control mounting location.
4. Wiring from electrical entry point to control enclosure is furnished and installed by others in field.
5. All piping and insulation between Primary and secondary units is furnished and installed in the field by others.
6. Back riser location shown. See arrangement drawings for available unit configurations.
7. All coil and drain connections are "retracted" and braced internally for shipment.
8. Coil connections are 5/8" [16mm] O.D. female sweat. Drain "P-trap" is designed to accept 7/8" [22mm] O.D. copper tube.
- 9 TVSE do not include Risers. For Riser order TVRP.

Unit Size	A	B	C	D
03 & 04	18 [457]	23 3/8 [594]	16 [406]	8 [203]
06 & 08	20 [508]	25 3/8 [645]	18 [457]	12 [305]
10 & 12	24 [610]	29 3/8 [746]	22 [559]	14 [356]

TVSS/TVSM

Vertical High Rise Twin Pack Fan Coil Unit

(Do not Include Risers – See note 11)



NOTES:

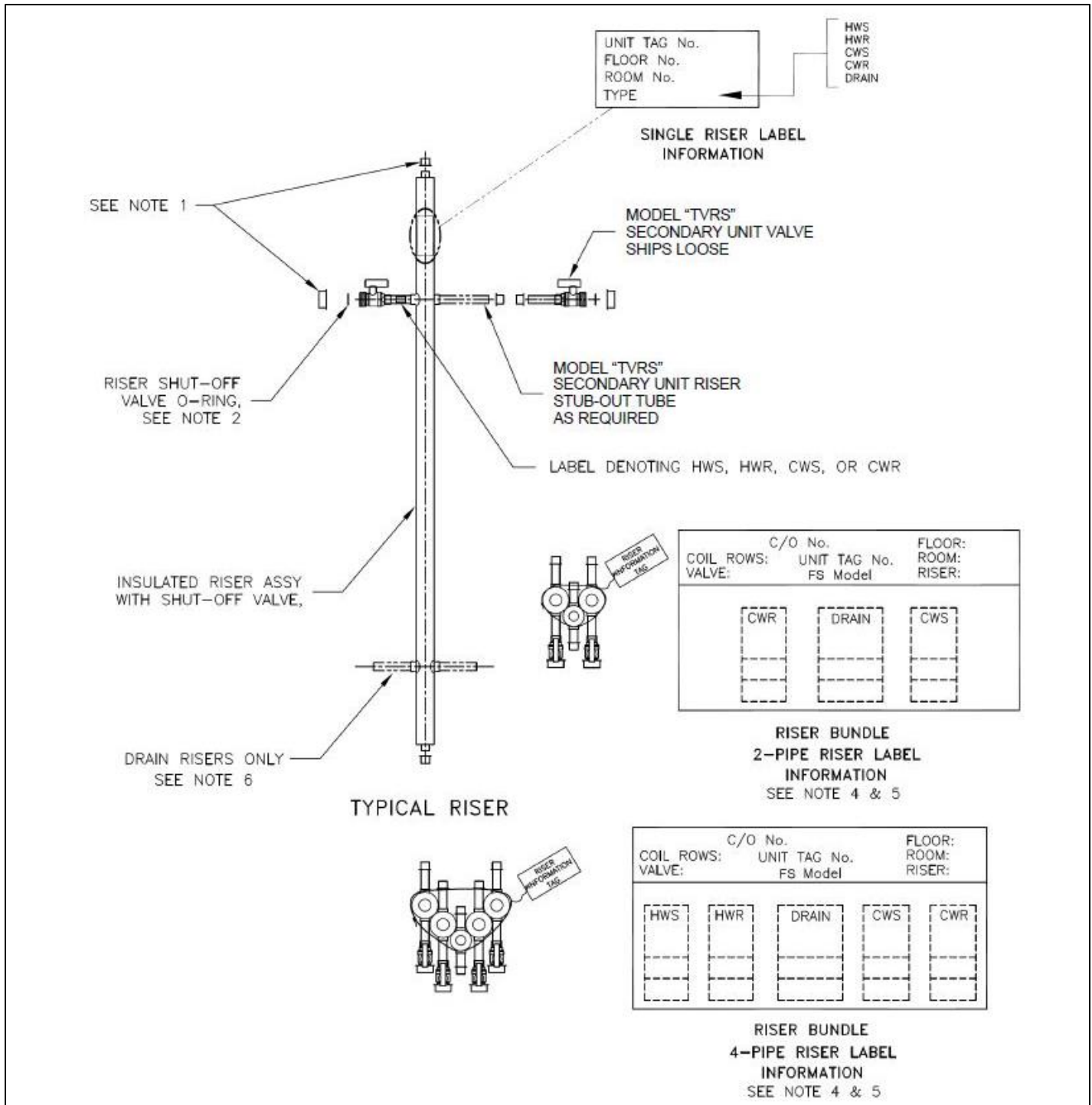
1. All dimension are Inches [mm]. Metric values are soft conversions.
2. All dimensions are $\pm \frac{1}{4}$ [6mm] .
3. Thermostat mounting -Tile ring is installed on front of unit as shown, and may be moved to left or right side of unit in field.
4. Wiring from electrical entry point to control enclosure is furnished and installed by others in field.
5. Risers available from $\frac{3}{4}$ " [19mm] to 2 $\frac{1}{2}$ " [64mm] diameter with $\frac{1}{2}$ " [13mm] or $\frac{3}{4}$ " [19mm] thick insulation.
6. Riser length is 120" [3048mm] max, 100" [2540mm] min.
7. NON-FIRE RATED unit shown with type-x gypsum board at back of secondary unit. FIRE RATED units have type-x gypsum board at back of both secondary and Primary units. FIRE RATED unit design has been tested in accordance with UL1479 – Fire Test Of Through Penetration Fire Stops, and is approved to bear ETL listing mark for Through Penetration Fire Stops Assemblies.
8. For further fire rating information refer to the Installation Instructions
9. Refer to page 15 for Vertical High Rise Twin Pack configurations.
10. See Next page for dimensions.
11. TVSM/TVSS do not include Risers. For Risers order TVRP.

TVSM/TVSS TWIN PACK UNITS CABINET DIMENSIONS

TVSM (Primary)	TVSS (Secondary)	A	B	C	D	SUPPLY AIR		
						SINGLE/DOUBLE	TOP	
						E	F	G
03 or 04	03 or 04	18 [457]	42 ¼ [1073]	16 ½ [419]	16 [406]	8 [203]	6 [152]	8 [203]
03 or 04	06 or 08	20 [508]	46 ¼ [1175]	18 ½ [470]	18 [457]	12 [305]	6 [152]	12 [305]
03 or 04	10 or 12	24 [610]	54 ¼ [1378]	22 ½ [572]	22 [559]	14 [356]	8 [203]	14 [356]
06 or 08	03 or 04	20 [508]	46 ¼ [1175]	18 ½ [470]	18 [457]	12 [305]	6 [152]	12 [305]
06 or 08	06 or 08							
06 or 08	10 or 12	24 [610]	54 ¼ [1378]	22 ½ [572]	22 [559]	14 [356]	8 [203]	14 [356]
10 or 12	03 or 04	24 [610]	54 ¼ [1378]	22 ½ [572]	22 [559]	14 [356]	8 [203]	14 [356]
10 or 12	06 or 08							
10 or 12	10 or 12							

TVRP

Riser Assembly

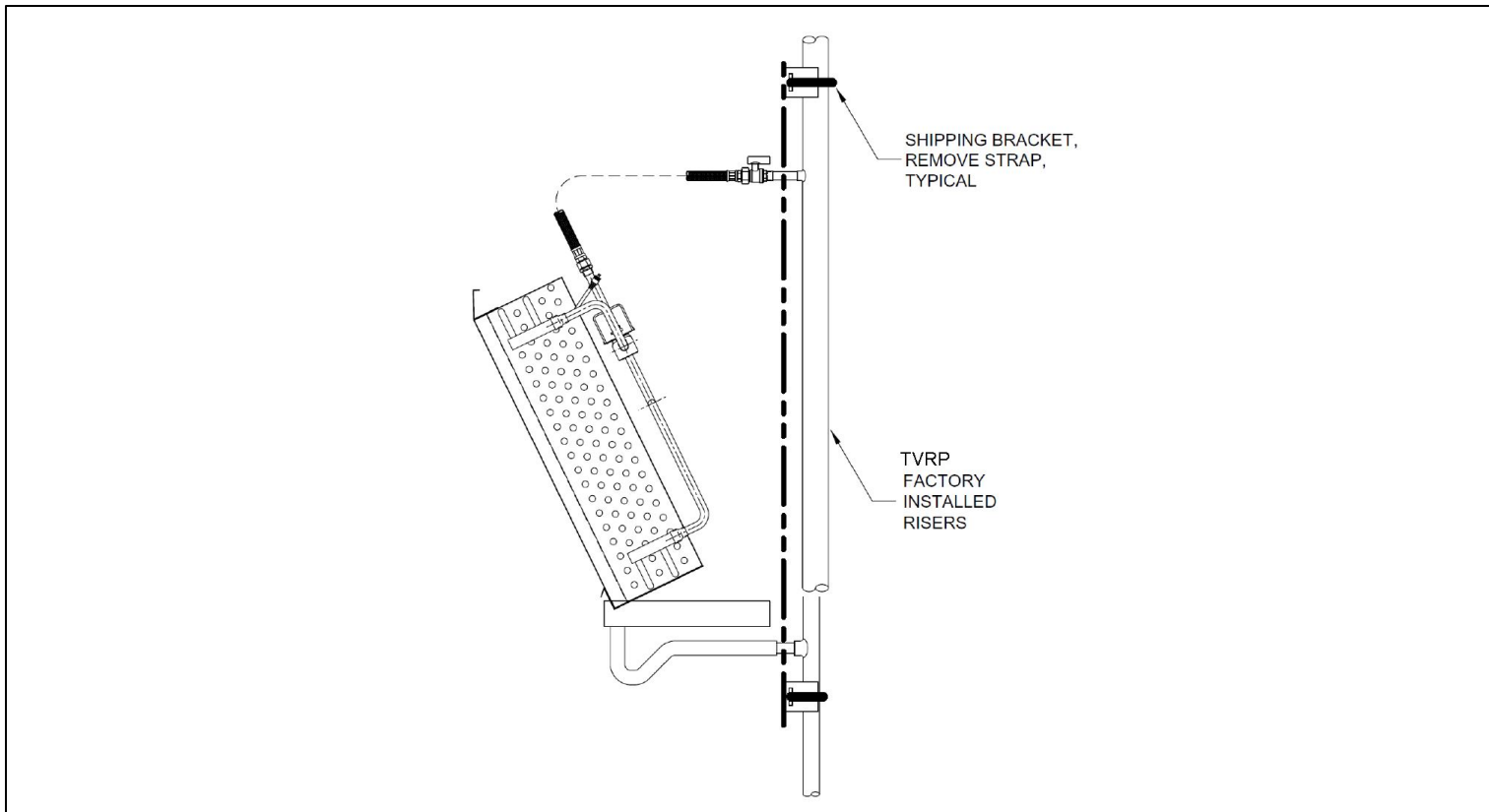


NOTES:

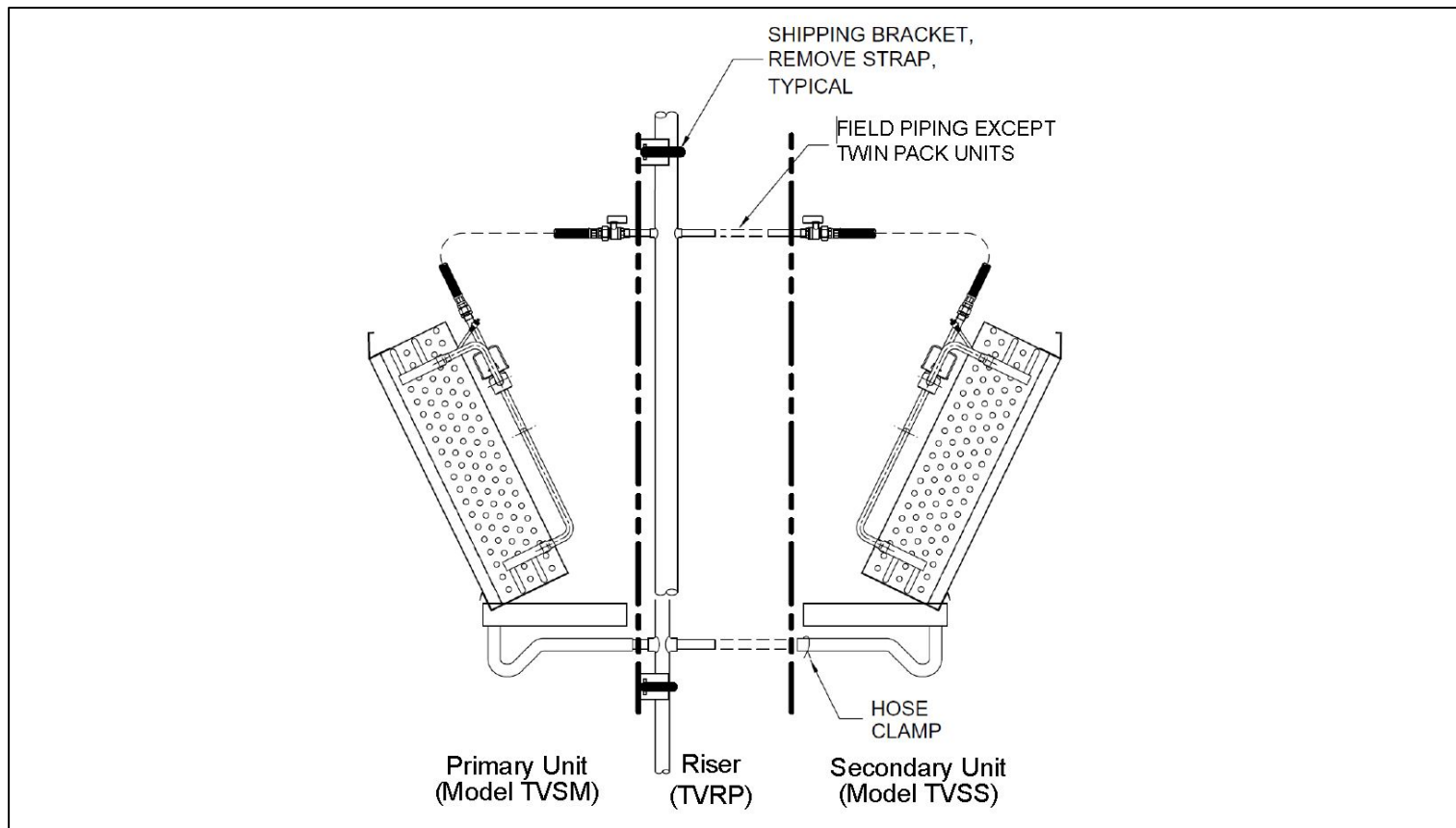
1. All risers and valves are shipped with protective caps. These caps should remain in place until installation of the unit.
2. Each valve is supplied with an O-ring that is bagged and shipped loose for field installation by others.
3. All risers are factory tested, and guaranteed to be leak free at the time of shipment.
4. Riser information shown shall reflect matching unit identification labels.
5. TVRS, Secondary Units will mirror image orientation and will be labeled in units.
6. Condensate P-Trap and hose clamps ships installed in unit for field connection to drain riser.

FACTORY INSTALLED RISERS

TVSR + TVRP RISER

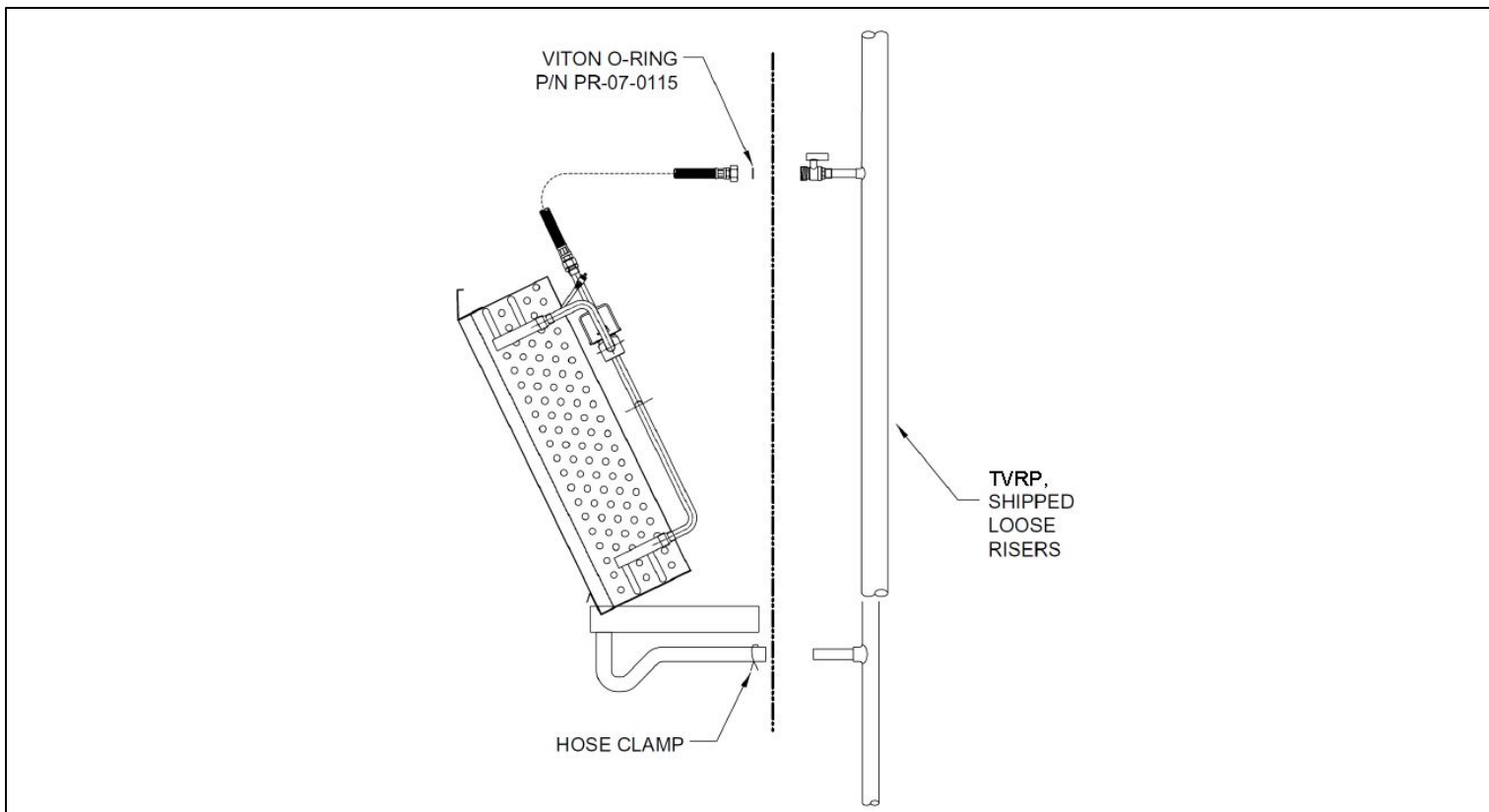


TVSM/TVSS + TVRP RISER

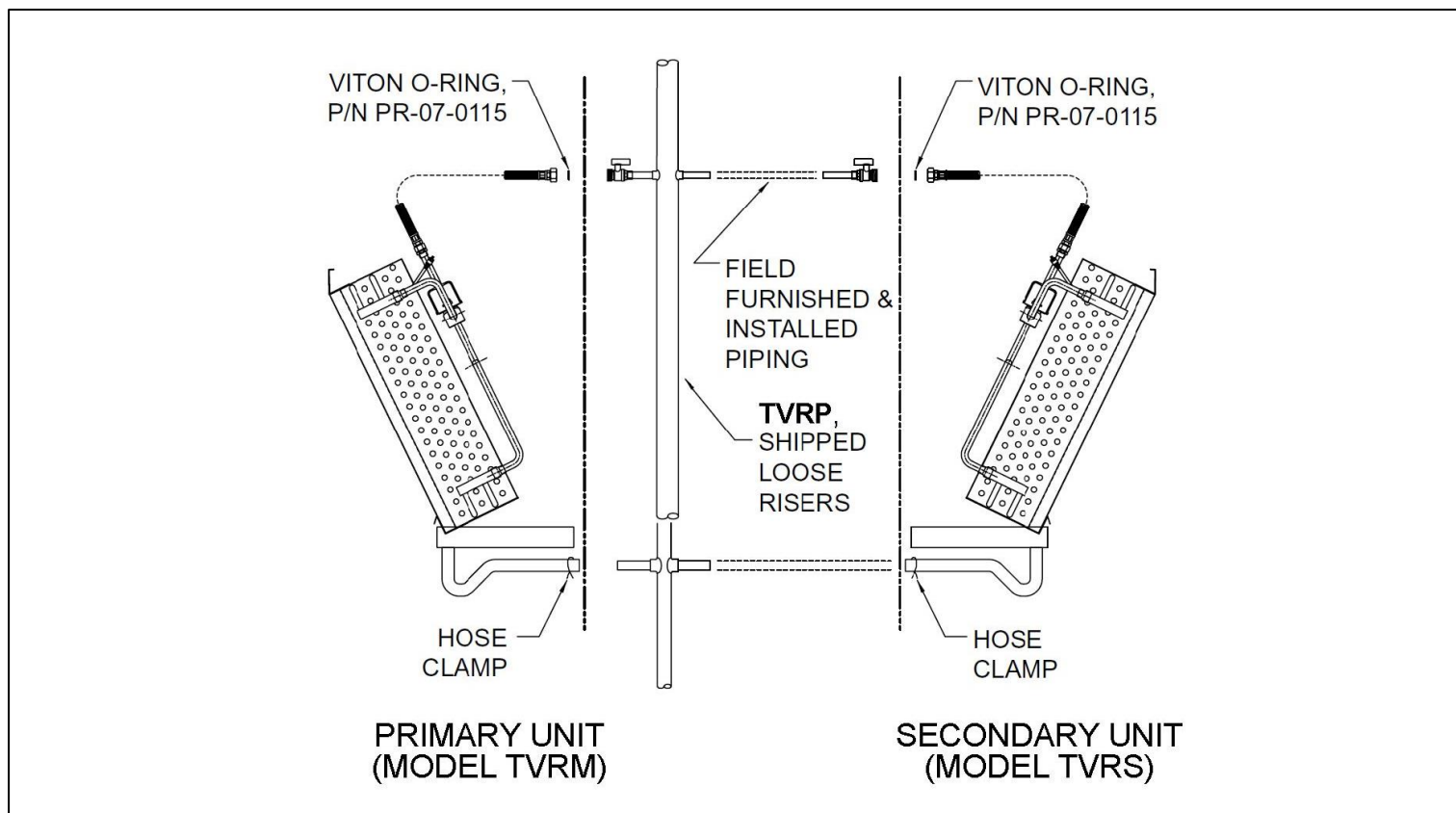


FACTORY FURNISHED -FIELD INSTALLED RISERS (Shipped Loose Riser)

TVSR/TVRM + TVRP RISER

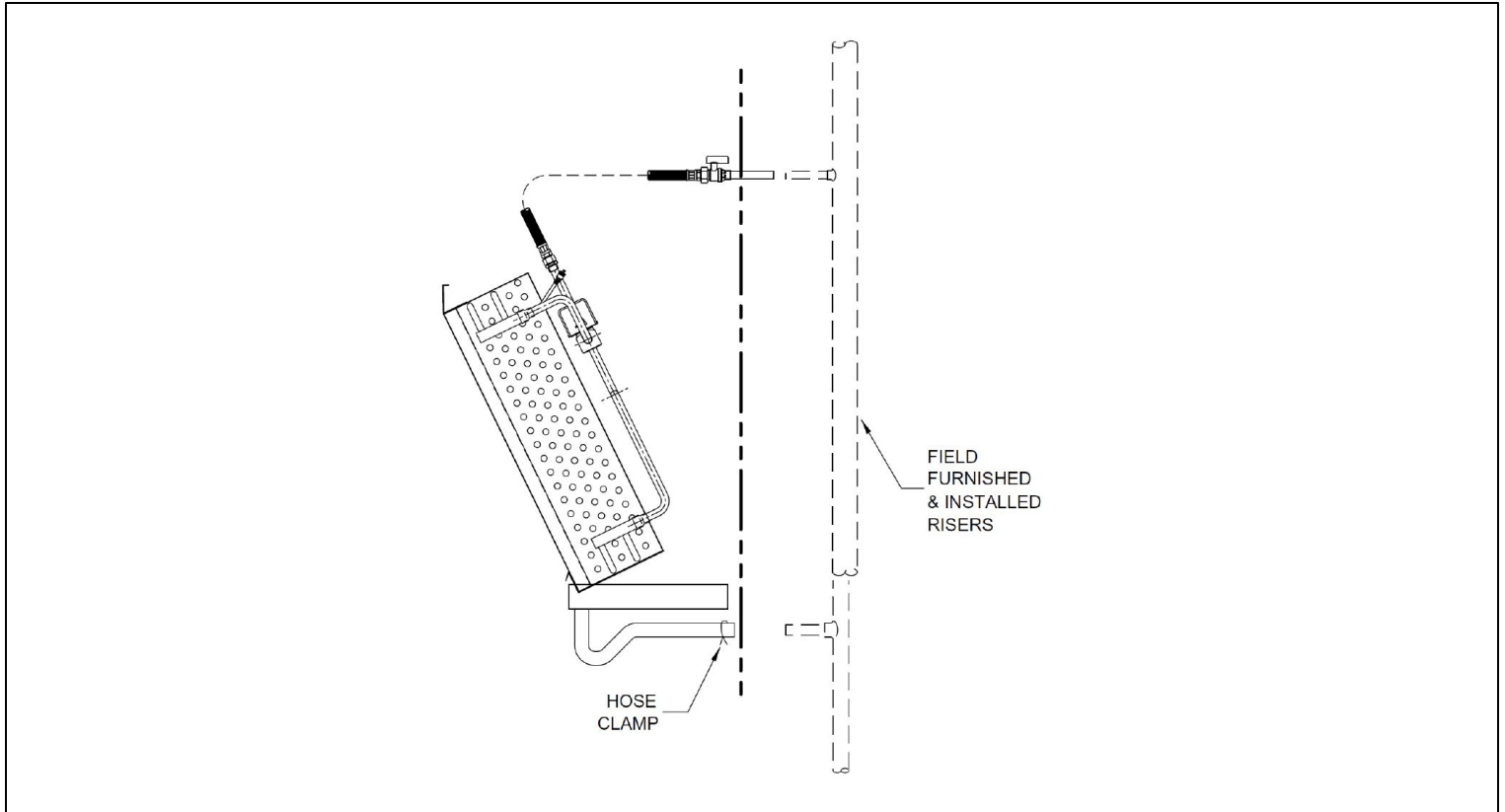


TVRM/TVRS + TVRP RISER

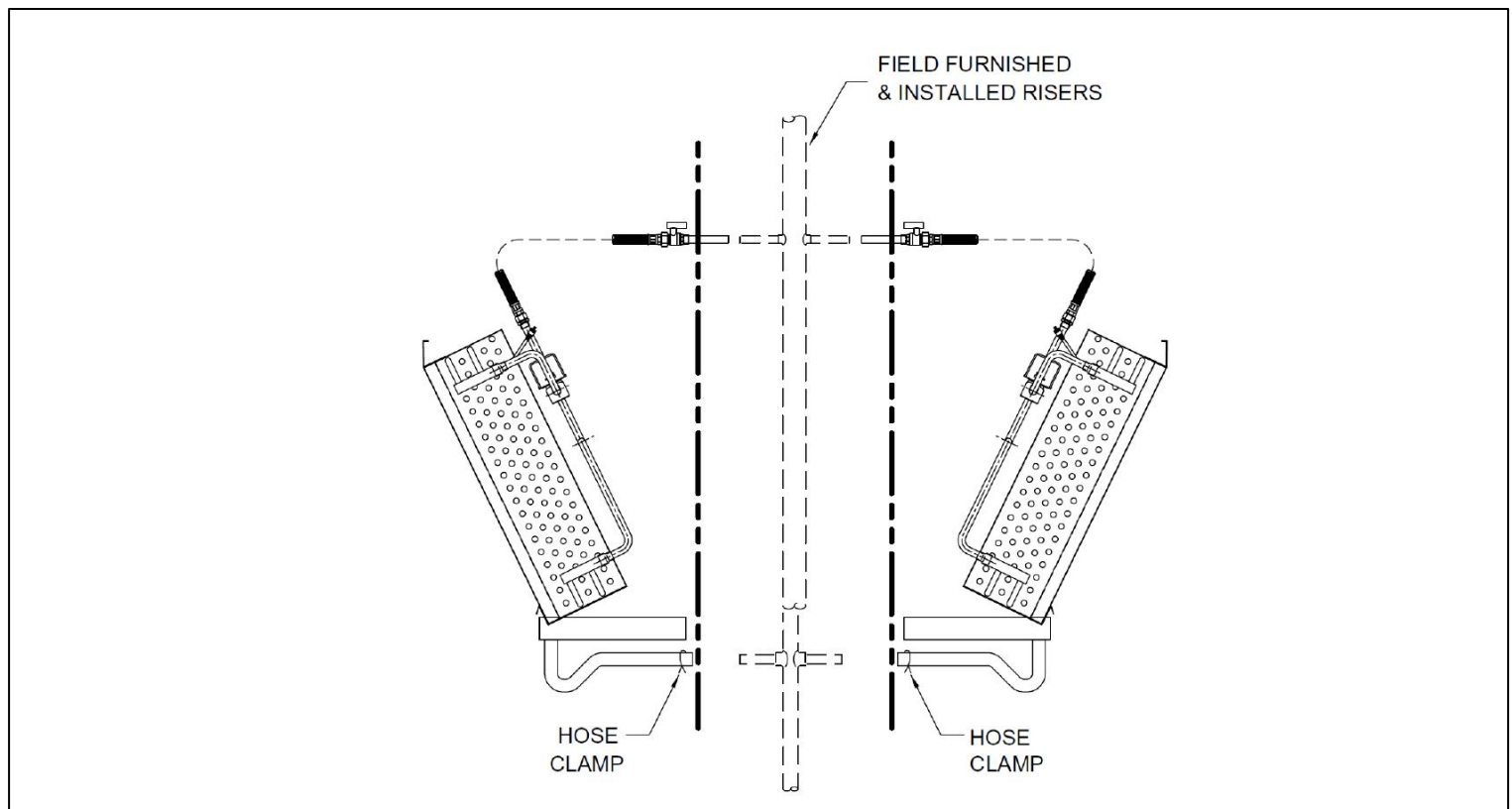


FIELD FURNISHED & INSTALLED RISERS

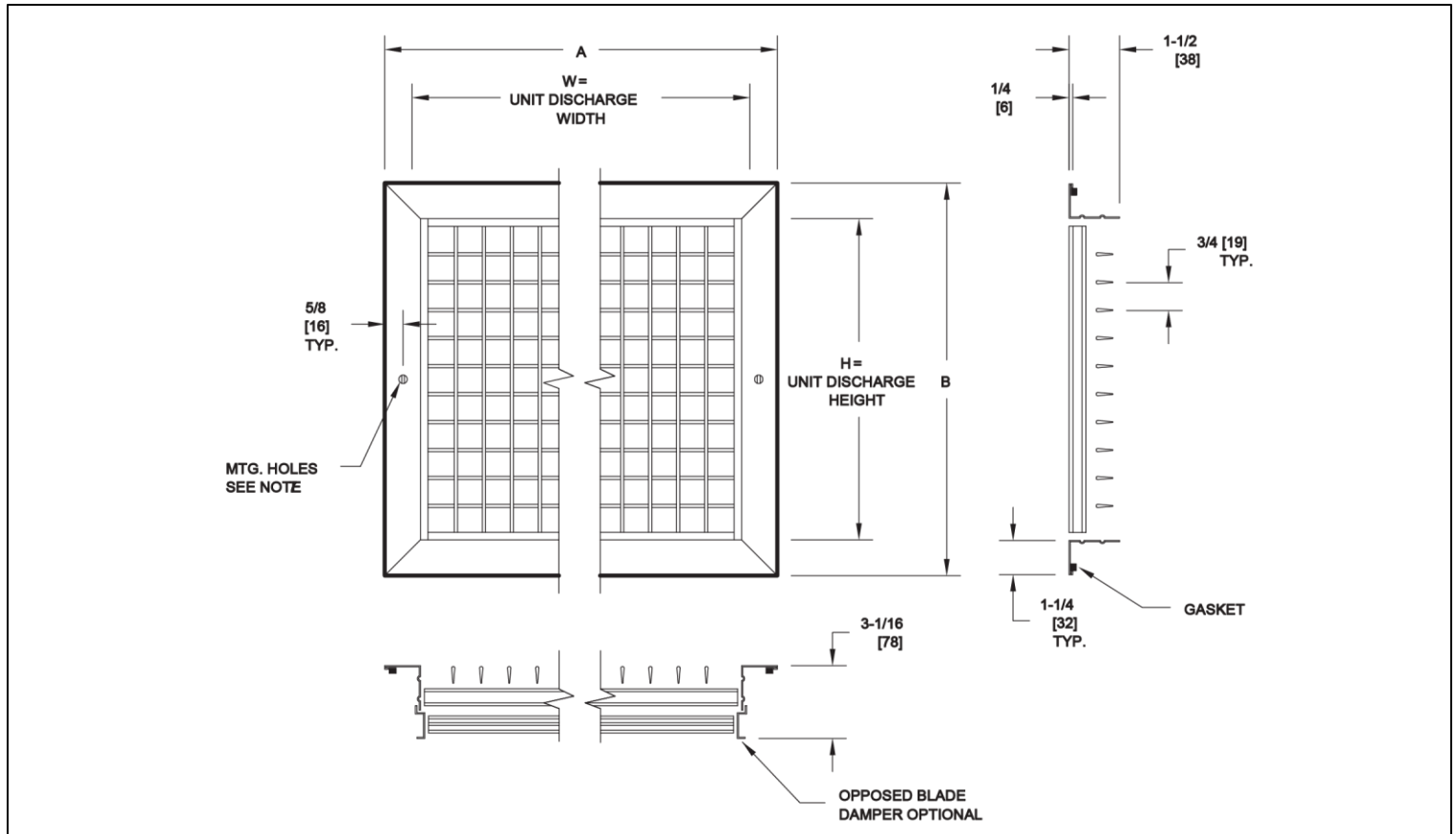
TVSR + Field Furnished Risers



TVRM/TVRS + Field Furnished Risers



DOUBLE DEFLECTION ALUMINUM DISCHARGE GRILLE



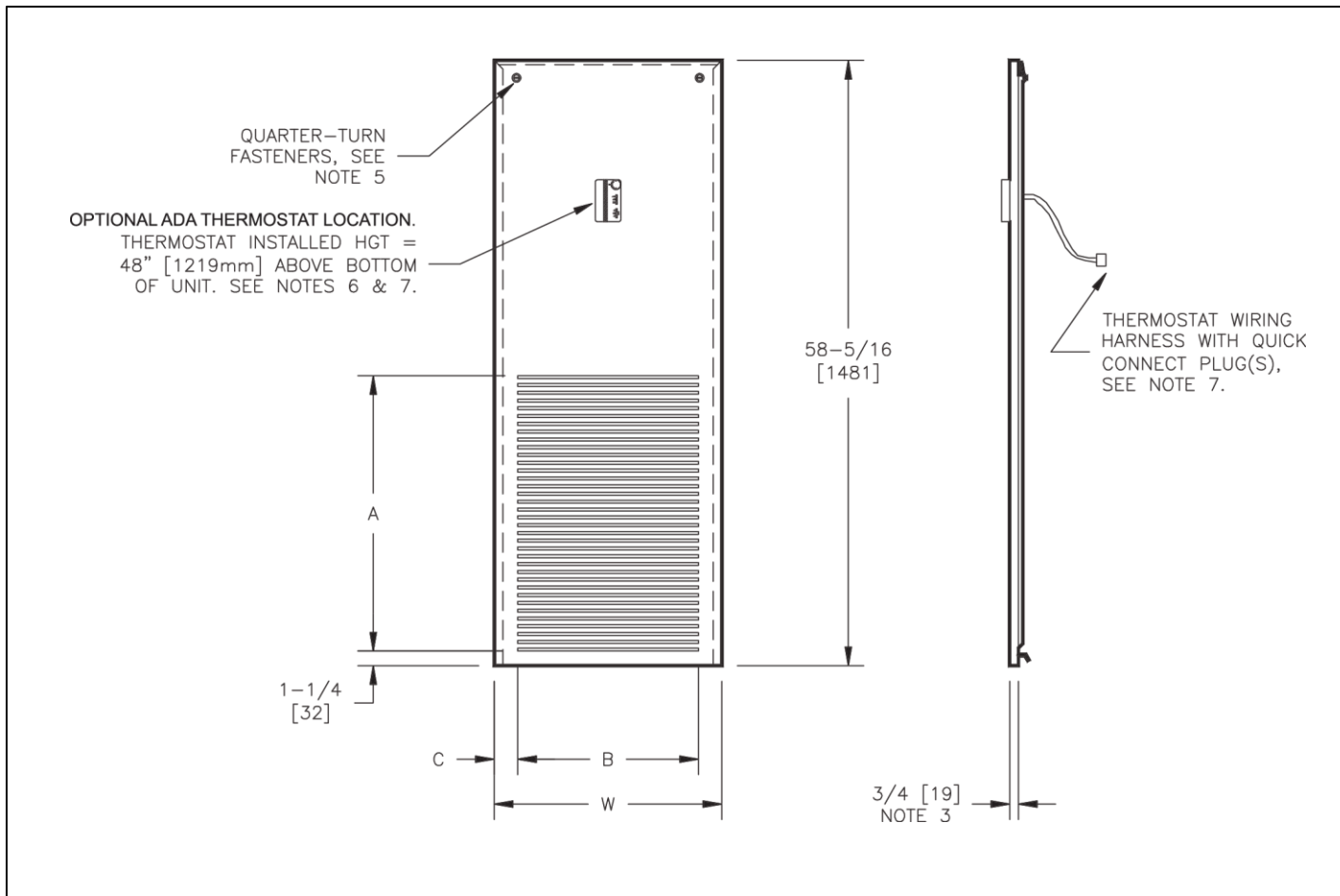
MODEL TYPE	Unit Size	CABT. HGT.	SINGLE/DOUBLE SUPPLY			
			W	H	A	B
VERTICAL HI-RISE & TANDEM Primary AND TANDEM Secondary SAME SIZE UNITS	03 or 04	STD	16	8	17 11/16	9 11/16
		79" CABT.	[406]	[203]	[449]	[246]
	06 or 08	STD	18	12	19 11/16	13 11/16
		79" CABT.	[457]	[305]	[500]	[348]
	10 or 12	STD	22	14	23 11/16	15 11/16
		79" CABT.	[559]	[356]	[602]	[398]

NOTES:

1. All dimension are Inches [mm]. Metric values are soft conversions.
2. All dimensions are $\pm 1/4$ [6mm] .
3. Discharge grilles are shipped loose for field installation.
4. Construction is aluminum frame and blades.
5. Standard finish is powder coat baked enamel. Color is "British White".
6. Installation of grille on adjacent unit sides may require furring one side away from unit to prevent interference of frames.
7. Mounting hardware included.

MODEL TYPE	Unit Size	CABT. HGT.	SINGLE/DOUBLE SUPPLY			
			W	H	A	B
TANDEM Primary AND TANDEM Secondary SAME SIZE UNITS	03 or 04	STD	18	12	19 11/16	13 11/16
		79" CABT.	[457]	[305]	[500]	[348]
	06 or 08	STD	18	8	19 11/16	9 11/16
		79" CABT.	[457]	[203]	[500]	[246]
	10 or 12	STD	22	14	23 11/16	15 11/16
		79" CABT.	[559]	[356]	[602]	[398]

STAMPED LOUVER FRONT RETURN AIR PANEL



Unit Size	W	A	B	C	Unit Size(8)	W	A	B	C
03/04	17 1/2 [445]	24 1/8 [613]	15 [381]	1 1/4 [32]	0306-0408	19 1/2 [495]	24 1/8 [613]	15 [381]	2 1/4 [57]
06/08	19 1/2 [495]	24 1/8 [613]	15 [381]	2 1/4 [57]	0310-0412	23 1/2 [597]	24 1/8 [613]	21 [533]	1 1/4 [32]
10/12	23 1/2 [597]	28 1/2 [724]	21 [533]	1 1/4 [32]	0610-0812	23 1/2 [597]	24 1/8 [613]	21 [533]	1 1/4 [32]

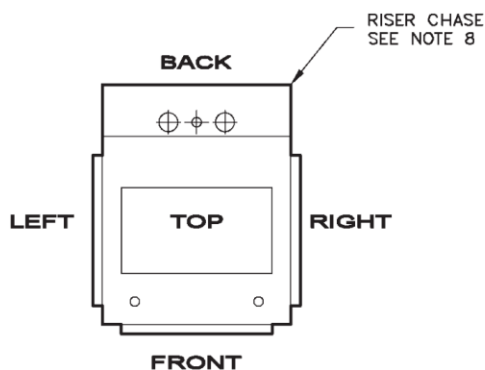
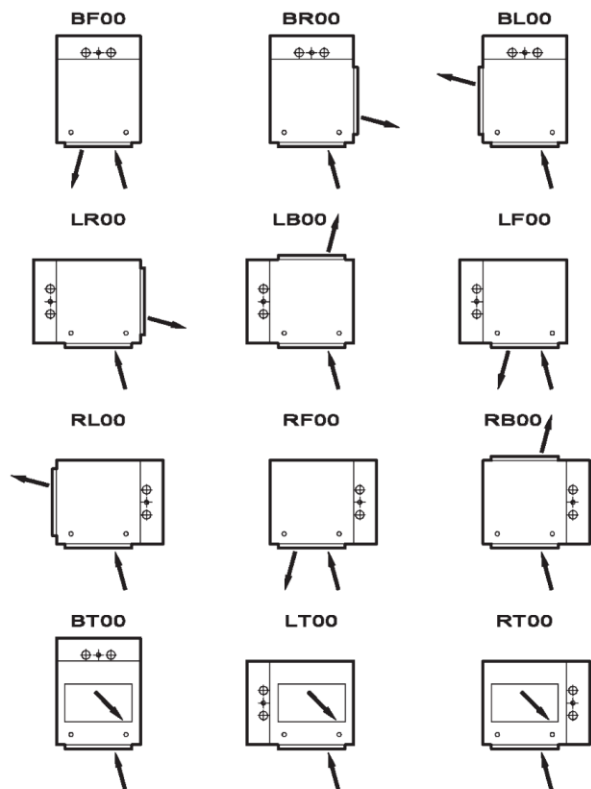
NOTES:

1. All dimension are Inches [mm]. Metric values are soft conversions.
2. All dimensions are $\pm 1/4$ [6mm] .
3. Installed wall panels extend approximately 3/4" [19mm] from finished wall surface.
4. Standard finish is powder coat baked enamel. Color is "British White".

5. Mounting hardware is factory installed. Refer to assembly instructions on page 48 for details.
6. Actual installed thermostat height is determined by unit installation method and may vary.
7. Thermostat is shipped loose for field installation by others.
8. Sizes shown are for "up-sized" cabinet units used in Twin Pack Primary & Secondary pairs.

ARRANGEMENT DRAWING

SINGLE SUPPLY



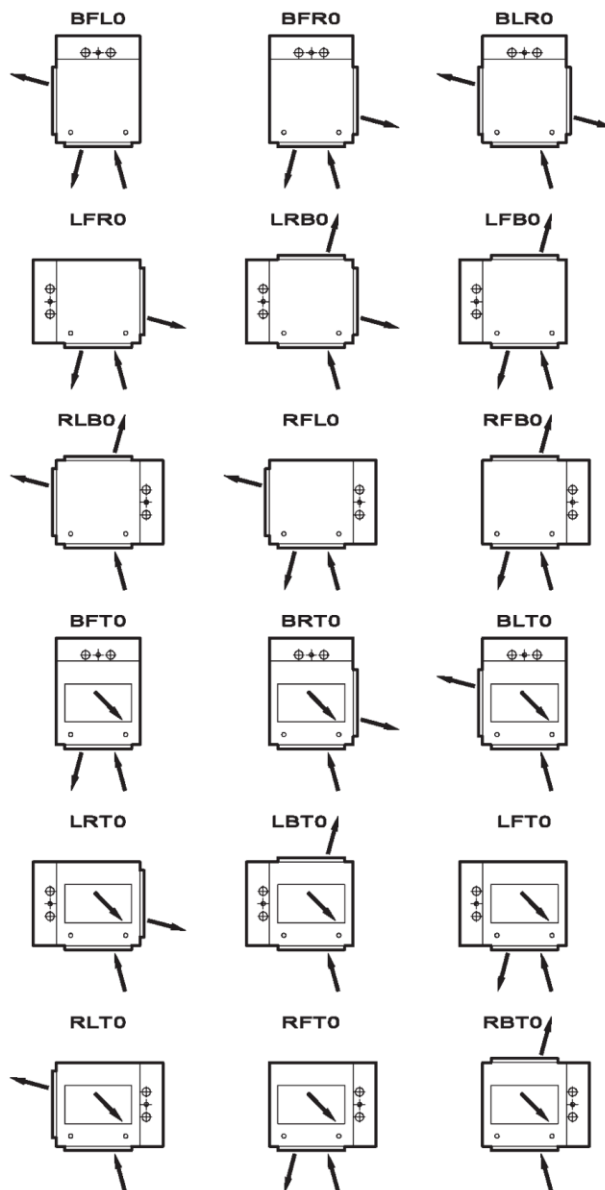
F = FRONT
T = TOP
B = BACK
L = LEFT
R = RIGHT
O = NONE



UNIT SIDE DESIGNATIONS

(UNIT ARRANGEMENTS TYPICAL FOR ALL MODELS)

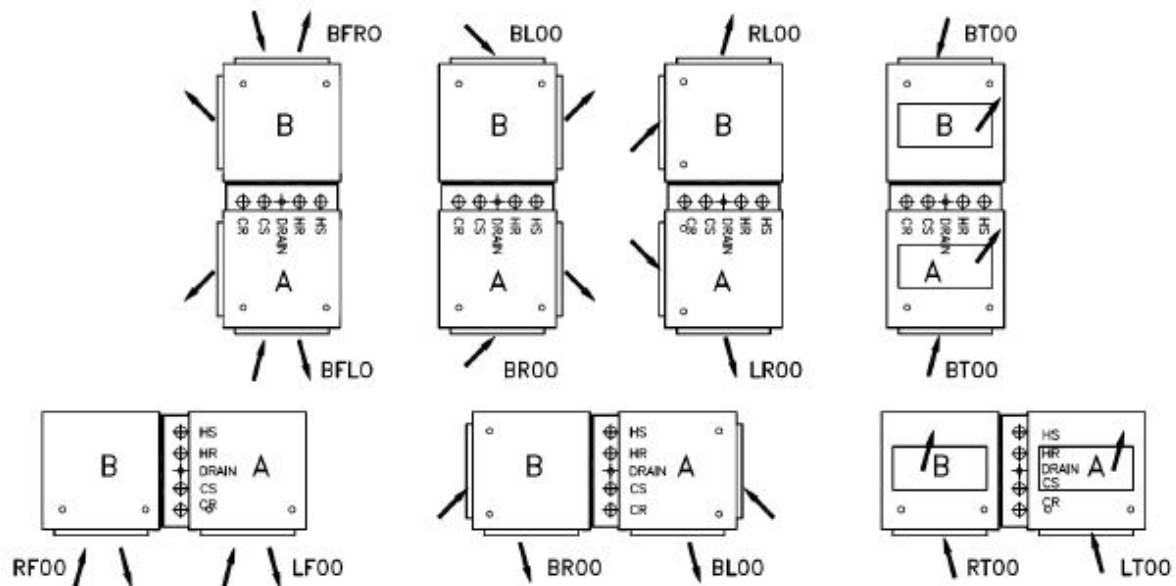
DOUBLE SUPPLY



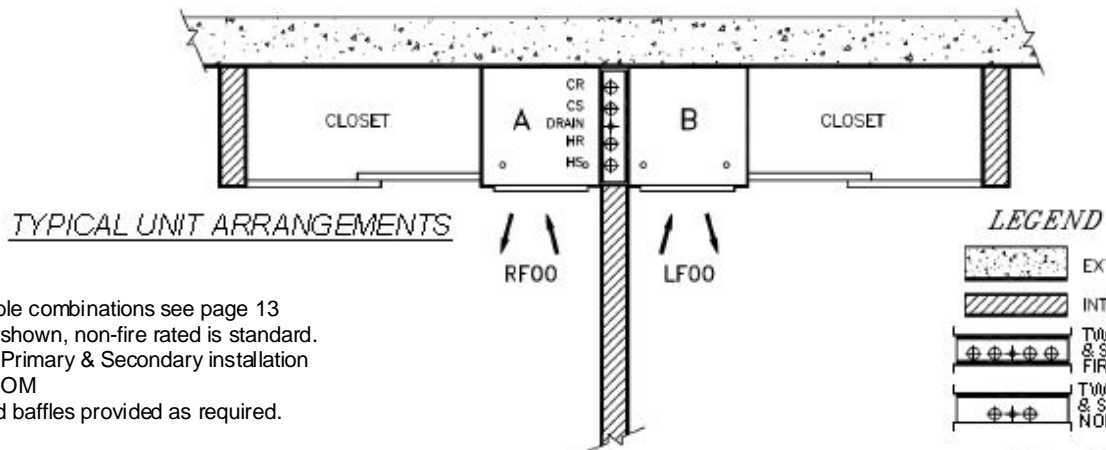
NOTES:

1. All drawings subject to change with prior notice.
2. Return air and access are always on front of unit.
3. Sight and sound baffle provided as required.
4. Sight and sound baffle not available on units with top supply outlet
5. Opposed blade damper is optional on one supply grille for units with double supply outlets.
6. This drawing applies to single and Primary units.
7. Fourth character indicates outside air location see page 46 for details.
8. Model TVSR unit show above with optional riser chase. Riser chase not available on TVRM units. TVSM units must be mated to TVSS units

TWIN PACK UNIT CONFIGURATION










TYPICAL UNIT ARRANGEMENTS
SHOWN ABOVE NON-FIRE RATED



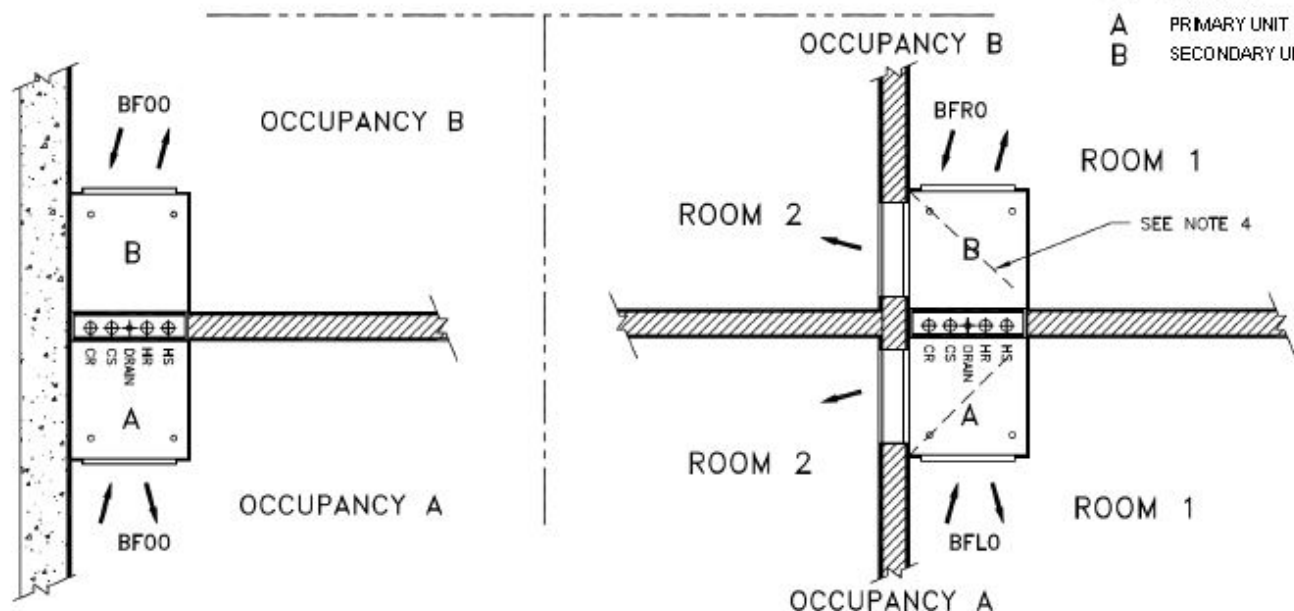
TYPICAL UNIT ARRANGEMENTS

LEGEND

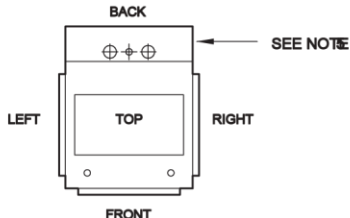
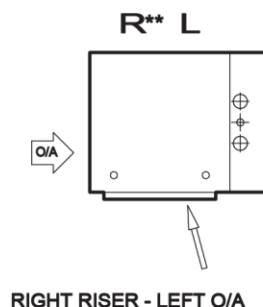
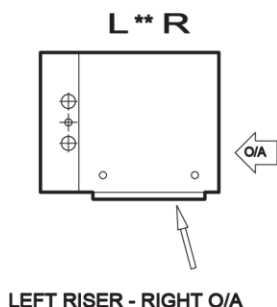
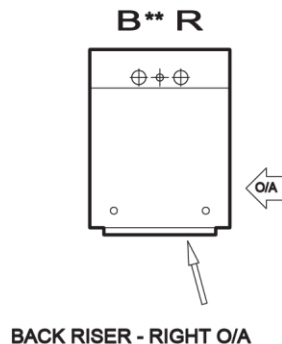
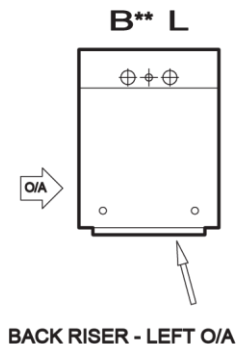
	EXTERIOR WALL
	INTERIOR WALL
	TWIN PACK PRIMARY & SECONDARY FIRE RATED
	TWIN PACK PRIMARY & SECONDARY NON-FIRE RATED
	AIR FLOW
	PRIMARY UNIT
	SECONDARY UNIT

NOTES:

- For other possible combinations see page 13
- Fire rated units shown, non-fire rated is standard.
- See Twin Pack Primary & Secondary installation instructions, in IOM
- Sight and sound baffles provided as required.



OUTSIDE AIR INLET DESIGNATIONS

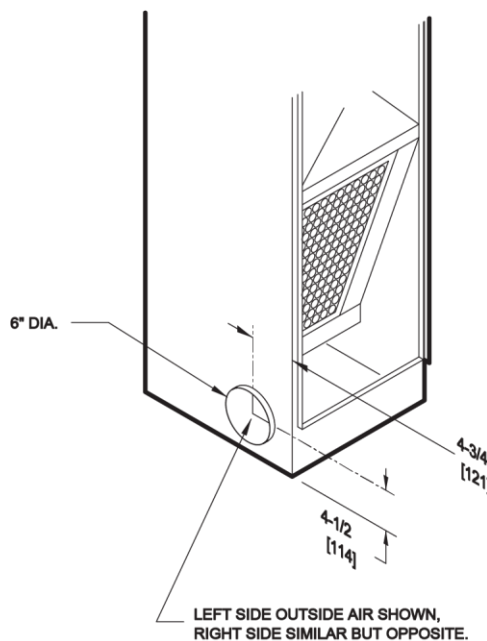


F = FRONT
T = TOP
B = BACK

L = LEFT
R = RIGHT
0 = NONE



UNIT SIDE DESIGNATIONS




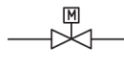




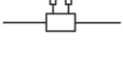





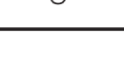


NOTES:

1. Return air and access are always on front of unit.
2. This drawing shows available return and outside air inlet locations.
3. See arrangement drawings for complete unit riser, supply, and return configuration details
4. Outside air inlet location is always last character in arrangement code.
5. TVSR unit with optional riser chase shown. Outside air location designations are typical for all TVS models.

General Notes - Piping Packages

1. All the packages and components described in this brochure are optional, extra cost features. Consult your Titus sales representative for details. Not all components are available on all unit models. See valve package code charts.
 2. All standard valve packages and piping components described in this catalog are for chilled and hot water applications. They may also be used with ethylene and propylene glycol solutions up to 50% concentration.
 3. VAV piping packages – as well as THB, THH, and TVB fan coil unit packages – are factory assembled and shipped loose for field installation and wiring. All TVS fan coil unit packages are factory assembled, installed, and wired.
 4. THB, THH and TVB unit valve packages are designed to mount directly onto the coil connections.
 5. Control valve actuators are removable, and may be serviced or replaced without removal of the valve body.
 6. Control valves are piped normally closed to the coil. For hot water coils, control valves are available normally open.
 7. 3-Way control valves are piped as mixing valves.
 8. All ball isolation valves are furnished with an adjustable memory stop feature and may be used as a balancing valve.
 9. When ordered, unions are installed at the water coil, and are available on all fan coil units except TVS. Unions must be ordered on both coils of 4-pipe units. Unions are not available separately.
 10. All TVS units include two flexible stainless steel braided hoses and ball isolation valves per coil. This hose/valve combination provides a "union" type connection to allow coil removal.
 11. Pressure/temperature (P/T) ports are located to monitor the pressure and temperature across the coil.
 12. Automatic fixed flow controls (FC, FCN, FCS) are available in flow (GPM) ratings as follows:
 1/2" = 0.5 to 4.0 GPM in 0.5 GPM increments
 >4.0 to 6.0 GPM in 1.0 GPM increments
 3/4" = 3.0 to 4.0 GPM in 0.5 GPM increments
 >4.0 to 12.0 GPM in 1.0 GPM increments
 1" = 5.0 to 10.0 GPM in 1.0 GPM increments
 >10.0 to 20.0 GPM in 2.0 GPM increments
 Individual coil GPM requirements must be specified at time of order.
 13. Component performance ratings such as Cv, maximum close-off pressure, operating temperature and pressure, are shown in Component Specifications.
 14. Valve and component performance ratings shown are maximum values. Appearance and actual ratings may vary with individual vendor and component size.
 15. Adjustable flow setter (AFS) is rated for full shut-off and replaces the return line ball isolation valve on all products except the TVS fan coil unit.
 16. 2-Pipe "change-over" units using a 2-way control valve and factory thermostat must be ordered with a E" "bleed" line to assure proper changeover thermostat (aquastat) operation. The E" "bleed" line is optional on 2-pipe "changeover" units with field provided thermostats.
 17. Some piping packages may extend beyond the unit drain pan and/or factory auxiliary drip pan. Requirements for field furnished and installed valve package and piping insulation must be determined by others on an individual application basis.
- The valve package piping and component details shown in this catalog are for standard valves and components. The suitability of all valve packages and components must be determined by others based on individual application requirements. Titus assumes no responsibility for selection and/or application of valve packages and components.**
- Modulating cooling valve control can increase part load space relative humidity. Titus does not encourage or endorse modulating valve control for fan coil cooling systems, and is not liable for high humidity problems that may result.**
- Modulating heating valve control may result in low leaving air temperatures while the valve reduces flow and as setpoint is approached.**
- Contact Titus for any requirements not shown in this catalog.

CONTROL DEVICE LEGEND

MANUAL BALL VALVE WITH MEMORY STOP (BVMS)		2-WAY CONTROL VALVE		3-WAY CONTROL VALVE	
FIXED FLOW CONTROL VALVE (FC)		AUTOMATIC CARTRIDGE FLOW CONTROL WITHOUT SCREEN		AUTOMATIC CARTRIDGE FLOW CONTROL WITH SCREEN	
ADJUSTABLE FLOW CIRCUIT SETTER (AFS)		BYPASS BALANCE VALVE (BPV)		PRESSURE-TEMPERATURE TEST PORT (PT)	
Y-STRAINER (Y-STR)		Y-STRAINER W/CLEANOUT VALVE (YCO)		UNION	
FLEXIBLE HOSE (FH)		AQUA-THERMOSTAT		SCHRADER FITTING	

STANDARD FEATURES

Construction

- AHRI 440 certified and labeled
- Galvanized steel construction
- 1/2" thick fiberglass insulation
- Integral filter rack with 1" throwaway filter
- Riser slot knockouts
- Supply air knockouts

Decorator Front Panel

- Stamped louver return air grille
- Durable powder coat paint
- Quarter-turn cam lock fasteners

Supply Air

- Single outlet
- Front, side or top outlets

Coils

- Cooling - 3 or 4 row chilled water
- Heating - 1 or 2 row hot water - reheat position
- 5 total rows of cooling and heating coils maximum
- 3/8" O.D. seamless copper tubes
- 0.012" tube wall thickness
- High efficiency aluminum fin surface for optimizing heat transfer, pressure drop and carryover
- Easily removable for service
- Manual air vents

Drain Pans

- Single wall, galvanized steel, externally insulated – fire retardant and anti microbial closed cell foam
- Positively sloped to drain connection
- 7/8" O.D. drain connection
- P-trap factory installed

Fan Assemblies

- Forward curved, DWDI centrifugal type blowers
- 115 volt, single phase, three tap PSC motors
- Quick disconnect motor connections
- Easily removable fan/motor deck for service

Electrical

- cETL listed for safety compliance
- Electrical enclosure with access door for field wiring terminations
- Terminal block for field connections

Electric Heat

- ETL listed as an assembly for safety compliance
- Integral electric heat assembly with removable elements for easy service
- Automatic reset primary and back-up secondary thermal limits
- Single point power connection

OPTIONAL FEATURES

Construction

- Primary/Secondary arrangements
- Foil faced fiberglass insulation
- Elastomeric closed cell foam insulation
- Eco-Shield insulation
- Eco-Shield Foil Face insulation
- 1" pleated filter (MERV 8)
- Manual or motorized outside air damper
- Blower shield

Decorator Front Panel

- Recessing frame • Full faced aluminum grille

Supply Air

- Double deflection discharge grille(s)
- Double outlets
- Sight and sound baffles for double outlet units
- Opposed blade damper

Coils

- Automatic air vents • Stainless steel coil casings

Drain Pans

- Stainless steel construction with external insulation
- Removable for cleaning

Fan Assemblies

- 208-230 & 277 volt, single phase, three tap PSC motors
- ECM motors

Electrical

- SCR fan speed controller
- Fan relay packages
- Silent solid state fan relays
- Toggle disconnect switch
- Condensate overflow switch (drain pan)
- Main fusing
- Unit and remote mounted three speed fan switches

Electric Heat

- Manual reset secondary thermal limit
- Silent relay/contactors
- Door interlocking disconnect switches
- Main fusing

Piping Packages

- Factory assembled and installed
- 1/2" 2-way and 3-way normally closed, two position electric motorized valves
- Stainless steel braided hoses (threaded swivel connections) for thermal expansion including isolation ball valves with memory stop
- Fixed and adjustable flow control devices
- P/T ports and Y-strainers
- Modulating control valves
- High pressure close-off actuators (50 PSIG max)

Thermostats

- Analog, digital display, or programmable
- Unit and wall mounted
- 2 and 4-pipe control sequences
- Automatic and manual changeover
- Integral three speed fan switches
- ADA mounting location on front panel or unit sides

Risers

- Type-M or L copper with swaged connections
- 3/4" to 3" diameters
- 1/2" and 3/4" closed cell insulation
- Type-M copper condensate riser
- Riser extensions • Riser cover
- Ship in advance risers