

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Pipe, duct, and equipment hangers, supports, and associated anchors.
- B. Equipment bases and supports.
- C. Sleeves and seals.

1.2 RELATED WORK

- A. Section 230548 - Vibration and Seismic Controls for HVAC Piping and Equipment
- B. Section 230719 - HVAC Piping Insulation

1.3 REFERENCES

- A. ANSI/ASME B31.1 - Power Piping.
- B. NFPA 101 - Life Safety Code.

1.4 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 013300.
- B. Indicate hanger and support framing and attachment methods.

PART 2 PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

- A. Hangers for Pipe Sized ½ to 1-1/2 Inch: Malleable iron, adjustable swivel, split ring, Grinnell figures 67, 69, 97, 104, 108, CT-109, CT-69.
- B. Hangers for Pipe Sizes 2 to 6 Inches: Carbon steel, adjustable, clevis, Grinnell figures 138, CT-65, 260, 300 or 590.
- C. Hangers for pipe sizes 8" and over: carbon steel, adjustable roller type. Grinnell figures 171, 175, 177, 178, 271, 274 or 275.
- D. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- E. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook, Grinnell figure 126.
- F. Wall Support for Pipe Sizes to 4 Inches and Over: Welded steel bracket and wrought steel clamp.
- G. Vertical Support: Steel riser clamp, Grinnell figures 261 or CT-121.

- H. Floor Support for Pipe Sizes to 4 Inches and All Cold Pipe Sizes: Cast iron adjustable pipe saddle, locknut nipple, floor flange, and concrete pier or steel support, Grinnell figure 264.
- I. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- J. Shield for Insulated Piping 2 Inches and Smaller: 18 gauge galvanized steel shield over insulation in 180 degree segments, minimum 12 inches long at pipe support.
- K. Shield for Insulated Piping 2-1/2 Inches and Larger: Type 2 or 3 insulation insert between pipe and hanger pipe. Provide 18 gauge galvanized steel shield between hanger and insert, in 180 degree segment, 12" long.
- L. Shields for Vertical Copper Pipe Risers: Sheet Lead.
- M. Pipe alignment guides: Carbon steel, with one coat of primer paint for rust protection, complete with housing and spider assembly. Similar to Grinnell figure 256 or Advanced Thermal Systems Model HL or CL. Select guides suitable for 1200 degrees F for use on engine exhaust pipe, and provide thermal barrier equal to Advanced Thermal Systems Model CL for guides used on chilled water piping.

2.2 HANGER RODS

- A. Steel Hanger Rods: Threaded both ends, threaded one end, or continuous threaded. Rods located outdoors or in Boiler Room shall be galvanized or chrome plated.

2.3 CONCRETE INSERTS

- A. Inserts: Malleable iron case or galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.4 SLEEVES

- A. Sleeves for Pipes Through Non-fire Rated Floors: Form with 18 gage galvanized steel.
- B. Sleeves for Pipes Through Fire Rated and Fire Resistive Floors and Walls, and Fireproofing: Prefabricated fire rated sleeves including seals, UL listed.
- C. Sleeves for Round or Rectangular Ductwork: Form with galvanized steel.
- D. Fire Stopping Insulation: Glass fiber type, non-combustible.
- E. Caulk: UL listed fire stop sealant, 3M fire barrier CP 25WB, CP25N/S or CP255/L as required for sealing penetrations, floors and fire rated walls.

2.5 FABRICATION

- A. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation of supported pipe.
- B. Design hangers to allow for adjustment without disengagement of supported pipe.
- C. Provide copper plated hangers and supports for copper piping.

- D. Provide galvanized supports for all supports and hangers located in the Mechanical Room or outdoors.

2.6 FINISH

- A. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

2.7 FIRE STOP SYSTEMS AND SEALANTS

- A. Refer to Architectural Division 07 - Thermal and Moisture Protection, for sealing and fire stopping of mechanical penetrations through walls, floors, roofs or any other barrier.

PART 3 EXECUTION

3.1 CONCRETE INSERTS

- A. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- B. Where concrete slabs form finished ceiling, provide inserts to be flush with slab surface.
- C. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.2 PIPE HANGERS AND SUPPORTS

- A. Support horizontal piping as follows:

<u>PIPE SIZE</u>	<u>MAX. HANGER SPACING</u>	<u>HANGER DIAMETER</u>
2 to 1-1/4 inch	6'-0"	3/8"
1-1/2 to 2 inch	7'-0"	3/8"
2-1/2 to 3 inch	8'-0"	2"
4 to 6 inch	10'-0"	5/8"

- B. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
- C. Place a hanger within 12 inches of each horizontal elbow.
- D. Use hangers with 1-1/2 inch minimum vertical adjustment.
- E. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.
- F. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
- G. Support riser piping independently of connected horizontal piping.

- H. Pipe hangers shall be capable of supporting the pipe in all conditions of operation. They shall allow free expansion and contraction of the piping, and prevent excessive stress resulting from transferred weight being induced into the pipe or connected equipment.
- I. Wherever possible, pipe attachments for horizontal piping shall be pipe clamps.
- J. Wherever possible, structural attachments shall be beam clamps, or rigid steel members embedded in poured concrete slabs, column, beams or walls.
- K. All rigid hangers shall provide a means of vertical adjustment after erection.
- L. Contractor shall coordinate with Section 230548, Vibration and Seismic Controls for HVAC Piping and Equipment, for hangers requiring vibration control.
- M. Hanger rods shall be subject to tensile loading only. At hanger locations where lateral or axial movement is anticipated, suitable linkage shall be provided.
- N. Hangers shall be designed so that they cannot become disengaged by movements of the supported pipe.
- O. Supports, guides and anchors shall be so designed that excessive heat will not be transmitted to the building steel.
- P. Pipe hangers and supports that are in direct contact with piping shall be of approved materials that are compatible with the piping and that will not promote galvanic action.

3.3 SLEEVES

- A. Extend sleeves through floors one inch above finished floor level. Caulk inside of sleeves full depth and provide floor plate, caulked to make water tight.
- B. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with fire stopping insulation and caulk seal. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- C. Install chrome plated steel escutcheons at finished surfaces.
- D. Provide sleeves for all piping and ductwork through all walls and floors.

END OF SECTION 230529