

Facilities Management

Facilities Projects

Campus Services Building 1945 Wheeling Street Mail Stop F418 Aurora, Colorado 80045 (303) 724-0623

ADDENDUM 3

November 29, 2023

Perinatal Research Facility – Power, HVAC, Boiler Upgrades / PN 23-110889

QUESTIONS / RESPONSES:

- 1. Are liquidated damaged applicable to this project? If yes, what amount? <u>Response: No. There are no liquidated damaged applicable to this project.</u>
- 2. Will bid opening be public?

Response: Bid opening will be conducted over a web conference meeting (i.e.; Zoom, MS Teams). Bidders that submit bids will receive an invite to attend.

- 3. Are bid day deliverables only to include the Bid Form and Bid Bond? <u>Response: Yes, unless there are alternates included in the bid documents. If</u> <u>alternates are included, provide the Alternate Price Form with the deliverables.</u>
- Is Owner responsible for commissioning of systems?
 Response: Yes, the Owner will contract separately for commissioning of systems.
- 5. Will mechanical contractors be permitted to bid this project as a Prime Contractor?

Response: No. The university is only seeking "General Contractors" that can manage this project in a Design/Bid/Build contractual relationship. Mechanical contractors will need to bid the mechanical scope of work to one of the interested general contractors that is pursuing this project.

6. Will Owner procure the custom air handler directly to help with overall schedule due to approximate 30-35 week lead-time following approved submittals?

Response: No. The university wants to keep responsibility for procuring this equipment with the selected general contractor and mechanical subcontractor. The design team is exploring other custom air handler manufacturers with shorter lead times and will update the bid documents with this information by separate addendum. 7. Will GC be responsible for any temporary cooling with the air handler off-line?

Response: The university will provide the temporary cooling units as required during construction. Coordinate with the CU Building Maintenance and Operations (BMO) representative (Dan Dix) during phase planning for required locations in PRF for temporary cooling.

8. What are the parking fees that GC/subcontractors should include in their pricing?

Response: The university has several parking permit options available. The closest university parking lot to the PRF project site is the "east rock lot". The cost per vehicle to park in the east rock lot is \$37 month. More information is available on the CU Anschutz parking website listed below:

https://www.cuanschutz.edu/offices/facilities-management/parkingtransportation-maps/parking/permit-parking

9. Can a job-walk for interested sub-contractors be scheduled?

Response: The university is open to schedule one (1) additional job walk (prior to bid) with all interested sub-contractors if they can attend on the same date and time. Please contact the CU project manager to arrange this.

10. Is this project tax exempt?

Response: The University of Colorado is exempt for State Sales/Use Tax only. The contractor for this project can obtain sales tax exemption forms for some construction material purchases, depending on the location (county) where the materials are purchased. Note that Denver does not extend sales tax exemption to construction contractors. Please refer to the information included in Section 00 73 80 of the project specifications.

11. Does GC need to include any permit/plan review costs?

Response: No. The plan review/permit process for this project is handled internally, since CU Anschutz is the Authority Having Jurisdiction (AHJ).

12. Who is the manufacturer/brand of the existing electrical panels in this facility? Fire Alarm panel?

Response: Electrical Panels are manufactured by Square D. Fire Alarm panel is manufactured by Silent Knight.

13. At the job walk it was mentioned that the drywall ceilings may be a double-layer. Has this been confirmed?

Response: Per General Notes on Sheet A-1.0, there is gypsum board installed on the bottom on the roof structure to form a rated roof-ceiling assembly. The gypsum board ceiling in the restroom and locker room areas is suspended below this assembly. 14. Is any relocation of fire alarm or fire suppression expected?

Response: Sprinkler heads in existing ceiling to be protected during construction. Fire alarm devices may need to be temporarily removed and reinstalled as required based on ceiling removal.

15. What is the existing flooring at the floor drain? Assuming this will need to be patched/repaired?

Response: Floor drains shall be provided and installed by the custom air handler manufacturer. This shall not be field installed. Extent of work to include modifying sanitary pipe routing as shown in isometric for new connection only.

16. Is new 4" concrete pad required at the pump, or is this existing? If new, please provide details for reinforcement, etc.

Response: Contractor to provide new precast concrete pad for pump. Remove and retain existing pump and spring isolators for reuse.

17. Is the floor in the mechanical room epoxy or sealed concrete?

Response: Floor in the mechanical (boiler) room located as part of the penthouse unit (PH-1) is provided by the custom air handler manufacturer. We do not anticipate any floor work in the main mechanical room on the first floor.

18. Please provide detail for lintels at new louver.

<u>Response:</u> Combustion air louvers shall be provided and installed by the custom air handler manufacturer. This shall not be field installed.

19. Can Owner provide an allowance for all GC's to carry to cover potential costs for patching and painting of drywall along the new pipe chase route?

Response: Please, include this cost in base bid amount.

- 20. Is there a specific roofer required to be used? <u>Response: No. However, the roofer selected for this project will need to maintain</u> existing roof warranties for building, if they are still in effect.
- 21. Is there a specific fire alarm and/or fire suppression contractor that needs to be used? <u>Response: This information is in CU Standards. See section 28 31 00 part 2.2.</u>
- 22. Given this is a lab space, temp protection will be important. Does GC need to include provisions for negative air and containment (ICRA protocols)?

Response: Yes, protection to isolate and control dust, debris and areas of the building that will remain occupied during construction shall be provided in accordance with section 01 50 00.

23. Spec section 23 70 00 – Central HVAC Equipment & 23 76 00 – Evaporative Air-Cooling Equipment appear on the Table of Contents, but no .pdf section exists. Please provide.

Response: See Addendum 1 specification changes summary. Section 23 70 00 is no longer included. Section 23 76 00 is now included.

24. Please provide additional information on CRT-1, SD-1, WS-1, and CTP-I that are shown to be included in the Boiler Skid Package System per the Steam Boiler Equipment Schedule Remark 6.

Response: Cut sheets for all components of the boiler skid package have been included with this addendum (see attached Supplemental Info sheets). In addition, the Steam Boiler Equipment Schedule remarks have been revised to include all associated manufacturers and model numbers for reference.

25. Please confirm there are no structural modifications required for installation of new rooftop equipment.

Response: No structural modifications will be required for replacement of unit.

26. Please provide information on what parts of the building are to maintain normal operation while the construction project is underway. What parts of the building does PH-I serve?

Response: Sheet M-1.0 now includes a key plan outlining the areas of the building served by PH-1.

27. Are there specific airflow adjustments needing to be made or pressure cascades that need to be maintained to other parts of the building after the existing PH-I is turned off?

<u>Response:</u> No, all fume hoods and any exhaust requirements in area served by PH-1 are to be temporarily suspended during replacement of PH-1. A pre and post balance report shall be obtained to rebalance airflows from PH-1 as indicated.

28. Are there certain times of year when the building will be unoccupied and occupied with live animals that needs to be considered? Is there a certain window of time this project must be completed by?

Response: This information was discussed at the 11/6/2023 pre-bid conference and tour. The PRF facility will be unoccupied with live animals from approximately July 08, 2024, through September 30, 2024. This schedule information is also noted on the bid form. The new roof-top custom air handling unit and replacement boiler work needs to take place during this schedule window. Other exterior work, such as the emergency power upgrades can begin earlier, but still needs to be completed by September 30, 2024.

29. Are there any vaccination or PPE requirements over and above the CU Anschutz campus standards?

<u>Response: Yes, this information was discussed at the 11/6/2023 pre-bid conference</u> and tour. Please also refer to supplementary information included in Addendum #1.

30. Please confirm if there are seismic requirements for the newly installed equipment/piping/ductwork associated with this project.

Response: There are no seismic requirements for newly installed equipment, piping, or ductwork associated with this project.

- 31. Please confirm there are no liquidated damages or damages for delay for this project. Response: See response to question 1 above.
- 32. Will there be any temporary heating or temporary cooling requirements while PH-I is being replaced?

Response: See response to question 7 above.

What are the assumed extents of work related to the acoustic ceilings at gridlines 0.1
 2 and GL A-B? If the extents of work can be defined on Sheet A-1.0, it would help subcontractors with pricing.

Response: See attached revised sheet A-1.0.

34. Are there any specific rules/protocols for the final cleaning of the space?

Response: Final cleaning shall be performed per Closeout Procedures as indicated in section 01 77 00.

35. Please provide detail(s) for the fire resistant roof ceiling assembly.

Response: See attached sheet A-7 for original assembly information. Roof Ceiling assembly is similar to UL P519, also attached.

36. Shall GC's assume the new mechanical equipment curb will be of similar size to the existing and that roofers will only need to flash new curb(s) and no other roofing scope is required?

Response: New curb is similar to existing curb. Dimensions of the original and new curb are indicated on sheets MD-2.0 and M-2.0. Refer to sheet A-2.0 for roofing scope required.

37. Please confirm the extra stock required for this project per Section 01 78 46.

Response: Extra stock required shall be based on materials utilized for this project. Refer to 01 78 46 for quantities.

38. Please provide the specification for the existing ceiling tiles size/pattern.

Response: Per Specification section 09 51 13, ceiling tiles are to match existing. Submittals to include physical samples for review by design team and Owner.

39. Shall GC's include costs for cleaning of the HVAC system(s) throughout the building?

Response: No, cleaning of the existing duct system is not part of this scope of work.

- 40. Please provide specifications/thicknesses for asphalt & concrete to be patched. <u>Response: Thickness of asphalt is believed to be 3-4" thick. Thickness of concrete is</u> believed to be 5" thick. All thicknesses need to be verified in the field.
- 41. Is boring (in lieu of open cutting) the conduit to the generator an option? <u>Response: Yes, boring new conduit from generator is an acceptable option.</u>
- 42. Is the landscaped area to be repaired just sod, or are there plantings and mulch as well?

Response: No plantings or mulch required for the area of work shown for conduit run from generator.

43. Are there any existing underground utilities (water, sanitary etc.) between the building and generator?

Response: It is unclear if existing underground utilities cross the proposed pathway. Utility locates were not completed as part of the design process. Contractor to provide utility locates prior to any demolition. Proposed routing attempted to avoid crossing existing utilities.

44. Who is the building specific controls contractor?

Response: Controls shall be provided by Siemens Industry, Inc. Contact Duane Ranski at Duane.ranski@siemens.com ; (973) 703-2365 for pricing.

45. Please confirm the formstack address for bid submission. The link provided in the RFP is returning an error message.

Response: Please use the following web address for bid submission:

https://ucdenverdata.formstack.com/forms/rfp_rfq_submission

46. Provide selection for new Air Separator AS-I. This item is not shown as existing or being reused.

Response: The existing air separator shown to be removed in the boiler room will not be replaced. The new AS-1 shown on M-3.1 has been removed. An existing air separator located in the existing hydronic boiler room will serve the entire hydronic system.

47. Provide selection for new Blowdown Separator. (This item is being requested as part of the skid but it is now shown on a skid on the drawings)

Response: See response to question 24 above.

48. Provide selection for new Water Softener WS-I and Tanks. (This item is being requested as part of a skid but it is not shown on a skid on the drawings)

Response: See response to question 24 above.

49. Provide selection for new Condensate Return Tank CRT-I. (This item is being requested as part of a skid but it is not shown on a skid on the drawings)

Response: See response to question 24 above.

50. Provide selection for new Chemical Treatment Tank CTP-I. (This item is being requested as part of a skid but it is not shown on a skid on the drawings)

Response: See response to question 24 above.

51. Provide routing, size and isometric for existing sanitary piping that will connect to new Floor Drains, as these will have a new location.

Response: Isometric diagram has been added to M-0.3 for clarity. Additionally, existing and new sanitary pipe routing is shown on M-1.0, matching isometric diagram. FD serving the heat exchanger section of PH-1 will remain in location shown on M-3.0. Two (2) FD locations in the boiler room will be relocated as shown on M-3.0. One (1) FD that was next to WS-1 has been removed.

CHANGES TO DRAWINGS:

(see revised drawing sheets which are attached to this addendum)

- 1. M-0.1: Remark 6 in the Steam Boiler Schedule updated with manufacturer and model for skid package components.
- 2. M-0.3: Sanitary Piping Isometric Diagram added.
- 3. M-1.0: Key plan added, existing and new sanitary routing matching sanitary piping isometric diagram added, drawing notes added.
- 4. M-3.0: Floor drain next to WS-1 removed, drawing notes added to reflect remaining floor drains being tied into existing sanitary,
- 5. M-3.1: AS-1 removed.
- 6. A-1.0 Area of ceiling work indicated.

CHANGES TO SPECIFICATIONS:

No changes.

CHANGES TO SCHEDULE:

No changes.

END OF ADDENDUM 3

(This addendum consists of forty-three (43) pages including attachments)

12"x8"x16"CONCRETE BLOCK TO MATCH BD-20 COLOR, TYPICAL; RE: BUILDING ELEVATIONS

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WALL SECTION AT GLASS BLOCK 3/4"=1'-0" RE: 1-A4, 3-A6, 1-A7,





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Design No. **P519** March 20, 2023

Restrained Assembly Rating — 1 and 2 Hr. (See Items 2B, 10, 10A, 11 and 11A) Unrestrained Assembly Rating — 1 and 2 Hr. (See Items 2B, 10, 10A, 11 and 11A) This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide <u>BXUV</u> or <u>BXUV7</u>

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



1. **Roof Covering*** — Consisting of hot mopped or cold application materials compatible with insulation(s) described herein which provide Class A, B or C coverings. See Roofing Materials and Systems Directory **Roof Covering Materials** (TEVT).

1A. In lieu of Item 1, roof covering consisting of single-ply **Roofing Membrane*** that is either ballasted, adhered or mechanically attached as permitted under the respective manufacturer's Classification.

See Fire Resistance Directory Roofing Membranes (CHCI).

2. **Mineral and Fiber Boards*** — 24 by 48 in. min size, max size 48 by 96 in. to be applied in one or more layers. Boards to be installed perpendicular to gypsum wallboard direction with end joints staggered 2 ft in adjacent rows. When applied in more than one layer, each layer of board to be offset in both directions from layer below a min of 12 in. in order to lap all joints. Min thickness 1 in. (no limit on max overall thickness).

When only one layer is used, it may be bonded to gypsum wallboard or laid loosely. When two or more layers are used, the insulation may be fastened to steel roof deck (through wallboard) with mechanical fasteners (Item 7) and/or bonded to wallboard or vapor barrier and/or bonded to additional layers of insulation with adhesive (Item 6) or hot asphalt (Item 6A). Adhesive may be omitted from between components secured together by mechanical fasteners.

GAF — Rigid mineral fiber boards

2A. **Roof Insulation** — **Foamed Plastic*** — As an alternate to Item 2, any thickness polystyrene foamed plastic insulation boards bearing the UL Classification Marking, having a density of 2.5 pcf max, shall be installed on top of min 1 in. thick Mineral and Fiber Boards* (Item 2) and covered with either the Built-Up Roof Covering (Item 1) or single-ply Roofing Membrane (Item 1A). The 1 in. thick Mineral and Fiber boards to be installed over the gypsum wallboard (Item 4). See **Foamed Plastic*** (BRYX) category in the Building Materials Directory or **Foamed Plastic*** (CCVW) category in the Fire Resistance Directory for list of manufacturers.

2B. **Foamed Plastic*** — As an alternate to Items 2 or 2A, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., to be applied in one or more layers over the gypsum wallboard (Item 4). Min thickness is 1.3 in. with no limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows. When applied in more than one layer, each layer to be offset in both directions from layer below a min of 6 in. in order to lap all joints. **ATLAS ROOFING CORP** — ACFoam II, Tapered ACFoam II, ACFoam II NH, Tapered ACFoam II NH, ACFoam III, ACFoam III NH, Tapered ACFoam III NH, ACFoam IV, ACFoam Supreme, ACFoam Supreme NH, ACFoam Recover Board, ACFoam Recover Board NH

CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — SecurShield CD, InsulBase NH, SecurShield NH, SecurShield HD Composite NH, Polyiso HP-F NH, InsulBase RL, SecurShield RL, Polyiso HP-F

MULE-HIDE PRODUCTS CO INC - POLY ISO 2

DOW ROOFING SYSTEMS L L C — "Dow Termico Polyisocyanurate Insulation", "Dow Termico ISO HP-FR"

Kingspan Insulation LLC, dba Dyplast Products

FIRESTONE BUILDING PRODUCTS CO L L C — "ISO 95+ GL", "ISO 95+ FK", "ISO 95+ CAN", "ISO 95+ GL NH", "ISOGARD HD Composite Board", "RESISTA", "ISOGARD GL", "ISOGARD CG"

GAF — EnergyGuard[™], EnergyGuard[™] RA, EnergyGuard[™] NH.

When EnergyGuard[™] or EnergyGuard[™] NH are used, all ratings are reduced by 1/2 hr. **HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — H Shield, H-Shield-F, H-Shield-CG, H-Shield-C, H-Shield Premier, H-Shield HD Composite, H-Shield HD Composite CG, H-Shield RL, H-Shield CG RL, H Shield NH, H-Shield-F NH, H-Shield-CG NH, H-Shield-CG NH, H-Shield Premier NH, H-Shield HD Composite CG NH

MULE-HIDE PRODUCTS CO INC — Poly ISO 1, Tapered Poly ISO 1, Poly ISO 1-DWD, Tapered Poly ISO 1-DWD, Poly ISO 1-HD, Poly ISO 1-HD90, Poly ISO 1-HD-Composite

JOHNS MANVILLE — ENRGY 3 25 psi, ENRGY 3, Tapered ENRGY 3, Tapered ENRGY 3 25 psi, ENRGY 3 AGF, Tapered ENRGY 3 AGF, ENRGY 3 25 psi AGF, Tapered ENRGY 3 25 psi AGF, ENRGY 3 CGF, Tapered ENRGY 3 CGF, ISO-3, Tapered ISO-3, ValuTherm, Tapered ValuTherm, ValuTherm 25 psi, Tapered ValuTherm 25 psi, ValuTherm AGF, Tapered ValuTherm AGF, ValuTherm 25 psi AGF, Tapered ValuTherm 25 psi AGF, ValuTherm CGF, Tapered ValuTherm CGF, ValuTherm 25 psi CGF, Tapered ValuTherm 25 psi CGF

MARTIN FIREPROOFING CORP — "Perform-A-Deck I"

POLYGLASS USA INC — Polytherm H, Polytherm CG, Polytherm HD Composite CG

RMAX, A BUSINESS UNIT OF SIKA CORPORATION — Multi-Max-3, Multi-Max FA-3, Ultra-Max, Ultra-Max Plus, Tapered Ultra-Max Plus, Tapered Thermaroof-3, Tapered Thermaroof FA-3, Tapered Ultra-Max.

SIKA SARNAFIL INC — Sarnatherm-R Insulation, Sarnatherm-R CG Insulation, Sarnatherm-R Tapered Insulation, Sarnatherm-R CG Tapered Insulation

SIPLAST INC — Paratherm G

SOPREMA INC — Sopra-ISO s, Sopra-ISO s Tapered, Sopra-ISO+ s, Sopra-ISO+ s Tapered, Sopra-ISO H+ s, Sopra-ISO H+ s Tapered

VERSICO INC — MP-H, VersiCore MP-H, WeatherBond XP, MP-HF, WeatherBond XP-HF, SecurShield, WeatherBond XFP, SecurShield CD, WeatherBond XFP CD, SecurShield HD Composite, WeatherBond XFP HD Composite, VersiCore MP-H NH, WeatherBond XP NH, SecurShield NH, WeatherBond XFP NH, VersiCore RL, SecurShield RL, Polyiso MP-HF NH

2C. **Foamed Plastic*** — Optional - (Not Shown) - Used in addition to the foam insulation required to achieve fire rating:

2Ca. **Foamed Plastic*** — Optional - (Not Shown) - Maximum 1 in. thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.

FIRESTONE BUILDING PRODUCTS CO L L C — "ISOGARD HD"

2Cb. **Foamed Plastic*** — Optional — (Not Shown) — Maximum 5/8 inch thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.

RMAX, A BUSINESS UNIT OF SIKA CORPORATION — "Ultra-Max HD"

SIKA SARNAFIL INC — "Sarnatherm Roof Board-R"

2Cc. **Foamed Plastic*** — Optional — (Not Shown) — Maximum 1/2 inch thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.

CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — SecurShield HD, SecurShield HD Plus, SecurShield HD NH, SecurShield HD Plus NH, SecurShield HD RL

HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — H-Shield HD, H-Shield HD90, H-Shield HD RL, H-Shield HD NH, H-Shield HD90 NH

POLYGLASS USA INC — Polytherm HD

VERSICO INC — SecurShield HD, WeatherBond XFP HD Cover Board SecurShield HD NH, WeatherBond XFP HD NH Cover Board, SecurShield HD Plus NH, WeatherBond XFP HD Plus NH Cover Board, SecurShield HD RL

2Cd. **Foamed Plastic*** — Optional — (Not Shown) — Maximum 1 inch thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in

addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.

ATLAS ROOFING CORP — ACFoam HD CoverBoard and ACFoam CoverBoard FR

2Ce. **Foamed Plastic*** — (Optional — Not Shown) — Maximum 1 in. thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.

JOHNS MANVILLE – Types ProtectoR HD, SeparatoR CGF, Invinsa

2D. **Roof Insulation — Foamed Plastic* — As an alternate to Items 2 - 2B —** Polyurethane foamed plastic roof insulation. Formed by the simultaneous spraying of two liquid components applied over gypsum wallboard (item 4) in accordance with the manufacturer's instructions. Min thickness is 1.3. No limit on max overall thickness.

BASF CORP — Types FE348-2.5, FE348-2.8, FE348-3.0, ELASTOSPRAY 81255, ELASTOSPRAY 81285, ELASTOSPRAY 81305, SKYTITE C1

BASF CORP — Elastospray 5100-2.0, Elastospray 5100-2.5, Elastospray 81302, Elastospray 81272, Elastospray Alpha System, Elastospray 81252

3. **Sheathing Material*** — (Optional) — Vinyl film vapor barrier, applied with adhesive to gypsum wallboard. Adjacent sheets overlapped 2 in.

4. **Gypsum Board** — (Classified or unclassified) — Supplied in sheets nom 2 by 4 ft to 4 by 12 ft by nom 5/8 in. thick. Min weight 2.0 pcf. Applied perpendicular to steel roof deck directly with adhesive or laid loosely. End joints to occur over crests of steel roof deck with end joints staggered 2 ft in adjacent rows.

See Gypsum Board (CKNX) category for names of manufacturers.

4A. **Gypsum Board*** — (Optional) — 1/4, 3/8 or 1/2 in. thick. gypsum board placed perpendicular to and on top of Item 4. Gypsum board loosely laid or adhered with **Adhesive***. Adhesive applied in approx 1/2 in. wide ribbons 6 in. OC, at rate of 0.4 gal per 100 sq ft. See **Adhesives** (BYWR) category for names of manufacturer's.

CERTAINTEED GYPSUM INC — Type Regular

5. **Steel Floor and Form Units*** — Noncomposite fluted or corrugated, min 0.034 in. thick (20 gauge), 1-1/2 in. deep painted or galv steel units. Spacing of welds attaching units to supports shall not exceed 12 in. OC. Adjacent units welded or secured together with No. 12 by 1/2 in. self-drilling, self-tapping steel screws, 36 in. OC along side joints.

CANAM GROUP INC — Type P-3606 or P-3615; 36 in. wide Types 1.5B, 1.5BI

GOODER HENRICHSEN CO. — Type B

INTSEL STEEL EAST LLC — 36 in. wide Type 1.5" B-DECK/ROOF.

NEW MILLENNIUM BUILDING SYSTEMS L L C — Types B, BI, F. Units may be phos/painted or galvanized

VULCRAFT, DIV OF NUCOR CORP — Types 1.5A, 1.5B, 1.5BI, 1.5PLB, 1.5F; Types BW, B High Strength, BW High Strength, N. Units may be phd/ptd

6. **Adhesive** — Optional — May be applied between crests of steel roof deck and gypsum wallboard in 1/2 in. wide ribbons, 6 in. OC at 0.4 gal per 100 sq ft. May also be applied in 1/2 in. wide ribbons 6 in. OC, at 0.4 gal per 100 sq ft between gypsum wallboard and vapor barrier, and between vapor barrier and mineral and fiber boards, or directly between gypsum boards and roof insulation when vapor barrier is omitted. May also be applied at the same rate between layers of roof insulation.

7. **Mechanical Fasteners** — (Not Shown) — Any steel nail or steel clip type fastener designed for the purpose may be used to attach one or more layers of insulation to steel roof deck (through gypsum board). As an alternate, the gypsum wallboard may be attached directly to the steel roof deck with the mechanical fasteners.

7A. Hot Asphalt or Coal Tar Pitch — (Not Shown) — May be used as an alternate to adhesive between layers of roof insulation at a rate not to exceed 35 lb per 100 sq ft.

8. Steel Joists — Type 10K1, min size, spaced a max 48 in. OC.

9. Bridging — Steel bars, 1/2 in. diam welded to top and bottom chords of each joist.

10. **Furring Channels** — For 1 hr restrained and unrestrained assembly rating, No. 26 MSG galv steel 2-9/16 in. or 2-5/8 in. or 2-23/32 in. wide by 7/8 in. deep; spaced 24 in. OC, perpendicular to joists. Two courses of furring channel positioned 6 in. OC, 3 in. from each end of wallboard. Channels secured to each joist with No. 18 SWG galv steel wire double strand saddle ties. Channels spliced below joists with adjoining pieces overlapped 6 in. Channels tied together with double strand No. 18 SWG galv steel wire at each end of overlap. For 2 hr restrained and unrestrained assembly rating, furring channels installed as described above but spaced 16 in. OC max.

10A. **Steel Framing Members*** — (optional, not shown, for 1 hr restrained and unrestrained assembly ratings only) — Alternate method to attach furring channels (Item 10) to joists (Item 8). Clips spaced max 48 in. OC., and secured to joists with cup washer installation kit provided by manufacturer. On underside of bottom chord, 1-1/2 in. dia x 3/8 in. deep #16 galv steel cup washer is placed to surround the rubber insert. Clip attached to the bottom chord with a 1/4 in. dia. zinc plated bolt inserted through the center grommet and between the chord members; depth of bolt determined as 1-1/2 in. plus the depth of the bottom chord of the joist. Fastened on the top side of

the bottom chord with a second cup washer placed open side up, and a 1/4 in. zinc plated "Nyloc" nut. Furring channels are friction fitted into clips. RSIC-1 clip for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clip for use with 2-23/32 in. wide furring channels. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the wallboard butt joints, as described in Item 11.

PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75)

10B. **Steel Framing Members*** — (Optional, not shown, for 1 hr restrained and unrestrained assembly ratings only) — Alternate method to attach furring channels (Item 10) to joists (Item 8). Clips spaced max 48 in. OC., and secured to joists with cup washer installation kit provided by manufacturer. On underside of bottom chord, 1-1/2 in. dia x 3/8 in. deep #16 galv steel cup washer is placed to surround the rubber insert. Clip attached to the bottom chord with a 1/4 in. dia. zinc plated bolt inserted through the center grommet and between the chord members; depth of bolt determined as 1-1/2 in. plus the depth of the bottom chord of the joist. Fastened on the top side of the bottom chord with a second cup washer placed open side up, and a 1/4 in. zinc plated "Nyloc" nut. Furring channels are friction fitted into clips. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the wallboard butt joints, as described in Item 11.

PLITEQ INC — Type GENIECLIP

10C. **Steel Framing Members*** — (Optional, Not Shown, for 1 hr restrained and unrestrained assembly ratings only) - Used as an alternate method to attach furring channels (item 10) to joists (item 8). Clips spaced at 48" OC and secured to the bottom of the joists with cup washer installation kit provided by manufacturer. On underside of bottom chord, 1-1/2 in. dia x 3/8 in. deep No. 16 galv steel cup washer is placed to surround the rubber insert. Clip attached to the bottom chord with a 1/4 in. dia. zinc plated bolt inserted through the center grommet and between the chord members; depth of bolt determined as 1-1/2 in. plus the depth of the bottom chord of the joist. Fastened on the top side of the bottom chord with a second cup washer placed open side up, and a 1/4 in. zinc plated "Nyloc" nut. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6" and tied together with double strand of No. 18 AWG galvanized steel wire. Additional clips are required to hold the Gypsum Butt joints as described in Item 11.

STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237R

10D. **Steel Framing Members*** — (optional, not shown, for 1 hr restrained and unrestrained assembly ratings only) — Alternate method to attach 2-23/32 in. wide by 7/8 in. deep furring channels to joists. Clips spaced max 48 in. OC., and secured to joists with cup washer installation kit provided by manufacturer. On underside of bottom chord, 1-1/2 in. dia x 3/8 in. deep #16 galv steel cup washer is placed to surround the rubber insert. Clip attached to the bottom chord with a 1/4 in. dia. zinc plated bolt inserted through the center grommet and between the chord members; depth of bolt determined as 1-1/2 in. plus the depth of the bottom chord of the joist. Fastened on the top side of the bottom chord with a second cup washer placed open side up, and a 1/4 in. zinc plated

"Nyloc" nut. Furring channels are friction fitted into clips. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the wallboard butt joints, as described in Item 11.

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clip

11. Gypsum Board* — For 1 hr restrained and unrestrained assembly rating, one layer 5/8 in. thick, 4 ft wide, installed with long dimension perpendicular to furring channels with side joints located 1 ft from center lines of joists. Wallboard fastened to furring channels with 1 in. wallboard screws spaced 12 in. OC, 3/4 and 3 in. from butted side and end joints, respectively. End joints attached to double channels and protected above with 3 in. wide strips of 5/8 in. thick wallboard. Wallboard joints may be either exposed or covered with joint compound and paper tape. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard. When Steel Framing Members (Item 10A, 10B, 10D) are used, wallboard butt joints shall be staggered min. 2 ft. within the assembly, and occur between the main furring channels. Edge joints located 1 ft from center lines of joists. At the wallboard butt joints, each end of the gypsum board shall be supported by a single length of furring channel equal to the width of the wallboard plus 6 in. on each end. The furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to underside of the joist with one clip at each end of the channel. Gypsum board attached to the furring channels using 1 in. long Type S bugle-head steel screws spaced 8 in. OC along butted end joints and 12 in. OC in the field of the board. Wallboard joints covered with fiber tape and joint compound. Butt joints protected above with 3 in. wide strips of 5/8 in. thick gypsum board.

When **Steel Framing Members** (Item 10C) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 3 in. on each end. The two support furring channels shall be spaced approximately 3 in. in from end joint. Screw spacing along the gypsum board butt joint and along both additional channels shall be 8 in. OC. Additional screws shall be placed in the adjacent section of gypsum board into the aforementioned 3 in. extension of the extra butt joint channels as well as into the main channel that runs between. Butt joint furring channels shall be attached with one RESILMOUNT Sound Isolation Clip at each end of the channel.

AMERICAN GYPSUM CO — Type AG-C

CERTAINTEED GYPSUM INC — Type C

CGC INC — Type C, IP-X2, ULIX.

CERTAINTEED GYPSUM INC — Type LGFC-C/A

GEORGIA-PACIFIC GYPSUM L L C — Types 5, C, DAPC, TG-C

NATIONAL GYPSUM CO — Types eXP-C, FSK-C, FSW-C, FSW-G

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type C

PANEL REY S A — Type PRC

UNITED STATES GYPSUM CO — Type C, IP-X2, ULIX

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Type C, IP-X2

11A. **Gypsum Board*** — For 2 hr restrained and unrestrained assembly rating, two layers nom 1/2 in. thick by 48 in. wide, installed with long dimension perpendicular to furring channels. Inner layer positioned with end joints midway between furring channels. Secured to furring channels with 1 in. long Type S-12 screws spaced 12 in. OC, and located 5/8 in. from side joints and 2 in. from end joints. Outer layer positioned with end joints between furring channels. End joints and side joints offset joints 16 to 32 in. from end and side joints of inner layer. Outer layer secured to furring channels with 1-5/8 in. long Type S-12 screws spaced 12 in. OC. End joints of outer layer attached to inner layer with 1-1/2 in. long Type G bugle-head steel screws spaced 8 in. OC and 3/4 in. from end of boards.

CERTAINTEED GYPSUM INC — Type C

GEORGIA-PACIFIC GYPSUM L L C — Type TG-C

UNITED STATES GYPSUM CO — Type C, IP-X2

USG BORAL DRYWALL SFZ LLC — Type C

11B. **Gypsum Board*** — For 2 hr restrained and unrestrained assembly rating, two layers nom 5/8 in. thick by 48 in. wide, installed with long dimension perpendicular to furring channels. Inner layer positioned with end joints midway between furring channels. Secured to furring channels with 1 in. long Type S-12 screws spaced 12 in. OC, and located 5/8 in. from side joints and 2 in. from end joints. Outer layer positioned with end joints between furring channels. End joints and side joints offset joints 16 to 32 in. from end and side joints of inner layer. Outer layer secured to furring channels with 1-5/8 in. long Type S-12 screws spaced 8 in. OC. End joints of outer layer attached to inner layer with 1-1/2 in. long Type G bugle-head steel screws spaced 8 in. OC and 3/4 in. from end of boards.

CGC INC — Type ULIX

UNITED STATES GYPSUM CO — ULIX

12. **Screw, Wallboard** — Case hardened steel, 1 in. long, 0.150 diam shank, self-drilling and self-tapping 0.335 in. diam Phillips type head. Screw heads may be either exposed or covered with joint cement.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Last Updated on 2023-03-20

MODEL CG MODEL CG HTD FORCED DRAFT BURNERS GAS

98,000 -19,100,000 BTU/HR.

Power Flame Type C



Power Flame's Versatile High Performance Gas Burner

Adjustable Premix Firing Head Produces optimum fuel-air mixture within the premix combustion zone*

Circular Furnace Opening No special cutting of combustion chamber front plate

Low Gas Pressure — Firing Head Added flexibility of application for low gas pressure conditions*

> Characterized Fuel Metering Varicam[®] provides adjustable and accurately repeatable fuel-air ratios throughout

the firing range*

Total Access Panel

Swing out, easily removable top and front panels give total access to all internal panelmounted components

Graphic Burner Management System Director[®] graphic annunciation of critical burner functions*

*Optional

(h) **(f)**

The Power Flame Model CG gas burner presents optimum state-of-the-art design for maximum combustion efficiency and operating dependability. These packaged combustion systems will fire natural gas and a full range of waste or other gaseous fuels. The Model CG HTD (High Turndown) will fire natural gas at turndowns up to 10 to 1. The flame retention firing head incorporates the nozzle mix multiport combustor and unique air sandwich design to produce full range stable performance in both

positive or negative combustion chamber environments. Operating system adjustments have been minimized to provide trouble free start up and operating performance.

The Model CG produces efficient combustion without the aid of refractory or other costly flame support devices. Optional features include the premix and low gas pressure firing heads for limited size combustion chamber configurations or low gas pressure conditions. Modular design produces added flexibility for a wide range of optional features. All Power Flame packaged combustion systems are factory fire-tested to ensure cost effective installation and start up.

Alpha System[™]

LED indicators, switches and operator annunciator. (Optional additional 6-light board shown on right.)



A The Power To Manage Energy Addendum #3 Supplemental Info

5/8" DIA. 4 Holes

TYP.

STANDARD EQUIPMENT

- Alpha System[™] LED (power, demand, main fuel, FSG alarm, selectable) and control switch
- Gas electric pilot and gas ignition transformer
- Leakage test cock, pilot cock and main gas cock Pilot and main gas pressure regulators
- Air safety switch

60	- State
	1 the

Optional NOVA[®] Low NOx systems: Induced Flue Gas Recirculation shown.



ADDED FEATURES X-Standard O-Optional NA-Not Available	C1-G-10 C1-G-12 <mark>C2-G-15</mark>	C2-G-20A	C2-G-20B	C3-G-20 C3-G-25 C3-G-25B	C4-G-25	C4-G-30 C5-G-30(B) C6-G-30	C7-G-30 C8-G-30	
Flame Safeguard with UV and intermittent pilot	X	Х	NA	NA	NA	NA	NA	
Flame Safeguard with UV and interrupted pilot	0	0	Х	Х	Х	Х	Х	
On-Off diaphragm gas valve with fixed air control manual adjustment	X	NA	NA	NA	NA	NA	NA	
Low-Hi-Off motorized gas valve with automatic air control	0	Х	Х	Х	Х	NA	NA	
Low-Hi-Low motorized gas valve with automatic air control	0	0	0	0	0	NA	NA	
Modulation with automatic air control (Standard on all CG HTD)	0	0	0	0	0	Х	Х	
Dual gas safety valves $igl(A)$	X	Х	Х	Х	Х	Х	Х	
High and Low gas pressure switches	0	0	Х	Х	Х	Х	Х	
Nova [®] Low NOx systems	0	0	0	0	0	0	0	
Customized control systems and accessories	0	0	0	0	0	0	0	
Man/Auto switch - manual potentiometer-modulation units	X	Х	Х	Х	Х	Х	Х	
Conforms to UL795	(A) 5,000 M Above 5	BH and below ,000 MBH one	may be replate (1) of the saf	ced by one (1 ety valves will) proof of clo include proo	sure valve; f of closure fea	ature.	



B(R)



• K-G MAX 4' G STD. ç Н ł Add 3/8" to "H" for size of opening in boiler front plate L (REF.)

DIMENSIONS(Inches) Standard Models.

RATINGS & SPECIFICATIONS

| | | | | |

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 | | CAPA
 | | Blower | Standard | |
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| Burner
Model | A | В | B(R) | C | C(R)

 | D | E
 | F** | G
Std.
 | G
*Max. | H | I | K
 | L | S
 | X | Nat. Gas
MBH Max.
 | Boiler H.P.
Max. | Motor H.P.
(3450RPM) | Gas Train
Size(In.) | Required (In. W.C.) ² |
 |
| C1-G-10 | 34 ¹ / ₈ | 3 ¹³ / ₁₆ | 5 %/16 | 14 ¹ / ₂ | 14 ¹ / ₂

 | 4 ⁵ / ₈ | 12 ¹ / ₄
 | 20 | 3 ¹ / ₄
 | 4 ³ / ₄ | 7 ¹ / ₄ | 7 ³/8 | 10 ¹ / ₄
 | 17 ¹ / ₈ | 12 ⁵ /8
 | 7 ¹ / ₄ | 980
 | 23.5 | 1/3 | 1 | 5.6 |
 |
| C1-G-12 | 34 ¹ / ₈ | 3 ¹³ / ₁₆ | 5 ⁹ / ₁₆ | 14 ¹ / ₂ | 14 ¹ / ₂

 | 4 ⁵ / ₈ | 12 ¹ / ₄
 | 20 | 3 ¹ / ₄
 | 4 ³ / ₄ | 7 ¹ / ₄ | 7 ³ /8 | 10 ¹ / ₄
 | 17 ¹ / ₈ | 12 ⁵ /8
 | 7 ¹ / ₄ | 1,360
 | 32.3 | 1/3 | 1 ¹ / ₄ | 5.3 |
 |
| C2-G-15 | 39 ¹ /8 | 4 ¹ /2 | 6 ¹ /8 | 14 ⁷ /8 | 14

 | <mark>5¹/4</mark> | 14
 | <mark>20</mark> | 4
 | <mark>6³/4</mark> | <mark>8³/4</mark> | 8 ¹ / ₂ | 10 ¹ /4
 | 187/8 | 13 ³ /8
 | 8 ¹ / ₂ | <mark>2,200</mark>
 | <mark>52.3</mark> | 1/2 | <mark>11/2</mark> | 5.2 |
 |
| C2-G-20A | 39 ¹ / ₈ | 4 ¹ / ₂ | 6 ¹ / ₈ | 14 ⁷ /8 | 14

 | 5 ¹ /4 | 14
 | 20 | 4
 | 6 ³ / ₄ | 8 ³ / ₄ | 8 ¹ / ₂ | 10 ¹ / ₄
 | 18 ⁷ / ₈ | 13 ³ /8
 | 8 ¹ / ₂ | 2,500
 | 60.0 | ³ /4 | 2 | 4.8 |
 |
| C2-G-20B | 39 ¹ / ₈ | 4 ¹ / ₂ | 6 ¹ / ₈ | 14 ⁷ /8 | 14

 | 5 ¹ / ₄ | 14
 | 20 | 4
 | 6 3/4 | 8 ³ / ₄ | 8 ¹ / ₂ | 10 ¹ / ₄
 | 18 ⁷ / ₈ | 13 ³ /8
 | 8 ¹ / ₂ | 3,080
 | 73.5 | 1 | 2 | 4.8 |
 |
| C3-G-20 | 44 | 5 ¹ / ₄ | 7 | 16 ⁵ /8 | 15 ¹ / ₄

 | 6 | 16
 | 22 ³ / ₈ | 4 ¹ / ₂
 | 8 | 10 ¹ / ₈ | $11^{1}/_{2}$ | 10 ¹ / ₄
 | 22 | 15 ¹ / ₂
 | 10 | 4,200
 | 100.0 | 1 ¹ / ₂ | 2 | 7.6 |
 |
| C3-G-25 | 44 | 5 ¹ / ₄ | 7 | 16 5/8 | 15 ¹ / ₄

 | 6 | 16
 | 22 ³ / ₈ | 4 ¹ / ₂
 | 8 | 10 ¹ / ₈ | 11 ¹ / ₂ | 10 ¹ / ₄
 | 22 | 15 ¹ / ₂
 | 10 | 4,718
 | 112.0 | 1 ¹ / ₂ | 2 ¹ / ₂ | 7.0 |
 |
| C3-G-25B | 44 | 5 ¹ / ₄ | 7 | 165/8 | 15 ¹ / ₄

 | 6 | 16
 | 22 ³ / ₈ | 4 ¹ / ₂
 | 8 | 10 ¹ / ₈ | $11^{1}/_{2}$ | 10 ¹ / ₄
 | 22 | 15 ¹ / ₂
 | 10 | 5,250
 | 125.0 | 3 | 2 ¹ / ₂ | 7.2 |
 |
| C4-G-25 | 50 | 6 ¹ / ₄ | 7 5/16 | 18 7/ ₈ | 17 ¹¹ / ₁₆

 | 7 | 18 ¹ / ₂
 | 28 | 6
 | 9 | 12 ¹ / ₈ | $14^{1}/_{4}$ | 10 ¹ / ₄
 | 26 ⁵ / ₈ | 19 ¹ / ₈
 | 12 | 6,300
 | 150.0 | 3 | 2 ¹ / ₂ | 10.0 |
 |
| C4-G-30 | 50 | 6 ¹ / ₄ | 7 5/ ₁₆ | 18 7/8 | 17 ¹¹ / ₁₆

 | 7 | 18 ¹ / ₂
 | 28 | 6
 | 9 | 12 ¹ / ₈ | 14 ¹ / ₄ | 10 ¹ / ₄
 | 26 ⁵ / ₈ | 19 ¹ / ₈
 | 12 | 7,840
 | 190.0 | 5 | 3 | 12.1 |
 |
| C5-G-30(B) | 50 | 6 ¹ / ₄ | 7 ⁵ / ₁₆ | 18 7/ ₈ | 17 ¹¹ / ₁₆

 | 7 | 18 ¹ / ₂
 | 26 ¹ / ₂ | 6
 | 9 | 12 ¹ / ₈ | 14 ¹ / ₄ | 10 ¹ / ₄
 | 26 ⁵ / ₈ | 19 ¹ / ₈
 | 12 | 10,500
 | 250.0 | 7 ¹ / ₂ | 3 | 19.9,17.8 |
 |
| C6-G-30 | 49 ⁷ / ₈ | 6 ¹ / ₄ | 7 ⁵ / ₁₆ | 18 ⁷ / ₈ | 17 ¹¹ / ₁₆

 | 7 ³ / ₄ | 19 ⁷ / ₈
 | 26 ¹ / ₂ | 5
 | 11 ¹ / ₂ | 13 ⁵ /8 | $14^{1}/_{8}$ | 10 ¹ / ₄
 | 26 ¹ / ₂ | 19
 | 13 ¹ / ₂ | 14,215
 | 340.0 | 10 | 3 | 26.5 |
 |
| C7-G-30 | 51 ¹¹ / ₁₆ | 8 ¹ / ₈ | 10 ¹ / ₈ | 24 ⁵ / ₁₆ | 22 ³ / ₈

 | 8 ³ / ₄ | 18
 | 21 ¹³ / ₁₆ | 4 ⁷ / ₈
 | 11 ¹ / ₄ | 15 ⁵ /8 | 137/8 | 9 ¹ / ₈
 | 26 ¹ / ₂ | 19
 | 13 ¹ / ₂ | 17,000
 | 404.0 | 15 | 3 | 40.0 |
 |
| C7-G-30B | 51 ¹¹ / ₁₆ | 8 ¹ / ₈ | 10 ¹ / ₈ | 24 ⁵ / ₁₆ | 22 ³ / ₈

 | 8 ³ / ₄ | 18
 | 21 ¹³ / ₁₆ | 4 ⁷ / ₈
 | 11 ¹ / ₄ | 15 ⁵ /8 | 137/8 | 9 ¹ / ₈
 | 26 ¹ / ₂ | 19
 | 13 ¹ / ₂ | 17,700
 | 421.0 | 20 | 3 | 45.0 |
 |
| C8-G-30 | 56 ⁹ / ₁₆ | 8 ¹ / ₈ | 10 ¹ / ₈ | 27 ¹ / ₈ | 27 ⁵ / ₈

 | 8 ³ / ₄ | 20
 | 24 ³ / ₈ | 3 ¹ / ₄
 | 9 ⁵ / ₈ | 15 ⁵ /8 | 12 ¹ / ₄ | 9 ¹ / ₈
 | 24 ⁷ / ₈ | 17 ⁵ / ₁₆
 | 13 ¹ / ₂ | 19,100
 | 454.0 | 15 | 3 | 50.0 |
 |
| | Burner
Model
C1-G-10
C2-G-15
C2-G-20A
C2-G-20B
C3-G-20
C3-G-25
C3-G-25B
C4-G-25
C4-G-30
C5-G-30(B)
C6-G-30
C7-G-30B
C7-G-30B
C8-G-30 | Burner
Model A C1-G-10 341/8 C1-G-12 341/8 C2-G-15 391/8 C2-G-20A 391/8 C2-G-20B 391/8 C3-G-20 44 C3-G-25 44 C3-G-25 50 C4-G-25 50 C4-G-30 50 C5-G-30(B) 50 C6-G-30 497/8 C7-G-30B 5111/16 C7-G-30C 56 ⁹ /16 | Burner
Model A B C1-G-10 341/8 313/16 C1-G-12 341/8 313/16 C2-G-15 391/8 41/2 C2-G-20A 391/8 41/2 C2-G-20B 391/8 41/2 C3-G-20 44 51/4 C3-G-25 44 51/4 C3-G-25 50 61/4 C4-G-25 50 61/4 C4-G-30 50 61/4 C5-G-30(B) 50 61/4 C7-G-30 5111/16 81/8 C7-G-30B 5111/16 81/8 C8-G-30 56 ⁹ /16 81/8 | Burner
Model A B B(R) C1-G-10 341/8 313/16 59/16 C1-G-12 341/8 313/16 59/16 C2-G-15 391/8 41/2 61/8 C2-G-20A 391/8 41/2 61/8 C2-G-20B 391/8 41/2 61/8 C2-G-20B 391/8 41/2 61/8 C3-G-25 44 51/4 7 C3-G-25B 44 51/4 7 C3-G-25B 44 51/4 7 C4-G-25 50 61/4 75/16 C4-G-30 50 61/4 75/16 C5-G-30(B) 50 61/4 75/16 C7-G-30 5111/16 81/8 101/8 C7-G-30B 5111/16 81/8 101/8 C7-G-30B 56 ⁹ /16 81/8 101/8 | Burner
Model A B B(R) C C1-G-10 341/8 313/16 59/16 141/2 C1-G-12 341/8 313/16 59/16 141/2 C2-G-15 391/8 41/2 61/8 147/8 C2-G-20A 391/8 41/2 61/8 147/8 C2-G-20B 391/8 41/2 61/8 147/8 C2-G-20B 391/8 41/2 61/8 147/8 C3-G-20 44 51/4 7 165/8 C3-G-25 44 51/4 7 165/8 C3-G-25B 44 51/4 7 165/8 C4-G-30 50 61/4 75/16 187/8 C4-G-30 50 61/4 75/16 187/8 C5-G-30(B) 50 61/4 75/16 187/8 C6-G-30 497/8 61/4 75/16 187/8 C7-G-30B 5111/16 81/8 101/8 245/16 C7-G-30B <t< td=""><td>Burner
Model A B B(R) C C(R) C1-G-10 341/8 313/16 59/16 141/2 141/2 C1-G-12 341/8 313/16 59/16 141/2 141/2 C1-G-12 341/8 313/16 59/16 141/2 141/2 C2-G-15 391/8 41/2 61/8 147/8 14 C2-G-20A 391/8 41/2 61/8 147/8 14 C2-G-20B 391/8 41/2 61/8 147/8 14 C3-G-20 44 51/4 7 165/8 151/4 C3-G-25 44 51/4 7 165/8 151/4 C3-G-25 44 51/4 7 165/8 151/4 C4-G-25 50 61/4 75/16 187/8 1711/16 C4-G-30 50 61/4 75/16 187/8 1711/16 C4-G-30 50 61/4 75/16 187/8 1711/16 C5-G-</td><td>Burner
Model A B B(R) C C(R) D C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 C3-G-20B 391/8 41/2 61/8 147/8 14 51/4 C3-G-25 44 51/4 7 165/8 151/4 6 C3-G-25 44 51/4 7 165/8 151/4 6 C3-G-25 44 51/4 7 165/8 151/4 6 C4-G-25 50 61/4 75/16 187/8 1711/16 7 C4-G-30 50 61/4 75/16 187/8<!--</td--><td>Burner
Model A B B(R) C C(R) D E C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 C2-G-15 391/8 41/2 61/8 141/2 141/2 45/8 121/4 C2-G-15 391/8 41/2 61/8 141/2 141/2 45/8 121/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 14 C3-G-20 44 51/4 7 165/8 151/4 6 16 C3-G-25 44 51/4 7 165/8 151/4 6 16 C3-G-25 50 61/4 75 165/8 151/4 6 16 C4-G-25 50 61/4</td><td>Burner
Model A B B(R) C C(R) D E F** C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 14 20 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 C3-G-25 44 51/4 7 165/8 151/4 6 16 223/8 C3-G-25B 44 51/4 7 165/8 151/4 6 16 223/8 C4-G-25 50 61/4 75/16<!--</td--><td>Burner
ModelABB(R)CC(R)DEF**$G_{Std.}$C1-G-10$341/_8$$3^{13}/_{16}$$5^9/_{16}$$141/_2$$141/_2$$45/_8$$121/_4$$20$$31/_4$C1-G-12$341/_8$$3^{13}/_{16}$$5^9/_{16}$$141/_2$$141/_2$$45/_8$$121/_4$$20$$31/_4$C2-G-12$391/_8$$41/_2$$61/_8$$147/_8$$14$$51/_4$$14$$20$$4$C2-G-20A$391/_8$$41/_2$$61/_8$$147/_8$$14$$51/_4$$14$$20$$4$C2-G-20B$391/_8$$41/_2$$61/_8$$147/_8$$14$$51/_4$$14$$20$$4$C3-G-20$44$$51/_4$$7$$165/_8$$151/_4$$6$$16$$223/_8$$41/_2$C3-G-25$44$$51/_4$$7$$165/_8$$151/_4$$6$$16$$223/_8$$41/_2$C3-G-25$44$$51/_4$$7$$165/_8$$151/_4$$6$$16$$223/_8$$41/_2$C4-G-25$50$$61/_4$$7^{5}_{16}$$187/_8$$1711/_{16}$$7$$181/_2$$28$$6$C4-G-30$50$$61/_4$$75/_{16}$$187/_8$$1711/_{16}$$7$$181/_2$$261/_2$$5$C7-G-30$5111/_{16}$$81/_8$$101/_8$$245/_{16}$$223/_8$$83/_4$$18$$2113/_{16}$$47/_8$C7-G-30B$5111/_{16}$$81/_8$$101$</td><td>Burner
Model A B B(R) C C(R) D E F** G G Max. C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 C2-G-15 391/8 41/2 61/8 141/2 141/2 45/8 121/4 20 31/4 43/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 41/2 8 C3-G-25 44 51/4 7 165/8 151/4 6 16 223/8</td><td>Burner
Model A B B(R) C C(R) D E F** G G G Y C1-G-10 341/8 313/16
 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C2-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 41/2 8 101/8 C3-G-25 44<!--</td--><td>Burner
Model A B B(R) C C(R) D E F** G G G H I C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8</td><td>Burner
Model A B B(R) C C(R) D E F** G G G H I K C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 6 16 223/8 41/2 8 101/8 11/2 101/4 C3-G-255 44</td></td></td></td></t<> <td>Burner
Model A B B(R) C C(R) D E F** G G G H I K L C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 187/8 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 187/8 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 6 16 223/8 41/2 8 101/8<!--</td--><td>Burner
Model A B B(R) C C(R) D E F** Std. *Max. H I K L S C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 C2-G-15 391/8 41/2 61/8 141/2 141 51/4 14 20 4 63/4 83/4 81/2 101/4 13/8 13/8 C2-G-20A 391/8 41/2 61/8 151/4 6 16 223/8 41/2 8 101/2 101/4 13/8 13/8 C3-G-20A 491/8 51/4 7 165/8 151/4 6 16 223/8 41/2 8</td><td>Burner
Model A B B(R) C C(R) D E F** G G Max. H I K L S X C1-G-10 341/8 313/6 59/6 141/2 141/2 45/6 121/4 20 31/4 43/4 71/4 79/6 101/1 171/6 125/6 71/4 C1-G-12 341/8 313/6 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 79/6 101/4 171/8 125/8 71/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 187/8 133/8 81/2 C2-G-20B 391/8 41/2 61/8 141/8 14 20 4 63/4 83/4 81/2 101/8 13/8 81/2 C3-G-20 44 51/4 7 165/8 151/4<!--</td--><td>Burner
Model A B B(R) C C(R) D E F** G G M I K L S X Nat.Gas
MBH Max. C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 71/4 980 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 71/4 980 C2-G-15 391/8 41/2 61/8 144 51/4 14 20 4 63/4 83/4 81/2 101/4 187/8 13/8 81/2 2,200 C2-G-020 391/8 41/2 61/8 147/8 14 20 4 63/4 83/4 81/2 101/4 17/8 18/2 3,080 C3-G-20 44</td><td>Burner
Model A B B(R) C C(R) D E F** G G G H I K L S X MBH Max. Boiler H.P.
Mat. Gas C1-G-10 341/s 313/16 59/16 141/2 141/2 45/s 121/4 20 31/4 43/4 71/4 73/s 101/2 125/s 71/4 980 23.5 C1-G-12 341/s 313/16 59/16 141/2 141/2 45/s 121/4 20 31/4 43/4 71/4 73/s 101/2 125/s 71/4 1380 32.3 C2-G-15 391/s 41/2 61/s 141 51/4 14 20 4 63/4 83/2 101/4 187/s 133/s 81/2 2,200 52.3 C2-G-2DA 391/s 41/2 61/s 141 20 4 63/4 83/z 101/a 187/s 133/s 81/2 2,500 60.0 <t< td=""><td>Burner
Model A B B(R) C C(R) D E F** G G G G Na E K L K L S X Mat. Gas
MBH Max. Motor H.P.
Mat. C1-G-10 34'/a 3'1/a 5'1/a 14'/2 14'/2 4'/a 20 3'/a 4'/a 7'/a 7'/a 10'/a 17'/a 12'/a 12'/a 12'/a 12'/a 20 3'/a 4'/a 7'/a 7'/a 10'/a 12'/a 7'/a 13/a 3'/a 13'/a 14'/a 13'/a 13'/a 13'/a 13'/a 14'/a 12'/a 14'/a</td><td>Burner
Model A B B(R) C C(R) D E F** G
 G G K L S X Mat. Gas
MBH Max. Bollor H.P.
Max. Blower
(3450RPM) Standard
Starlin C1-G-10 341/s 313/s 59/s 141/z 141/z 45/s 121/z 20 31/z 43/z 71/z 73/z 101/z 171/s 125/s 71/z 1360 32.3 1/z 11/z C1-G-12 341/s 313/s 59/s 141/z 141/z 45/s 121/z 20 31/z 47/z 73/z 101/z 17/s 125/s 71/z 1360 32.3 1/z 11/z C2-G-15 391/s 41/z 61/z 12/z 0 4 63/z 81/z 101/z 133/z 81/z 2,500 60.0 31/z 11/z 21/z 141/z 101/z 12/z 101/z 12/z 10/z 12/z 10/z 12/z 12/z</td><td>Burner
Model A B B(R) C C(R) D E F** Std. Max. L S X Mat. Gas
MBH Max. Blower
MBH Max. Standard
Max. Pressure
MBM Max. Blower
MBH Max. Standard
Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max.<</td></t<></td></td></td> | Burner
Model A B B(R) C C(R) C1-G-10 341/8 313/16 59/16 141/2 141/2 C1-G-12 341/8 313/16 59/16 141/2 141/2 C1-G-12 341/8 313/16 59/16 141/2 141/2 C2-G-15 391/8 41/2 61/8 147/8 14 C2-G-20A 391/8 41/2 61/8 147/8 14 C2-G-20B 391/8 41/2 61/8 147/8 14 C3-G-20 44 51/4 7 165/8 151/4 C3-G-25 44 51/4 7 165/8 151/4 C3-G-25 44 51/4 7 165/8 151/4 C4-G-25 50 61/4 75/16 187/8 1711/16 C4-G-30 50 61/4 75/16 187/8 1711/16 C4-G-30 50 61/4 75/16 187/8 1711/16 C5-G- | Burner
Model A B B(R) C C(R) D C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 C3-G-20B 391/8 41/2 61/8 147/8 14 51/4 C3-G-25 44 51/4 7 165/8 151/4 6 C3-G-25 44 51/4 7 165/8 151/4 6 C3-G-25 44 51/4 7 165/8 151/4 6 C4-G-25 50 61/4 75/16 187/8 1711/16 7 C4-G-30 50 61/4 75/16 187/8 </td <td>Burner
Model A B B(R) C C(R) D E C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 C2-G-15 391/8 41/2 61/8 141/2 141/2 45/8 121/4 C2-G-15 391/8 41/2 61/8 141/2 141/2 45/8 121/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 14 C3-G-20 44 51/4 7 165/8 151/4 6 16 C3-G-25 44 51/4 7 165/8 151/4 6 16 C3-G-25 50 61/4 75 165/8 151/4 6 16 C4-G-25 50 61/4</td> <td>Burner
Model A B B(R) C C(R) D E F** C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 14 20 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 C3-G-25 44 51/4 7 165/8 151/4 6 16 223/8 C3-G-25B 44 51/4 7 165/8 151/4 6 16 223/8 C4-G-25 50 61/4 75/16<!--</td--><td>Burner
ModelABB(R)CC(R)DEF**$G_{Std.}$C1-G-10$341/_8$$3^{13}/_{16}$$5^9/_{16}$$141/_2$$141/_2$$45/_8$$121/_4$$20$$31/_4$C1-G-12$341/_8$$3^{13}/_{16}$$5^9/_{16}$$141/_2$$141/_2$$45/_8$$121/_4$$20$$31/_4$C2-G-12$391/_8$$41/_2$$61/_8$$147/_8$$14$$51/_4$$14$$20$$4$C2-G-20A$391/_8$$41/_2$$61/_8$$147/_8$$14$$51/_4$$14$$20$$4$C2-G-20B$391/_8$$41/_2$$61/_8$$147/_8$$14$$51/_4$$14$$20$$4$C3-G-20$44$$51/_4$$7$$165/_8$$151/_4$$6$$16$$223/_8$$41/_2$C3-G-25$44$$51/_4$$7$$165/_8$$151/_4$$6$$16$$223/_8$$41/_2$C3-G-25$44$$51/_4$$7$$165/_8$$151/_4$$6$$16$$223/_8$$41/_2$C4-G-25$50$$61/_4$$7^{5}_{16}$$187/_8$$1711/_{16}$$7$$181/_2$$28$$6$C4-G-30$50$$61/_4$$75/_{16}$$187/_8$$1711/_{16}$$7$$181/_2$$261/_2$$5$C7-G-30$5111/_{16}$$81/_8$$101/_8$$245/_{16}$$223/_8$$83/_4$$18$$2113/_{16}$$47/_8$C7-G-30B$5111/_{16}$$81/_8$$101$</td><td>Burner
Model A B B(R) C C(R) D E F** G G Max. C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 C2-G-15 391/8 41/2 61/8 141/2 141/2 45/8 121/4 20 31/4 43/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 41/2 8 C3-G-25 44 51/4 7 165/8 151/4 6 16 223/8</td><td>Burner
Model A B B(R) C C(R) D E F** G G G Y C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C2-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 41/2 8 101/8 C3-G-25 44<!--</td--><td>Burner
Model A B B(R) C C(R) D E F** G G G H I C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20
 31/4 43/4 71/4 73/8 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8</td><td>Burner
Model A B B(R) C C(R) D E F** G G G H I K C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 6 16 223/8 41/2 8 101/8 11/2 101/4 C3-G-255 44</td></td></td> | Burner
Model A B B(R) C C(R) D E C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 C2-G-15 391/8 41/2 61/8 141/2 141/2 45/8 121/4 C2-G-15 391/8 41/2 61/8 141/2 141/2 45/8 121/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 14 C3-G-20 44 51/4 7 165/8 151/4 6 16 C3-G-25 44 51/4 7 165/8 151/4 6 16 C3-G-25 50 61/4 75 165/8 151/4 6 16 C4-G-25 50 61/4 | Burner
Model A B B(R) C C(R) D E F** C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 14 20 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 C3-G-25 44 51/4 7 165/8 151/4 6 16 223/8 C3-G-25B 44 51/4 7 165/8 151/4 6 16 223/8 C4-G-25 50 61/4 75/16 </td <td>Burner
ModelABB(R)CC(R)DEF**$G_{Std.}$C1-G-10$341/_8$$3^{13}/_{16}$$5^9/_{16}$$141/_2$$141/_2$$45/_8$$121/_4$$20$$31/_4$C1-G-12$341/_8$$3^{13}/_{16}$$5^9/_{16}$$141/_2$$141/_2$$45/_8$$121/_4$$20$$31/_4$C2-G-12$391/_8$$41/_2$$61/_8$$147/_8$$14$$51/_4$$14$$20$$4$C2-G-20A$391/_8$$41/_2$$61/_8$$147/_8$$14$$51/_4$$14$$20$$4$C2-G-20B$391/_8$$41/_2$$61/_8$$147/_8$$14$$51/_4$$14$$20$$4$C3-G-20$44$$51/_4$$7$$165/_8$$151/_4$$6$$16$$223/_8$$41/_2$C3-G-25$44$$51/_4$$7$$165/_8$$151/_4$$6$$16$$223/_8$$41/_2$C3-G-25$44$$51/_4$$7$$165/_8$$151/_4$$6$$16$$223/_8$$41/_2$C4-G-25$50$$61/_4$$7^{5}_{16}$$187/_8$$1711/_{16}$$7$$181/_2$$28$$6$C4-G-30$50$$61/_4$$75/_{16}$$187/_8$$1711/_{16}$$7$$181/_2$$261/_2$$5$C7-G-30$5111/_{16}$$81/_8$$101/_8$$245/_{16}$$223/_8$$83/_4$$18$$2113/_{16}$$47/_8$C7-G-30B$5111/_{16}$$81/_8$$101$</td> <td>Burner
Model A B B(R) C C(R) D E F** G G Max. C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 C2-G-15 391/8 41/2 61/8 141/2 141/2 45/8 121/4 20 31/4 43/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 41/2 8 C3-G-25 44 51/4 7 165/8 151/4 6 16 223/8</td> <td>Burner
Model A B B(R) C C(R) D E F** G G G Y C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C2-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 41/2 8 101/8 C3-G-25 44<!--</td--><td>Burner
Model A B B(R) C C(R) D E F** G G G H I C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8</td><td>Burner
Model A B B(R) C C(R) D E F** G G G H I K C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 6 16 223/8 41/2 8 101/8 11/2 101/4 C3-G-255 44</td></td> | Burner
ModelABB(R)CC(R)DEF** $G_{Std.}$ C1-G-10 $341/_8$ $3^{13}/_{16}$ $5^9/_{16}$ $141/_2$ $141/_2$ $45/_8$ $121/_4$ 20 $31/_4$ C1-G-12 $341/_8$ $3^{13}/_{16}$ $5^9/_{16}$ $141/_2$ $141/_2$ $45/_8$ $121/_4$ 20 $31/_4$ C2-G-12 $391/_8$ $41/_2$ $61/_8$ $147/_8$ 14 $51/_4$ 14 20 4 C2-G-20A $391/_8$ $41/_2$ $61/_8$ $147/_8$ 14 $51/_4$ 14 20 4 C2-G-20B $391/_8$ $41/_2$ $61/_8$ $147/_8$ 14 $51/_4$ 14 20 4 C3-G-20 44 $51/_4$ 7 $165/_8$ $151/_4$ 6 16 $223/_8$ $41/_2$ C3-G-25 44 $51/_4$
7 $165/_8$ $151/_4$ 6 16 $223/_8$ $41/_2$ C3-G-25 44 $51/_4$ 7 $165/_8$ $151/_4$ 6 16 $223/_8$ $41/_2$ C4-G-25 50 $61/_4$ 7^{5}_{16} $187/_8$ $1711/_{16}$ 7 $181/_2$ 28 6 C4-G-30 50 $61/_4$ $75/_{16}$ $187/_8$ $1711/_{16}$ 7 $181/_2$ $261/_2$ 5 C7-G-30 $5111/_{16}$ $81/_8$ $101/_8$ $245/_{16}$ $223/_8$ $83/_4$ 18 $2113/_{16}$ $47/_8$ C7-G-30B $5111/_{16}$ $81/_8$ 101 | Burner
Model A B B(R) C C(R) D E F** G G Max. C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 C2-G-15 391/8 41/2 61/8 141/2 141/2 45/8 121/4 20 31/4 43/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 41/2 8 C3-G-25 44 51/4 7 165/8 151/4 6 16 223/8 | Burner
Model A B B(R) C C(R) D E F** G G G Y C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C2-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 41/2 8 101/8 C3-G-25 44 </td <td>Burner
Model A B B(R) C C(R) D E F** G G G H I C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8</td> <td>Burner
Model A B B(R) C C(R) D E F** G G G H I K C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 6 16 223/8 41/2 8 101/8 11/2 101/4 C3-G-255 44</td> | Burner
Model A B B(R) C C(R) D E F** G G G H I C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 C3-G-20 44 51/4 7 165/8 151/4 6 16 223/8 | Burner
Model A B B(R) C C(R) D E F** G G G H I K C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 6 16 223/8 41/2 8 101/8 11/2 101/4 C3-G-255 44 | Burner
Model A B B(R) C C(R) D E F** G G G H I K L C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 187/8 C2-G-20A 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 187/8 C2-G-20B 391/8 41/2 61/8 147/8 14 51/4 6 16 223/8 41/2 8 101/8 </td <td>Burner
Model A B B(R) C C(R) D E F** Std. *Max. H I K L S C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 C2-G-15 391/8 41/2 61/8 141/2 141 51/4 14 20 4 63/4 83/4 81/2 101/4 13/8 13/8 C2-G-20A 391/8 41/2 61/8 151/4 6 16 223/8 41/2 8 101/2 101/4 13/8 13/8 C3-G-20A 491/8 51/4 7 165/8 151/4 6 16 223/8 41/2 8</td> <td>Burner
Model A B B(R) C C(R) D E F** G G Max. H I K L S X C1-G-10 341/8 313/6 59/6 141/2 141/2 45/6 121/4 20 31/4 43/4 71/4 79/6 101/1 171/6 125/6 71/4
C1-G-12 341/8 313/6 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 79/6 101/4 171/8 125/8 71/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 187/8 133/8 81/2 C2-G-20B 391/8 41/2 61/8 141/8 14 20 4 63/4 83/4 81/2 101/8 13/8 81/2 C3-G-20 44 51/4 7 165/8 151/4<!--</td--><td>Burner
Model A B B(R) C C(R) D E F** G G M I K L S X Nat.Gas
MBH Max. C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 71/4 980 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 71/4 980 C2-G-15 391/8 41/2 61/8 144 51/4 14 20 4 63/4 83/4 81/2 101/4 187/8 13/8 81/2 2,200 C2-G-020 391/8 41/2 61/8 147/8 14 20 4 63/4 83/4 81/2 101/4 17/8 18/2 3,080 C3-G-20 44</td><td>Burner
Model A B B(R) C C(R) D E F** G G G H I K L S X MBH Max. Boiler H.P.
Mat. Gas C1-G-10 341/s 313/16 59/16 141/2 141/2 45/s 121/4 20 31/4 43/4 71/4 73/s 101/2 125/s 71/4 980 23.5 C1-G-12 341/s 313/16 59/16 141/2 141/2 45/s 121/4 20 31/4 43/4 71/4 73/s 101/2 125/s 71/4 1380 32.3 C2-G-15 391/s 41/2 61/s 141 51/4 14 20 4 63/4 83/2 101/4 187/s 133/s 81/2 2,200 52.3 C2-G-2DA 391/s 41/2 61/s 141 20 4 63/4 83/z 101/a 187/s 133/s 81/2 2,500 60.0 <t< td=""><td>Burner
Model A B B(R) C C(R) D E F** G G G G Na E K L K L S X Mat. Gas
MBH Max. Motor H.P.
Mat. C1-G-10 34'/a 3'1/a 5'1/a 14'/2 14'/2 4'/a 20 3'/a 4'/a 7'/a 7'/a 10'/a 17'/a 12'/a 12'/a 12'/a 12'/a 20 3'/a 4'/a 7'/a 7'/a 10'/a 12'/a 7'/a 13/a 3'/a 13'/a 14'/a 13'/a 13'/a 13'/a 13'/a 14'/a 12'/a 14'/a</td><td>Burner
Model A B B(R) C C(R) D E F** G G G K L S X Mat. Gas
MBH Max. Bollor H.P.
Max. Blower
(3450RPM) Standard
Starlin C1-G-10 341/s 313/s 59/s 141/z 141/z 45/s 121/z 20 31/z 43/z 71/z 73/z 101/z 171/s 125/s 71/z 1360 32.3 1/z 11/z C1-G-12 341/s 313/s 59/s 141/z 141/z 45/s 121/z 20 31/z 47/z 73/z 101/z 17/s 125/s 71/z 1360 32.3 1/z 11/z C2-G-15 391/s 41/z 61/z 12/z 0 4 63/z 81/z 101/z 133/z 81/z 2,500 60.0 31/z 11/z 21/z 141/z 101/z 12/z 101/z 12/z 10/z 12/z 10/z 12/z 12/z</td><td>Burner
Model A B B(R) C C(R) D E F** Std. Max. L S X Mat. Gas
MBH Max. Blower
MBH Max. Standard
Max. Pressure
MBM Max. Blower
MBH Max. Standard
Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max.<</td></t<></td></td> | Burner
Model A B B(R) C C(R) D E F** Std. *Max. H I K L S C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 C2-G-15 391/8 41/2 61/8 141/2 141 51/4 14 20 4 63/4 83/4 81/2 101/4 13/8 13/8 C2-G-20A 391/8 41/2 61/8 151/4 6 16 223/8 41/2 8 101/2 101/4 13/8 13/8 C3-G-20A 491/8 51/4 7 165/8 151/4 6 16 223/8 41/2 8 | Burner
Model A B B(R) C C(R) D E F** G G Max. H I K L S X C1-G-10 341/8 313/6 59/6 141/2 141/2 45/6 121/4 20 31/4 43/4 71/4 79/6 101/1 171/6 125/6 71/4 C1-G-12 341/8 313/6 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 79/6 101/4 171/8 125/8 71/4 C2-G-15 391/8 41/2 61/8 147/8 14 51/4 14 20 4 63/4 83/4 81/2 101/4 187/8 133/8 81/2 C2-G-20B 391/8 41/2 61/8 141/8 14 20 4 63/4 83/4 81/2 101/8 13/8 81/2 C3-G-20 44 51/4 7 165/8 151/4 </td <td>Burner
Model A B B(R) C C(R) D E F** G G M I K L S X Nat.Gas
MBH Max. C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 71/4 980 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 71/4 980 C2-G-15 391/8 41/2 61/8 144 51/4 14 20 4 63/4 83/4 81/2 101/4 187/8 13/8 81/2 2,200 C2-G-020 391/8 41/2 61/8 147/8 14 20 4 63/4 83/4 81/2 101/4 17/8 18/2 3,080 C3-G-20 44</td> <td>Burner
Model A B B(R) C C(R) D E F** G G G H I K L S X MBH Max. Boiler H.P.
Mat. Gas C1-G-10 341/s 313/16 59/16 141/2 141/2 45/s 121/4 20 31/4 43/4 71/4 73/s 101/2 125/s 71/4 980 23.5 C1-G-12 341/s 313/16 59/16 141/2 141/2 45/s 121/4
 20 31/4 43/4 71/4 73/s 101/2 125/s 71/4 1380 32.3 C2-G-15 391/s 41/2 61/s 141 51/4 14 20 4 63/4 83/2 101/4 187/s 133/s 81/2 2,200 52.3 C2-G-2DA 391/s 41/2 61/s 141 20 4 63/4 83/z 101/a 187/s 133/s 81/2 2,500 60.0 <t< td=""><td>Burner
Model A B B(R) C C(R) D E F** G G G G Na E K L K L S X Mat. Gas
MBH Max. Motor H.P.
Mat. C1-G-10 34'/a 3'1/a 5'1/a 14'/2 14'/2 4'/a 20 3'/a 4'/a 7'/a 7'/a 10'/a 17'/a 12'/a 12'/a 12'/a 12'/a 20 3'/a 4'/a 7'/a 7'/a 10'/a 12'/a 7'/a 13/a 3'/a 13'/a 14'/a 13'/a 13'/a 13'/a 13'/a 14'/a 12'/a 14'/a</td><td>Burner
Model A B B(R) C C(R) D E F** G G G K L S X Mat. Gas
MBH Max. Bollor H.P.
Max. Blower
(3450RPM) Standard
Starlin C1-G-10 341/s 313/s 59/s 141/z 141/z 45/s 121/z 20 31/z 43/z 71/z 73/z 101/z 171/s 125/s 71/z 1360 32.3 1/z 11/z C1-G-12 341/s 313/s 59/s 141/z 141/z 45/s 121/z 20 31/z 47/z 73/z 101/z 17/s 125/s 71/z 1360 32.3 1/z 11/z C2-G-15 391/s 41/z 61/z 12/z 0 4 63/z 81/z 101/z 133/z 81/z 2,500 60.0 31/z 11/z 21/z 141/z 101/z 12/z 101/z 12/z 10/z 12/z 10/z 12/z 12/z</td><td>Burner
Model A B B(R) C C(R) D E F** Std. Max. L S X Mat. Gas
MBH Max. Blower
MBH Max. Standard
Max. Pressure
MBM Max. Blower
MBH Max. Standard
Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max.<</td></t<></td> | Burner
Model A B B(R) C C(R) D E F** G G M I K L S X Nat.Gas
MBH Max. C1-G-10 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 71/4 980 C1-G-12 341/8 313/16 59/16 141/2 141/2 45/8 121/4 20 31/4 43/4 71/4 73/8 101/4 171/8 125/8 71/4 980 C2-G-15 391/8 41/2 61/8 144 51/4 14 20 4 63/4 83/4 81/2 101/4 187/8 13/8 81/2 2,200 C2-G-020 391/8 41/2 61/8 147/8 14 20 4 63/4 83/4 81/2 101/4 17/8 18/2 3,080 C3-G-20 44 | Burner
Model A B B(R) C C(R) D E F** G G G H I K L S X MBH Max. Boiler H.P.
Mat. Gas C1-G-10 341/s 313/16 59/16 141/2 141/2 45/s 121/4 20 31/4 43/4 71/4 73/s 101/2 125/s 71/4 980 23.5 C1-G-12 341/s 313/16 59/16 141/2 141/2 45/s 121/4 20 31/4 43/4 71/4 73/s 101/2 125/s 71/4 1380 32.3 C2-G-15 391/s 41/2 61/s 141 51/4 14 20 4 63/4 83/2 101/4 187/s 133/s 81/2 2,200 52.3 C2-G-2DA 391/s 41/2 61/s 141 20 4 63/4 83/z 101/a 187/s 133/s 81/2 2,500 60.0 <t< td=""><td>Burner
Model A B B(R) C C(R) D E F** G G G G Na E K L K L S X Mat. Gas
MBH Max. Motor H.P.
Mat. C1-G-10 34'/a 3'1/a 5'1/a 14'/2 14'/2 4'/a 20 3'/a 4'/a 7'/a 7'/a 10'/a 17'/a 12'/a 12'/a 12'/a 12'/a 20 3'/a 4'/a 7'/a 7'/a 10'/a 12'/a 7'/a 13/a 3'/a 13'/a 14'/a 13'/a 13'/a 13'/a 13'/a 14'/a 12'/a 14'/a</td><td>Burner
Model A B B(R) C C(R) D E F** G G G K L S X Mat. Gas
MBH Max. Bollor H.P.
Max. Blower
(3450RPM) Standard
Starlin C1-G-10 341/s 313/s 59/s 141/z 141/z 45/s 121/z 20 31/z 43/z 71/z 73/z 101/z 171/s 125/s 71/z 1360 32.3 1/z 11/z C1-G-12 341/s 313/s 59/s 141/z 141/z 45/s 121/z 20 31/z 47/z 73/z 101/z 17/s 125/s 71/z 1360 32.3 1/z 11/z C2-G-15 391/s 41/z 61/z 12/z 0 4 63/z 81/z 101/z 133/z 81/z 2,500 60.0 31/z 11/z 21/z 141/z 101/z 12/z 101/z 12/z 10/z 12/z 10/z 12/z 12/z</td><td>Burner
Model A B B(R) C C(R) D E F** Std. Max. L S X Mat. Gas
MBH Max. Blower
MBH Max. Standard
Max. Pressure
MBM Max. Blower
MBH Max. Standard
Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max.<</td></t<> | Burner
Model A B B(R) C C(R) D E F** G G G G Na E K L K L S X Mat. Gas
MBH Max. Motor H.P.
Mat. C1-G-10 34'/a 3'1/a 5'1/a 14'/2 14'/2 4'/a 20 3'/a 4'/a 7'/a 7'/a 10'/a 17'/a 12'/a 12'/a 12'/a 12'/a 20 3'/a 4'/a 7'/a 7'/a 10'/a 12'/a 7'/a 13/a 3'/a 13'/a 14'/a 13'/a 13'/a 13'/a 13'/a 14'/a 12'/a 14'/a | Burner
Model A B B(R) C C(R) D E F** G G G K L S X Mat. Gas
MBH Max. Bollor H.P.
Max. Blower
(3450RPM) Standard
Starlin C1-G-10 341/s 313/s 59/s 141/z 141/z 45/s 121/z 20 31/z 43/z 71/z 73/z 101/z 171/s 125/s 71/z 1360 32.3 1/z 11/z C1-G-12 341/s 313/s
 59/s 141/z 141/z 45/s 121/z 20 31/z 47/z 73/z 101/z 17/s 125/s 71/z 1360 32.3 1/z 11/z C2-G-15 391/s 41/z 61/z 12/z 0 4 63/z 81/z 101/z 133/z 81/z 2,500 60.0 31/z 11/z 21/z 141/z 101/z 12/z 101/z 12/z 10/z 12/z 10/z 12/z 12/z | Burner
Model A B B(R) C C(R) D E F** Std. Max. L S X Mat. Gas
MBH Max. Blower
MBH Max. Standard
Max. Pressure
MBM Max. Blower
MBH Max. Standard
Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
Max. Pressure
MBH Max. Blower
MBH Max. Standard
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MBH Max. Standard
MBH Max. Pressure
MBH Max. Blower
MBH Max. Standard
MBH Max.< |



Power Flame Incorporated

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- Capacities listed are based on 0.20" W.C. positive pressure, except for C5-G-30B, which is rated at +1.2" W.C. Refer to capacity curves for derates based upon combustion chamber pressure.
- At inlet to main manual shutoff cock to obtain P/F certified ratings with standard U.L. gas train. Optional gas trains and combustion heads available for lower pressures.
- * This dimension may be increased. Consult factory.
- ** This dimension depicts space required to accomodate a standard gas train.



Blowdown Tanks For High Pressure Process Steam Boilers

Rite Blowdown (Blowoff) Tanks are engineered for the safe removal of scale causing solids in process steam boilers. These vented, heavy-duty tanks are constructed in accordance with ASME Code Section VIII, Division 1 for a maximum allowable working pressure (MAWP) of 150 PSIG @ 450 F and comply with current National Board Rules and Recommendations. Rite Blowdown Tanks may be used for intermittent blowdown service as supplied, or for continuous blowdown or multiple boiler blowoff service, with the addition of an automatic aftercooler system.

All Rite Blowdown Tanks feature **tangential blowdown inlet nozzles with half-inch thick full circumference wear plates** for improved blowdown performance and extended tank life over other designs. And, unlike blowdown separators that require temperature regulating valves and volume cold water supply to cool their direct discharge, Rite Blowdown Tanks hold enough cooled water left over from each previous blowoff to cool and temper the next, thus **insuring a safe, low volume discharge every time you blowdown**. Compare our standard features below and see why one choice stands out - the **Rite** choice.



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* If supplied.

Rev. 12/2013

REF.	DESCRIPTION	BDT1648	BDT1860	BDT1872	BDT2448	BDT2460	BDT2472	BDT3060	BDT3072	BDT3672	BDT4260
Α	VENT, FLASH STEAM	2 1/2" FNPT	3" FNPT	3" FNPT	4" FLG.	4" FLG.	4" FLG.	5" FLG.	5" FLG.	5" FLG.	6" FLG.
В	BLOWDOWN INLET	1" MNPT	1 1/2" MNPT	1 1/2" MNPT	1 1/2" MNPT	2" MNPT	2" MNPT	2" MNPT	2" MNPT	2" MNPT	2" MNPT
С	TEMPERED WATER OUTLET	2" MNPT	2" MNPT	2" MNPT	2" MNPT	2 1/2" MNPT	2 1/2" MNPT	3" MNPT	3" MNPT	3" MNPT	3" MNPT
D	INSPECTION PORTS (2)	2" FNPT	2" FNPT	2" FNPT	2" FNPT	2" FNPT	2" FNPT	2" FNPT	2" FNPT	2" FNPT	12x16 M.W.
E	CLEANOUT / FLUSHING DRAIN	2" FNPT	2" FNPT	2" FNPT	2" FNPT	2" FNPT	2" FNPT	3" FNPT	3" FNPT	3" FNPT	2" FNPT
F	PRESSURE GAGE CONNECTION *	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT
G	GAUGE GLASS CONNECTIONS (2) *	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT	1/2" FNPT
1	THERMOMETER CONNECTION *	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT
J	COLD WATER CONNECTION *	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT	3/4" FNPT
O.D.	OUTSIDE DIAMETER INCHES (cm)	16 (41)	18 (46)	18 (46)	<mark>24 (61)</mark>	24 (61)	24 (61)	30 (77)	30 (77)	36 (92)	42 (107)
S.L.	SHELL LENGTH INCHES (cm)	48 (122)	60 (153)	72 (183)	48 (122)	60 (153)	72 (183)	60 (153)	72 (183)	72 (183)	60 (153)
0.A.H.	OVERALL HEIGHT INCHES (cm)	75 (191)	88 (224)	96 (244)	<mark>78 (198)</mark>	9 (229)	98 (249)	92 (234)	104 (264)	107 (272)	98 (249)
BLOW GALLC	DOWN CAPACITY (HALF TANK) DNS (LITERS)	21 (79)	36 (136)	40 (151)	<mark>54</mark> (204)	65 (246)	76 (288)	106 (401)	124 (469)	183 (693)	222 (840)
NORM (TANK	AL OPERATING WEIGHT HALF FULL) POUNDS (kg)	610 (277)	890 (404)	993 (450)	<mark>1165</mark> (528)	1350 (612)	1540 (699)	1984 (900)	2254 (1022)	3041 (1379)	3481 (1579)
FLOOD	DED WEIGHT (FULL) POUNDS (kg)	960 (435)	1190 (540)	1327 (602)	<mark>1615</mark> (733)	1894 (859)	2172 (985)	2867 (1300)	3288 (1491)	4566 (2071)	5332 (2419)
SHIPP	ING WEIGHT POUNDS (kg)	435 (197)	590 (268)	660 (299)	<mark>715</mark> (324)	810 (367)	905 (411)	1150 (522)	1350 (612)	1590 (721)	1650 (748)
MAX. E	BOILER OPERATING PRESSURE	150 psi	150 psi	150 psi	150 psi	150 psi	150 psi	150 psi	150 psi	150 psi	150 psi



Addendum #3

Supplemental Info



J

O.D. TANK -

F

A

LEFT SIDE VIEW

Blowdown (Blowoff) Tanks Data & Dimensions

J

FRONT VIEW

F)*



Blowdown (Blowoff) Tanks Installation & Operation

INSTALLATION

Addendum #3 Supplemental Info

- 1. Level tank on concrete pad (with shims if required) until plumb.
- 2. Limit the number of elbows in vent piping to two 45 degree offsets.
- 3. Do not use plastic pipe or fittings.
- 4. Do not insulate the tank.
- For multiple boiler connections, continuous blowdown systems or frequent blowoff operations - an aftercooler may be required to keep the tempered water outlet temperature at or below 140 degrees F. Use cold water connection J for manual control, or install automatic aftercooler system at the tempered water outlet nozzle C.
- 6. Dashed lines indicate field piping.

GENERAL OPERATING INSTRUCTIONS

- 1. Electrically turn off boiler feed pump.
- 2. Blowdown low pressure steam boilers at or near operating pressure.
- 3. Blowdown high pressure steam boilers between 50-75 PSIG.
- 4. Note the water level in the boiler gauge glass.
- If boiler is equipped with fast & slow opening blowdown valves, open the fast one first, the slow one second. Shut blowdown valves off after water level in boiler gauge glass drops about 4" (see step 7).
- 6. Restore power to boiler feed pump. Pump should come on and refill the boiler to normal operating level.
- 7. Your chemical treatment company may alter the amount and frequency of blowdown based on job conditions.



Blowdown Tanks For High Pressure Steam Process Boilers Specification and Order Form

Addendum #3 Supplemental Info

SN	
NB	

Provide <u>1</u> Rite Blowdown Tank Model BDTHPS <u>2448</u>. Blowdown tank shall be constructed in accordance with the ASME Code Section VII, Division 1 for a maximum allowable working pressure of 150 psig and shall be National Board "U" stamped and registered. Shell and head thickness shall e 3/8" (.375"). The tank shall have the following standard connections: vent, tangential blowdown inlet, tempered water outlet, inspection openings, and a cleanout/flushing drain.

The blowdown inlet nozzle shall be tangential entry and constructed from Schedule 80 pipe. A 1/2" thick by 12" wide carbon steel full circumference wear plate shall be welded inside the tank at the inlet nozzle point of entry to protect the tank shell from erosion during blowdowns. The tempered water outlet nozzle shall be larger than the blowdown inlet nozzle for faster drainage and shall incorporate a water seal leg and integral anti-siphon feature.

The tank shall be supported by four heavy duty angle iron legs on feet with anchoring holes. Tanks shall be furnished with lifting lug(s) and painted with two or more coats of hard metallic blue polyurethane paint.

The following options shall also be required:

- _____ Industrial grade thermometer (shipped loose).
- _____ Pressure gauge with siphon loop (shipped loose).
- _____ Gauge glass assembly (shipped loose).
- _____ Automatic aftercooler assembly (shipped loose).
- _____ 4X6 handhole assembly (except on model BDT-4260 where 12" x 16" is standard).
- _____ Other: _____

Blowdown tank is for a ______ Boiler, Model _____ A# _____

A copy of this brochure shall ship with the tank ______ or mailed ahead of time to:

Representative		Job Name	Ship to:	
Requested Ship Date _		Purchase Order #		
Price:	_ Freight	Attn:	Tag:	
		Call	_ Hrs. Ahead:	
			Contact:	

Chemical Treatment SystemsFor Addendum #3 High Pressure Steam Boilers

Rite Chemical Treatment Systems are designed for the "Do It Yourself" customer who would like to take control of their water quality monitoring and treatment. The Chemical Treatment System includes everything needed to get started:

- 1. (1) 1/4" FNPT connection stainless steel injection quill installed in Rite CR tank.
- 2. (1) 120/60/1 chemical metering pump with suction and discharge tubing and connections.
- 3. (1) 120/60/1 receptacle on feed pump electrical housing to plug in chemical metering pump: (Also available in weatherproof for outdoor jobs).
- 4. (1) 48# pail of Rite BT-611 boiler chemical treatment*.
- 5. (1) test kit with instructions and chemical control parameters*.
- 6. (1) stainless steel body sample cooler shipped loose or mounted on side of boiler (for softened or regular tap cooling water).

*Consumables that will require re-ordering from time to time



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Condensate Return Feedwater Systems For Low and High Pressure Steam Boilers

Rite's feedwater return systems are engineered for the safe and efficient storage and pumping of condensate and make-up water back to the boiler. Why Rite? Because all our receivers are made from 3/8" PVQ steel, which is up to double the thickness of other receivers. With corrosion as the number one reason why return tanks wear out and need replacing – Rite Condensate Return Systems offer up to twice the service life of other brands. With standard receiver capacities from 46 to 250 gallons and simplex to triplex pump sets, Rite has a return system for virtually any requirement. Check out our other standard features below and see why one choice stands out – the **Rite** Choice.

Addendum #3 Supplemental Info

- Long-lasting 3/8" (.375) steel tank construction. Up to twice the head and shell thickness of other receivers for superior corrosion resistance.
- Vented, non-pressurized tank.
- Large 5" diameter cleanout facilitates sediment removal from receiver.
- Standard feedwater pumps are high performace Burks turbine or Goulds multistage centrifugal for long service life.
- NPSH suction piping to pumps includes shut-off valve and wye strainer.
- Automatic water make-up valve is float operated and mounted on top of the tank with built-in air gap provision. Eliminates the need for a backflow preventer.





- Sparge tube connection for preheating make-up water.
- Sight glass with brass gauge glass valves and rod protectors.
- Industrial grade thermometer.
- Structural steel base with anchor holes.
- Forklift skid design.
- Balanced lifting lug.
- Finished with super tuff metallic blue polyurethane paint.



Condensate Return Feedwater Systems Data & Dimensions Addendum #3

Supplemental Info





MODEL CR250

REF. DESCRIPTION CR50 CR100 CR250 2" FNPT (2) 2" FNPT А CONDENSATE RETURN 2" FNPT в VENT TO OUTDOORS 2" FNPT 2" FNPT 2" FNPT SPARGE TUBE CONNECTION (IF USED) 1/2" FNPT 1/2" ENPT 1/2" FNPT С D OVERFLOW 1" FNPT 1" FNPT 1 1/4" FNPT Е TANK DRAIN 1" FNPT 2" FNPT 1" FNPT F SOFT WATER MAKE UP 1/2" FNP1 1/2" FNPT 1/2" FNPT SPARGE TUBE REGULATING VALVE TEMPERATURE SENSOR ' FNPT 1" FNPT 1" FNPT G (2) 1/4" FNPT BOILER FEED PUMP DISCHARGE 1" FNPT Κ 36" (91 cm) L LENGTH INCHES (cm) 48.5" (123 cm) 63" (160 cm) INCHES (cm) 26" (66 cm) W WIDTH 38" (97 cm) 36" (91 cm) 38" (97 cm) н HEIGHT INCHES (cm) 38" (97 cm) 70" (178 cm) INCHES (cm) 9 1/2" (24 cm) Р PIPING (REMOVABLE) 7" (18 cm) N/A RETURN TANK CAPACITY TO OVERFLOW 46 GAL. (175 L) 104 GAL. (395 L) 240 GAL. (912 L) GALLONS (LITERS) SHIPPING WEIGHT APPROXIMATE POUNDS (KILOGRAMS) 495 LBS (223 KG) 825 LBS (371 KG) 1465 LBS (695 KG) MAXIMUM OPERATING WEIGHT POUNDS (KILOGRAMS) 3457 LBS (1556 KG) 877 LBS (395 KG) 1688 LBS (760 KG) (TANK FLOODED) SUGGESTED MAX. BOILER HORSEPOWER CAPACITY 50 100 250 MAXIMUM OPERATING FEEDWATER TEMPERATURE °F (°C) 225° F (107° C 225° F (107° C) 225° F (107° C)

* If supplied.



RECEIVING

Carefully inspect the equipment for any damage before signing bill of lading. Make sure the copper float ball inside the receiver (tank) has not come loose during shipment.

MAINTENANCE

Clean the pump suction wye strainer screen every 6 months. Clean out sediment from the bottom of the tank every few years as required. Be sure make-up valve shuts off tightly (no drips) when the float reaches its upward travel limit. If the tank overflows due to condensate return, adjust the float valve linkage to lower the make-up water level. Check float valve linkages every six months to be sure connections are tight. Lubricate float rod where it passes through guide bushing into tank every 6 months with WD-40 and make sure the rod is straight and travels smoothly between the stops. Make sure there is no stray voltage between the tank and ground. As little as 3 millivolts may cause electrolysis which can lead to premature tank corrosion.

TROUBLESHOOTING

If pump runs but the boiler at operating pressure doesn't fill, install a pressure gauge with the same range as the boiler's pressure gauge near the discharge of the pump as shown below. If the pump pressure fluctuates by more than a few P.S.I., the pump is probably cavitating (not getting enough water). Check the wye strainer screen, suction piping and sediment level in the bottom of the tank for any flow restrictions. If the pump pressure is constant but stays below the boiler pressure until the boiler pressure drops far enough for the pump to work, then either the check valve(s) in the feed line are failing or the pump impeller (Burks turbine only) needs to be adjusted for wear – see pump cut sheet for instructions.

STORAGE - LAY-UP

Empty tank completely using the drain fitting and a wet-dry vacuum. Remove all sediment and get the tank as dry as possible. Drain water from pump casing and leave dry. Post equipment lockout notice on receiver and pump disconnect(s).





Condensate Return Feedwater Systems Pump Data & Dimensions

Addendum #3 Supplemental Info





Condensate Return Feedwater Systems

Specification and Order Form Addendum #3

Supplemental Info

Condensate Return Feedwater System. Steel receiver shall be 3/8" (.375") minimum head and shell Provide one Rite model CR- 50 thick-ness for corrosion resistance. Receiver (tank) shall have 2" vent connection for non-pressurized operation and shall have additional fittings for the following: condensate return, sparge tube, sparge tube temperature sensor, overfow, drain, foat fange cover and cleanout opening, gauge glass valves, thermometer, (2) pump suction connections, and soft water make-up. All fttings shall be seal welded both inside and outside the tank. A sediment separator shall be incorporated into the receiver design. Receiver capacity shall be ______ gallons.

SN

Pump suction piping shall be complete and consist of a wye strainer with 20-mesh stainless steel screen, brass shut-off valve and pump flange or union. The tank and suction piping shall deliver the required NPSH (net positive suction head) to the boiler feed pumps without cavitation or vortexing. Pump baseplates shall be through-bolted to feedwater system base without transmitting undue stress to the pump or suction piping. Pump arrangement shall be ______(simplex, duplex or triplex). Pump(s) shall be ______(Make) T41J-BF (Model), capable of delivering ______ GPM to a boiler operating at a maximum pressure of ______ PSIG.

Make-up water valve shall be foat operated type and mounted on top of the tank with built-in air gap provision. It shall be readily accessible for service.

The following options shall also be required: (Click Options for pictures)

Duplex pump arrangement. (2 Pumps)

Triplex pump arrangement. (Add 12" to "L" dimension of CR-50, CR-75, CR-100, and CR-150 receivers).

Panel Option #1 - Duplex pump control panel, NEMA ___, with rotary hand-auto switch, pump alternator and lead-lag feature to bring on both pumps when there is a low water condition. Includes rotary on-off switches, 1" indicating lights and contactors of suffcient rating for each single-phase fractionalhorsepower pumps. Supply power disconnect(s) and overload protection by others (single-phase fractional horsepower motors have built-in thermal overload protection). Wiring to pumps shall be furnished in liquid tight conduit.

Panel Option #2 - Same as above except with hand-off-auto switch and without lead-lag feature. Pumps will automatically alternate each time there is a call for feedwater as above, but the second pump will not come on when there is a low water condition.

Panel Option # 3 - Same as Panel Option 1, except where 3 phase pump motors require IEC type motor starters with overload protection in lieu of single phase motor contactors. Specify voltage _____ phase _____ and cycles _

_ Panel Option # 4 - Same as Panel Option 2, except where 3 phase pump motors require IEC type motor starters with overload protection in lieu of single phase motor contactors. Specify voltage _____ phase _____ and cycles ____

Panel Option # 5 - For triplex systems feeding two boilers with dedicated pumps and a third standby pump. Features NEMA 1 panel with rotary auto-off-pump #3 switches that allow pump #3 to operate in lieu of pump #1 or #2. With 1" indicating lights and contactors for each single-phase fractional horsepower pump.

Panel Option # 6 - Same as Panel Option #5, except where 3 phase pump motors require IEC type motor starters with overload

protection in lieu of single phase motor contactors. Specify voltage _____ phase _____ and cycles _____.
Panel Option # 7 – Simplex pump control panel, NEMA ___ with combination disconnect switch, circuit breaker, IEC starter with overload realy and Hand-Off-Auto switch with light. (Specify Motor Horsepower Voltage Phase and Cycles Specify NEMA Rating (NEMA 1 for indoor or NEMA 3R for outdoor)

Low water alarm _____ with indicating light _____ with silencing switch _____ with dry contacts for remote signal.

High water alarm _____ with indicating light _____ with silencing switch _____ with dry contacts for remote signal.

NEMA 4 panel in lieu of NEMA 1.

Open drip proof pump motors covered for wet or outdoor location.

TEFC pump motors in lieu of O.D.P.

Sparge tube with automatic steam control valve to regulate feedwater temperature.

Receiver shall be insulated with 1" thick fiberglass and covered with metal jacket.

- Metal Dome cover over CR-50, CR-75, CR-100, or CR-150 for outdoor rain protection.
- Other:

System is for a Rite Model ______ S/N _____ A# _____ Scheduled ship date ______ Other _____ Representative ______ Job Name _____ Ship to: _____ Requested Ship Date ______ Purchase Order # _____ _____ Freight ____ Price:

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T41J Jockey Pump Submittal Sheet **Performance Curve**

Addendum #3 Supplemental Info



All dimensions in inches. May vary ± ½ inches. Not for construction purposes unless certified. *See motor dimensions for "C-AH" dimension (Varies depending on motor enclosure).

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Phone: 630-552-4115 • Fax: 630-552-3688 Email: SALES@MTHPUMPS.COM

Horizontal Close Coupled Design Specifications

The contractor shall furnish (and install as shown on the plans) an MTH T41 Series horizontal close coupled regenerative turbine type pump model T41J size 1" by 1" of bronze fitted construction. Each pump shall have a capacity of _____GPM when operating at a total PSI of ______. Suction pressure will be _____feet with a liquid temperature of ______°F.

The pump is to be furnished with a mechanical seal with stainless steel metal parts, Buna elastomers, ceramic seat and carbon washer. A stainless steel shaft or a shaft sleeve shall be furnished in pumps up to three horsepower and a 316 stainless steel shaft in pumps five horsepower and larger.

The pump casing shall be vertically split two piece, end suction and top discharge with water passageways accurately machined into each piece. The impeller shall be hydraulically self centering and no external adjustment shall be necessary.

Addendum #3 Supplemental Info

The pump shall be close coupled to a standard NEMA "C" face 3/4 HP ____phase ____Hertz ____voltage ____RPM horizontal open drip proof motor. The motor shall be sized to prevent overloading at the highest head condition listed in the specifications.

1-Phase Bills of Materials

[Item ID: 8C-T410.	JBFSCSXSAXX-CF71AD	
Item Description: 1	410J BF T21 Cer C/C 3/4 HP 1/60/115/208-230V 3450 RPM	ODP Motor
Item Number	Description	Qty Needed
12-1068-01-457	Type 21 Rotating Element .875" Buna Seal	1
1-2218-0J-543	T41 J Motor Bracket, Teflon Coated	1
2-2208-0J-543	T41 J Cover, Teflon Coated	1
17-1390-01-181	Sleeve, Shaft, Brass	1
15-1168-01-104	Setscrew, 18-8 SS	2
125-1282-01-592	Seal Seat, 0.875 Ceramic, O-Ring Style	1
22-4265-01-101	Plug, 1/8 SAE	1
135-1179-01-457	Oring, -218 Buna Included w/ Seat	1
7-3970-01-457	O Ring, -902 Buna (Drain Plug)	1
7-2479-01-457	O Ring, -159 Buna	1
DLC-1242-07-ODP	Motor, 56C-Face, DLT Electric, 3/4 Hp, 1 Phase, 2 Poles, ODP CC	1
19-1997-01-080	Machine Bolt, 3/8-16 + 4"L	4
23-1487-01-080	Key, Sleeve	1
11-2228-0J-206	Impeller, T41J Bronze	1
23-1022-01-104	Drive Key, 316SS	1
14-1049-01-080	Drive Collar	1

1-Phase Motor Nameplate



3-Phase Bills of Materials

Item Description: T410G BF T21 Cer C/C 3/4 HP 3/60/208-230/460V 3450 RPM ODP motor Item Number Description Qty Needed 12-1068-01-457 Type 21 Rotating Element .875" Buna Seal 1 1-2218-0J-543 T41 J Motor Bracket, Teflon Coated 1 2-2208-0J-543 T41 J Cover, Teflon Coated 1 17-1390-01-181 Sleeve, Shaft, Brass 1 15-1168-01-104 Setscrew, 18-8 SS 2 125-1282-01-592 Seal Seat, 0.875 Ceramic, O-Ring Style 1 12-4265-01-101 Plug, 1/8 SAE 1 135-1179-01-457 Oring, -218 Buna Included w/ Seat 1 7-3970-01-457 O Ring, -902 Buna 1 7-2479-01-457 O Ring, -159 Buna 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	Item ID: 8C-T410	IBFSCSXSAXX-CF79ED	
Item Number Description Qty Needed 12-1068-01-457 Type 21 Rotating Element .875" Buna Seal 1 1-2218-0J-543 T41 J Motor Bracket, Teflon Coated 1 2-2208-0J-543 T41 J Cover, Teflon Coated 1 2-2208-0J-543 T41 J Cover, Teflon Coated 1 17-1390-01-181 Sleeve, Shaft, Brass 1 15-1168-01-104 Setscrew, 18-8 SS 2 125-1282-01-592 Seal Seat, 0.875 Ceramic, O-Ring Style 1 22-4265-01-101 Plug, 1/8 SAE 1 135-1179-01-457 Oring, -218 Buna Included w/ Seat 1 7-3970-01-457 O Ring, -902 Buna (Drain Plug) 1 7-2479-01-457 O Ring, -159 Buna 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1402-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1 </td <td>Item Description: 1</td> <td>410G BF T21 Cer C/C 3/4 HP 3/60/208-230/460V 3450 RPM</td> <td>ODP motor</td>	Item Description: 1	410G BF T21 Cer C/C 3/4 HP 3/60/208-230/460V 3450 RPM	ODP motor
12-1068-01-457 Type 21 Rotating Element .875" Buna Seal 1 1-2218-0J-543 T41 J Motor Bracket, Teflon Coated 1 2-208-0J-543 T41 J Cover, Teflon Coated 1 17-1390-01-181 Sleeve, Shaft, Brass 1 15-1168-01-104 Setscrew, 18-8 SS 2 125-1282-01-592 Seal Seat, 0.875 Ceramic, O-Ring Style 1 125-1282-01-592 Seal Seat, 0.875 Ceramic, O-Ring Style 1 135-1179-01-457 Oring, -218 Buna Included w/ Seat 1 7-3970-01-457 O Ring, -902 Buna (Drain Plug) 1 7-2479-01-457 O Ring, -902 Buna 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	Item Number	Description	Qty Needed
1-2218-0J-543 T41 J Motor Bracket, Teflon Coated 1 2-2208-0J-543 T41 J Cover, Teflon Coated 1 17-1390-01-181 Sleeve, Shaft, Brass 1 15-1168-01-104 Setscrew, 18-8 SS 2 125-1282-01-592 Seal Seat, 0.875 Ceramic, O-Ring Style 1 22-4265-01-101 Plug, 1/8 SAE 1 135-1179-01-457 Oring, -218 Buna Included w/ Seat 1 7-3970-01-457 O Ring, -902 Buna (Drain Plug) 1 7-2479-01-457 O Ring, -902 Buna 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	12-1068-01-457	Type 21 Rotating Element .875" Buna Seal	1
2-2208-0J-543 T41 J Cover, Teflon Coated 1 17-1390-01-181 Sleeve, Shaft, Brass 1 15-1168-01-104 Setscrew, 18-8 SS 2 125-1282-01-592 Seal Seat, 0.875 Ceramic, O-Ring Style 1 135-1179-01-457 Oring, -218 Buna Included w/ Seat 1 17-3970-01-457 O Ring, -902 Buna (Drain Plug) 1 7-3970-01-457 O Ring, -902 Buna (Drain Plug) 1 7-2479-01-457 O Ring, -902 Buna (Drain Plug) 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	1-2218-0J-543	T41 J Motor Bracket, Teflon Coated	1
17-1390-01-181 Sleeve, Shaft, Brass 1 15-1168-01-104 Setscrew, 18-8 SS 2 125-1282-01-592 Seal Seat, 0.875 Ceramic, O-Ring Style 1 22-4265-01-101 Plug, 1/8 SAE 1 135-1179-01-457 Oring, -218 Buna Included w/ Seat 1 7-3970-01-457 O Ring, -902 Buna (Drain Plug) 1 7-2479-01-457 O Ring, -159 Buna 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	2-2208-0J-543	T41 J Cover, Teflon Coated	1
15-1168-01-104 Setscrew, 18-8 SS 2 125-1282-01-592 Seal Seat, 0.875 Ceramic, O-Ring Style 1 22-4265-01-101 Plug, 1/8 SAE 1 135-1179-01-457 Oring, -218 Buna Included w/ Seat 1 7-3970-01-457 O Ring, -902 Buna (Drain Plug) 1 7-2479-01-457 O Ring, -159 Buna 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	17-1390-01-181	Sleeve, Shaft, Brass	1
125-1282-01-592 Seal Seat, 0.875 Ceramic, O-Ring Style 1 122-4265-01-101 Plug, 1/8 SAE 1 135-1179-01-457 Oring, -218 Buna Included w/ Seat 1 7-3970-01-457 O Ring, -902 Buna (Drain Plug) 1 7-2479-01-457 O Ring, -159 Buna 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	15-1168-01-104	Setscrew, 18-8 SS	2
22-4265-01-101 Plug, 1/8 SAE 1 135-1179-01-457 Oring, -218 Buna Included w/ Seat 1 7-3970-01-457 O Ring, -902 Buna (Drain Plug) 1 7-2479-01-457 O Ring, -159 Buna 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	125-1282-01-592	Seal Seat, 0.875 Ceramic, O-Ring Style	1
135-1179-01-457 Oring, -218 Buna Included w/ Seat 1 7-3970-01-457 O Ring, -902 Buna (Drain Plug) 1 7-2479-01-457 O Ring, -159 Buna 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	22-4265-01-101	Plug, 1/8 SAE	1
7-3970-01-457 O Ring, -902 Buna (Drain Plug) 1 7-2479-01-457 O Ring, -159 Buna 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	135-1179-01-457	Oring, -218 Buna Included w/ Seat	1
7-2479-01-457 O Ring, -159 Buna 1 FRC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	7-3970-01-457	O Ring, -902 Buna (Drain Plug)	1
ERC-1250-07-ODP 3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880] 1 19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	7-2479-01-457	O Ring, -159 Buna	1
19-1997-01-080 Machine Bolt, 3/8-16 + 4"L 4 23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	FRC-1250-07-ODP	3/4 HP 3/60/230/460V 3450 RPM ODP Bluffton [3/50/190/3802880]	1
23-1487-01-080 Key, Sleeve 1 11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	19-1997-01-080	Machine Bolt, 3/8-16 + 4"L	4
11-2228-0J-206 Impeller, T41J Bronze 1 23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	23-1487-01-080	Key, Sleeve	1
23-1022-01-104 Drive Key, 316SS 1 14-1049-01-080 Drive Collar 1	11-2228-0J-206	Impeller, T41J Bronze	1
14-1049-01-080 Drive Collar 1	23-1022-01-104	Drive Key, 316SS	1
	14-1049-01-080	Drive Collar	1

3-Phase Motor Nameplate

BLUFF 410 E. 3 Blufftor	Spring St. h, Indiana 46714	DTOR	Bark MOD 1303007156 REF 1250-07-0DF
60.HZ HP 3/4 RPM 3450 v 208-230/460 FLA 2.6-2.6/1.3 SF 1.5 SFA 3.4-3.4/1.7	<u>50.HZ</u> 3/4 2875 190-220/380-440 3 0-3 2/1 5-1 6 10 Blank	FR 56C Mai 40 ENC D P Kate CONT	PH 3 INS B
	OLTAGE $\frac{1}{2}$ 5 4 6 $\frac{1}{6}$ 9 OLTAGE 1 4 7 7 2 5 6 8	Separate provided lire hazard office sign fine sign fine sign fine sign fine sign fine sign fine sign fine sign fine sign fine sign fine sign fine sign fine fine fine fine fine fine fine fin	ARNING - Always disconnect dot from power supply before viriding. OTOR CONTAINS NO IERMAL PROTECTOR- wer current protection must be to prevent burnout and possible imm overlead or stalled metor. ROUNDING- Fatal electrical & may result il motor itame and cost metal are not grounde di pliance with dedricit coda.

MTHPUMPS 401 West Main Street • Plano, IL 60545-1436 Phone: 630-552-4115 • Fax: 630-552-3688 Email: SALES @ MTHPUMPS.COM http://WWW.MTHPUMPS.COM Dated February 2019

Addendum #3 **Supplemental Info** How the Twin-Tank Softener works.

Brine and hard water ions out to drain

Water Softening Process

Hard water enters the tank in service. As it passes through the resin, the hard water ions are attracted to the resin. By the time the water gets to the bottom of the tank, it's soft.

Regeneration Process

When the resin becomes saturated with hard water ions, the tank goes into regeneration. Brine water is injected into the tank and rinses the hard water ions off the resin and down the drain. Once the resin is free of the hard water ions, fresh, soft water rinses all the brine out, leaving the tank Brine tank ready for service.

FYI: Typical water ranges from 1 gpg (grains per gallon) to well in excess of 100 gpg of hardness. The Environmental Protection Agency recommends using water not exceeding 7 gpg.

Regeneration process Water softener tank in service

Brine and hard water ions out to drain

Hard water in



NAME OF COMMAN

Superior Product Quality and Continuous Service at an Affordable Price.



The New Twin-Tank System

A cost-effective solution for soft water all the time.

COLUMN EXC

Twin tanks provide continuous soft water. With the new twin-tank softener system featuring the Fleck 9100 control valve, businesses benefit from soft water 24 hours a day, seven days a week. Should your demand for soft water suddenly spike - for instance, from unexpected demand - the second tank of softened water is there as a backup, with an innovative quick connection for seamless switching between the tanks.

Why is soft water so critical to businesses in the first place? Hard minerals in the water can clog plumbing lines, negatively affecting product taste and/or performance. Without soft water more soap and other additives are required to achieve desired results, and stains and mineral residue are common.



Noryl[®] material

Installing a twin-tank softener featuring the Fleck 9100 valve can save significant amounts of water and salt



3200 Mechanical Timer



Advanced SE Electronic Timer



daily use. In addition, they offer the added advantage of having only a single moving part in contact with water for low maintenance.

* Noryl® is a registered trademark of the General Electric Company

15% savings in both water and salt.

Unlike preset systems, the twin-tank system regenerates with soft water only when necessary. Plus it uses 100% of the tank in service. The end result? Fifteen percent savings in both water and salt.**

> ** Compared to a system with meter delayed regeneration and the reserve set at 30% of the system capacity, provided that half of the reserve capacity is unused.

Electronic or mechanical.

Your choice of the highly reliable 3200 mechanical timer or advanced SE electronic timer with easy programming and minimal parts.

Noryl[®] material for added durability.

Manufactured from high-tech Noryl® material, the 9100 valve is highly corrosion resistant. Its light-weight, electrical insulating properties and superior impact strength make it the material of choice for this highly reliable and durable valve. The 9100 is also available in lead-free brass. Both versions have been engineered and tested to withstand the equivalent of 27 years of uninterrupted

Only pennies per day to operate.

Choose the SE electronic timer, and you'll pay only \$4.87 in electricity for the entire year. Choose the mechanical timer, and that cost is less than 25 cents per year!***

*** Based on one regeneration per day at \$0.0745/kw.





Back (without cover)

Features

- Salt and water savings by using 100% capacity of the tank in service before switching to the second tank
- Regenerates immediately when needed for continuous soft water
- Regenerates with soft water and keeps system clean for optimum operating efficiency and minimum maintenance
- · Proven technology and performance
- · Corrosion-free fiber-reinforced polymer valve body
- · Innovative second tank quick connection
- Perfect for light commercial/heavy residential systems that require twin tank conditioning capabilities

Options

- · Fiber-reinforced polymer or lead-free brass meter
- · Bypass valve (fiber-reinforced polymer or lead-free brass)
- · Auxillary switches
- 3200 mechanical timer, SXT, or XT electronic timers
- · 32 mm high flow distribution system

Valve Specifications

Valve material	Fiber-reinforced polymer
Inlet/Outlet	3/4", 1" or 1-1/4"
Cycles	6

Flow Rates (50 psi Inlet) - Valve with Meter

	3/4" meter	3/4" turbine	1" meter
Continuous (15 psi drop)	18 GPM	19 GPM	21 GPM
Peak (25 psi drop)	24 GPM	25 GPM	28 GPM
Cv (flow at 1 psi drop)	4.8	5	5.1
Max. backwash (25 psi drop)	8.5 GPM	8.5 GPM	8.5 GPM

Regeneration

Downflow/Upflow	Downflow only
Adjustable cycles	Yes
	3200: 82 or 164 minutes total
Time available	SXT: 199 minutes per cycle
	XT: Up to 240 minutes per cycle

Meter Information

Meter accuracy range	3/4": .25 - 15 GPM +/- 5% 1": .7 - 40 GPM +/- 5%
Meter capacity range (gal.) 3/4"	Standard: 125 - 2,125 Extended: 625 - 10,625 SXT: 1 - 999,900 XT: 1,000 - 9,900,000
1"	Standard: 310 - 5,270 Extended: 1,550 - 26,350 SXT: 1 - 999,900 XT: 1,000 - 9,900,000

Dimensions

Distributor pilot	1.05" O.D. and 32 mm
Drain line	1/2" NPT
Injector brine system	1600
Brine line	3/8"
Mounting base	2-1/2" - 8 NPSM
Height from top of tank	7-3/10"

Typical Applications

Water softener 6" - 16" diameter

Additional Information

Electrical rating	24 v, 110 v, 220 v - 50 Hz, 60 Hz
Estimated shipping weight	Mechanical valve: 14-1/2 lbs. SXT and XT valve: 12 lbs.
Pressure	Hydrostatic: 300 psi Working: 20 - 125 psi
Temperature	34° - 110° F (cold water only)

* As defined in the U.S. EPA Safe Drinking Water Act; the product also meets California Proposition 65 Standards





KEY NOTES

REMOVE GYPSUM BOARD CEILING AS SHOWN FOR MECHANICAL WORK, RE: MECH. REPAIR GYPSUM BOARD TO MATCH EXISTING. PAINT ENTIRE CEILING.

REMOVE SUSPENDED ACOUSTIC CEILING AS SHOWN FOR MECHANICAL WORK, RE: MECH. REPLACE CEILING TILE AND GRID. PROVIDE NEW CEILING GRIDS TO REPLACE DAMAGED TILE/GRID.

GENERAL NOTES

ROOF-CEILING ASSEMBLY IS OBSERVED.

—(В)

—(C)

REPAIR GYPSUM BOARD ON STRUCTURE TO MAINTAIN FIRE RESISTANT ROOF CEILING ASSEMBLY WHERE DAMAGED BY MECHANICAL WORK. INSTALL FIRESTOPPING AT PIPE/DUCTWORK PENETRATIONS.

ALERT OWNER & ARCHITECT IF PREVIOUS DAMAGE TO FIRE-RESISTANT

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ISSUE		DATE
Construction Do	cuments	09/22/2023
Issued for Const	ruction	10/27/2023
Addendum	#3	11/20/2023
MEP JOB:	22318	
DESIGNED:	SH	
CHECKED:		

	PLUMBING FIXTURE SCHEDULE												
					MANUFACTURER &	FAUCET TRIM	ACCEPTABLE		R	ROUGH IN CONNECTION SIZING			
SYMBOL	TYPE	ADA	ACCESSORIES	FINISH	MODEL NUMBER	MANUFACTURER &	MANUFACTURERS	REMARKS	WASTE	VENT	HOT	1	
						MODEL NUMBER			(INCHES)	(INCHES)	(INCHES)	, (
	EMERGENCY EYE AND FACE WASH		INTEGRAL FLOW CONTROL, 1/2" IPS STAY		HAWS		BRADLEY	PROVIDE WITH THERMAL DISPERSION				i	
EFW-I	PEDESTAL MOUNTED, STAINLESS STEEL BOWL,	YES	OPEN BALL VALVE OPERATED BY SWING	COMPOSITE	7351-7641		GUARDIAN EQUIP.	MONITOR EQUAL TO AMERITROL	2	2	I/2	i .	
	YELLOW POP-OFF DUST COVER.		ARM OPERATION, IN-LINE MESH WATER STRAINER				SPEAKMAN	MODEL FXIOOO. SEE NOTE 2.			(85F-105F)	L	
	FLOOR DRAIN - 5" ROUND TOP, ROUND CAST				ZURN		JOSAM		NOTED			i .	
FD-I	IRON BODY ,FLASHING COLLAR, ADJUSTABLE	YES	ZIO72 TRAP PROTECTOR	NICKLE BRONZE	Z4I5-BZI		JR SMITH	FOR FINISHED FLOOR AREAS	ON	2		i .	
	STRAINER HEAD, SECURED GRATE						MIFAB	PROVIDED BY AHU MANUFACTURER	PLANS			i	
NOTE:	I. ALL CONNECTIONS TO POTABLE WATER SYSTEM SHALL	CONFORM TO NS	F/ANSI-61 AND NSF/ANSI-372 EFFECTIVE 01/04/2014.										
	2. COORDINATE INTERLOCKING SENSOR NOTIFICATIONS F	ROM THERMAL DI	ISPERSION MONITOR WITH SIEMENS.										

									SIE		SCHEDULE								
						MBH	MBH		BOILER			NUMBER	NATURAL GAS		OPERATING	F	ELECTRICAL	-	
SYMBOL	MANUFACTURER	MODEL	SERVICE	TYPE	BOILER	INPUT	OUTPUT	LBS/HR	BURNER	MAX FIRING RATE	OPERATING PRESSURE	OF	SUPPLY PRESSURE	FUEL	WEIGHT	BURNER	VOLT	PHASE	REMA
					(HP)	@S.L.	@ 5300'		(HP)	(CFH)	(PSIG)	TUBES	(IN WG)		(LBS)	RPM	, 		
B-I	RITE	P50G	STEAM	WATER TUBE	50	2,093	1,373	1,725	3/4	2,891	75	63	Т	NAT. GAS	3,000	3,450	480	3	-
REMARKS:																			
١.	EQUIPMENT SCHEDULE BAS	ED ON: RITE. AC	CCEPTABLE MANUFACT	VER'S INCLUDE: AJA	X, BRYAN.														
2.	150 PSI CONSTRUCTION.																		

3. BASED ON 830 CU.FT /HR NATURAL GAS FUEL HEATING.

4. PROVIDE SINGLE POINT POWER CONNECTION FOR BOILER CONTROL PANEL.

5. POWERFLAME C2-G-15 MODULATING BURNER. BURNER CAPACITY SHALL BE SIZED FOR 5,280' ELEVATION. (6. PROVIDE MANUFACTURER'S BOILER SKID PACKAGE SYSTEM INCLUDING RITE CR50 CONDENSATE RETURN TANK (CRT-1), MTH PUMPS TAIJ FEEDWATER PUMP (P-6), RITE BDT2448 BLOWDOWN SEPARATOR (BS-1), RITE AFT-24-I TWIN TANK WATER SOFTENER SYSTEM WITH FLECK 9100 CONTROL VALVE (MG-I), AND RITE CHEMICAL TREATMENT SYSTEM FOR HIGH PRESSURE STEAM BOILERS (CTP-I). 1. PROVIDE 208V/3PH CONNECTION FOR CONDENSATE RETURN TANK PUMP P-6.

8. PROVIDE 120V CONNECTION FOR WS-1 METERED TWIN VALVE.

9. PROVIDE 120V CONNECTION FOR CTP-1 CHEMICAL METERING PUMP.

SYMBOL	MANUFACTURER	
EFPH-I	GREENHECK	SE
REMARKS:		
١.	EQUIPMENT SCHEDULE BA	ASED
2.	PROVIDE FAN WITH UNIT	MOUN
3.	PROVIDE WITH DISCHAR	GE DU
4.	PROVIDE WITH 45 DEGR	ee we
5.	UNIT SHALL BE COMPATI	BLE F
SEQUENCE OF C	OPERATION:	
	SEE SHEET M-0.5 FOR S	EQUEN

	THERMOSTATIC MIXING VALVE SCHEDULE												
SYMBOL	MODEL	SERVICE	HOT WATER INLET TEMP (F)	COLD WATER INLET TEMP (F)	OUTLET TEMP (F)	MINIMUM FLOW (GPM)	DESIGN FLOW (GPM)	PRESSURE DROP (PSI)	SIZE (IN)	NOTES			
TMV-I	920IEW	EYEWASH STATION	140	55	85	3.7	3.7	2	I/2"	l, 2			
NOTES:	EQUIPMENT SCHEDULE E	BASED ON: HAWS.											

2. ACCEPTABLE MANUFACTURERS INCLUDE: LAWLER, POWERS, WEBSTONE, BRADLEY, AND SYMMONS.

THERMOSTATIC WATER MIXING VALVE WITH SOLID BIMETAL OR LIQUID FILLED THERMOSTAT, ADJUSTABLE TEMPERATURE LIMIT STOP, INTEGRAL COMBINATION CHECK STOPS ON INLETS. COLOR CODED DIAL THERMOMETER ON OUTLET, INTEGRAL WALL SUPPORT, CAST LEVER HANDLES. BRONZE, BRASS AND STAINLESS STEEL INTERNAL COMPONENTS WITH ROUGH BRONZE OR CHROME PLATED FINISH. LOCKING TEMPERATURE REGULATOR. MASTER MIXING TYPE VALVE SHALL CONSIST OF LARGE THERMOSTATIC WATER MIXING VALVE FOR HIGH FLOWS, SMALL THERMOSTATIC WATER MIXING VALVE FOR SMALL FLOWS, WITH PRESSURE REGULATING VALVE WITH PRESSURE GAUGES, FACTORY PREASSEMBLED AND TESTED PIPING MANIFOLD, INLET AND OUTLET BALL VALVES. EACH THERMOSTATIC MIXING VALVE SHALL BE AS SPECIFIED ABOVE. ASSEMBLY SHALL BE SURFACE MOUNTED TO STEEL FRAMEWORK.

	BACKFLOW PREVENTER SCHEDULE												
SYMBOL	MODEL	TYPE	MINIMUM FLOW (GPM)	MAXIMUM FLOW (GPM)	DESIGN FLOW (GPM)	PRESSURE DROP - DESIGN (PSI)	PRESSURE DROP - MAX (PSI)	SIZE (IN)	LENGTH (IN)	SERVICE			
BFP-I	BFP-I 975XL2 REDUCED PRESSURE 5 50 15 11 15 1 19 DOMESTIC												
١.	ACCEPTAB	LE MANUFACTURERS INCLUDE:	ZURN-WILK	INS, WATTS,	CASH-ACM	E, FEBCO, AMES.							
2.	CONNECTIC	INS TO DOMESTIC WATER SYS	TEM SHALL	BE LEAD FF	REE AND M	EET THE REQUIREM	IENTS OF NSF/AN	5I 6I.					
3.	LENGTH INC	LUDES STRAINER AND SHUT-C	PFF VALVE.										
4	PROVIDE M	NITH AIR GAP ACCESSORY PIF	PED TO NEA	REST FLOOR	R DRAIN AI	ND RELIEF VALVE	DISCHARGE SENS	50R.					

STEAM BOILED SOLEDILLE

SPECIFICATION:

	FAN SCHEDULE														
				5.P.	ELI	ECTRICAL DA	ATA								
MODEL	FAN TYPE	SERVICE	CFM	IN M.C.	VOLT/	RPM	HP	DRIVE	DAMPER	SONES	WALL	WEIGHT	HEIGHT	REMA	
			ø 5300'	ø 5300'	PHASE			TYPE	TYPE		OPENING	(LBS)	(IN)		
5EI-12-432-A	AXIAL	BOILER ROOM	800	0.35	120/1	1750	1/4	DIRECT	MOTORIZED	11.3	14.5" SQ	38	IB	I, 2, 3	

ON: GREENHECK. ACCEPTABLE MANUFACTURERS INCLUDE: ACME, CARNES, COOK, GREENHECK, PENN, SOLER & PALAU, AND TWIN CITY.

NTED SPEED CONTROL SWITCH.

NCT COLLAR.

EATHERHOOD AND BIRD SCREEN. FOR INTERFACE WITH BAS. COORDINATE ALL REQUIRED POINTS AND MONITORING WITH SIEMENS.

ENCE OF OPERATIONS.

					PUMP	SCHED	ULE						
SYMBOL	SERVICE	MANUFACTURER	PUMP TYPE	MODEL	GPM	Head Feet WC	EFF %	HP	RPM	Volts/ Phase	SUCTION SIZE INCHES	DISCH SIZE INCHES	REMAR
(E)P-I	HEATING WATER	B \$ G	BASE MOUNTED	1510 2-1/2 BB	245	50	73	7 1/2	1750	480/3	з	2-1/2	I
P-4	PH-I HEATING COIL	B \$ G	IN-LINE	SERIES 60 2-1/2 F	165	20	44	2	1750	480/3	2-1/2	2-1/2	2
P-6	CONDENSATE RETURN TANK	MTH PUMPS	BASE MOUNTED	T4IJ- BF	5	IOO PSI OPERATION		2	1750	480/3			3

I. PUMP IS EXISTING TO REMAIN. SHOWN HERE FOR REFERENCE ONLY.

2. INTERLOCK WITH EXISTING WH COIL FREEZE PROTECTION CONTROL OPERATION. SEE SEQUENCE OF OPERATION FOR ADDITIONAL INFORMATION

3. INTERLOCK WITH BOILER FEED WATER CONTROLLER. TC TO INTERLOCK WITH EXISTING FEED WATER CONDENSATE PUMP SERVING CLEAN STEAM GENERATOR

E5) SHEEAL 91100L DESCRIPTION <
SYMBOL DESCRIPTION SYMBOL PERFERENCE BUBBLE WEITANELAL/BLECTRICAL BERNER DOUBLE LINE BUCHWORK SYMBOL DOUBLE LINE BUCHWORK SYMBOL DOUBLE LINE BUCHWORK SYMBOL PECTANELLAR BERCTANELLAR PECTANELLAR BERCTANELLAR
Image: Strategy of the strate
SHT HE CHANGAL BELECTRICAL EQUIPHENT DESIGNATION WHE CHANGAL BELECTRICAL EQUIPHENT DESIGNATION CH5 CH5 WHE CHANGAL DELECTRICAL EQUIPHENT DESIGNATION CH5 CH1LED MATTER SUPPLY WHE RECORE EXISTING CH5 CH5 CH1LED MATTER SUPPLY WHE RECORE EXISTING CH5 CH7 CH1LED MATTER SUPPLY WHE RECORE EXISTING CH5 CH7 CH1LED MATTER SUPPLY WHE RECORE EXISTING CH6 CH1LED MATTER SUPPLY CH7 WHE RECORE EXISTING CH7 CH7 CH7 WHE RECORE EXISTING CH7
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M-0.1

MECHANICAL GENERAL NOTES

- THE FIRST NAMED MANUFACTURER'S MATERIAL OR EQUIPMENT LISTED IN SCHEDULES OR ON DRAWINGS ARE THE BASIS OF DESIGN. OTHER ACCEPTABLE MANUFACTURERS MAY BE USED, INCLUDE THE COST OF ANY CHANGE IN CONSTRUCTION REQUIRED BY THEIR USE.
- 2. EQUIPMENT SHALL CONFORM TO STATE AND/OR LOCAL CODES, ORDINANCES, AND ENERGY CONSERVATION STANDARDS.
- IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO RESULT IN A COMPLETE MECHANICAL INSTALLATION IN COMPLETE ACCORDANCE WITH ALL APPLICABLE LOCAL CODES AND ORDINANCES.
- 4. DRAWINGS ARE DIAGRAMMATIC IN CHARACTER AND DO NOT NECESSARILY INDICATE EVERY REQUIRED PIPE, OFFSET, TRANSITION, ETC. ITEMS NOT SPECIFICALLY MENTIONED IN THE SPECIFICATION OR NOTED ON THE DRAWINGS, BUT WHICH ARE NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION, SHALL BE INCLUDED.
- 5. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY. WHATEVER IS CALLED FOR IN EITHER IS BINDING AS THOUGH CALLED FOR IN BOTH, IF THERE IS A CONFLICT IN THE CONTRACT DOCUMENTS, THE MORE STRINGENT AND COSTLY DESIGN SHALL BE SELECTED FOR BIDDING PURPOSES. THE CONTRACTOR SHALL IMMEDIATELY PRESENT THE CONFLICT FOUND IN THE CONTRACT DOCUMENTS TO THE ARCHITECT/ENGINEER FOR RESOLUTION.
- DRAWINGS SHALL NOT BE SCALED FOR MEASUREMENTS OR USED AS SHOP DRAWINGS. WHERE DRAWINGS ARE REQUIRED FOR THESE PURPOSES, THE CONTRACTOR SHALL TAKE THE NECESSARY FIELD MEASUREMENTS AND PREPARE THE DRAWINGS.
- BEFORE ANY WORK IS INSTALLED, DETERMINE THAT EQUIPMENT WILL PROPERLY FIT THE SPACE, THAT REQUIRED CLEARANCES CAN BE MAINTAINED AND THAT EQUIPMENT CAN BE LOCATED WITHOUT INTERFERENCES BETWEEN SYSTEMS, WITH STRUCTURAL ELEMENTS, OR WITH THE WORK OF OTHER TRADES.
- 8. ISOLATE ALL SUPPLY AND RETURN PIPING SERVING PENTHOUSE UNIT . CUT AND CAP PIPING AT ROOF PENETRATION FOR PENTHOUSE UNIT REMOVAL. (TYPICAL ALL PIPE CONNECTIONS.)

O DRAWING NOTES (DEMO)

- I. DISCONNECT EXISTING HPS PIPING FROM UNIT.
- 2. DISCONNECT EXISTING 2-1/2" HWS/HWR PIPING FROM UNIT COIL. PREPARE PIPING FOR RECONNECTION TO NEW UNIT.
- 3. DISCONNECT EXISTING 3" CHWS/CHWR PIPING FROM UNIT COIL. PREPARE PIPING FOR RECONNECTION TO NEW UNIT.
- 4. DISCONNECT EXISTING 4" HMS/HWR PIPE DISTRIBUTION PIPING FROM UNIT. PREPARE PIPING FOR RECONNECTION.
- 5. EXISTING 1/2" CW AND HW SERVING MOP SINK. CONTRACTOR TO FIELD VERIFY EXACT LOCATION.
- 6. DISCONNECT EXISTING HPR, LPR AND I" CW PIPING TO UNIT.
- DISCONNECT EXISTING SUPPLY AND EXHAUST AIR DUCT FROM UNIT ABOVE. PREPARE FOR RECONNECTION TO NEW UNIT.
- 8. DEMO EXISTING CIRCULATING PUMP SERVING HOT WATER COIL. PREPARE EXISTING
- 9. DEMO EXISTING LPS STEAM PIPING AS SHOWN BACK TO PENTHOUSE.
- IO. REMOVE EXISTING STEAM TRAP. PREPARE PIPING FOR REPLACEMENT.
- II. REMOVE EXISTING STEAM DUCT HUMIDIFIER IN ITS ENTIRETY. PATCH/REPAIR DUCT OPENING AS REQUIRED.
- 12. DEMO EXISTING LPR STEAM PIPING IN ITS ENTIRETY.
- (I3. DEMO EXISTING 3" SANITARY PIPING UP TO FLOOR DRAIN, PREPARE FOR NEW CONNECTION.

ORAWING NOTES

- . EXTEND AND RECONNECT EXISTING PIPING UP TO NEW PENTHOUSE CONNECTIONS.
- 2. PROVIDE NEW CIRCULATION PUMP.
- 3. PROVIDE NEW TRANSITION FROM EXISTING 58"x20" SUPPLY DUCT TO 126"x24" UNIT SUPPLY OPENING. EXPAND METAL OVER OPENING INSIDE UNIT.
- 4. PROVIDE NEW TRANSITION FROM EXISTING EXHAUST DUCTS TO 126"x24" EXHAUST AIR OPENING IN UNIT. EXPAND METAL OVER OPENING INSIDE UNIT.
- 5. PROVIDE NEW I" CW LINE UP TO NEW PH-I IN PIPE CHASE. ROUTE TO NEW EVAPORATIVE COOLER. PROVIDE WITH SHUTOFF VALVE AND ACCESS PANEL.
- CONNECT NEW 1/2" HW TO EXISTING 1/2" HW AS SHOWN.
- 7. ROUTE NEW 1/2" HW FROM EXISTING MOP SINK CONNECTION UP TO NEW PENTHOUSE TO
- SERVE EYEWASH STATION. 8. REPLACE EXISTING STEAM TRAP BUCKET WITH NEW. EQUAL TO ARMSTRONG MODEL 800
- 9. PROVIDE NEW END OF MAIN STEAM TRAP BUCKET FOR HIGH PRESSURE STEAM (75 PS
- PROVIDE NEW END OF MAIN STEAM TRAP BUCKET FOR HIGH PRESSURE STEAM (75 PSI). EQUAL TO ARMSTRONG MODEL 816.

IO. ROUTE NEW I" CHS OR CHR AS SHOWN UP TO NEW PENTHOUSE TO SERVE FCU-I.
 II. TRANSITION AS REQUIRED TO CONNECT NEW 3" SANITARY TO EXISTING 3" SANITARY LINE. RE: M-O.3.
 I2. CONNECT EXISTING SANITARY UP TO NEW FD-I. RE: M-O.3, M-3.O.

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M-1.0

DRAWING NOTES (DEMO)

REMOVE AND RETAIN EXISTING EQUIPMENT AND PREPARE FOR RELOCATION. 2. DISCONNECT AND REMOVE EXISTING BOILER. 3. CUT AND CAP PIPING BELOW ROOF AND PREPARE FOR NEW CONNECTION.

4. CUT AND CAP PIPING ON EXTERIOR WALL AND PREPARE FOR NEW CONNECTION. 5. REMOVE AND RETAIN EXISTING EQUIPMENT WITH FLASH NEUTRALIZER KIT AND PREPARE FOR RELOCATION.

6. REMOVE EXISTING EQUIPMENT AND RETURN TO OWNER'S STOCK. REMOVE ALL EXISTING PNEUMATIC CONTROLS AND PIPING IN ITS ENTIRETY

REMOVE, CUT, AND CAP ALL PNEUMATIC TUBING BACK TO AIR COMPRESSOR. 3 REMOVE EXISTING FLOOR DRAIN BODY. REMOVE EXISTING SANITARY PIPING DOWN. PROTECT REMAINING PIPING FOR RECONNECTION IN NEW WORK.

MOUNT BOTTOM OF FAN COIL UNIT 9'-O" AFF. SUPPORT FROM STRUCTURE ABOVE. RE: INSTALLATION DIAGRAM ON M-0.3.

2. MOUNT EMERGENCY BOILER SHUT-OFF SWITCH 4'-O" AFF NEXT TO DOOR. COORDINATE WITH ELECTRICAL TO INTERLOCK WITH BOILER CONTROLS.

3. MOUNT THERMOSTAT 4'-O" AFF NEXT TO DOOR. INTERLOCK WITH FCU-I. CHEMICAL POT FEEDER SHALL BE EQUAL TO 20L NU-CALGON MODEL 4628-0.

INSTALL PER MANUFACTURER'S RECOMMENDED INSTALLATION. 5. 4" BLOWDOWN SEPARATOR VENT TO APPROVED VENT CAP ON ROOF.

6. 2" CONDENSATE RETURN TANK VENT TO APPROVED VENT CAP ON ROOF. 1. 2" BOILER SAFETY RELIEF VENT TO APPROVED VENT CAP ON ROOF. 8. IS" BOILER FLUE TO APPROVED VENT CAP ON ROOF.

MOUNT FAN I'-O" BELOW CEILING. IO. PROVIDE NEW FLOOR DRAIN BODY. RECONNECT TO EXISTING SANITARY PIPING BELOW ROOF. RE: M-0.3, M-I.O.

ROUTE WATER SOFTENER DRAIN LINE TO NEAREST FLOOR DRAIN.

M-3.0

STEAM BOILER SYSTEM (EXISTING/NEW)

HEATING WATER SYSTEM (EXISTING/NEW)

