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PROCESS
TECHNOLOGIES

ENERGY | COMBUSTION

North American Low NOx Fuel Directed® Magna-Flame™ Burners

Manual flame adjustment screws, as shown here on the burner gas connection, adjust flame shape.

4384 Fuel Directed Magna-Flame™ Burners

- Range 3 to 68 million Btu/h HHV
- For furnaces, boilers, process heaters, and dryers up to 2000°F
- Standard Low NOx capability
- Fits the flame to the combustion chamber
- Distributes the heat where it's needed
- High turndown capabilities

Product Overview | 4384 Fuel Directed

4384 Fuel Directed Magna-Flame Burners are used with ambient temperature combustion air on a wide variety of furnaces operating up to 2000°F. Fuel directed principles enable these burners to vary flame configuration from approximately 750 000 Btu/h HHV per foot of length to 2 000 000 Btu/h HHV per foot. User can manually select optimum flame shape with the flame adjustment, which is an integral part of the gas connection. Refer to Bulletins 4472 and 4482 for Fuel Direct models operating with preheated combustion air and at higher furnace temperatures.

Fuel Directed Burner bodies and backplates are fabricated of heavy gauge welded steel. Internal parts include a front refractory ring, alloy flame stabilizer, and an investment cast A330SST nozzle.

Burners use gas pressure to create a flame shape and heat pattern that is most advantageous for the installation they are firing. A controlled flame shape is **desirable** in almost any application - it is **essential** in many to realize optimum furnace performance.

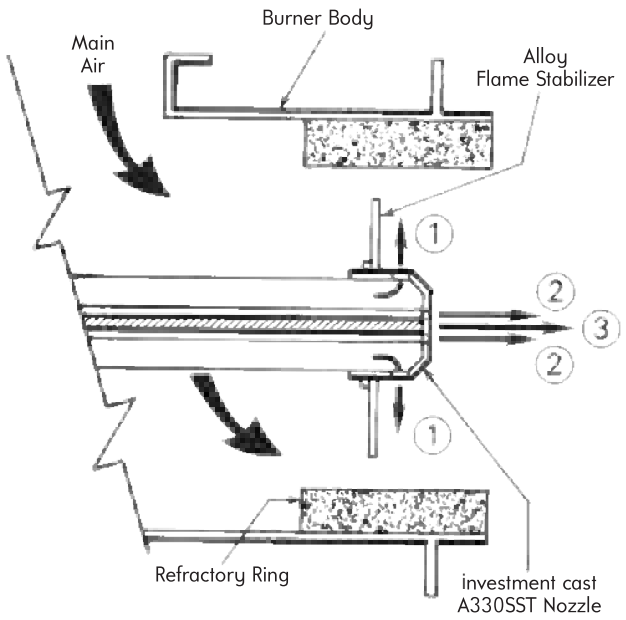
OPERATION

Burners are designed for a nominal 6"w.c. air pressure, but can be operated to a maximum 10"w.c. This is particularly useful for installation with high excess air, preheated air or FGR. Stoichiometric firing at this nominal capacity will result in a fuel pressure requirement of 8 psig at the burner. Operation is quiet and the burner is stable over a wide range of air/gas ratios ranging from 30% fuel rich to 1000% excess air at 6"w.c. Stoichiometric turndown is 10:1 with 6"w.c. main air pressure. For multiple burner installations requiring high turndown capability, air inlet orifices should be considered to ensure adequate header pressure for uniform air distribution at low inputs.

Standard design is for 8 psig gas pressure at the burner; however a 2 psig option is available in sizes up to -20 if gas pressure is limited. Be sure to specify the LO option when ordering the 2 psig model.

A constant gas jet at 8 psi and 5% of maximum capacity maintains flame definition as input is reduced.

A low fire start is required at 1"w.c or less main air pressure.



① Radial gas--Increasing radial gas flow (with flame adjustment screw S) shortens flame.

② Forward gas--Increasing forward gas flow (with flame adjustment screw L) lengthens flame.

③ Jet gas--used to maintain flame definition as input is reduced.

Capacities | 4384 Fuel Directed

CONTROL

Mass flow control is recommended. Standard 4384 Fuel Directed® Burners have a single gas connection with internal radial/forward gas adjustment for flame shaping.

Main and center jet gas should be supplied to the burner at the same time. See flow control schematic.

PILOT and FLAME SUPERVISION

Burners are ignited with a gas-boosted pilot. Pilot air pressure must be at least 10"w.c., and pilot regulator must be cross-connected to the pilot air line (see Sheet 4014).

If flame supervision is used, pilot must be of the interrupted type. UV flame detection is recommended (using an 883_-D adapter). It is possible for a UV scanner mounted on this burner to sight flame(s) of other burners in the same firing chamber. Consult Fives North American Combustion, Inc. for configuration guidiance on multiple burner applications.

LOW NOx

The 4384 Fuel Directed Burner is an inherently Low NOx burner. In conjunction with other NOx reducing features, it is capable of meeting emission limitations for new or retrofit applications in environmentally sensitive installations. Contact your Fives North American Combustion, Inc. Sales Engineer for specific applications.

BURNER TILE CONSTRUCTION

4384 Burners do not include a tile. Tunnel shapes and recommended installation is shown on Dimensions & Installation 4384.

OTHER FUELS

For other gaseous fuels and oils, contact your Fives North American Combustion, Inc. Sales Engineer.

COMBUSTION AIR CAPACITIES, scfh
long flame mode

Capacities are reduced up to 10% in short flame mode.

Burner designation	air pressure 0.06"w.c.*	3"w.c.	6"w.c.†
4384-8	4 070	28 600	40 700
4384-9	7 100	50 800	71 500
4384-10-A	8 900	63 000	89 200
4384-10-B	11 300	80 000	113 000
4384-12	16 000	114 000	160 000
4384-14	20 000	142 000	200 000
4384-16	26 000	187 000	264 000
4384-18	33 000	238 000	337 000
4384-20	42 000	296 000	419 000
4384-22	51 000	361 000	509 000
4384-24	61 000	430 000	608 000
4384-26	75 000	530 000	750 000

* min. air rate † recommended press. (See "Operation".)

RANGE OF FLAME LENGTHS and DIAMETERS
(2000 F Furnace) in feet with 8 or 2 psig gas

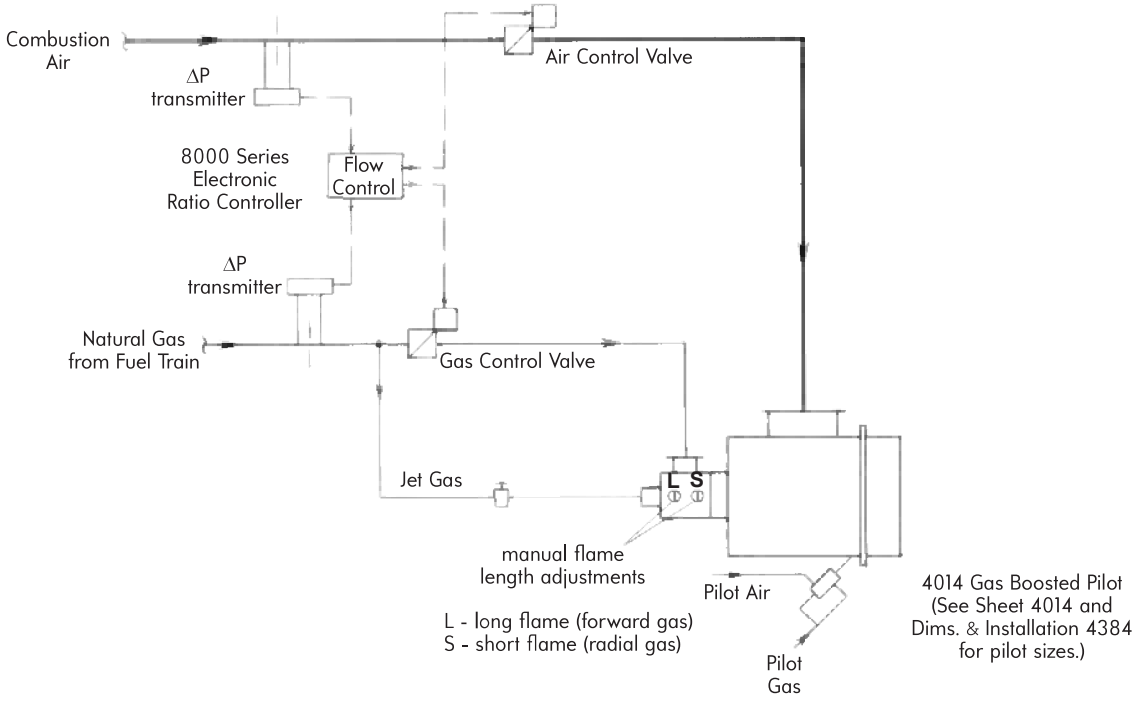
Air/gas ratio set for 10% excess air.

Burner designation	SHORT FLAME (10% reduced capacity) air pressure 3"w.c.	6"w.c.	LONG FLAME (full capacity) air pressure 3"w.c.	6"w.c.	FLAME DIA. (full capacity) long or short
4384-8	3	4	8	14	2
4384-9	3½	4½	9	15	2
4384-10-A	3½	5	10	16	2.5
4384-10-B	4½	6	12	18	2.5
4384-12	5	7	14	20	2.5
4384-14	5½	8	15	24	3
4384-16	7	10	20	30	3
4384-18	8½	12	25	34	3.5
4384-20	10½	15	30	40	3.5
4384-22	13	18	32	45	4
4384-24	15	20	40	50	4
4384-26	19	24	49	60	4.5

‡ Flame lengths will be longer in a lower temperature furnace.

Adjustments | 4384 Fuel Directed

Typical Single Burner Fuel Directed Flow Control Schematic



BURNER ADJUSTMENTS

1. The flame length adjusters are located on the side of the gas inlet connection. Initially set both the short (S) and the long (L) flame adjustment screws equally open. (Fully close both adjusters by turning them clockwise, then open 2 turns.)

2. Establish pilot flame. See Sheet 4014 for instructions.

3. Establish main flame. If main flame cannot be established, open (S) and (L) flame adjustment screws equally until a flame is established.

4. With an established flame, drive the system to high fire. Set air/fuel ratio. Using the (S) and (L) flame adjustment screws, make the desired flame length adjustments. If high fire gas flow cannot be reached, open the (S) and (L) flame length adjustment screws equally until the proper gas flow is obtained. Correct air/fuel ratio as required.

5. Drive the system to low fire. Set air/fuel ratio. If used, adjust jet gas valve to improve the low fire flame definition.

6. Drive the system to high fire and verify flame length and air/fuel ratio.

To order, specify: 4384-(code for pipe size)-(A, if applicable) / (LO for 2 psig model) Burner Complete
(specify Arrangement Designators-see Dimensions & Installation 4384).
Examples: 4384-10-A 10" Burner Complete with arrangement 3a1
4384-12/LO 12" Low Gas Pressure Burner Complete with arrangement 1c3

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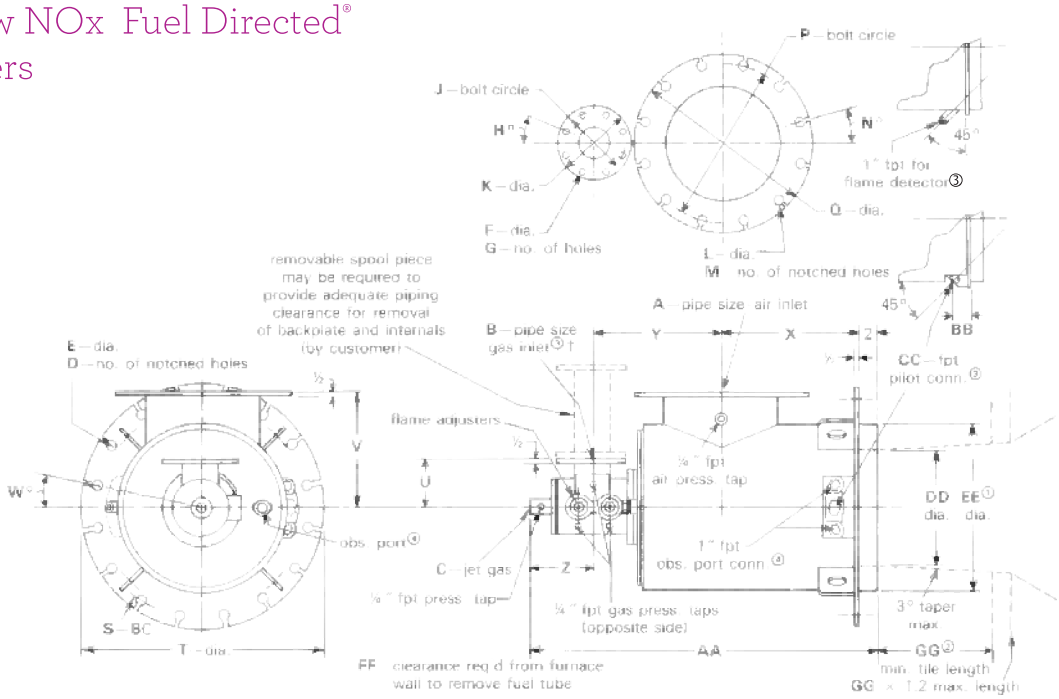
North American Low NOx Fuel Directed® Magna-Flame Burners

Dimensions & Installation 4384

DIMENSIONS inches



Burner designation	A③	B③†	C	D	E	F	G	H°	J	K	L	M	N°	P	Q	S	T	U
4384-8	6	2½	¾	16	¾	—	—	—	—	—	⅞	8	22½	9½	11	18½	20¼	5⅛
4384-9	8	2½	¾	16	¾	—	—	—	—	—	⅞	8	22½	11¾	13½	20½	22¼	5⅛
4384-10-A	10	2½	¾	16	¾	—	—	—	—	—	1	12	15	14¼	16	22½	24¼	5⅛
4384-10-B	10	2½	¾	16	¾	—	—	—	—	—	1	12	15	14¼	16	22½	24¼	5⅛
4384-12	12	2½	¾	16	¾	—	—	—	—	—	1	12	15	17	19	24½	26¼	5⅛
4384-14	14	2½	¾	20	¾	—	—	—	—	—	1⅛	12	15	18¾	21	26½	28¼	5⅛
4384-16	16	2½	¾	20	¾	—	—	—	—	—	1⅛	16	11¼	21¼	23½	28½	30¼	5⅛
4384-18	18	4	1	20	⅞	¾	8	22½	7½	9	1¼	16	11¼	22¾	25	30½	32¼	7¹¹⁄₁₆
4384-20	20	4	1	24	⅞	¾	8	22½	7½	9	1¼	20	9	25	27½	32½	34¼	7¹¹⁄₁₆
4384-22	22	4	1	24	⅞	¾	8	22½	7½	9	1¼	20	9	26	29½	34½	36¼	7¹¹⁄₁₆
4384-24	24	4	1	24	⅞	¾	8	22½	7½	9	1⅜	20	9	29½	32	36½	38¼	7¹¹⁄₁₆
4384-26	26	4	1	24	⅞	⅜	8	22½	7½	9	1⅜	24	7½	32	34	38½	40½	7¹¹⁄₁₆

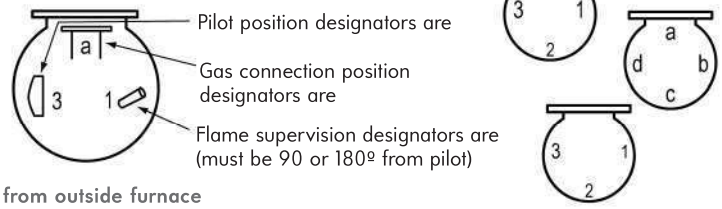
†-8 thru -16, 2½" threaded; -18 thru -26, 4" ANSI flange

Burner designation	V	W°	X	Y	Z	AA	BB	CC③	DD	EE①	FF	GG②	Pilot assembly designation	Wt. lbs.
4384-8	9½	11¼	10	11⅞	7⅜	31¼	2³⁄₁₆	1¼	8½	14	57⅝	5	4014-1-T	240
4384-9	11	11¼	13	12¾	7⅜	35⅛	2³⁄₁₆	1¼	10¼	16	57⅝	6	4014-1-T	290
4384-10-A	12½	11¼	15	14⅜	7⅜	38¾	2¾	1½	11¼	18	64⅞	7	4014-2-T	365
4384-10-B	12½	11¼	15	14⅜	7⅜	38¾	2¾	1½	12¼	18	64⅞	8	4014-2-T	355
4384-12	13½	11¼	17½	15⅞	7⅜	42¾	2⅞	2	14¼	20	73⅛	9	4014-3-AT	410
4384-14	14½	9	18½	16⅞	7⅜	44¾	2⅞	2	16¼	22	76⅞	10	4014-3-AT	465
4384-16	15½	9	19	17⅜	7⅜	45¾	2⅞	2	18¼	24	78⅞	11	4014-3-AT	515
4384-18	16½	9	19½	19⅝	8¼	49¼	2⅞	2	20¼	26	86¾	12	4014-3-BT	635
4384-20	17½	7½	20½	20½	8¼	51⅛	2⅞	2	22¼	28	87½	13	4014-3-BT	685
4384-22	18½	7½	21½	22⅜	8¼	54	2⅞	2	24¼	30	93¼	14	4014-3-BT	760
4384-24	19½	7½	22½	23½	8¼	56⅛	2⅞	2	26¼	32	97½	15	4014-3-BT	820
4384-26	20½	7½	23½	24½	8¼	58¼	2⅞	2	28¼	34	103	16	4014-3-BT	940

① Furnace opening should be ½" larger than dimension EE for -8 thru -14;¾" larger than dimension EE for -16 thru -26.
② Any tile length greater than GG × 1.2 should have a 30° angled flare from the standard tile extension.
③ Burner must be ordered with locations designated. See reverse side.
④ Backplate and pilot observation ports included with burner.

DIMENSIONS SHOWN ARE SUBJECT TO CHANGE. PLEASE OBTAIN CERTIFIED PRINTS FROM FIVES NORTH AMERICAN COMBUSITON, INC. IF SPACE LIMITATIONS OR OTHER CONSIDERATIONS MAKE EXACT DIMENSION(S) CRITICAL.

Arrangement Designators are specified relative to the main air connection at 12 o'clock and should be listed for **pilot, gas, and flame detector in that order.** Good practice dictates that neither the pilot nor the flame supervision device be on the bottom of the burner.



Fuel Directed Burner Tile Installation Recommendations for Hard Refractory LIned Furnaces

FIGURE 1
Wall thickness equal to or greater than required tile length.

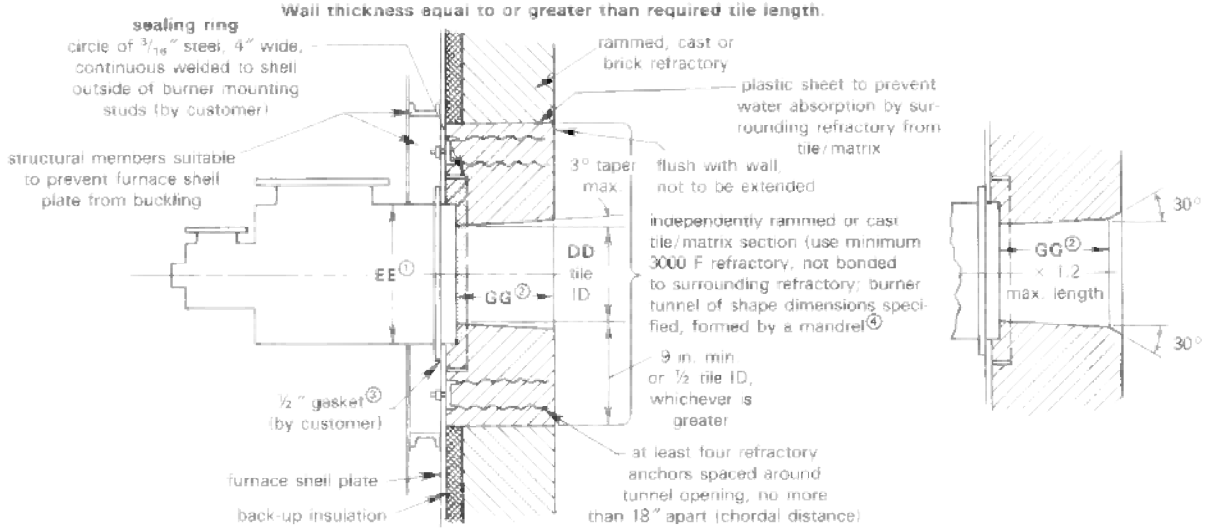
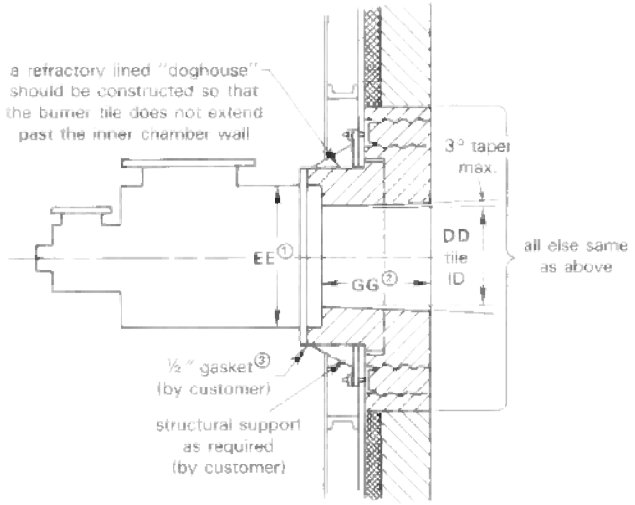


FIGURE 2
Wall thickness less than required tile length.



① Furnace opening should be ½" larger than dimension EE for -8 thru -14; ¾" larger than dimension EE for -16 thru -26.

② Any tile length greater than GG × 1.2 should have a 30° angled flare from the standard tile extension.

③ Two wraps of ½" soft fiberglass rope (Davlyn #100801 or equivalent) suitable for 1000 F service. North American can supply as part no. R540-0365. Specify length when ordering.

④ Expansion joints must be provided in surrounding refractory to prevent pressure being exerted on cast or rammed burner tunnel section.

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PROCESS TECHNOLOGIES

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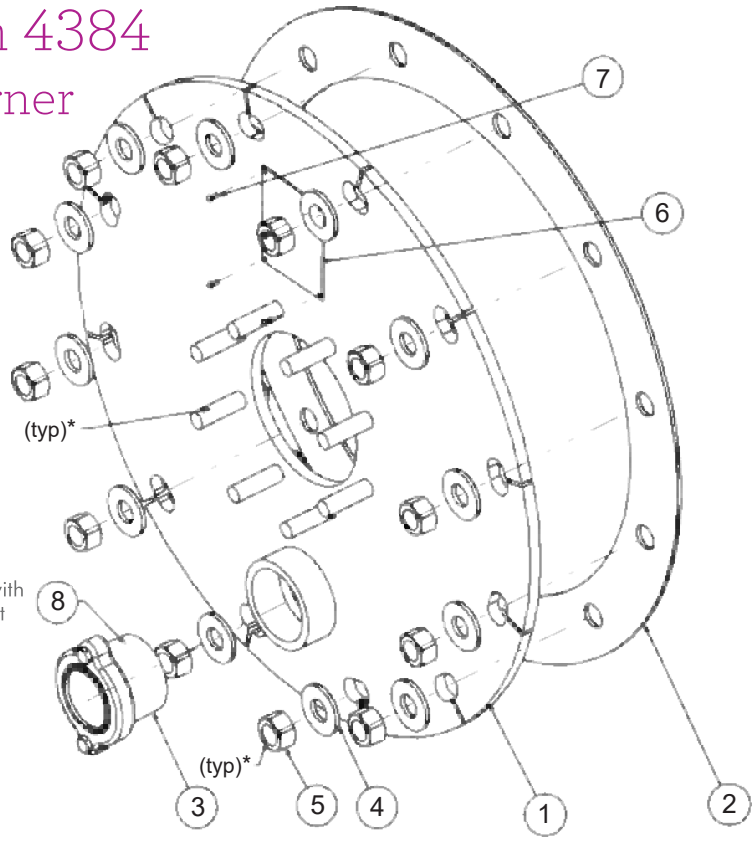
North American 4384
Fuel Directed® Burner

Parts List 4384-1



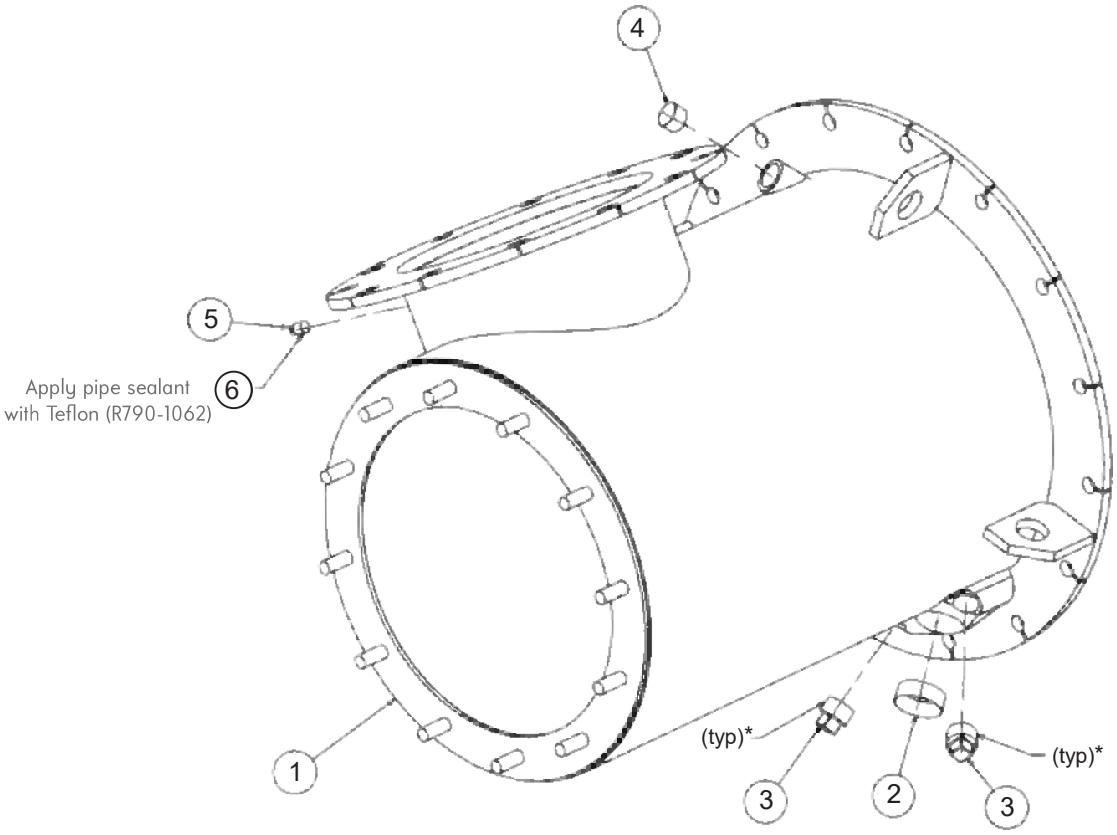
BACKPLATE

Part Name	4384-8	4384-9	4384-10-A	4384-10-B	4384-12	4384-14
(1) Backplate	4-47711-1	4-47445-1	4-47718-1	4-47718-1	4-47731-1	4-47746-1
(2) Backplate Gasket	4-14544-8	4-14544-9	4-14544-10	4-14544-10	4-14544-12	4-14544-14
(3) Observation Port	8790-0	8790-0	8790-4-A	8790-4-A	8790-4-A	8790-4-A
(4) ⅝" Flat Washer	R970-7420	R970-7420	R970-7420	R970-7420	R970-7420	R970-7420
(5) ⅝"-11 Hex Nut	R510-2399	R510-2399	R510-2399	R510-2399	R510-2399	R510-2399
(6) Nameplate	OA15-0027-1	OA15-0027-1	4-15407-1	4-15407-1	4-15407-1	4-15407-2
(7) #4 × ¼" Drive Pin	R570-1360	R570-1360	R570-1360	R570-1360	R570-1360	R570-1360
(8) Pipe Sealant w/Teflon	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062

Part Name	4384-16	4384-18	4384-20	4384-22	4384-24	4384-26
(1) Backplate	4-47752-1	4-47758-1	4-47831-1	4-47845-1	4-47861-1	4-47928-1
(2) Backplate Gasket	B4-14544-16	4-14544-18	4-14544-20	4-14544-22	4-14544-24	4-14544-26
(3) Observation Port	8790-4-A	8790-4-A	8790-4-A	8790-4-A	8790-4-A	8790-4-A
(4) ⅝" Flat Washer	R970-7420	R970-7420	R970-7420	R970-7420	R970-7420	R970-7420
(5) ⅝"-11 Hex Nut	R510-2399	R510-2399	R510-2399	R510-2399	R510-2399	R510-2399
(6) Nameplate	4-15407-2	4-15407-2	4-15407-2	4-15407-2	4-15407-2	4-15407-2
(7) #4 × ¼" Drive Pin	R570-1360	R570-1360	R570-1360	R570-1360	R570-1360	R570-1360
(8) Pipe Sealant w/Teflon	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062

*Apply "Anti Seize Lubricant" (R790-1007) compound to these threads at final assembly.

BODY

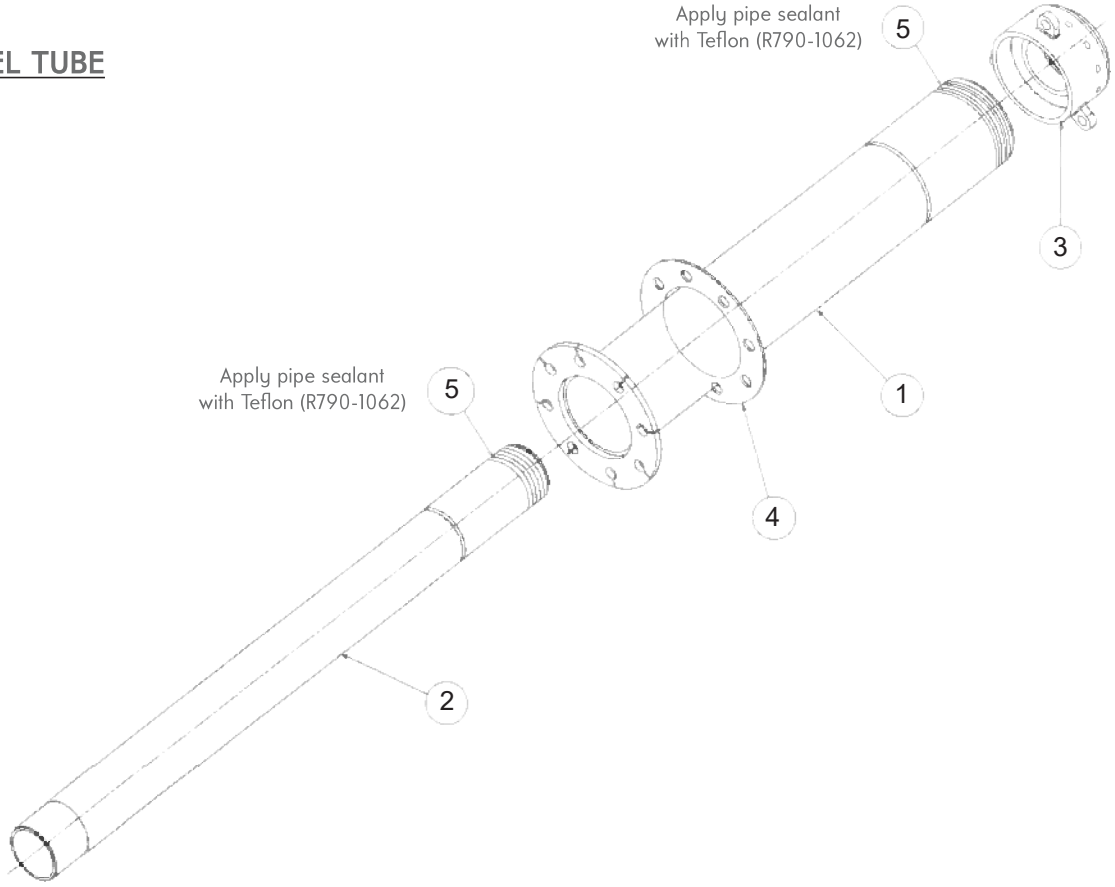


Part Name	4384-8	4384-9	4384-10-A	4384-10-B	4384-12	4384-14
(1) Body	4-15087-1	4-14911-1	4-14912-1	4-15135-1	4-14913-1	4-14914-1
(2) Thread Protector	R865-0185	R865-0185	R865-0190	R865-0190	R865-0200	R865-0200
(3) 1" Sq. Hd. Pipe Plug	R590-7860	R590-7860	R590-7860	R590-7860	R590-7860	R590-7860
(4) 1" Thread Protector	R865-0180	R865-0180	R865-0180	R865-0180	R865-0180	R865-0180
(5) ¼" Sq. Hd. Pipe Plug	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820
(6) Pipe Sealant w/Teflon	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062

Part Name	4384-16	4384-18	4384-20	4384-22	4384-24	4384-26
(1) Body	4-14915-1	4-14916-1	4-14917-1	4-14918-1	4-14919-1	4-47927-1
(2) Thread Protector	R865-0200	R865-0200	R865-0200	R865-0200	R865-0200	R865-0200
(3) 1" Sq. Hd. Pipe Plug	R590-7860	R590-7860	R590-7860	R590-7860	R590-7860	R590-7860
(4) 1" Thread Protector	R865-0180	R865-0180	R865-0180	R865-0180	R865-0180	R865-0180
(5) ¼" Sq. Hd. Pipe Plug	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820
(6) Pipe Sealant w/Teflon	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062

*Apply "Anti Seize Lubricant" (R790-1007) compound to these threads at final assembly.

FUEL TUBE

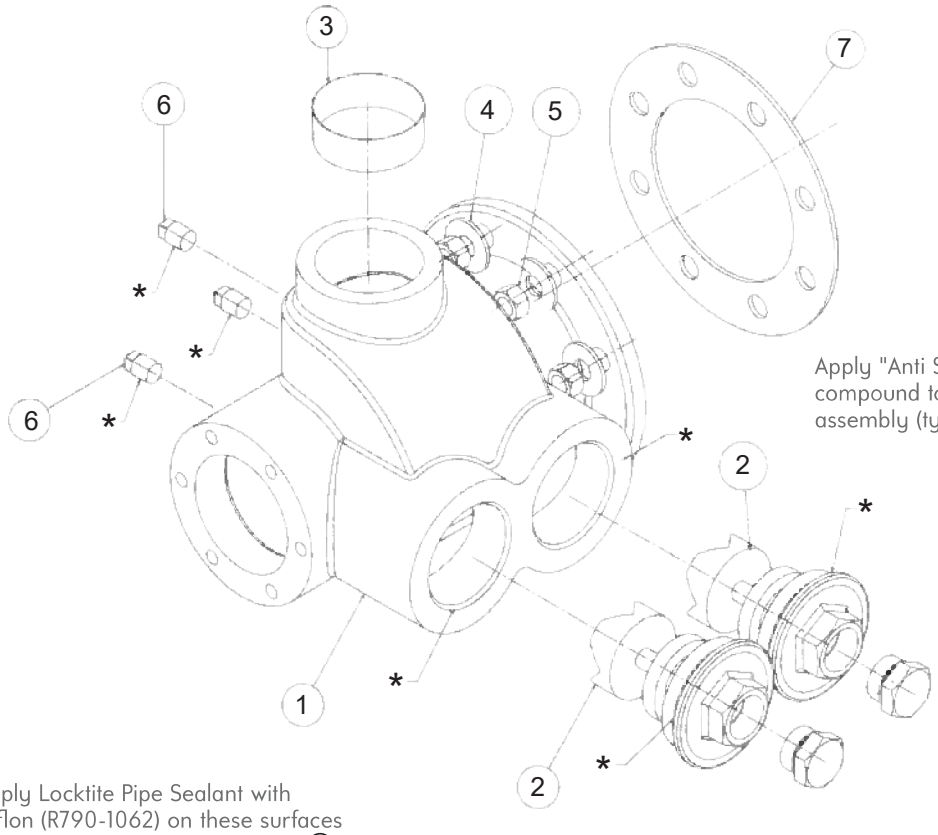


Final assembly note: Radial gas tube ① must be inserted through backplate before assembling gas nozzle ③.

Part Name	4384-8	4384-9	4384-10-A	4384-10-B	4384-12	4384-14
(1) Radial Gas Tube	4-47712-1	4-47446-1	4-47719-1	4-47719-1	4-47732-1	4-47747-1
(2) Forward Gas Tube	4-47713-1	4-47578-1	4-47720-1	4-47720-1	4-47733-1	4-47748-1
(3) Gas Nozzle (8 psig)	4-15411-1	4-15411-2	4-15412-1	4-15412-2	4-15412-4	4-15412-5
(3) Gas Nozzle (2 psig)	4-15411-3	4-15411-4	4-15412-7	4-15412-8	4-15412-10	4-15412-11
(4) Fuel Tube Gasket	4-14739-1	4-14739-1	4-14739-1	4-14739-1	4-14739-1	4-14739-1
(5) Pipe Sealant w/Teflon	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062

Part Name	4384-16	4384-18	4384-20	4384-22	4384-24	4384-26
(1) Radial Gas Tube	4-47753-1	4-47759-1	4-47832-1	4-47846-1	4-47862-1	4-47929-1
(2) Forward Gas Tube	4-47754-1	4-47760-1	4-47833-1	4-47847-1	4-47863-1	4-47930-1
(3) Gas Nozzle (8 psig)	4-15412-6	4-15413-1	4-15413-2	4-15413-3	4-15413-4	4-15413-9
(3) Gas Nozzle (2 psig)	4-15412-12	4-15413-5	4-15413-6	N/A	N/A	N/A
(4) Fuel Tube Gasket	4-14739-1	4-14739-2	4-14739-2	4-14739-2	4-14739-2	4-14739-2
(5) Pipe Sealant w/Teflon	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062

GAS CONNECTION SUB-ASSEMBLY



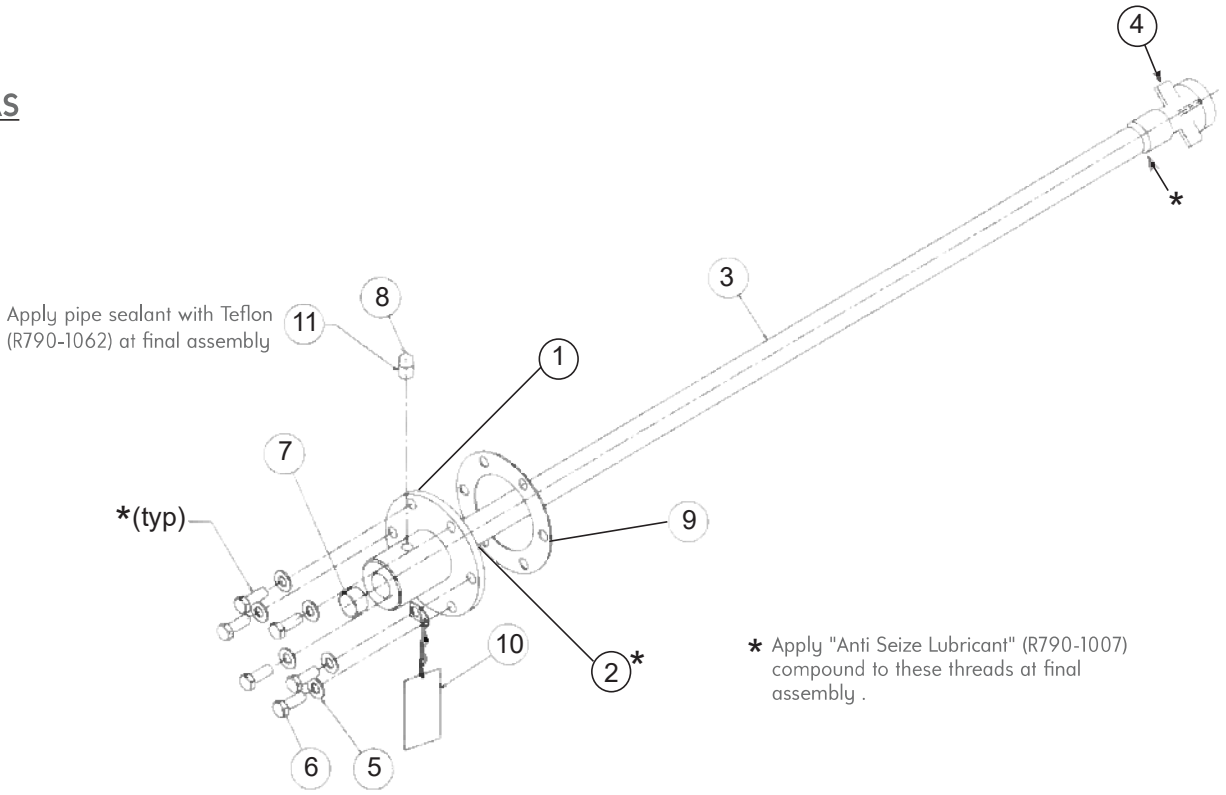
Apply "Anti Seize Lubricant" (R790-1007) compound to these threads at final assembly (typ)

* Apply Locktite Pipe Sealant with Teflon (R790-1062) on these surfaces (100% coverage on flange faces) ⑧ .

Part Name	4384-8	4384-9	4384-10-A	4384-10-B	4384-12	4384-14
Gas Connection Sub-Assembly	4-15016-1	4-15016-1	4-15016-2	4-15016-2	4-15016-2	4-15016-2
(1) Gas Connection	4-14600-2	4-14600-2	4-14600-1	4-14600-1	4-14600-1	4-14600-1
(2) Gas Cartridge Assy.	4-6063-5	4-6063-5	4-6063-5	4-6063-5	4-6063-5	4-6063-5
(3) Thread Protector	R865-0210	R865-0210	R865-0210	R865-0210	R865-0210	R865-0210
(4) ½" Flat Washer	R970-7370	R970-7370	R970-7370	R970-7370	R970-7370	R970-7370
(5) ½"-13 Hex Nut	R510-2319	R510-2319	R510-2319	R510-2319	R510-2319	R510-2319
(6) ¼" NPT Sq. Hd. Pipe Plug	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820
(7) Gas Conn. Gasket	4-14739-1	4-14739-1	4-14739-1	4-14739-1	4-14739-1	4-14739-1
(8) Pipe Sealant	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062

Part Name	4384-16	4384-18	4384-20	4384-22	4384-24	4384-26
Gas Connection Sub-Assembly	4-15016-2	4-15016-3	4-15016-3	4-15016-3	4-15016-3	4-15016-3
(1) Gas Connection	4-14600-1	4-14555-1	4-14555-1	4-14555-1	4-14555-1	4-14555-1
(2) Gas Cartridge Assy.	4-6063-5	4-6063-6	4-6063-6	4-6063-6	4-6063-6	4-6063-6
(3) Thread Protector	R865-0210	R865-0240	R865-0240	R865-0240	R865-0240	R865-0240
(4) ½" Flat Washer	R970-7370	R970-7370	R970-7370	R970-7370	R970-7370	R970-7370
(5) ½"-13 Hex Nut	R510-2319	R510-2319	R510-2319	R510-2319	R510-2319	R510-2319
(6) ¼" NPT Sq. Hd. Pipe Plug	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820
(7) Gas Conn. Gasket	4-14739-1	4-14739-2	4-14739-2	4-14739-2	4-14739-2	4-14739-2
(8) Pipe Sealant	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062

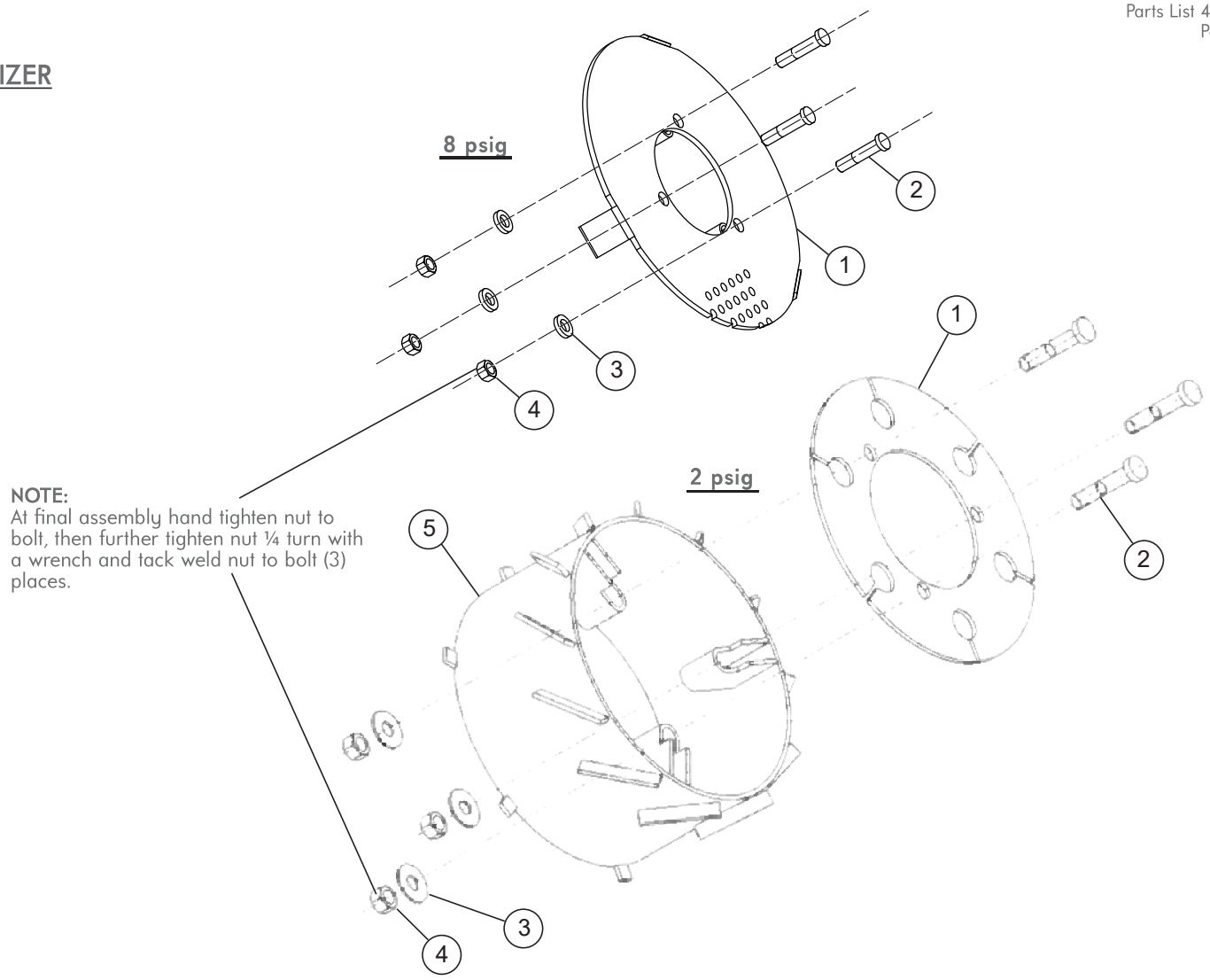
JET GAS



Part Name	4384-8	4384-9	4384-10-A	4384-10-B	4384-12	4384-14
(1) Jet Gas Connection	4-14556-1	4-14556-1	4-14556-1	4-14556-1	4-14556-1	4-14556-1
(2) Tru-Fitting	R790-0130	R790-0130	R790-0130	R790-0130	R790-0130	R790-0130
(3) Jet Gas Tube	4-47714-1	4-47580-1	4-47721-1	4-47721-1	4-47734-1	4-47749-1
(4) Jet Gas Nozzle (8 psig)	4-15306-1	4-15306-2	4-15409-1	4-15409-2	4-15409-4	4-15409-5
(4) Jet Gas Nozzle (2 psig)	4-15306-3	4-15306-4	4-15409-7	4-15409-8	4-15409-10	4-15409-11
(5) ⅜" Flat Washer	R970-7295-C	R970-7295-C	R970-7295-C	R970-7295-C	R970-7295-C	R970-7295-C
(6) ⅜"-16 Hex Hd. Bolt	R066-2930	R066-2930	R066-2930	R066-2930	R066-2930	R066-2930
(7) Thread Protector	R865-0170	R865-0170	R865-0170	R865-0170	R865-0170	R865-0170
(8) ¼" NPT Sq. Hd. Pipe Plug	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820
(9) Jet Gas Gasket	4-14545-1	4-14545-1	4-14545-1	4-14545-1	4-14545-1	4-14545-1
(10) Caution Tag	4-7161-1	4-7161-1	4-7161-1	4-7161-1	4-7161-1	4-7161-1
(11) Pipe Sealant	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062

Part Name	4384-16	4384-18	4384-20	4384-22	4384-24	4384-26
(1) Jet Gas Connection	4-14556-1	4-14556-2	4-14556-2	4-14556-2	4-14556-2	4-14556-2
(2) Tru-Fitting	R790-0130	R790-0140	R790-0140	R790-0140	R790-0140	R790-0140
(3) Jet Gas Tube	4-47755-1	4-47761-1	4-47835-1	4-47848-1	4-47865-1	4-47932-1
(4) Jet Gas Nozzle (8 psig)	4-15409-6	4-15410-1	4-15410-2	4-15410-3	4-15410-4	4-15410-9
(4) Jet Gas Nozzle (2 psig)	4-15409-12	4-15410-5	4-15410-6	N/A	N/A	N/A
(5) ⅜" Flat Washer	R970-7295-C	R970-7295-C	R970-7295-C	R970-7295-C	R970-7295-C	R970-7295-C
(6) ⅜"-16 Hex Hd. Bolt	R066-2930	R066-2930	R066-2930	R066-2930	R066-2930	R066-2930
(7) Thread Protector	R865-0170	R865-0180	R865-0180	R865-0180	R865-0180	R865-0180
(8) ¼" NPT Sq. Hd. Pipe Plug	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820	R590-7820
(9) Jet Gas Gasket	4-14545-1	4-14545-2	4-14545-2	4-14545-2	4-14545-2	4-14545-2
(10) Caution Tag	4-7161-1	4-7161-1	4-7161-1	4-7161-1	4-7161-1	4-7161-1
(11) Pipe Sealant	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062	R790-1062

STABILIZER



NOTE:
At final assembly hand tighten nut to bolt, then further tighten nut ¼ turn with a wrench and tack weld nut to bolt (3) places.

Part Name	4384-8	4384-9	4384-10-A	4384-10-B	4384-12	4384-14
(1) Air Disc (8 psig)	4-47715-1	4-47581-1	4-47722-1	4-47729-1	4-47735-1	4-47750-1
(1) Air Disc (2 psig)	4-25529-1	4-25532-1	4-26678-1	4-25535-1	4-26677-1	4-21610-1
(2) Retaining Bolt	4-15276-1	4-15276-1	4-14684-1	4-14684-1	4-14684-1	4-14684-1
(3) Flat Washer	R970-7294-S	R970-7294-S	R970-7379-S	R970-7379-S	R970-7379-S	R970-7379-S
(4) Hex Nut	R510-2259-S	R510-2259-S	R510-2319-S	R510-2319-S	R510-2319-S	R510-2319-S
(5) Spin Vane Stabilizer (2 psig)	4-25528-1	4-25531-1	4-29020-1	4-25534-1	4-29022-1	4-21608-1

Part Name	4384-16	4384-18	4384-20	4384-22	4384-24	4384-26
(1) Air Disc (8 psig)	4-47756-1	4-47762-1	4-47834-1	4-47849-1	4-47864-1	4-47931-1
(1) Air Disc (2 psig)	4-25538-1	4-25541-1	4-25544-1	N/A	N/A	N/A
(2) Retaining Bolt	4-14684-1	4-14684-1	4-14684-1	4-14684-1	4-14684-1	4-14684-1
(3) Flat Washer	R970-7379-S	R970-7379-S	R970-7379-S	R970-7379-S	R970-7379-S	R970-7379-S
(4) Hex Nut	R510-2319-S	R510-2319-S	R510-2319-S	R510-2319-S	R510-2319-S	R510-2319-S
(5) Spin Vane Stabilizer (2 psig)	4-25537-1	2-25540-1	4-25543-1	N/A	N/A	N/A

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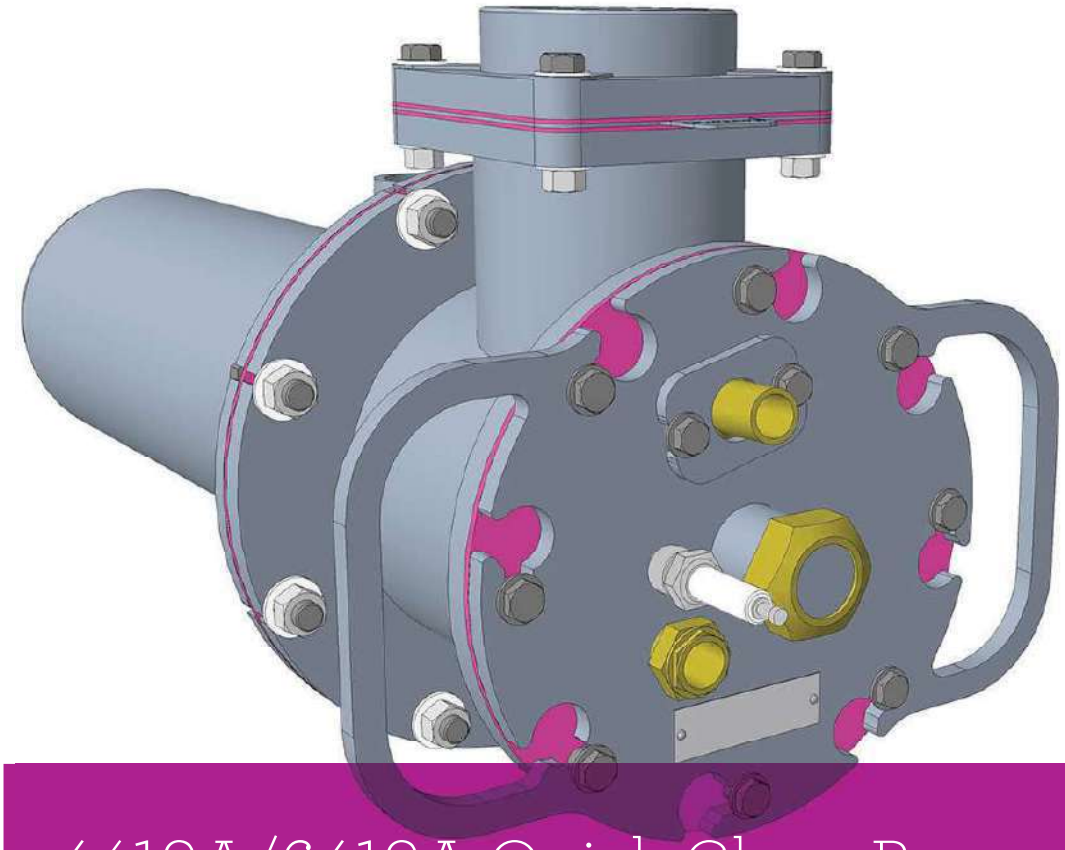

4419A/6419A Quick Clean Burner

- Quick cleanout
- Direct spark ignition
- Dual fuel version available
- Multiple hearth furnaces
- Aluminum tower melters