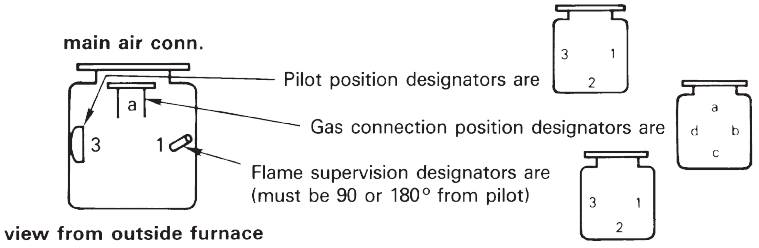
Arrangement Designators are specified relative to the main air connection at 12 o'clock and should be listed for **pilot, gas, and flame detector in that order.** Good practice dictates that neither the pilot nor the flame supervision device be on the bottom of the burner.



Burners are designed to be mounted no more than 15° from horizontal. Contact your North American Sales Engineer if your application requires a greater angle.

ATP BURNER TILE INSTALLATION RECOMMENDATIONS FOR HARD REFRACTORY LINED FURNACES

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

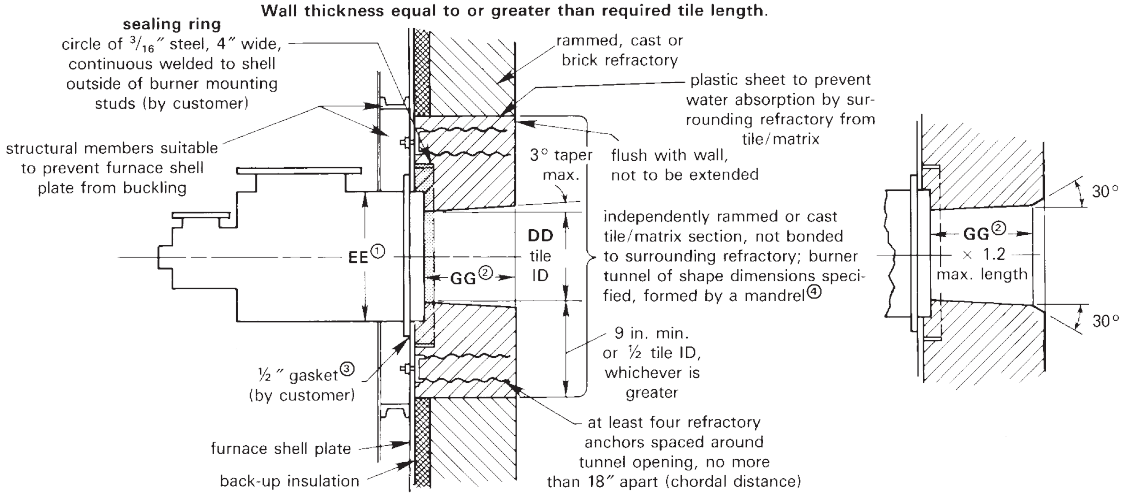
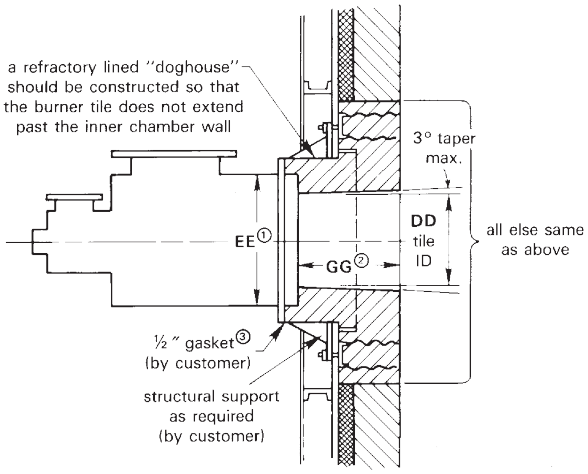


FIGURE 2
Wall thickness less than required tile length.



① Furnace opening should be ½" larger than dimension EE for -8 thru -14; ¾" larger than dimension EE for -16 thru -24.
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.

CONTACT
fna.sales@fivesgroup.com
T +1 800 626 3477 - F +1 216 373 4237

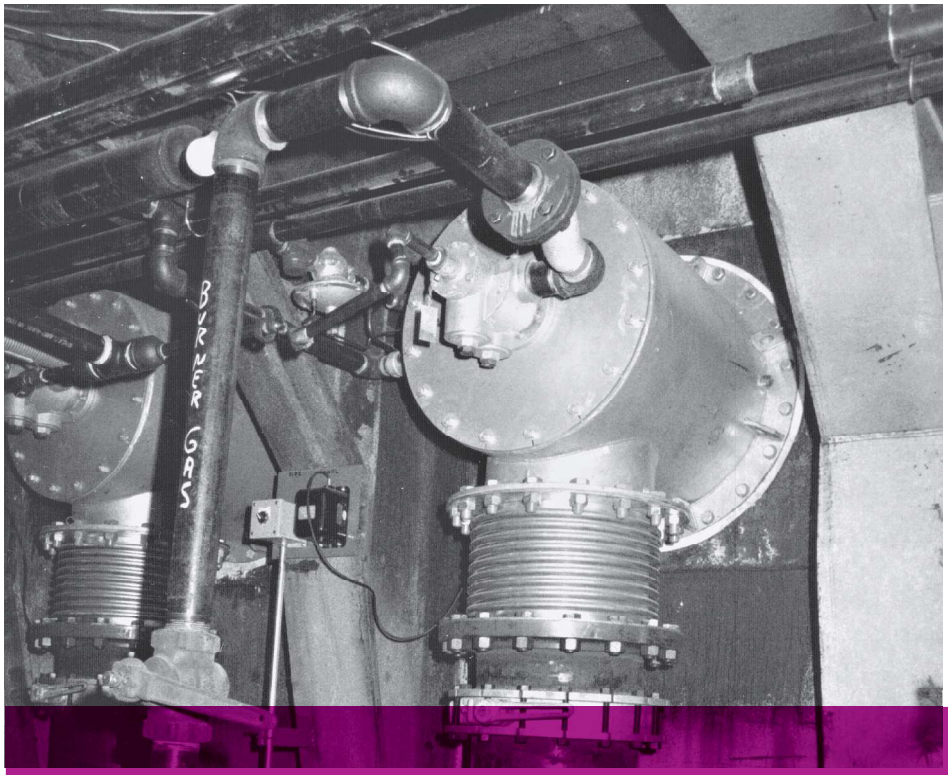
Fives North American Combustion, Inc.
4455 East 71st Street - Cleveland, OH 44105 - USA
www.fivesgroup.com

fives

PROCESS
TECHNOLOGIES

ENERGY | COMBUSITION

North American
4482 ATP™ Burners



These Low NOx ATP Burners are firing a new hot strip mill reheat furnace.

Adaptive Thermal Profile Low NOx Burners for High Temperature Applications

- For reheat furnaces, process heaters, aluminum melters, etc. from 1800°F to 2600°F.
- Controlled flame shape

Product Overview | 4482 ATP™ Burner

ATP Burner bodies and backplates are fabricated of heavy gauge welded steel. Internal parts include a front refractory ring, refractory 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 furnace contour and application. A controlled flame shape is desirable in almost any application--it is essential in many to realize optimum furnace performance.

4482 ATP Burners are used with ambient temperature combustion air on a wide variety of furnaces operating up to 2600°F. For preheated air applications, refer to Bulletin 4472. Adaptive profiling principles enable these burners to vary flame configuration from approximately 750 000 Btu/h HHV per foot of length to 1,700,000 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.

OPERATION

Burners are designed for 10"w.c. maximum recommended air pressure. 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 10"w.c.

Stoichiometric turndown is 10:1 with 10"w.c. main air pressure (thermal turndown is extended to 15:1).

Standard design is for 8 psig gas at the burner.

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.

Burners are designed to be mounted no more than 15° from horizontal. Contact Fives North American Combustion, Inc. if your application requires a greater angle.

CONTROL

Mass flow control is recommended. Standard 4482 ATP™ Burners have a single gas connection with internal tangential/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"wc, 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 North American for configuration guidance on multiple burner applications.

LOW NOx

The 4482 ATP 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 North American for specific applications.

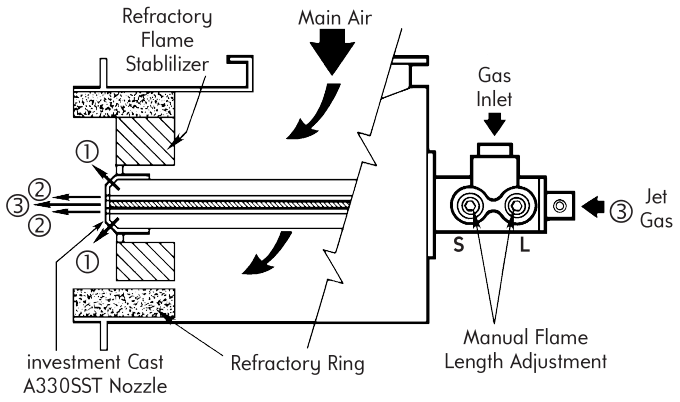
BURNER TILE CONSTRUCTION

4482 Burners do not include a tile. Tunnel shape and recommended installation is shown on Dimensions & Installation 4482.

OTHER FUELS

For other gaseous fuels and oils, contact North American.

Adaptive Thermal Profiling (ATP) distributes the heat where it's needed...3 to 55 million Btu/h HHV.



① Tangential gas--Increasing tangential 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.

Capacity | 4482 ATP™ Burner

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

Air/gas ratio set for 10% excess air.

Burner designation	SHORT FLAME (10% reduced capacity) air pressure 6"w.c.	10"w.c.	LONG FLAME (full capacity) air pressure 6"w.c.	10"w.c.	FLAME DIA. (full capacity) long or short
4482-8	3½	6	8	15	2.5
4482-9	5	8	10	15	2.5
4482-10-A	6	8	12	16	3
4482-10-B	7	9	15	18	3
4482-12	7	9	16	20	3
4482-14	9	12	18	24	3.5
4482-16	11	14	24	30	3.5
4482-18	14	18	28	34	4
4482-20	18	22	32	40	4
4482-22	20	25	36	45	4.5
4482-24	23	28	45	50	5

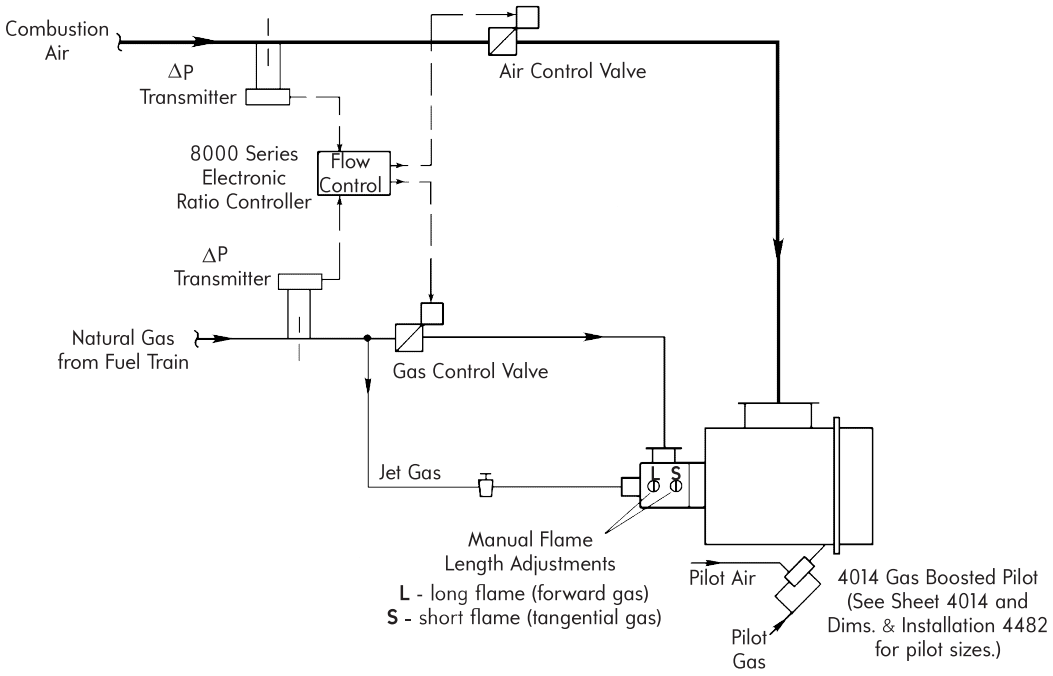
COMBUSTION AIR CAPACITIES, scfh long flame mode

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

Burner designation	air pressure 0.1"w.c.*	6"w.c.	10"w.c.†
4482-8	4 070	31 500	40 700
4482-9	7 150	55 300	71 500
4482-10-A	8 900	69 100	89 200
4482-10-B	11 300	87 700	113 000
4482-12	16 000	124 000	160 000
4482-14	20 000	155 000	200 000
4482-16	26 000	205 000	264 000
4482-18	33 000	261 000	337 000
4482-20	42 000	324 000	419 000
4482-22	51 000	361 000	509 000
4482-24	61 000	471 000	608 000

*min. air rate †max. recommended press.

TYPICAL SINGLE BURNER ATP FLOW CONTROL SCHEMATIC



Burner Adjustments| 4482 ATP™ Burner

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: 4482-(code for pipe size)-(A, if applicable) Burner Complete (specify Arrangement Designators--see Dimensions & Installation 4482).
Examples: 4482-10-A 10" Burner Complete with arrangement 3a1
4482-12 12" Burner Complete with arrangement 1c3

CONTACT
fna.sales@fivesgroup.com
T +1 800 626 3477 - F +1 216 373 4237

Fives North American Combustion, Inc.
4455 East 71st Street - Cleveland, OH 44105 - USA
www.fivesgroup.com

fives
Industry can do it

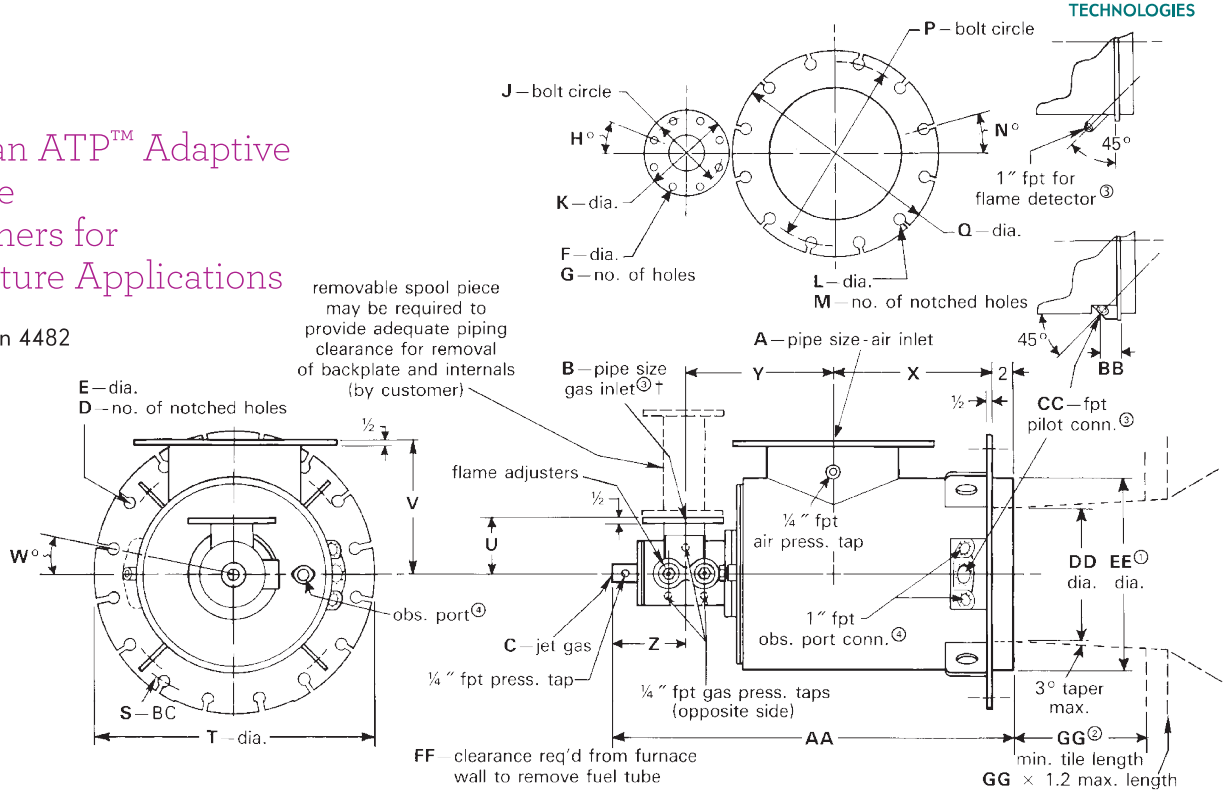
fives

PROCESS TECHNOLOGIES

North American ATP™ Adaptive Thermal Profile Low NOx Burners for High Temperature Applications

Dimensions & Installation 4482

DIMENSIONS inches



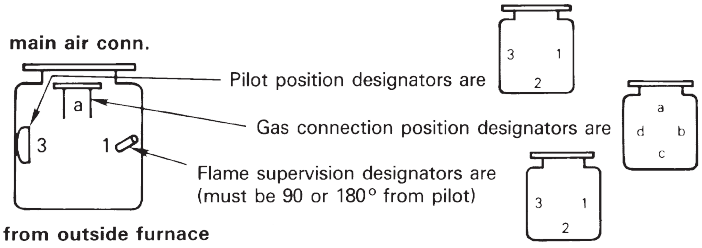
Burner designation	A ③	B ③†	C	D	E	F	G	H°	J	K	L	M	N°	P	Q	S	T	U
4482-8	6	2½	¾	16	¾	–	–	–	–	–	⅞	8	22½	9½	11	24½	26¼	5⅛
4482-9	8	2½	¾	16	¾	–	–	–	–	–	⅞	8	22½	11¾	13½	24½	26¼	5⅛
4482-10-A	10	2½	¾	20	¾	–	–	–	–	–	1	12	15	14¼	16	26½	28¼	5⅛
4482-10-B	10	2½	¾	20	¾	–	–	–	–	–	1	12	15	14¼	16	26½	28¼	5⅛
4482-12	12	2½	¾	20	¾	–	–	–	–	–	1	12	15	17	19	28½	30¼	5⅛
4482-14	13⅞	2½	¾	20	⅞	–	–	–	–	–	1⅛	12	15	18¾	21	30½	32¼	5⅛
4482-16	15⅞	2½	¾	24	⅞	–	–	–	–	–	1⅛	16	11¼	21¼	23½	32½	34¼	5⅛
4482-18	17⅞	4	1	24	⅞	¾	8	22½	7½	9	1¼	16	11¼	22¾	25	36½	38¼	7 11/16
4482-20	19⅞	4	1	24	⅞	¾	8	22½	7½	9	1¼	20	9	25	27½	38½	40¼	7 11/16
4482-22	21⅞	4	1	24	⅞	¾	8	22½	7½	9	1¼	20	9	26	29½	40½	42¼	7 11/16
4482-24	23⅞	4	1	24	⅞	¾	8	22½	7½	9	1⅜	20	9	29½	32	42½	44¼	7 11/16

†-8 thru -16, 2½" threaded; -18 thru -24, 4" ANSI flange

Burner designation	V	W°	X	Y	Z	AA	BB	CC ③	DD	EE ①	FF	GG ②	Pilot assembly designation
4482-8	13½	11¼	16	12¾	7⅜	38⅛	2 3/16	1¼	14	20	63⅝	11	4014-1-T
4482-9	13½	11¼	16	12¾	7⅜	38⅛	2 3/16	1¼	14	20	63⅝	11	4014-1-T
4482-10-A	14½	9	18	14⅜	7⅜	41¾	2¾	1½	16	22	70⅞	13	4014-2-T
4482-10-B	14½	9	18	14⅜	7⅜	41¾	2¾	1½	16	22	70⅞	13	4014-2-T
4482-12	15½	9	20½	15⅞	7⅜	45¾	2⅞	2	18	24	79⅛	14	4014-3-AT
4482-14	16½	9	21½	16⅞	7⅜	47¾	2⅞	2	20	26	82⅞	16	4014-3-AT
4482-16	17½	7½	22	17½	7⅜	48⅞	2⅞	2	22	28	85	18	4014-3-AT
4482-18	19½	7½	22½	19⅝	8¼	52⅜	2⅞	2	26	32	92¾	21	4014-3-BT
4482-20	21½	7½	23½	20½	8¼	54¼	2⅞	2	28	34	93½	22	4014-3-BT
4482-22	22½	7½	24½	22⅜	8¼	57⅛	2⅞	2	30	36	99¼	24	4014-3-BT
4482-24	23½	7½	25½	23½	8¼	59¼	2⅞	2	32	38	103½	26	4014-3-BT

① Furnace opening should be ½" larger than dimension EE for -8 thru -14; ¾" larger than dimension EE for -16 thru -24.
② Any tile length greater than GG x 1.2 should have a 30° angled flare from the standard tile extension.
③ Burner must be ordered with pilot, gas, and flame detector locations designated. See reverse side.
④ Backplate and pilot observation ports included with burner.

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.



Burners are designed to be mounted no more than 15° from horizontal. Contact your North American Sales Engineer if your application requires a greater angle.

ATP BURNER TILE INSTALLATION RECOMMENDATIONS FOR HARD REFRACTORY LINED FURNACES

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

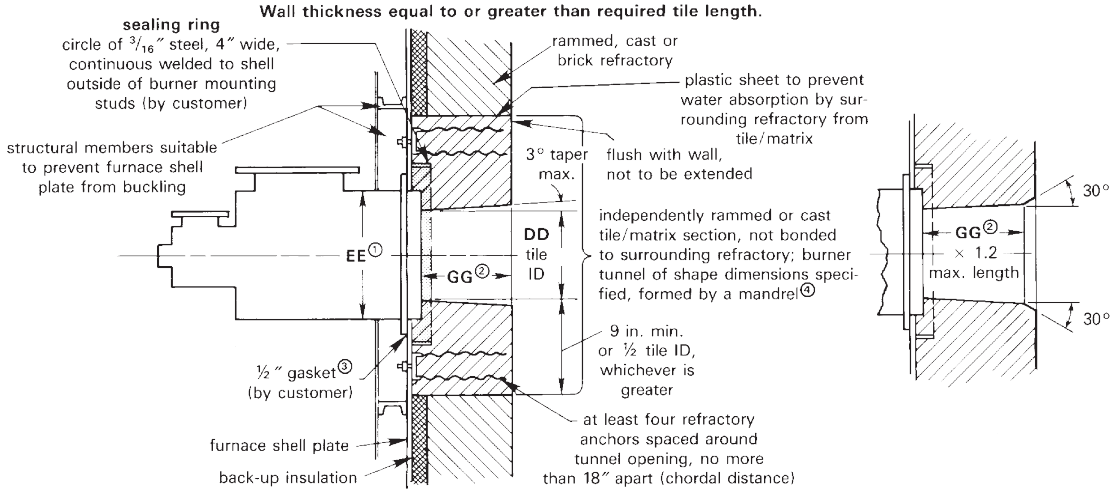
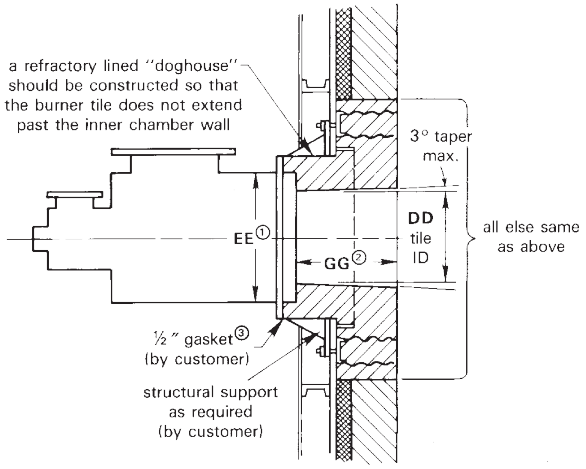


FIGURE 2
Wall thickness less than required tile length.



① Furnace opening should be ½" larger than dimension EE for -8 thru -14; ¾" larger than dimension EE for -16 thru -24.
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.

CONTACT
fna.sales@fivesgroup.com
T +1 800 626 3477 - F +1 216 373 4237

Fives North American Combustion, Inc.
4455 East 71st Street - Cleveland, OH 44105 - USA
www.fivesgroup.com

fives
Industry can do it