



fives

# Combustion

## North American 6514 Burner Options

Sheet 6514-3

### BURNER NOSE OPTIONS

### STANDARD OPTIONS

**Burner nose options** are available for sizes shown on the right and can be specified in the product number. The burner nose establishes main combustion air flow and influences flame propagation. Nose material is either cast iron that is suitable for cold air applications up to 1800F, or cast stainless alloy for preheated air (maximum 700F) applications up to 2400F.

The product designation 1.0 represents standard main air capacity shown on page 1 of the product Bulletin. Use of an extra capacity burner nose will result in either more air at 16 osi or standard air flow at lower pressure. Extending the capacity of the burner by increasing air pressure beyond 16 osi, or using the extra capacity nose, is acceptable for gas and light oil applications. Heavy oil applications however, are often more difficult because of fuel makeup variation and special fuel conditioning. Specific applications involving heavy oil and extra capacity should be reviewed with Fives North American Combustion, Inc.

Burner	Capacity Designation		Nose Part Number		Main Air @ 16 osi
	Cast Iron Nose	Cast Alloy Nose	Cast Iron Nose	Cast Alloy Nose	scfh
4514/6514-6	1.0H	1.0A	3-3201-2	3-3201-3	14 900
5514-6	1.0H	1.0A	3-3201-4	3-3201-5	14 900
4514/6514-7	1.0H	1.0A	3-3203-2	3-3203-3	24 400
4514/6514-7	1.1H	1.1A	3-3203-6	3-3203-7	27 000
5514-7	1.0H	1.0A	3-3203-4	3-3203-5	24 400
5514-7	1.1H	1.1A	3-3203-8	3-3203-9	27 000
4514/5514/6514-8-A	1.0H	1.0A	3-3202-1	3-3202-2	42 400
4514/5514/6514-8-A	1.1H	1.1A	3-3202-3	3-3202-4	46 500
4514/5514/6514-8-A	1.2H	1.2A	3-3202-5	3-3202-6	51 000
4514/5514/6514-8-A	1.3H	1.3A	3-3202-7	3-3202-8	55 000
4514/5514/6514-8-B	1.0H	1.0A	3-3200-1	3-3200-2	70 000
4514/5514/6514-8-B	1.1H	1.1A	3-3200-3	3-3200-4	77 000
4514/5514/6514-8-B	1.2H	1.2A	3-3200-5	3-3200-6	84 000
4514/5514/6514-8-B	1.3H	1.3A	3-3200-7	3-3200-8	91 000
4514/5514/6514-9	1.0H	1.0A	3-3204-1	3-3204-2	146 000
4514/5514/6514-9	1.1H	1.1A	3-3204-3	3-3204-4	161 000
4514/5514/6514-9	1.2H	1.2A	3-3204-5	3-3204-6	175 000
4514/5514/6514-9	1.3H	1.3A	3-3204-7	3-3204-8	190 000
4514/5514/6514-10	1.0H	1.0A	3-3205-1	3-3205-2	218 000
4514/5514/6514-10	1.1H	1.1A	3-3205-3	3-3205-4	240 000
4514/5514/6514-10	1.2H	1.2A	3-3205-5	3-3205-6	262 000
4514/5514/6514-10	1.3H	1.3A	3-3205-7	3-3205-8	283 000

### JACKETED TILE OPTIONS

Burner Size	Tile Designation	Mounting and Tile Part Number	Tile Jacket Material	Tile Jacket Part Number	Continuous Duty (F)	Intermittent Duty (F)
-6	LX	3-7099-1	no jacket	-	2600	2400
-6	LC	3-15539-1	carbon steel	3-2691-1	700	700
-6	L4	3-15539-2	304 sst	3-2691-2	1700	1600
-6	L9	3-15539-3	309 sst	3-2691-3	1900	1800
-7	LX	3-7099-4	no jacket	-	2600	2400
-7	LC	3-15539-4	carbon steel	3-2703-1	700	700
-7	L4	3-15539-5	304 sst	3-2703-2	1700	1600
-7	L9	3-15539-6	309 sst	3-2703-3	1900	1800
-8-A	LX	3-7099-7	no jacket	-	2600	2400
-8-A	LC	3-15539-7	carbon steel	3-2991-1	700	700
-8-A	L4	3-15539-8	304 sst	3-2991-2	1700	1600
-8-A	L9	3-15539-9	309 sst	3-2991-3	1900	1800
-8-B	LX	3-7099-10	no jacket	-	2600	2400
-8-B	LC	3-15539-10	carbon steel	3-2661-1	700	700
-8-B	L4	3-15539-11	304 sst	3-2661-2	1700	1600
-8-B	L9	3-15539-12	309 sst	3-2661-3	1900	1800
-9	LX	3-7099-13	no jacket	-	2600	2400
-9	LC	3-15539-13	carbon steel	3-2632-2	700	700
-9	L4	3-15539-14	304 sst	3-2632-3	1700	1600
-9	L9	3-15539-15	309 sst	3-2632-4	1900	1800
-10	LX	3-4987-1	no jacket	-	2600	2400
-10	LC	3-4987-1L	carbon steel	3-2738-3	700	700
-10	L4	3-4987-1L4	304 sst	3-2738-4	1700	1600
-10	L9	4-4987-1L9	309 sst	3-2738-5	1900	1800

**Jacketed tile options** are available for applications where the tile is not supported by furnace refractory. Jackets are available in three different metals and have maximum temperature ratings for each. They must be protected with sufficient insulation so as not to exceed rated temperature. The maximum temperature rating for jacket metals depends upon frequency of heat-up/cool-down cycles.

As an example, batch annealing furnaces that are heated and cooled every day should use the "intermittent exposure" ratings. Continuous annealing furnaces that remain at the same temperature for months at a time, can use the higher "continuous" rating.

## SPECIAL OPTIONS

Special options are available for Fireall burners for a nominal increase in price. These must be ordered with assistance from North American. Several of the more popular options are detailed on this page. Benefits from using these options can vary and often depend on factors other than the burner itself, such as the fuel delivery system, furnace size and temperature, and process variables.

**Back pressure construction** is available for applications up to several psi, such as found in fluidized beds. The special construction addresses leak paths to minimize this condition. The standard Fire•All product is suitable up to approximately ¼ psi furnace back pressure.

**Fast mix construction** is available for most burner sizes. This reduces flame length by approximately 40%. It is not recommended for heavy oil applications, and in general, the modification will result in a reduction in performance limits (lighting, excess air, etc.).

**Hinged burner construction** is available for the -8-A size only. This allows the BO (burner only) portion to swing open from the mounting and tile assembly for easy access to burner internals.

**Undersized atomizers** for 5514 and 6514 burners are useful where extra turndown, preheated air, or consistently lean operation is required. Atomizer reduction is typically one size smaller, e.g., an -8-A atomizer in an -8-B burner. Under sizing the atomizer is not recommended for the 6514-10 burner.

**High pressure atomizers** 5622, 5623 or 5643 can be fitted to 5514 and 6514 burners for special applications such as incinerating waste liquids. Steam or compressed air (15 to 125 psig) is required at the atomizer for proper operation. Refer to Bulletins 5622/23 and 5643 for performance characteristics. In these instances, the existing low pressure atomizing air connection on the burner is used for additional main combustion air.

**Special construction** (welding) of the atomizing air nozzle and tube is recommended for hot applications (1800F and higher) where the 5514 or 6514 burner is fired vertically down.

**Spoked oil nozzles** can be requested for light oil applications. This can improve atomization quality and reduce burner carboning. The standard 5514 and 6514 oil nozzle (not spoked) is recommended for all heavy oil applications.

**Tile mountings** can be specified with 1½" NPT connection to accept a 5025-1-3T direct spark oil pilot. This pilot is recommended for interrupted operation only. Good practice dictates mounting the oil pilot above the burner horizontal centerline to avoid possibility of oil running back into the pilot. An 8699-1-453 balancing orifice is suggested for the air supply to provide proper air flow for 8 osi and 0.85 gph rating.

**Refractory burner tiles** can be manufactured in a number of special ways including shortened length, with a choked exit, with expanded metal liners or sst needles. Contact North American for an explanation of benefits and availability of these options. Pre-fired tiles are no longer available as a special option.

## ADDITIONAL ACCESSORIES

**Oversized air connections.** Nose castings for sizes -8-A and larger can be bored out for up to 30% additional main air capacity. Complete performance data is not available for burners with this modification. Most -8-B,-9, and -10 applications require an enlarged air connection flange.

Burner Designation	Oversized air connection (SW type)	
	Size	P/N
4514/5514/6514-8-B	8"	3-21995-1
4514/5514/6514-9	10"	3-21996-1
4514/5514/6514-10	12"	3-21997-1

**Direct spark ignition** is possible with a 4055-M igniter for gas only 4514 burners. The igniter has a ¾" NPT connection and can replace the 4025 pilot tip. Igniter extension is adjustable and optimal position is determined during field start up. The burner main air pressure should be less than 1 osi when attempting to light with direct spark.

**WARNING:** Situations dangerous to personnel and property may exist with the operation and maintenance of any combustion equipment. The presence of fuels, oxidants, hot and cold combustion products, hot surfaces, electrical power in control and ignition circuits, etc., are inherent with any combustion application. Parts of this product may exceed 160F in operation and present a contact hazard. Fives North American Combustion, Inc. urges compliance with National Safety Standards and Insurance Underwriters' recommendations, and care in operation.



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