

North American Tempest® III High Velocity Dual-Fuel™ Burners

Bulletin 6435

TEMPEST III BURNERS FEATURE:

HIGH VELOCITY—Comparable to North American’s renowned 4442 Tempest I gas burner.

DUAL-FUEL—Natural gas and/or distillate oil only. Not suitable for blends containing residuals such as Indian "LDO" or similar.

WIDE STABILITY RANGE—From 15% excess fuel to 400% excess air.

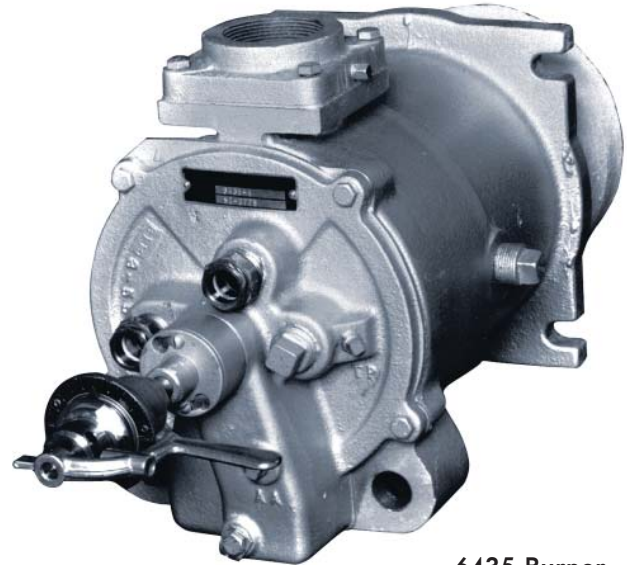
UNIT CONSTRUCTION—The high temperature tile is secured in the main body section—no extra support is required.

USEFUL CAPACITY RANGES—Ratings from 130 000 to 1 600 000 Btu/hr.

EASY INSPECTION/SERVICE—Air and gas piping need not be removed for complete access to internals.

PREHEATED AIR CAPABILITY—To 800 F main air temperature at the burner.

FUEL PRESSURES—Natural gas - 12 osig, #2 oil - 2.5 psig.



6435 Burner

TABLE 1. Main and Atomizing Air capacities
scfh*
(for Btu/hr, multiply by 100)

| Burner | fuel | Main Air | | | | | Atomizing Air (with 16 osi Main Air) | | Flame lengths 16 osi Main Air | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|------|----------|------|------|-------|-------|---|--------------|----------------------------------|--------|-----|------|------|------|-------|-------|--------------|-----|-----|-----|------|------|------|-------|-------|--------|-----|------|------|------|-------|-------|--------------|-----|-----|-----|------|------|------|-------|-------|--------|-----|------|------|------|-------|-------|--------------|-----|-----|-----|------|------|------|-------|-------|--------|-----|------|------|------|-------|-------|--------------|-----|-----|-----|------|------|------|-------|-------|--------|-----|------|------|------|-------|-------|--------------|-----|-----|-----|------|
| | | 0.2 | 1 | 4 | 9 | 16 | 8 osi (gas) | 30 osi (oil) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6435-1 | gas | 65 | 240 | 545 | 870 | 1220 | 75 | 180 | 9" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | oil | 85 | 232 | 545 | 865 | 1200 | | | | 6435-2 | gas | 170 | 500 | 1090 | 1660 | 2280 | 30 | 140 | 8" | oil | 165 | 430 | 1070 | 1660 | 2280 | 6435-3 | gas | 235 | 680 | 1530 | 2490 | 3420 | 70 | 180 | 12" | oil | 300 | 665 | 1430 | 2320 | 3180 | 6435-4 | gas | 545 | 1270 | 2830 | 4350 | 6050 | 160 | 390 | 20" | oil | 665 | 1240 | 2750 | 4310 | 5850 | 6435-5 | gas | 895 | 2060 | 4460 | 6950 | 9500 | 400 @ 16 osi | 585 | 22" | oil | 895 | 2110 | 4760 | 7450 | 10000 | 6435-6 | gas | 1000 | 3500 | 7100 | 11300 | 15200 | 380 @ 16 osi | 470 | 38" | oil | 1200 |
| 6435-2 | gas | 170 | 500 | 1090 | 1660 | 2280 | 30 | 140 | 8" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | oil | 165 | 430 | 1070 | 1660 | 2280 | | | | 6435-3 | gas | 235 | 680 | 1530 | 2490 | 3420 | 70 | 180 | 12" | oil | 300 | 665 | 1430 | 2320 | 3180 | 6435-4 | gas | 545 | 1270 | 2830 | 4350 | 6050 | 160 | 390 | 20" | oil | 665 | 1240 | 2750 | 4310 | 5850 | 6435-5 | gas | 895 | 2060 | 4460 | 6950 | 9500 | 400 @ 16 osi | 585 | 22" | oil | 895 | 2110 | 4760 | 7450 | 10000 | 6435-6 | gas | 1000 | 3500 | 7100 | 11300 | 15200 | 380 @ 16 osi | 470 | 38" | oil | 1200 | 3600 | 7400 | 11200 | 15000 | | | | | | | | | | | | |
| 6435-3 | gas | 235 | 680 | 1530 | 2490 | 3420 | 70 | 180 | 12" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | oil | 300 | 665 | 1430 | 2320 | 3180 | | | | 6435-4 | gas | 545 | 1270 | 2830 | 4350 | 6050 | 160 | 390 | 20" | oil | 665 | 1240 | 2750 | 4310 | 5850 | 6435-5 | gas | 895 | 2060 | 4460 | 6950 | 9500 | 400 @ 16 osi | 585 | 22" | oil | 895 | 2110 | 4760 | 7450 | 10000 | 6435-6 | gas | 1000 | 3500 | 7100 | 11300 | 15200 | 380 @ 16 osi | 470 | 38" | oil | 1200 | 3600 | 7400 | 11200 | 15000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6435-4 | gas | 545 | 1270 | 2830 | 4350 | 6050 | 160 | 390 | 20" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | oil | 665 | 1240 | 2750 | 4310 | 5850 | | | | 6435-5 | gas | 895 | 2060 | 4460 | 6950 | 9500 | 400 @ 16 osi | 585 | 22" | oil | 895 | 2110 | 4760 | 7450 | 10000 | 6435-6 | gas | 1000 | 3500 | 7100 | 11300 | 15200 | 380 @ 16 osi | 470 | 38" | oil | 1200 | 3600 | 7400 | 11200 | 15000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6435-5 | gas | 895 | 2060 | 4460 | 6950 | 9500 | 400 @ 16 osi | 585 | 22" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | oil | 895 | 2110 | 4760 | 7450 | 10000 | | | | 6435-6 | gas | 1000 | 3500 | 7100 | 11300 | 15200 | 380 @ 16 osi | 470 | 38" | oil | 1200 | 3600 | 7400 | 11200 | 15000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6435-6 | gas | 1000 | 3500 | 7100 | 11300 | 15200 | 380 @ 16 osi | 470 | 38" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | oil | 1200 | 3600 | 7400 | 11200 | 15000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

*burning on stoichiometric ratio

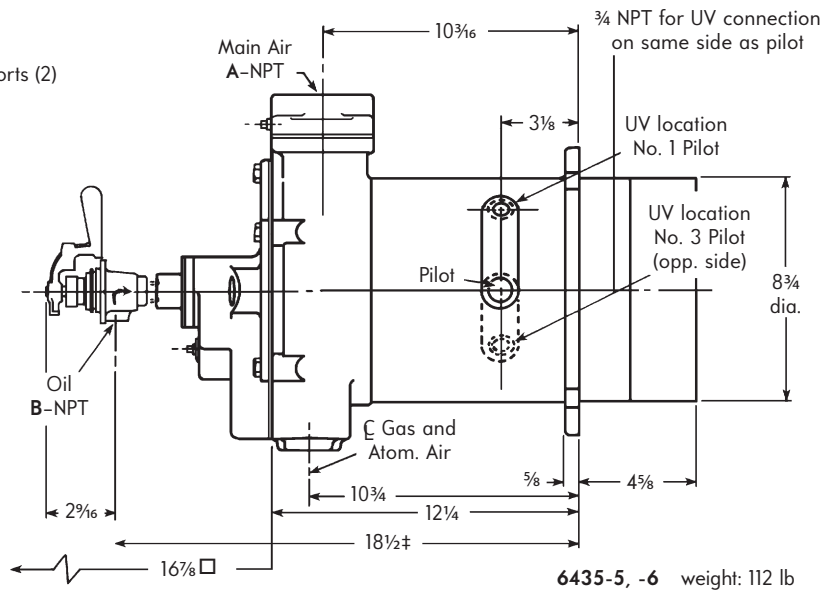
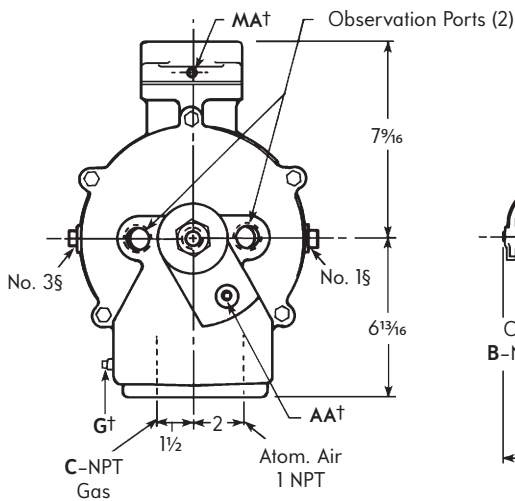
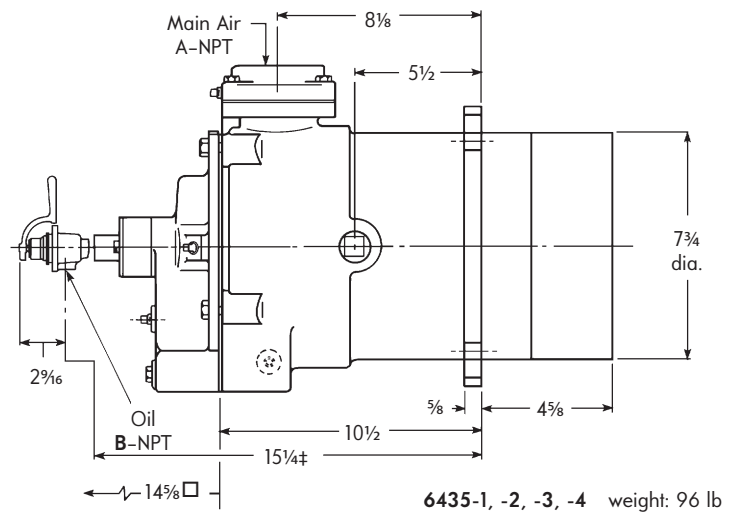
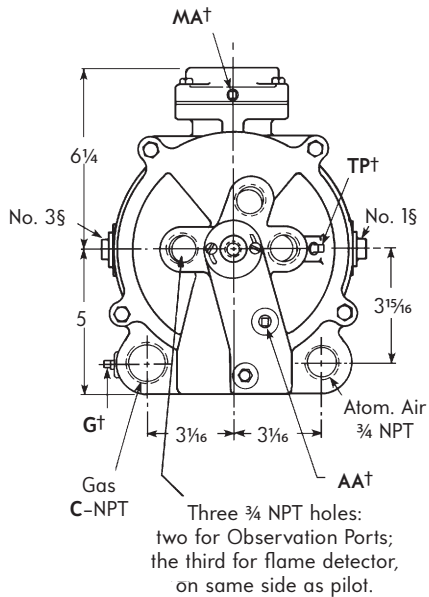
**TABLE 2. Main and Atomizing Air
scfh
capacities not burning
(use to size blowers)**

| Burner | Main Air at 16 osi | Atomizing Air (with 16 osi Main Air) | |
|--------|-----------------------|---|-----------|
| | | at 8 osi | at 30 osi |
| 6435-1 | 1350 | 90 | 180 |
| 6435-2 | 3000 | 90 | 190 |
| 6435-3 | 4120 | 100 | 200 |
| 6435-4 | 7240 | 240 | 460 |
| 6435-5 | 12100 | 430 @ 16 osi | 590 |
| 6435-6 | 17500 | 430 @ 16 osi | 590 |

**TABLE 3. Maximum %XSAir
(16 osi Main Air)**

| Fuel | Burner size | | | | | |
|-------------|-------------|-----|-----|-----|-----|-----|
| | -1 | -2 | -3 | -4 | -5 | -6 |
| Natural Gas | 400 | 400 | 400 | 350 | 350 | 600 |
| #2 Oil | 200 | 300 | 400 | 300 | 350 | 600 |

DIMENSIONS in inches



Recommended Pilot Tip 4021-12.

‡ Dimension assumes close nipple between burner and Sensitrol™ Oil Valve.

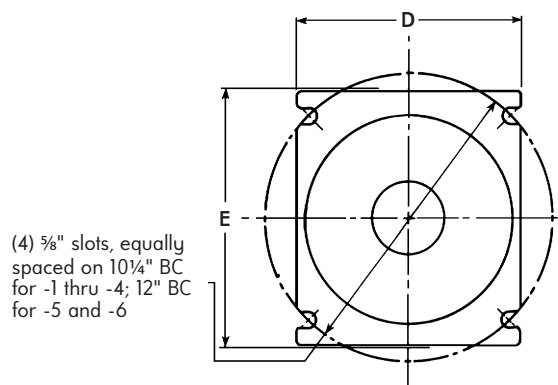
§ For sizes -1 through -4 with flame supervision, Sensitrol Valve cannot be close connected because of interference with handle.

¶ Pilot position designation (No. 1 or No. 3) must be specified on order.

□ Minimum for removal of internals including Sensitrol Valve.

† 1/8 fpt Pressure Taps: MA—Main Air, G—Gas, AA—Atomizing Air, TP—Tile Pressure.

| 6435 | A | B | C | D | E | tile exit hole diameter | Sensitrol Oil Valve |
|------|-------|-----|-------|-------|--------|-------------------------|---------------------|
| -1 | 1 | 1/4 | 1 | 8 3/8 | 9 1/8 | 1 1/64 | 1813-03 |
| -2 | 1 1/4 | 1/4 | 1 | 8 3/8 | 9 1/8 | 1 1/4 | 1813-03 |
| -3 | 1 1/2 | 1/4 | 1 | 8 3/8 | 9 1/8 | 1 1/2 | 1813-03 |
| -4 | 2 | 3/8 | 1 | 8 3/8 | 9 1/8 | 1 5/16 | 1813-02-A |
| -5 | 2 1/2 | 3/8 | 1 1/4 | 9 1/2 | 10 3/4 | 2 1/2 | 1813-02-A |
| -6 | 3 | 3/8 | 1 1/2 | 9 1/2 | 10 3/4 | 3 | 1813-02-B |



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

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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