

INTRODUCTION

Krueger's R1DBR10 round ceiling diffusers are designed for applications that require heavy duty construction featuring a ring operator which is fully adjustable with a pole operator. Discharge patterns can be adjusted from full horizontal to full vertical blow patterns. At the full vertical setting, the diffuser forces the air in a long downward projection. The result is effective heating and spot cooling from high mounting locations. The R1DBR10 is especially suitable for installation in factories, warehouses, convention halls, coliseums and shopping malls where ceilings are high and conditions may vary.

MODEL

R1DBR10 - Steel with Ring Operated Center Downblow Adjustment

FEATURES

- Outer Cone is contoured to guard against ceiling smudging.
- Designed for heating and cooling applications.
- Adjustable horizontal and vertical discharge patterns.
- 360° Discharge air pattern.
- Designed for exposed duct applications and high ceilings.
- Standard finish is #44 British White.
- Optional finishes available.

ACCESSORY

- Optional Round Straightening Grid



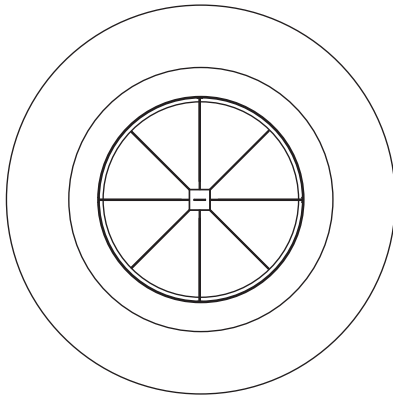
R1DBR10

R1DBR10

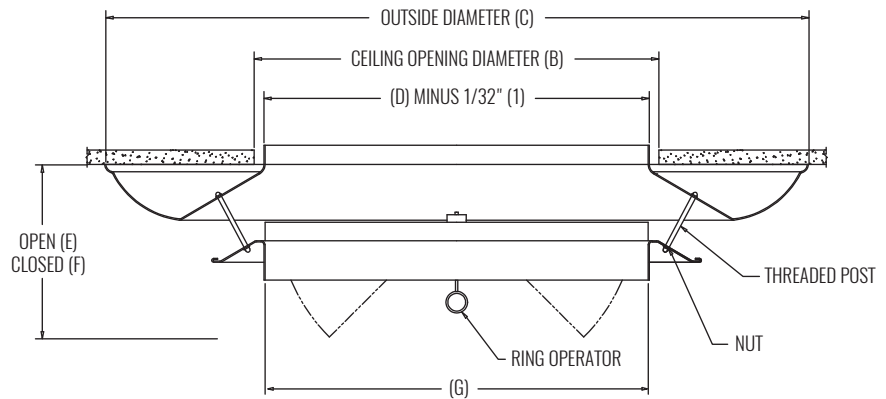
Round Diffuser, Ring Operated Center Downblow



DIMENSIONAL DATA



FACE VIEW



CROSS SECTION

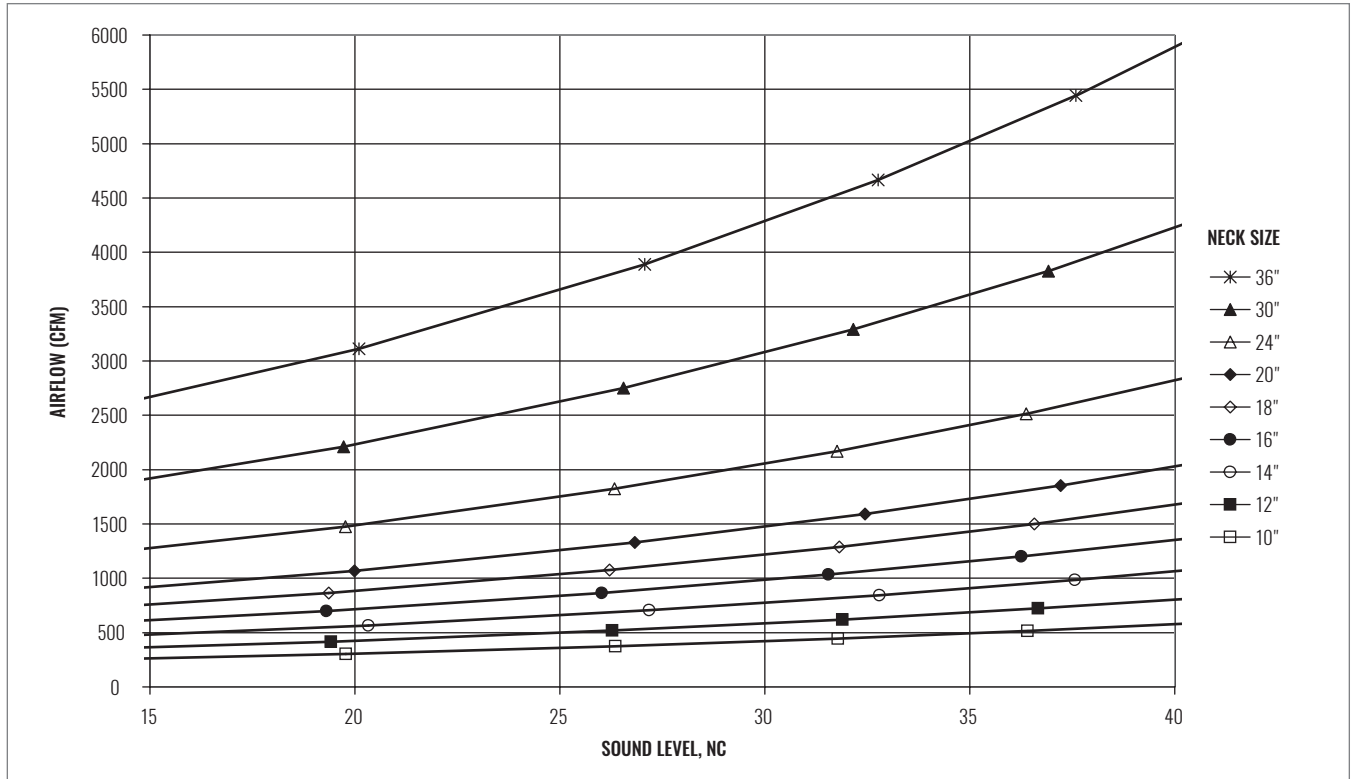
AVAILABLE NECK SIZES

| NOMINAL ROUND DUCT SIZE D | B | C | E | F | G |
|---------------------------|---------------|----------------|---------------|--------------|-----------|
| 10" | 10 1/2" (267) | 18 1/4" (464) | 7 1/2" (191) | 3" (76) | 10" (254) |
| 12" | 12 1/2" (318) | 22" (559) | 9 3/8" (238) | 4" (102) | 12" (305) |
| 14" | 14 1/2" (368) | 26" (660) | 6 3/4" (171) | 4" (102) | 14" (356) |
| 16" | 16 1/2" (419) | 29" (737) | 8 1/2" (216) | 5" (127) | 16" (406) |
| 18" | 18 1/2" (470) | 32 1/2" (826) | 9 1/8" (232) | 5" (127) | 18" (457) |
| 20" | 20 1/2" (521) | 36" (914) | 10 3/8" (264) | 5 1/2" (140) | 20" (508) |
| 24" | 24 1/2" (622) | 43 1/4" (1099) | 12 1/4" (308) | 6 5/8" (168) | 24" (610) |
| 30" | 30 1/2" (775) | 53 5/8" (1362) | 13 7/8" (352) | 8 1/4" (210) | 30" (762) |
| 36" | 36 1/2" (927) | 64 3/8" (1635) | 15 5/8" (397) | 10" (254) | 36" (914) |

NOTE: Dimensions in parentheses are millimeters (mm).

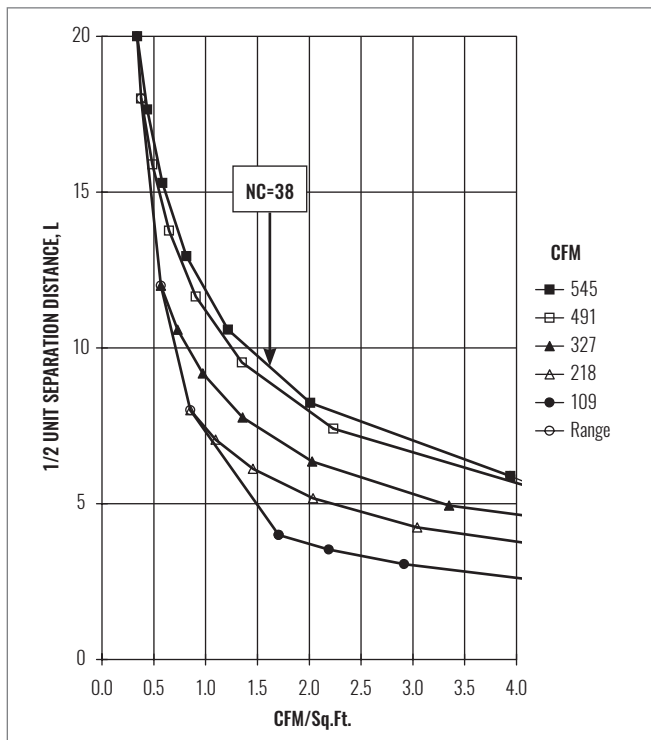
SOUND & ADPI CHARTS | HORIZONTAL THROW

AIRFLOW VS. NC LEVEL (NO DAMPER)

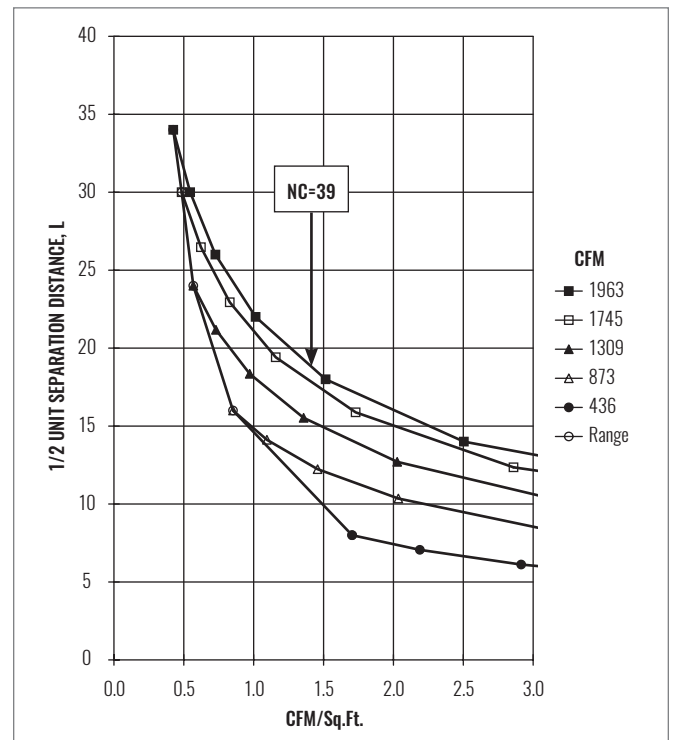


DIFFUSERS | ROUND

UNIT SPACING FOR 80% ADPI (10" NECK, NO DAMPER)



UNIT SPACING FOR 80% ADPI (20" NECK, NO DAMPER)



NOTES: Lower charts are at 20 BTUH/ft² loads. See the Engineering section of this catalog for instructions on how to read these charts and additional ADPI information.

R1DBR10

Round Diffuser, Ring Operated Center Downblow



PERFORMANCE DATA | NO DAMPER

DIFFUSERS | ROUND

| SIZE | IP DATA | | | | | | | | | | METRIC DATA | | | | | | | | | |
|------|-------------|-------------|----------------|----------------|----------------|----------------|-------------|------|------|----|-------------|-------------|-------------|----------------|----------------|----------------|----------------|-------------|------|------|
| | NECK VEL | AIR FLOW | HZ | | VT | | HZ THROW | VT | | HZ | VT | NECK VEL | AIR FLOW | HZ | | VT | | HZ THROW | VT | |
| | | | P _s | P _t | P _s | P _t | | 20°F | 40°F | | | | | P _s | P _t | P _s | P _t | | 11°C | 22°C |
| | in | fpm | cfm | in wg | in wg | in wg | in wg | ft | ft | ft | NC | NC | m/s | L/s | Pa | Pa | Pa | Pa | m | m |
| 10 | 425 | 232 | 0.00 | 0.01 | 0.01 | 0.02 | 1-2-4 | 17 | 6 | 11 | - | 2.2 | 109 | 1 | 3 | 3 | 6 | 0.4-0.6-1.2 | 5.1 | 1.7 |
| | 555 | 303 | 0.00 | 0.02 | 0.02 | 0.04 | 2-3-5 | 22 | 7 | 20 | 17 | 2.8 | 143 | 1 | 6 | 5 | 10 | 0.5-0.8-1.6 | 6.7 | 2.2 |
| | 685 | 374 | 0.01 | 0.04 | 0.03 | 0.06 | 2-3-7 | 27 | 9 | 26 | 23 | 3.5 | 176 | 2 | 9 | 8 | 15 | 0.7-1.0-2.0 | 8.3 | 2.8 |
| | 815 | 445 | 0.01 | 0.05 | 0.05 | 0.09 | 3-4-8 | 32 | 11 | 32 | 29 | 4.1 | 210 | 2 | 13 | 11 | 22 | 0.8-1.2-2.4 | 9.8 | 3.3 |
| | 945 | 515 | 0.01 | 0.07 | 0.06 | 0.12 | 3-5-9 | 37 | 12 | 36 | 33 | 4.8 | 243 | 3 | 17 | 15 | 29 | 0.9-1.4-2.8 | 11.4 | 3.8 |
| 1075 | 586 | 0.02 | 0.09 | 0.08 | 0.15 | 3-5-10 | 43 | 14 | 40 | 37 | 5.5 | 277 | 4 | 22 | 20 | 37 | 1.0-1.6-3.1 | 13.0 | 4.3 | |
| 12 | 400 | 314 | 0.00 | 0.01 | 0.01 | 0.02 | 2-2-5 | 14 | 4 | 11 | - | 2.0 | 148 | 1 | 3 | 3 | 5 | 0.5-0.7-1.4 | 4.3 | 1.2 |
| | 530 | 416 | 0.00 | 0.02 | 0.02 | 0.04 | 2-3-6 | 22 | 7 | 19 | 16 | 2.7 | 196 | 1 | 5 | 5 | 9 | 0.6-0.9-1.9 | 6.5 | 2.2 |
| | 660 | 518 | 0.01 | 0.03 | 0.03 | 0.06 | 3-4-8 | 27 | 9 | 26 | 23 | 3.4 | 245 | 2 | 8 | 8 | 14 | 0.8-1.2-2.3 | 8.1 | 2.7 |
| | 790 | 620 | 0.01 | 0.05 | 0.04 | 0.08 | 3-5-9 | 32 | 11 | 32 | 29 | 4.0 | 293 | 2 | 12 | 11 | 21 | 0.9-1.4-2.8 | 9.7 | 3.2 |
| | 920 | 723 | 0.01 | 0.07 | 0.06 | 0.11 | 4-5-11 | 37 | 12 | 37 | 34 | 4.7 | 341 | 3 | 16 | 15 | 28 | 1.1-1.6-3.2 | 11.4 | 3.8 |
| 1050 | 825 | 0.02 | 0.09 | 0.08 | 0.15 | 4-6-12 | 43 | 14 | 41 | 38 | 5.3 | 389 | 4 | 21 | 19 | 36 | 1.2-1.8-3.7 | 13.0 | 4.3 | |
| 14 | 400 | 428 | 0.00 | 0.01 | 0.01 | 0.02 | 2-3-5 | 13 | 4 | 12 | - | 2.0 | 202 | 1 | 3 | 3 | 5 | 0.5-0.8-1.6 | 4.0 | 1.2 |
| | 530 | 567 | 0.00 | 0.02 | 0.02 | 0.04 | 2-4-7 | 23 | 7 | 20 | 17 | 2.7 | 267 | 1 | 5 | 5 | 9 | 0.7-1.1-2.2 | 6.9 | 2.0 |
| | 660 | 706 | 0.01 | 0.03 | 0.03 | 0.06 | 3-4-9 | 29 | 10 | 27 | 24 | 3.4 | 333 | 2 | 8 | 8 | 14 | 0.9-1.3-2.7 | 8.8 | 2.9 |
| | 790 | 845 | 0.01 | 0.05 | 0.04 | 0.08 | 4-5-11 | 35 | 12 | 33 | 30 | 4.0 | 399 | 2 | 12 | 11 | 21 | 1.1-1.6-3.2 | 10.5 | 3.5 |
| | 920 | 983 | 0.01 | 0.07 | 0.06 | 0.11 | 4-6-12 | 40 | 13 | 38 | 35 | 4.7 | 464 | 3 | 16 | 15 | 28 | 1.3-1.9-3.8 | 12.3 | 4.1 |
| 1050 | 1122 | 0.02 | 0.09 | 0.08 | 0.15 | 5-7-14 | 46 | 15 | 42 | 39 | 5.3 | 530 | 4 | 21 | 19 | 36 | 1.4-2.1-4.3 | 14.0 | 4.7 | |
| 16 | 380 | 531 | 0.00 | 0.01 | 0.01 | 0.02 | 2-3-6 | 12 | 3 | 11 | - | 1.9 | 250 | 1 | 3 | 3 | 5 | 0.6-0.9-1.8 | 3.6 | 1.0 |
| | 500 | 698 | 0.00 | 0.02 | 0.02 | 0.03 | 3-4-8 | 20 | 6 | 19 | 16 | 2.5 | 329 | 1 | 5 | 4 | 8 | 0.8-1.2-2.3 | 6.2 | 1.8 |
| | 620 | 866 | 0.01 | 0.03 | 0.03 | 0.05 | 3-5-10 | 30 | 9 | 26 | 23 | 3.2 | 409 | 2 | 7 | 7 | 13 | 1.0-1.4-2.9 | 9.0 | 2.8 |
| | 740 | 1033 | 0.01 | 0.04 | 0.04 | 0.07 | 4-6-11 | 36 | 12 | 32 | 29 | 3.8 | 488 | 2 | 11 | 10 | 18 | 1.2-1.7-3.5 | 10.8 | 3.6 |
| | 860 | 1201 | 0.01 | 0.06 | 0.05 | 0.10 | 4-7-13 | 41 | 14 | 36 | 33 | 4.4 | 567 | 3 | 14 | 13 | 24 | 1.3-2.0-4.0 | 12.6 | 4.2 |
| 980 | 1368 | 0.02 | 0.08 | 0.07 | 0.13 | 5-8-15 | 47 | 16 | 40 | 37 | 5.0 | 646 | 4 | 19 | 17 | 32 | 1.5-2.3-4.6 | 14.3 | 4.8 | |
| 18 | 370 | 654 | 0.00 | 0.01 | 0.01 | 0.02 | 2-3-6 | 12 | 3 | 11 | - | 1.9 | 309 | 1 | 3 | 2 | 5 | 0.6-1.0-1.9 | 3.5 | 1.0 |
| | 490 | 866 | 0.00 | 0.02 | 0.02 | 0.03 | 3-4-8 | 20 | 6 | 19 | 16 | 2.5 | 409 | 1 | 5 | 4 | 8 | 0.9-1.3-2.6 | 6.2 | 1.8 |
| | 610 | 1078 | 0.01 | 0.03 | 0.03 | 0.05 | 4-5-11 | 31 | 9 | 26 | 23 | 3.1 | 509 | 1 | 7 | 7 | 12 | 1.1-1.6-3.2 | 9.5 | 2.8 |
| | 730 | 1290 | 0.01 | 0.04 | 0.04 | 0.07 | 4-6-13 | 38 | 13 | 32 | 29 | 3.7 | 609 | 2 | 10 | 9 | 18 | 1.3-1.9-3.8 | 11.7 | 3.9 |
| | 850 | 1502 | 0.01 | 0.06 | 0.05 | 0.10 | 5-7-15 | 45 | 15 | 37 | 34 | 4.3 | 709 | 3 | 14 | 13 | 24 | 1.5-2.2-4.5 | 13.6 | 4.5 |
| 970 | 1714 | 0.01 | 0.07 | 0.07 | 0.13 | 6-8-17 | 51 | 17 | 41 | 38 | 4.9 | 809 | 4 | 18 | 17 | 31 | 1.7-2.5-5.1 | 15.5 | 5.2 | |
| 20 | 370 | 807 | 0.00 | 0.01 | 0.01 | 0.02 | 2-4-7 | 12 | 4 | 11 | - | 1.9 | 381 | 1 | 3 | 2 | 5 | 0.7-1.1-2.2 | 3.7 | 1.1 |
| | 490 | 1069 | 0.00 | 0.02 | 0.02 | 0.03 | 3-5-9 | 21 | 6 | 20 | 17 | 2.5 | 505 | 1 | 5 | 4 | 8 | 1.0-1.4-2.9 | 6.5 | 1.9 |
| | 610 | 1331 | 0.01 | 0.03 | 0.03 | 0.05 | 4-6-12 | 33 | 10 | 27 | 24 | 3.1 | 628 | 1 | 7 | 7 | 12 | 1.2-1.8-3.6 | 10.0 | 2.9 |
| | 730 | 1593 | 0.01 | 0.04 | 0.04 | 0.07 | 5-7-14 | 42 | 14 | 32 | 29 | 3.7 | 752 | 2 | 10 | 9 | 18 | 1.4-2.1-4.3 | 12.7 | 4.2 |
| | 850 | 1854 | 0.01 | 0.06 | 0.05 | 0.10 | 5-8-16 | 49 | 16 | 37 | 34 | 4.3 | 875 | 3 | 14 | 13 | 24 | 1.7-2.5-5.0 | 14.8 | 4.9 |
| 970 | 2116 | 0.01 | 0.07 | 0.07 | 0.13 | 6-9-19 | 56 | 19 | 41 | 38 | 4.9 | 999 | 4 | 18 | 17 | 31 | 1.9-2.8-5.7 | 16.9 | 5.6 | |
| 24 | 360 | 1131 | 0.00 | 0.01 | 0.01 | 0.02 | 3-4-8 | 13 | 4 | 11 | - | 1.8 | 534 | 1 | 3 | 2 | 4 | 0.8-1.3-2.5 | 3.9 | 1.1 |
| | 470 | 1477 | 0.00 | 0.02 | 0.02 | 0.03 | 4-5-11 | 22 | 6 | 20 | 17 | 2.4 | 697 | 1 | 4 | 4 | 7 | 1.1-1.6-3.3 | 6.6 | 1.9 |
| | 580 | 1822 | 0.01 | 0.03 | 0.02 | 0.04 | 4-7-13 | 33 | 10 | 26 | 23 | 2.9 | 860 | 1 | 7 | 6 | 11 | 1.4-2.0-4.1 | 10.1 | 3.0 |
| | 690 | 2168 | 0.01 | 0.04 | 0.03 | 0.06 | 5-8-16 | 46 | 14 | 32 | 29 | 3.5 | 1023 | 2 | 9 | 8 | 16 | 1.6-2.4-4.8 | 14.1 | 4.2 |
| | 800 | 2513 | 0.01 | 0.05 | 0.05 | 0.09 | 6-9-18 | 54 | 18 | 36 | 33 | 4.1 | 1186 | 3 | 12 | 11 | 21 | 1.9-2.8-5.6 | 16.3 | 5.4 |
| 910 | 2859 | 0.01 | 0.06 | 0.06 | 0.11 | 7-10-21 | 61 | 20 | 40 | 37 | 4.6 | 1349 | 3 | 16 | 15 | 27 | 2.1-3.2-6.4 | 18.6 | 6.2 | |
| 30 | 340 | 1669 | 0.00 | 0.01 | 0.01 | 0.02 | 3-5-10 | 14 | 4 | 11 | - | 1.7 | 788 | 0 | 2 | 2 | 4 | 1.0-1.5-3.0 | 4.1 | 1.2 |
| | 450 | 2209 | 0.00 | 0.02 | 0.01 | 0.03 | 4-6-13 | 24 | 7 | 20 | 17 | 2.3 | 1042 | 1 | 4 | 4 | 7 | 1.3-2.0-3.9 | 7.2 | 2.1 |
| | 560 | 2749 | 0.01 | 0.02 | 0.02 | 0.04 | 5-8-16 | 37 | 11 | 27 | 24 | 2.8 | 1297 | 1 | 6 | 6 | 10 | 1.6-2.5-4.9 | 11.1 | 3.3 |
| | 670 | 3289 | 0.01 | 0.04 | 0.03 | 0.06 | 6-10-19 | 52 | 15 | 32 | 29 | 3.4 | 1552 | 2 | 9 | 8 | 15 | 2.0-2.9-5.9 | 16.0 | 4.7 |
| | 780 | 3829 | 0.01 | 0.05 | 0.04 | 0.08 | 7-11-22 | 64 | 21 | 37 | 34 | 4.0 | 1807 | 2 | 12 | 11 | 20 | 2.3-3.4-6.8 | 19.5 | 6.3 |
| 890 | 4369 | 0.01 | 0.06 | 0.06 | 0.11 | 9-13-26 | 73 | 24 | 41 | 38 | 4.5 | 2062 | 3 | 15 | 14 | 26 | 2.6-3.9-7.8 | 22.3 | 7.4 | |

NOTES: Throw values are given terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Horizontal throw values are given for isothermal conditions. Vertical throw values are for a terminal velocity of 50 FPM, free jet, at the temperature differences shown. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re 10⁻¹² Watts. Dash in space denotes a NC value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. See selection software for performance data not shown, including octave band data.

PERFORMANCE DATA | NO DAMPER

| SIZE | IP DATA | | | | | | | | | | METRIC DATA | | | | | | | | | |
|------|----------|----------|-------|-------|-------|-------|--------------|------|------|----|-------------|----------|----------|----|----|----|----|-----------------|------|------|
| | NECK VEL | AIR FLOW | HZ | | VT | | HZ THROW | VT | | HZ | VT | NECK VEL | AIR FLOW | HZ | | VT | | HZ THROW | VT | |
| | | | Ps | Pt | Ps | Pt | | 20°F | 40°F | | | | | Pa | Pa | Pa | Pa | | 11°C | 22°C |
| in | fpm | cfm | in wg | in wg | in wg | in wg | ft | ft | ft | NC | NC | m/s | L/s | Pa | Pa | Pa | Pa | m | m | m |
| 36 | 330 | 2333 | 0.00 | 0.01 | 0.01 | 0.01 | 4 - 6 - 11 | 15 | 4 | 11 | - | 1.7 | 1101 | 0 | 2 | 2 | 4 | 1.2 - 1.7 - 3.5 | 4.5 | 1.3 |
| | 440 | 3110 | 0.00 | 0.02 | 0.01 | 0.03 | 5 - 8 - 15 | 26 | 8 | 20 | 17 | 2.2 | 1468 | 1 | 4 | 3 | 6 | 1.5 - 2.3 - 4.6 | 8.0 | 2.3 |
| | 550 | 3888 | 0.00 | 0.02 | 0.02 | 0.04 | 6 - 10 - 19 | 41 | 12 | 27 | 24 | 2.8 | 1835 | 1 | 6 | 5 | 10 | 1.9 - 2.9 - 5.8 | 12.5 | 3.7 |
| | 660 | 4665 | 0.01 | 0.03 | 0.03 | 0.06 | 8 - 11 - 23 | 59 | 17 | 33 | 30 | 3.4 | 2202 | 2 | 8 | 8 | 14 | 2.3 - 3.5 - 6.9 | 18.0 | 5.3 |
| | 770 | 5443 | 0.01 | 0.05 | 0.04 | 0.08 | 9 - 13 - 27 | 75 | 24 | 38 | 35 | 3.9 | 2569 | 2 | 12 | 10 | 20 | 2.7 - 4.0 - 8.1 | 22.9 | 7.2 |
| | 880 | 6220 | 0.01 | 0.06 | 0.05 | 0.10 | 10 - 15 - 30 | 86 | 29 | 42 | 39 | 4.5 | 2936 | 3 | 15 | 14 | 26 | 3.1 - 4.6 - 9.2 | 26.2 | 8.7 |

NOTES: Throw values are given terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Horizontal throw values are given for isothermal conditions. Vertical throw values are for a terminal velocity of 50 FPM, free jet, at the temperature differences shown. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re 10⁻¹² Watts. Dash in space denotes a NC value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. See selection software for performance data not shown, including octave band data.

ENGINEERING SPECIFICATION & CONFIGURATION

R1DBR10

The round ceiling diffuser shall be Krueger model R1DBR10. The R1DBR10 model shall be constructed of a contoured outer cone for reduction of smudging and an adjustable inner vane assembly. The inner vane assembly shall be fully adjustable by rotating a ring operator to modify the discharge air setting from horizontal to vertical and be easily removable. The ring operator shall be adjustable with a pole operator for remote access. Diffusers shall be constructed of 18 gauge steel.

Optional round damper shall be constructed of heavy gauge steel. Damper shall be operable from the face of the diffuser.

PERFORMANCE

The manufacturer shall provide published (printed or electronic) performance data for the diffuser. Performance data shall include 2 - 7 octave band sound power levels. The diffuser shall be tested in accordance to the data standards at the time of product introduction or ANSI/ASHRAE Standard 70.

FINISH

The paint finish shall be #44 British White and be an anodic acrylic paint, baked at 315°F for 30 minutes. The paint thickness shall be 0.8 - 1.0 mils, gloss at 60° per ASTM D523-89 of 50 - 85%, pencil hardness per ASTM D3363-92A of HB - H, crosshatch adhesion per ASTM D3359-83 of 4B - 5B, impact per ASTM D2794-93 of direct impact >100 in/lb and reverse impact >80 in/lb, salt spray per ASTM B117-9048 of 96 hours, humidity per ASTM D2247-92 of >500 hours and water soak per ASTM D870-92 of 250 hours.

1. SERIES: (XXXXXXX)

R1DBR10 - Heavy Duty, Ring Operator Round Steel Diffuser

2. INLET: (XX)

10" - 20" in 2" Increments, 24", 30", or 36"

3. DAMPER: (XX)

00 - NONE
03 - PR10
04 - PRD10
06 - PR12
08 - PRN100

4. ACCESSORIES: (X)

0 - No Accessories
R - Round Straightening Grid

5. FINISH: (XX)

01 - Mill
10 - Alumican
35 - Black
44 - British White

SAMPLE CONFIGURATION: R1DBR10 - 14 - 00 - 0 - 44