

DESCRIPTION

The CRF is designed to meet the toughest requirements in clean room and BSL applications. The enclosed and gasketed housing and one-piece, door protect against infiltration of airborne bacteria. Die-formed edges on door frame and the hole-free design of housing prevent air exchange between fixture and plenum, to allow re-lamping without contaminating the area. One-piece gaskets are included on lens, for easy replacement and on door edge. UL/cUL listed for wet locations. IP 65 rated and manufactured in accordance with ISO 14644, NSF and Federal Standard 209E. in a certified ISO 9001:2000 facility.

SPECIFICATION FEATURES

Application

The CRF is suitable for use in I.E.S. Class 100, 1,000, 10,000, and 100,000 clean room environments. Applications include clean rooms, Biomedical Safety Labs, food processing/testing centers and pharmaceutical labs.

Fasteners

Flush mounted, stainless steel machine screws and molded washers ensure a proper seal; secured through captive cage nuts in the housing, and evenly spaced to compress gasketing on all sides.

Housing

Die-formed, 20 ga. CRS with tightly butted, seam welded, sealed end caps. Contains no holes that would allow air passage. Standard white high reflectance polyester powder coat finish. Gloss: 85%; Reflectance: 93%; Hardness: 2H; Salt Spray: 500 Hours.

Hinge

Two braided, stainless steel cables on side of door provide hinging.

Door

One-piece, 20 ga. door with baked white polyester powder coat. Fully gasketed, outside door with die-formed edges eliminates seams which could entrap microscopic contaminants. Other doors also available.

Gasket

White, closed cell one piece silicone gasketing is standard around perimeter of lens, and around perimeter of door. Additional fixture-to-ceiling gasketing is available.

Access

Gasketed access plate on top of housing with two flattened, 7/8" diameter knockouts allows connection of vapor tight conduit fitting. Optional, above-ceiling, top access door for luminaire maintenance is available and ideal

for food processing and cleanroom applications.

Lens

Lens is clear, 0.125" thick, Pattern 12 acrylic with prisms positioned inside the fixture providing a smooth surface on the outside for easy cleaning.

Lamps

T5, T8, Biaxial.

Lens Retention

Unique, one-piece Particulock™ lens retention system utilizes continuous, media clampdowns to sandwich gasketing and integrate lens and door frame for equalized pressure on the lens.

Ballast

Standard Class P, CBM/RTL ballast.

Labels

UL/cUL listed, standard wet label, NSF.



CRF

2x2

2x4

Cleanroom

RECESSED FLANGE
Overlapping Door

IP65 Rated

TRI-SEAL™



ENERGY DATA

Input Watts

STD Ballasts & STD Lamps

- (2) 40W Biaxial Fluorescents: 82W
- (3) 40W Biaxial Fluorescents: 127W

T5 ES Ballast & STD Lamps

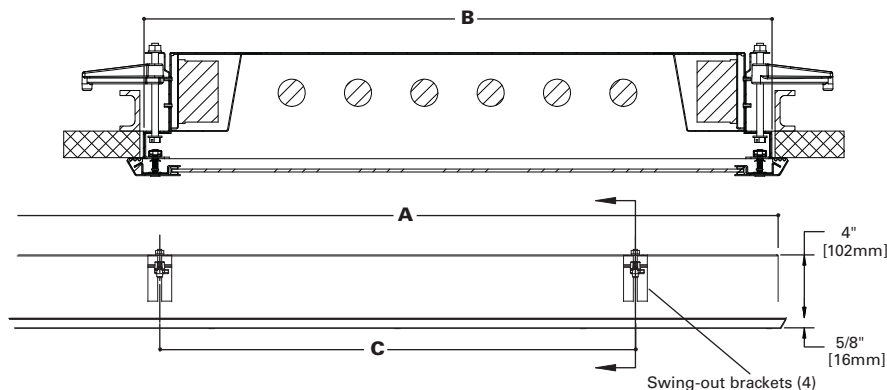
- (2) 24WT5 Fluorescents: 52W
- (3) 24WT5 Fluorescents: 78W
- (2) 54WT5 Fluorescents: 106W
- (3) 54WT5 Fluorescents: 160W

T8 ES Ballast & STD Lamps

- (2) 17WT8 Fluorescents: 36W
- (3) 17WT8 Fluorescents: 56W
- (2) 32WT8 Fluorescents: 71W
- (3) 32WT8 Fluorescents: 108W
- (2) 40W U-Lamps: 86W

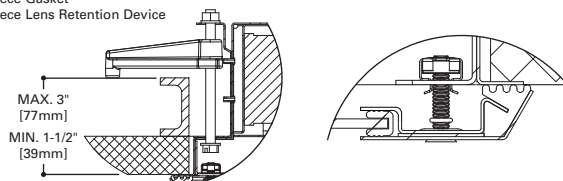
Electronic Ballast Data

Consult Cooper Lighting Representative



DOOR FRAME

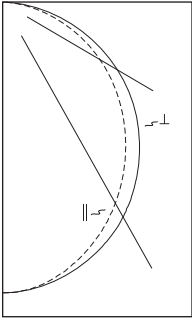
Flange Type= One Piece Door
One Piece Gasket
One Piece Lens Retention Device



Overall Sizes			
Housing Type	A (in)	B (in)	C (in)
2' x 4'	48"	23-11/16"	30"
2' x 2'	24"	23-11/16"	15"

Ceiling Cutout Dimensions		
Ceiling Type	X (in)	Y (in)
2' x 4'	48-5/16"	24"
2' x 2'	24-5/16"	24"

PHOTOMETRICS



CRF-24-632
Electronic Ballast
F32T8 Lamps
2850 Lumens

Spacing criterion:
(H) 1.2 x mounting
height, (L) 1.3 x
mounting height

Efficiency 71.5%

Test Report:
LTL15830

Coefficients of Utilization

		Effective floor cavity reflectance								20%							
		80%				70%				50%				30%			
rc																	
rw		70	50	30	10	70	50	30	10	50	30	10		50	30	10	0%
RCR																	
0		85	85	85	85	83	83	83	83	79	79	79		76	76	76	72
1		78	74	71	69	76	73	70	67	70	67	65		67	65	63	60
2		71	65	60	56	69	63	59	56	61	57	54		59	55	53	50
3		64	57	51	46	63	56	50	46	54	49	45		52	48	44	42
4		59	50	44	39	57	49	43	39	48	42	38		46	41	38	36
5		54	45	39	34	53	44	38	34	43	37	33		41	37	33	31
6		50	40	34	30	49	40	34	29	39	33	29		37	32	29	27
7		46	37	30	26	45	36	30	26	35	30	26		34	29	26	24
8		43	34	27	23	42	33	27	23	32	27	23		31	26	23	21
9		40	31	25	21	39	30	25	21	30	24	21		29	24	21	19
10		38	28	23	19	37	28	23	19	27	22	19		27	22	19	17

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	3368	19.7	27.6
0-40	5479	32.0	44.8
0-60	9631	56.3	78.8
0-90	12224	71.5	100.0
0-180	12224	71.5	100.0

Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	6073	6646	6827
55	8097	9117	9433
65	12986	14906	15661
75	25991	29891	33178
85	64751	77019	98658

Candela

Angle	Along H	45°	Across L
0	4433	4433	4433
5	4402	4401	4409
10	4299	4318	4339
15	4137	4187	4232
20	3948	4034	4096
25	3724	3856	3927
30	3475	3644	3722
35	3206	3403	3488
40	2916	3140	3228
45	2618	2865	2943
50	2315	2570	2649
55	2002	2254	2333
60	1684	1916	1996
65	1357	1558	1637
70	1025	1183	1266
75	703	808	897
80	401	463	547
85	153	182	233
90	0	1	10

ORDERING INFORMATION

SAMPLE NUMBER: CRF-24-317-277-1K12-EB81-GLR

Product Family	Width	Lamp Type	Voltage	Lens Type	Ballast	Door /Finish Options	Options
CRF	24						
CRF=Clean Room Fluorescent Flange Type	24=24"		120=120V 277=277V UNV=120-277V	IK12=K-12 Prismatic Acrylic, 0.125" thick ID12=K-12 Prismatic Impact Resistant Acrylic IP12=K-12 Prismatic Polycarbonate KSH25=Bat Wing Distribution ⁽¹⁾ 93=Prismatic Tempered Glass	Electronic Ballast⁽²⁾ EB51=(1) Ballast for use with T5 Lamp EB52=(2) Ballast for use with T5 Lamp EB81=(1) Ballast for use with T8 Lamp EB82=(2) Ballast for use with T8 Lamp EBX1=(1) Ballast for use with Biax Lamp EBX2=(2) Ballast for use with Biax Lamp	Blank=Standard, CRS with baked white finish SSN=Stainless Steel Door/Brushed finish SSP=Stainless Steel Door/Polyester Powder Coat Finish ALP=Aluminum Door/Polyester Powder Finish	EBP=Emergency Battery Pack GLR=Fuse and Holder RIF=Radio Frequency Interference Filter TAD=Top Access Door AM=Antimicrobial Finish Housing Options SHN=Stainless Steel, Brushed Finish SHP=Stainless Steel, Polyester Powder Finish ALH=Aluminum, Polyester Powder Finish GSK=Gasket Applied to Housing Flange to Seal Against Ceiling
2' Fixture Length T5 HO Fluorescent 224T5=(2) 24W Lamps 324T5=(3) 24W Lamps 424T5=(4) 24W Lamps 624T5=(6) 24W Lamps T5 Fluorescent 214T5=(2) 14W Lamps 314T5=(3) 14W Lamps 414T5=(4) 14W Lamps 614T5=(6) 14W Lamps T8 Fluorescent 217=(2) 17W Lamps 317=(3) 17W Lamps 417=(4) 17W Lamps 617=(6) 17W Lamps U Lamp 2U 1 5/8=(2) 31W T8 Lamps 3U 1 5/8=(3) 31W T8 Lamps 2U6T8=(2) 32W T8 Lamps Biaxial Fluorescent 240BX=(2) 40W Lamps 340BX=(3) 40W Lamps	4' Fixture Length T5 Fluorescent 228T5=(2) 28W Lamps 328T5=(3) 28W Lamps 428T5=(4) 28W Lamps 628T5=(6) 28W Lamps T5HO Fluorescent 254T5=(2) 54W Lamps 354T5=(3) 54W Lamps 454T5=(4) 54W Lamps 654T5=(6) 54W Lamps T8 Fluorescent 232=(2) 32W Lamps 332=(3) 32W Lamps 432=(4) 32W Lamps 632=(6) 32W Lamps	NOTES: For additional options please consult Cooper Lighting Representative. Specifications and Dimensions are subject to change without notice. Electronic ballast may cause interference with other electronic devices. If interference occurs, move the device away from the product or plug/connect into a different circuit/outlet. ⁽¹⁾ The KSH25 provides improved visual performance and wide angle distribution. This lens has an integral prism pattern designed so that prisms face the lamp cavity and still supply superior photometrics. ⁽²⁾ For specific electronic ballast, specify					