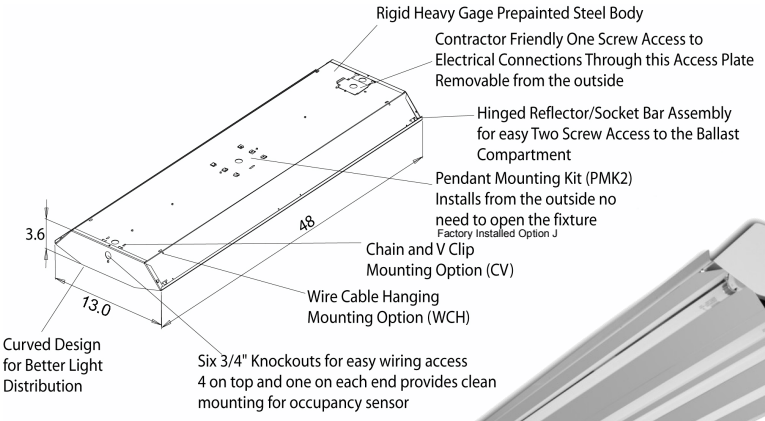
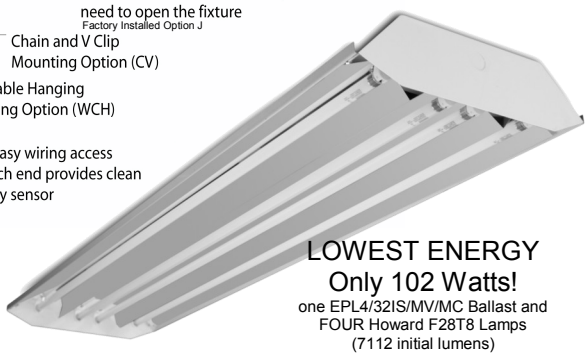
HIGH BAY FLUORESCENT—FOUR LAMP





LOWEST ENERGY
Only 102 Watts!
one EPL4/32IS/MV/MC Ballast and FOUR Howard F28T8 Lamps
(7112 initial lumens)

MOST LIGHT
Only 240 Watts!
two EP2/54HO/PRS/MV Ballasts and FOUR Howard F54T5/HO Lamps
(17400 initial lumens)

APPLICATIONS

- Warehouse
- Manufacturing facility
- Retail Store
- Gymnasium
- Cafeteria
- Auditorium

FEATURES

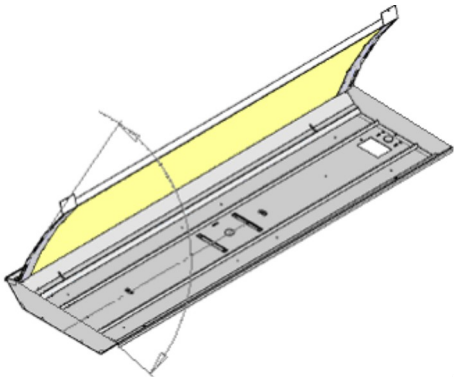
- Easy access to wiring compartment & ballast
- Access plate provides access to electrical wiring without the need to open the fixture
- Knock-outs for easy electrical wiring and assembly
- Factory Installed Occupancy Sensor option
- Factory Installed Emergency ballast option
- Lamp Installation option available
- Multiple power cord set options, (voltage, length, gage)
- Pendant mount kit provides a top J-box to simplify HID retro-fit installations. Can be used with a hook or rigid conduit and fasteners (Fixture must be specified with “J” option)
- Choice of 86% Standard Specular Aluminum Reflector, 95% Specular Enhanced Aluminum Reflector or 91% White Re-flector
- Heavy Duty pre-painted steel construction
- Custom configurations available
- Can be easily mounted by a single person
- Suspended or Pendant mounting insures a quick painless install
- Chain and V-Clip Hanging option
- Wire cable hanging option.
- Special wiring available upon request

DESCRIPTION

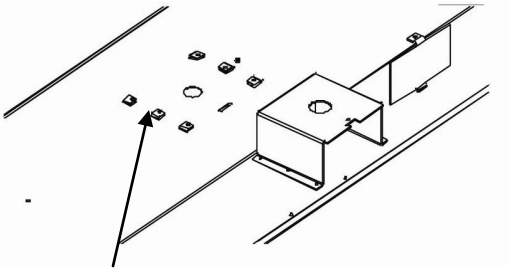
HFB3 series high-bay fluorescent fixture is a great energy saving alternative to traditional HID high-bay fixtures. This fixture operates four lamps and as a standard feature comes equipped with Howard ballasts.

Benefits of fluorescent high-bay luminaries include:

- Energy Saving Compared to HID systems
- Exceptional Color Rendering
- High System Efficacy
- Long Lamp Life
- Instant On/Re-strike Capability
- Howard Ballast and Howard Lamp as a system is covered by Howard Industries Warranty
- Quality Lamp holders
- Computer Designed Reflectors
- System Tested, Designed, Approved, and Manufactured by Howard Industries in Mendenhall Mississippi.
- Compliant with Safety and performance stan-dards.



Reflector Assembly pivoted open after removal of 2 Screws



Pendant mount option assembly

Pendant Mount lances included only if Factory Installed Option “J” is selected

Ordering Information:

Model Family	Reflector/ Lens	No. of Lamps	Lamp Type/ Wattage	CRI/CCT	Ballast	Input Volts	Factory Installed Options	Cord/Plug Description	TBA	Packaging
HFB3	**E**	**4**	**32**	**A**	**HI**	**MV**	**0CJ**	**06**	**0**	**I**
HFB3	A Standard specular aluminum (86%) E: Enhanced specular aluminum (95%) W: Reflective white (91%)	4	28: F28T8 30: F30T8 32: F32T8 54: F54T5HO	CRI CCT High Lumen T5 T8 A: No lamps installed B: 75 3000 No x C: 75 3500 No x D: 75 4100 No x E: 75 5000 No x F: 85 3000 No x x G: 85 3500 No x x H: 85 4100 No x x I: 85 5000 No x x J: 85 6500 No x K: 85 3000 Yes x L: 85 3500 Yes x M: 85 4100 Yes x N: 85 5000 Yes x	HI: High BF Electronic Instant Start (T8 only) LI: Low BF Electronic Instant Start (T8 only) SI: Standard BF Electronic Instant Start (T8 only) HE High BF Electronic Instant Start CEE Listed High Efficiency (T8 only) LE Low BF Electronic Instant Start CEE Listed High Efficiency (T8 only) SE Standard BF Electronic Instant Start CEE Listed High Efficiency (T8 only) PS: Programmed Start Electronic (T8 CEE Listed)[1]	02: 120V 08: 277V 09: 347V MV: 120-277V Universal HV: 347-480v Universal (T5HO only) AX: 480-477 Step-down autotransformer[2]	000: No factory installed options A: Occupancy sensor with extender arm[3] B: Emergency ballast (specify lumen requirement) D: Wrap Lens[7] I: Special wiring instructions J: J-Box (Pendant Mount) Configuration[5] T: Toggle switch bi-level lighting control[4]	00 Standard luminaire power disconnect (No Cord) 01 6' SJT 18/3; no plug 02 10' SJT 18/3; no plug 03 6' SJT 18/3; L5-15 twist lock (120V) 04 10' SJT 18/3; L5-15 twist lock (120V) 05 6' SJT 18/3; 5-15 non twist lock(120V) 06 10' SJT 18/3; 5-15 non twist lock(120V) 07 6' SJT 18/3; L7-15 twist lock (277V) 08 10' SJT 18/3; L7-15 twist lock (277V) 09 6' SJT 18/3; 7-15 non twist lock(277V) 10 10' SJT 18/3; 7-15 non twist lock(277V) 11 16/3 no plug; specify length 12 6' SJT 16/4 16 16' SJT 18/3; 7-15 non twist lock(277V) 17 18/3 no plug; specify length 18 6' SJT 16/3; L8-20 twist lock (480v) 19 10' SJT 16/3; L8-20 twist lock (480v) 20 16' SJT 18/3; L5-15 twist lock (120V) 21 16' SJT 18/3; L7-15 twist lock (277) 22 6' SJT 16/3; L7-20 twist lock(277V) 23 6' SJT 18/3; L6-15 twist lock (240V) 25 3' SJT 16/3; L8-20 twist lock (480v) 26 NEMA L6-20 6'L 240V CSET 27 NEMA L6-20 10'L 240V CS 28 20' SJT 16/3; L8-20 twist lock (480v) 29 14/3 no plug; specify length 30 10' SJT 18/3; L6-15 twist lock (240V) 31 10' SJT 16/3; L7-20 twist lock(277V) 32 6' SJT 16/3; L5-20 twist lock (120V) 51 White 6' SJT 18/3; no plug 52 White 10' SJT 18/3; no plug 53 White 6' SJT 18/3; L5-15 twist lock (120V)	TBA	I: Single X: Special

Field Installed Options	
HF-WCH	Wire cable hanging kit (2 pcs. Per kit)
HFB3-WG	Wire Guard
HF SK1	Stabilizer kit: Hub, collar and wire cable[6]
HF 2CV	2' hanging chain & v-clips
HF 3CV	3' hanging chain & v-clips

Sample Ordering Number
HFB3 E 432H SI MV 000 06 0 I

HFB3 Series Hi-Bay Fluorescent
Enhanced Specular Aluminum
4 lamp design; F32T8/841 Lamps
Standard Ballast Factor Ballast
w/ Universal Input (120-to-277v)
000– no factory installed options
10' SJT 18/3; 5-15 non twist lock(120V)
Individual Box Packaging

Footnotes:

(1) T8 Programmed Rapid Start recommended only in the case of abnormally frequent switching (as with an occupancy sensor). Instant Start T8 is appropriate for most ordinary applications.

(2) Allows hook-up of standard MV ballast to 480V

(3) Recommend use of programmed rapid start with occupancy sensor

(4) Allows for separate control of two ballasts through simple "toggling" of a standard wall switch. Recommend use of programmed rapid start ballast with this control.

(5) Unless otherwise specified, fixture will include field installed J-box. Supply wires will exit the center of the fixture, not the access plate. J-box can be installed without entering the fixture.

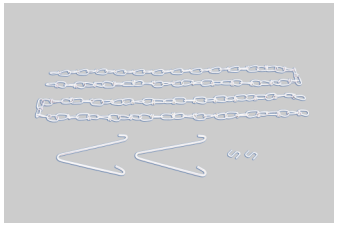
(7) Standard Acrylic Prismatic, Pattern 12, 0.100" thick. Call for options.

Wire Cable Hanging Kit

Pendant Mount Kit

Our Fluorescent fixtures can be ordered with lamps installed. Call factory for details, availability and lead times.

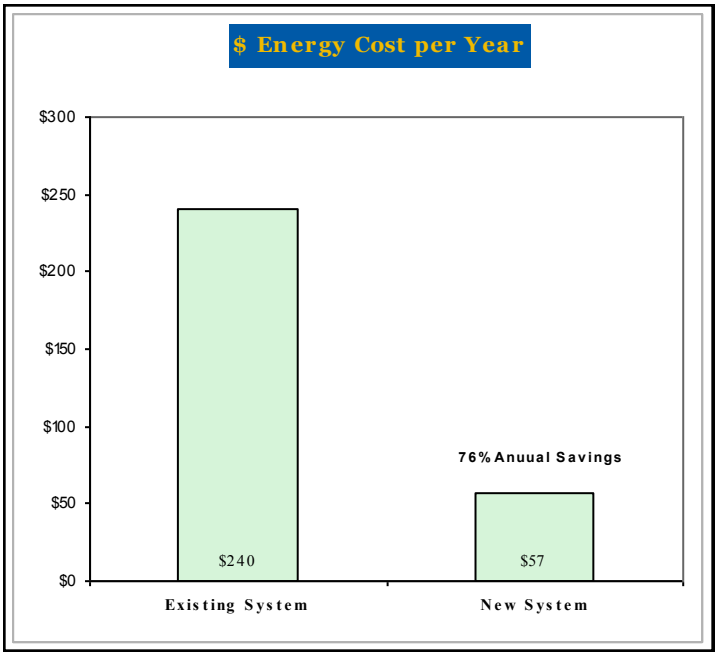
Stabilizer Kit



Hanging Chain & V-clips

Energy Cost

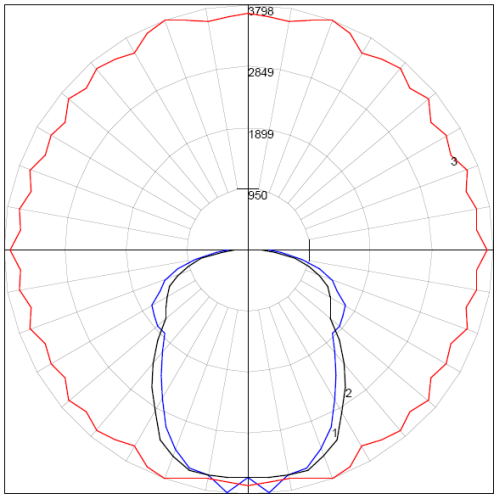
System Descriptions		Existing System		New System	
		400 Watt MH High Bay		HFB3E432HSI High Ballast Factor Fluorescent Highbay	
Hours burned per year	4368	Number of Fixtures	1	Number of Fixtures	1
Cost per kWh $	0.12	Watts per Fixture (exiting system) (ballast input watts)	458	Watts per Fixture (new system) (ballast input watts)	108
Energy Cost Estimation		Energy used per yr. (existing system)	$240	Energy used per yr. (new system)	$57
Potential Yearly Savings:				$183	



Howard Industries provides this tool to examine the potential impact of lighting decisions. This tool provides an ESTIMATE only. The analysis of this tool does not warrant or guarantee the actual costs or savings that will be realized as the analysis suggested. You can find the full version of this cost saving tool at the Howard Lighting Website—www.howardlightingproducts.com.
Click "Cost of Ownership Calculator".

Photometric Data - 4 Lamp T8 (HFB3432)

Candela Polar Graph



HFB3E432
Test report: HFB3E432.IES

Spacing Criteria (0-180): 1.28
Spacing Criteria (90-270): 1.12
Spacing Criteria (Diagonal): 1.30

Maximum Candela = 3798.24

Located at Horizontal Angle = 70, Vertical Angle = 5
1 – Vertical Plane through Horizontal Angles (70-250) (Max Cd.)
2 – Vertical Plane through Horizontal Angles (45-225)
3 – Vertical Plane through Horizontal Angles (5) (Through Max. Cd.)

Luminaire Efficiencies*

Reflector Type	T8
Enhanced Specular	90%
Specular	84%
White	85%

*Luminaire efficiency is the ratio of light output emitted by the luminaire to the light output emitted by its lamps.

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2796.29	24.10	26.80
0-40	4443.61	38.30	42.60
0-60	7633.57	65.80	73.20
0-90	10425.63	89.90	100.00
0-180	10425.63	89.90	100.00

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	7999	5689	5384
55	7517	5036	5938
65	6806	5279	5798
75	5619	4965	5566
85	2854	3142	3597

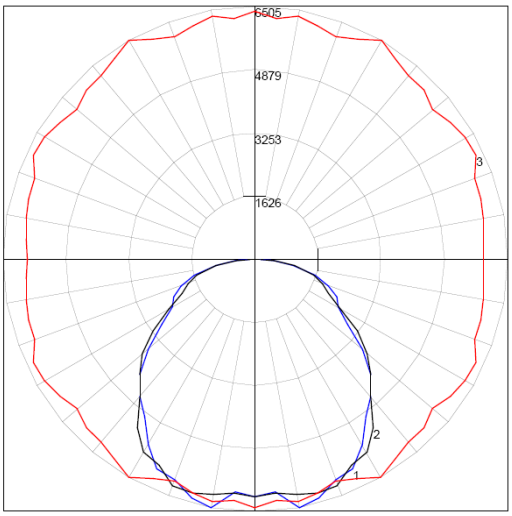
COEFFICIENTS OF UTILIZATION -ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	107	107	107	107	105	105	105	105	100	100	100	96	96	96	92	92	92	90
1	96	92	87	83	94	90	86	82	86	82	79	82	79	77	79	77	75	73
2	87	79	73	67	85	77	71	66	74	69	65	71	67	63	68	65	62	60
3	79	69	61	55	77	68	61	55	65	59	54	63	57	53	60	56	52	50
4	73	61	53	47	70	60	52	46	58	51	46	56	50	45	54	49	44	42
5	67	55	46	40	65	54	46	40	52	45	39	50	44	39	48	43	39	37
6	62	49	41	35	60	48	41	35	47	40	35	45	39	34	44	38	34	32
7	57	45	37	31	56	44	36	31	43	36	31	41	35	30	40	34	30	28
8	53	41	33	28	52	40	33	28	39	32	27	38	32	27	37	31	27	25
9	50	38	30	25	49	37	30	25	36	29	25	35	29	25	34	29	25	23
10	47	35	28	23	46	34	27	23	33	27	23	33	27	22	32	26	22	21

Photometric Data - 4 Lamp T5 (HFB3454)

Candela Polar Graph



HFB3E454
Test report: HFB3-454-MOD.IES

Spacing Criteria (0-180): 1.26
Spacing Criteria (90-270): 1.30
Spacing Criteria (Diagonal): 1.40

Maximum Candela = 6505.34

Located at Horizontal Angle = 60, Vertical Angle = 10
1 – Vertical Plane through Horizontal Angles (60-240) (Max Cd.)
2 – Vertical Plane through Horizontal Angles (45-225)
3 – Vertical Plane through Horizontal Angles (10) (Through Max. Cd.)

Luminaire Efficiencies*

Reflector Type	T5
Enhanced Specular	93%
Specular	88%
White	88%

*Luminaire efficiency is the ratio of light output emitted by the luminaire to the light output emitted by its lamps.

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	5018.63	25.10	26.90
0-40	8217.01	41.10	44.00
0-60	14314.51	71.60	76.60
0-90	18683.6	93.40	100.00
0-180	18683.6	93.40	100.00

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	15860	15289	14862
55	14682	13909	12227
65	13288	11505	13835
75	11396	12493	12773
85	9001	7421	7403

COEFFICIENTS OF UTILIZATION -ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	111	111	111	111	109	109	109	109	104	104	104	99	99	99	95	95	95	93
1	101	96	92	88	98	94	90	87	90	87	84	84	86	81	83	81	79	77
2	92	84	77	71	89	82	76	70	78	73	69	75	71	67	72	69	66	64
3	83	73	65	59	81	72	64	59	69	63	58	66	61	57	64	59	56	53
4	76	65	56	50	74	64	56	50	61	54	49	59	53	48	57	52	48	46
5	70	58	49	43	68	57	49	43	55	48	42	53	47	42	51	46	41	39
6	65	52	44	38	63	51	43	37	50	42	37	48	42	37	46	41	36	34
7	60	47	39	33	58	47	39	33	45	38	33	44	37	33	42	37	32	30
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