

TRAC 12®

juno®

The miniaturization of
these systems provides
unique versatility with an
adaptable, trac-based
system



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Juno Trac 12®

The miniaturization of these systems provides unique versatility with an adaptable, trac-based system.



Linear Lighting

Trac 12® can be easily integrated into coves or cabinetry to produce uniform linear lighting. Variable lampholder spacing allows on-the-job fine-tuning to create even illumination at the desired level.

Spotlights

Trac 12® is easily integrated into displays, low soffits, ceilings or pendant suspended for dramatic accent lighting. Owing to its miniature scale and remote transformer format that eliminates the need for transformers at each fixture, Trac 12/Trac12/25 infuses the flexibility of trac lighting in smaller scale settings typically not considered practical to illuminate with larger line voltage trac systems.

Decorative Pendants

A wide selection of stylish decorative pendants for trac or monopoint mounting.

Trac 12® and Trac 12/25 System Comparisons

The original Trac 12® and the new rigid profile, higher amperage Trac 12/25 each offer unique features and advantages best suited for particular applications. Both systems accept the full complement of Trac 12 linear, spotlight and decorative pendant fixtures.

Trac 12®

Trac 12® is the original extruded thermoplastic 20-amp system that Juno introduced when it first pioneered the concept of miniature low voltage trac. It is optimized for cabinetry, special displays, exhibits and other tight spaces where absolute minimum size is required, either because the trac is being concealed from view or is being mounted closer to eye level.

Key Features

- 20-amps maximum per circuit: 240 watts at 12 volts or 480 watts at 24 volts
- Ultra-miniature $\frac{3}{8}$ "H x $\frac{3}{4}$ "W thermoplastic profile
- Surface mounting only
- White or black finish

Best Applications

- Linear lighting in cabinetry and casework
- Shorter cove lighting runs up to 480 watts
- Displays, exhibits and kiosks where short trac runs are mounted closer to eye level
- Other space restricted locations



Trac 12®
shown actual size

Trac 12/25

Trac 12/25 offers a rigid aluminum profile and an increased 25-amp capacity that makes it more optimal for general trac display lighting and longer cove lighting runs. The rigid profile requires less installation mounting points, holds straight and true over long runs and can be surface or pendant mounted. The increased 25-amp capacity allows more fixtures per run of trac to be installed, which can reduce the installed system costs.



Trac 12/25
shown actual size



Key Features

- 25 amps per circuit:
300 watts at 12 volts
or 600 watts at 24 volts
- Miniature $\frac{5}{8}$ " H x $\frac{1}{16}$ " W
rigid aluminum profile
- For surface or pendant mounting
- White, black or silver finish

Best Applications

- Ceiling or pendant mounted
trac display lighting
- Longer linear lighting cove or
casework runs up to 600 watts





TL201

TL202

TL211

TL103

Xenon Wedge Base



Xenon lampholders are ideally suited for linear lighting applications. They have a minimum profile and produce a white light that approximates the color of halogen, but have up to a 20,000-hour lamp life and do not require fixture lenses or special handling.

FINISHES:

WHITE(WH) BLACK(BL)

CATALOG #	LAMP	DIMENSIONS
TL201	12V OR 24V ONE 3W-10W T3-1/4 XENON WEDGE BASE LAMP	 1 5/8" x 1 3/8"

TL202	12V OR 24V TWO 3W-10W T3-1/4 XENON WEDGE BASE LAMP	 1 5/8" x 2 3/8"
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FINISHES: WH, BL

T3-1/4 Wedge Base Lamps

CATALOG #	WATTS	VOLTS	CLEAR/ FROSTED	LUMENS
TL900	3	12	Clear	15
TL901	5	12	Clear	33
TL903	10	12	Clear	83
TL905-24V	5	24	Frosted	29
TL910-24V	10	24	Frosted	91

Xenon Rigid Loop



The rigid loop lamp carries all of the advantages of the wedge base lamps, but offer a more perfectly symmetrical light distribution and slightly higher output that is more optimized for cove lighting applications.

FINISHES:

WHITE(WH) BLACK(BL)

CATALOG #	LAMP	DIMENSIONS
TL211	12V OR 24V 5W-10W XENON T3 RIGID LOOP LAMP	 2 1/8" x 3/4"

FINISHES: WH, BL

Rigid Loop Lamps

CATALOG #	WATTS	VOLTS	CLEAR/ FROSTED	LUMENS
TL950CL	5	12	Clear	45
TL950FR	5	12	Frosted	45
TL951CL	10	12	Clear	100
TL951FR	10	12	Frosted	100
TL952CL-24V	5	24	Clear	40
TL952FR-24V	5	24	Frosted	40
TL953CL-24V	10	24	Clear	90
TL953FR-24V	10	24	Frosted	90

Halogen Flood



The unique aiming-adjustable low-profile halogen flood produces high light-levels and widespread illumination from a miniature luminaire. It is ideal for task and accent lighting in a variety of confined space situations. A slide-in frosted glass safety lens is provided. The halogen lamp is rated at 2000-hours and is available in either 12-volt or 24-volt versions.

FINISHES:

WHITE(WH) BLACK(BL)

CATALOG #	LAMP	DIMENSIONS
TL103	12V OR 24V 10W-20W T3 HALOGEN BI-PIN	 1 1/4" x 3 7/8"

FINISHES: WH, BL

T3 Halogen Bi-Pin Lamps

CATALOG #	WATTS	VOLTS	CLEAR/ FROSTED	LUMENS
TL922	10	12	Clear	134
TL923	20	12	Clear	307
TL924-24V	20	24	Clear	288

TL110

TL112

MR11 Mini-Spot

With a minimal 2 1/2" displacement from the trac, the MR11 Mini-Spot is the clear choice for spotlighting in confined spaces such as cabinetry, casework or displays.

FINISHES:

WHITE(WH) BLACK(BL)

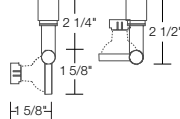
CATALOG

LAMP

DIMENSIONS

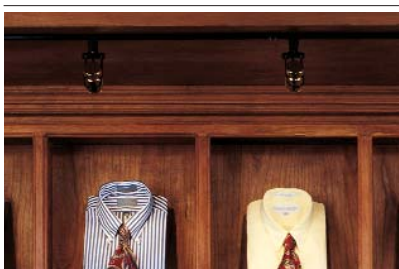
TL110

12V OR 24V
20W MR11



FINISHES: WH, BL

MR11 Suspended Cylinder



Suspended Cylinder provides an enclosed lamp option for miniature display lighting.

FINISHES:

WHITE(WH) SATIN CHROME(SC)
BLACK(BL) POLISHED BRASS(PB)

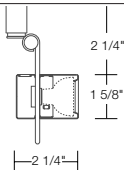
CATALOG

LAMP

DIMENSIONS

TL112

12V OR 24V
20W MR11



FINISHES: WH, BL, SC, PB



Shown Actual Size



Spotlighting from Suspended Trac 12/25

The rigid aluminum miniature profile of Trac 12/25 is perfect for suspending from cable or stems to bring the fixtures closer to the objects being illuminated. That can look great and save energy. By positioning the trac closer to the objects being illuminated, lower wattage lamps can often be used. And by using lower wattage lamps, the economy of the system increases, as more fixtures can be placed on a circuit of trac using the same size transformer.





Trapezia™

Trapezia™ suspends the MR16 lamp down from the trac with the grace of a trapeze artist. Slender 9-inch or 16-inch long tubes conceal supply wires feeding into an elegantly sculpted die-cast lamp housing. The light airy appearance is great for display, exhibition and gallery lighting and the downward reach can make pendant mounting of trac unnecessary.



FINISHES:

WHITE(WH) BLACK(BL)
SILVER(SL)

CATALOG #	LAMP	DIMENSIONS
TL130-9	12V OR 24V 20-50W MR16CG COVER GLASS	9 1/2"
FINISHES: WH, BL, SL		

CATALOG #	LAMP	DIMENSIONS
TL130-16	12V OR 24V 20-50W MR16CG COVER GLASS	16 3/4"
FINISHES: WH, BL, SL		

Gyrus™

A new spin on an old idea, the Gyrus™ combines dramatic aerodynamic styling with an integral accessory holder that accepts up to two standard 2" diameter lenses and louvers. The snap-on design makes this an easy to accessorize fixture for more demanding display lighting applications.



FINISHES:

WHITE(WH) BLACK(BL)
SILVER(SL)

CATALOG #	LAMP	DIMENSIONS
TL140	12V OR 24V 20-50W MR16	2 1/2" + 3" + 3 3/8"
FINISHES: WH, BL, SL		

ACCESSORIES FOR TL130-9, TL160-16 AND TL140:

Accessory Holder*	T7400BL, SA
Barn Doors**	T7470BL
Color Filters	T741-6
UV Filters	T7422
Dichroic Lenses	T7401-18
Prismatic Spread Lens	T7477
Linear Spread Lens	T7478
Diffuse Spread Lens	T7420
Uniformity Lens	T7421
Hexcell Louver	T7459BL

*TL130-9 and TL130-16 require accessory holder for filters, lenses, louvers and barn doors.

**Barn doors for TL130-9 and TL130-16 only.

See page 23 for complete accessory descriptions.

Gyrus US Patent No. D508,792
Trapezia US Patent No. D504,974



TL301
WITH TF308



TL301
WITH TF309

Geometrics

The timeless simplicity of cones and spheres. Choose the petite MR11 dart for a playful accent, the MR16 Cone for a more sophisticated design statement or the Orb for balanced, consistent appearance regardless of aiming angle.

FINISHES:

WHITE(WH) BLACK(BL)
SILVER(SL)

Dart

CATALOG #	LAMP	DIMENSIONS
TL161	12V OR 24V 20-35W MR11	5" height, 2 1/2" width, 3 3/8" depth

FINISHES: WH, BL, SL

Cone

CATALOG #	LAMP	DIMENSIONS
TL160	12V OR 24V 20-50W MR16	6 1/2" height, 4 3/4" width, 3 1/4" depth

FINISHES: WH, BL, SL

Orb

CATALOG #	LAMP	DIMENSIONS
TL165	12V OR 24V 20-50W MR16	5" height, 3" width, 2 7/8" depth

FINISHES: WH, BL, SL

ACCESSORIES FOR TL160 AND TL165:

Color Filters	T551-5
UV Filter	T5522
Dichroic Lenses	T5501-18
Diffuse Spread Lens	T5520
Linear Spread Lens	T559
Prismatic Spread Lens	T557
Uniformity Lens	T5521
Hexcell Louver	T5559BL

Universal

Use the minimalist universal by itself for a do everything basic lampholder, or in combination with one of the scoop accessories for a playful metallic or colorful accent. (Designed for use with integral cover glass MR16 lamps.)

FINISHES:

WHITE(WH) BLACK(BL)
SILVER(SL)

CATALOG #	LAMP	DIMENSIONS
TL301	12V OR 24V 20-50W MR16CG COVER GLASS	3 1/4" height, 2" width, 3" depth

FINISHES: WH, BL, SL

ACCESSORIES*:

Accessory Holder	T7400BL, SA
Barn Doors	T7470BL
Color Filters	T741-6
UV Filters	T7422
Dichroic Lenses	T7401-18
Prismatic Spread Lens	T7477
Linear Spread Lens	T7478
Diffuse Spread Lens	T7420
Uniformity Lens	T7421
Hexcell Louver	T7459BL

Accessory Scoops

Universal halogen spotlights take on a whole new appearance when you dress them up in one of these metal or luminous scoops.

CATALOG #	DESCRIPTION	DIMENSIONS
TF308	PERFORATED METAL SCOOP	3 1/2" height, 4 1/2" width

FINISHES:

WHITE(WH)
BLACK(BL)
SILVER(SL)

CATALOG #	DESCRIPTION	DIMENSIONS
TF309	LUMINOUS SCOOP	3 7/8" height, 5 1/4" width

SCOOP FINISHES:

WHITE(W)
BLUE FROST(BU)
YELLOW FROST(YL)

RETAINING COLLAR FINISHES:

WHITE(WH)
BLACK(BL)
SILVER(SL)

ORDERING EXAMPLE:
TF309BU-SL



TLP310AMBERDRIFT



TLP311SILVER



TLP314GLACIER



TLP315SILVER

Short Cone- GLASS

Hand blown cased glass with opal interior and satin nickel plated finial.

Short Cone- METAL

High-reflectance white interior finish and satin nickel plated finial.

Flute-GLASS

Hand blown cased glass with opal interior and satin nickel plated finial.

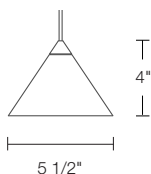
Flute-METAL

High-reflectance white interior finish and satin nickel plated finial.

CATALOG #	LAMP
TLP310*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS



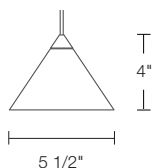
DIMENSIONS



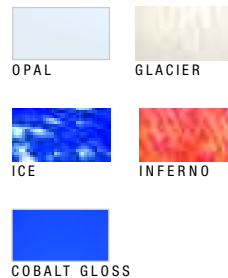
CATALOG #	LAMP
TLP311*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS



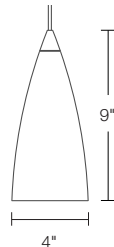
DIMENSIONS



CATALOG #	LAMP
TLP314*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS



DIMENSIONS



CATALOG #	LAMP
TLP315*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS (EXCEPT 35W MAX FOR MIDNIGHT FINISH)



DIMENSIONS



PLEASE NOTE: All pendant shades require a TLP78 or TLP144 pendant cordset. Cordset must be ordered separately. See complete description at far right.

*When ordering add finish name after catalog number. **EXAMPLE:** TLP310NIGHTBLUE.



TLP312COBALT



TLP322PISTACHIO



TLP324OPAL



TLP318ICE

Tall Cone

Hand blown cased glass with opal interior and satin nickel plated finial.

Ellipse

Hand blown cased glass with opal interior and satin nickel plated support spider.

Cylinder

Hand blown cased glass with opal interior and satin nickel plated support spider.

Teardrop

Hand blown cased glass with opal interior and satin nickel plated finial.

CATALOG #	LAMP
TLP312*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS

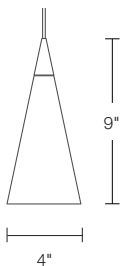
CATALOG #	LAMP
TLP322*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE

CATALOG #	LAMP
TLP324*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS

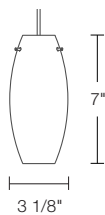
CATALOG #	LAMP
TLP318*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS



DIMENSIONS



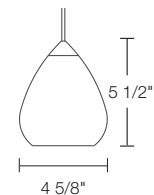
DIMENSIONS



DIMENSIONS



DIMENSIONS



PLEASE NOTE: All pendant shades require a TLP78 or TLP144 pendant cordset. Cordset must be ordered separately. See complete description at far right.

*When ordering add finish name after catalog number. **EXAMPLE:** TLP310NIGHTBLUE.



TLP326MAIZE



TLP327NATURAL



TLP320INFERNO



TLP316ORANGEPEEL

RLM-GLASS

Hand blown cased glass with opal interior and chrome plated top cap.

RLM-METAL

High-reflectance white interior finish. Top cap finished to match body.

Flame

Hand blown cased glass with opal interior and satin nickel plated support spider.

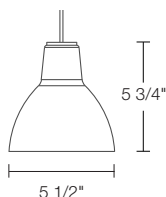
Wrap

Precision cut, interleaved layers of suede polycarbonate or parchment sheet captured by nickel plated support spider and cap nuts.

CATALOG #	LAMP
TLP326*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS



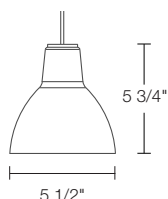
DIMENSIONS



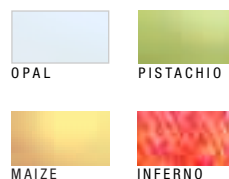
CATALOG #	LAMP
TLP327*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS (EXCEPT 35W MAX FOR MIDNIGHT FINISH)



DIMENSIONS



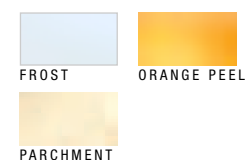
CATALOG #	LAMP
TLP320*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE



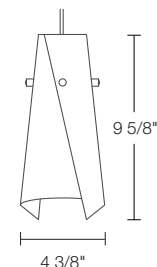
DIMENSIONS



CATALOG #	LAMP
TLP316*	12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS



DIMENSIONS



PLEASE NOTE: All pendant shades require a TLP78 or TLP144 pendant cordset. Cordset must be ordered separately. See complete description at far right.

*When ordering add finish name after catalog number. **EXAMPLE:** TLP310NIGHTBLUE.

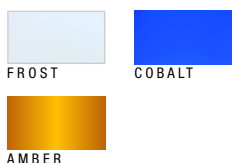


TLP328COBALT

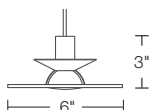
Disc

Precision aluminum casting with integrated aperture ring securely supports tempered glass disc. Use of dichroic lamps washes inverted cone with a decorative aura.

CATALOG #	LAMP
TLP328*	12V 50W MR16CG COVER GLASS



DIMENSIONS



Pendant Cordsets

Pendant cordset for use with Trac 12®, Trac 12/25 trac systems and monopoints. Includes adapter, splice compartment with terminal block for field-shortening cable, 78" or 144" of plated coaxial cable, 7" cord straightening sleeve, socket assembly and frosted glass diffuser capsule.

CATALOG #	LAMP
TLP78*	78" CORDSET FOR ALL SHADES EXCEPT TLP328: 12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS
TLP144*	144" CORDSET FOR ALL SHADES EXCEPT TLP328: 12V OR 24V, 50W MAX T4 HALOGEN GY6.35 BI-PIN CAPSULE OR MR16CG COVER GLASS
	FOR TLP328 DISC: 12V 50W MR16CG COVER GLASS (DISCARD GLASS DIFFUSER CAPSULE)

FINISHES:

	WHITE(WH)		BLACK(BL)		SILVER(SL)
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Halogen Bi-Pin Lamp Data T4 Bi-Pin Base Lamps

CATALOG #	WATTS	VOLTS	LAMP TYPE	CLEAR/ FROSTED	LUMENS*	LIFE*
TL925	35	12	Halogen	Clear	600	4,000
TL926	50	12	Halogen	Clear	930	4,000
TL927	37	12	Halogen	Clear	900	4,000
TL928-24V	50	24	Halogen	Clear	850	2,000

* Rated lumens and lamp life provided by lamp manufacturer.



Geometrics

The Geometric series integrates the timeless simplicity of cones and spheres with technical details that bring them into the new millennium.



TL191



TL109



TL116



TLP116

Studio II

Studio II adds a contemporary miniaturized stage and studio flavor into an environment.

FINISHES:

WHITE(WH) BLACK(BL)
SILVER(SL)

CATALOG #	LAMP	DIMENSIONS
TL191	12V OR 24V 20-50W MR16	1 3/4" 3" 3 5/8"

FINISHES: WH, BL, SL

ACCESSORIES:

Color Filters	T551-5
UV Filter	T5522
Diffuse Spread Lens	T5520
Dichroic Lenses	T5501-18
Linear Spread Lens	T559
Prismatic Spread Lens	T557
Uniformity Lens	T5521
Hexcell Louver	T5559BL

Slant Cylinder

A simple, solid form, this unique stepped cylinder adds a subtle hint of design into applications that call for a fully enclosed lamp.

FINISHES:

WHITE(WH) BLACK(BL)

CATALOG #	LAMP	DIMENSIONS
TL109	12V OR 24V 20-50W MR16	2 1/4" 2 5/8" 3 3/4"

FINISHES: WH, BL

ACCESSORIES:

Black Barn Doors	T74BL
Black Eyebrow	T556BL
Black Snoot	T558BL
Color Filters	T551-5
UV Filter	T5522
Dichroic Lenses	T5501-18
Diffuse Spread Lens	T5520
Linear Spread Lens	T559
Prismatic Spread Lens	T557
Uniformity Lens	T5521
Hexcell Louver	T5559BL

Delta 200 Series®

An angular, die-cast fixture body and rod-supported lamp bezel create a semi-exposed, technical appearance. For special effects, an optional louver or color filter can be substituted for the clear glass lens that is smartly contained in the rod-supported front bezel.

FINISHES:

WHITE(WH) SILVER(SL)
BLACK(BL)

CATALOG #	LAMP	DIMENSIONS
TL116	12V OR 24V 20-50W MR16	2 7/8" 2 1/4" 2 5/8"

FINISHES: WH, BL, SL

TLP116	12V OR 24V 20-50W MR16	10 3/4" 2 1/4" 2 5/8"
---------------	-----------------------------------	--------------------------------------

FINISHES: WH, BL, SL

ACCESSORIES FOR TL116 AND TLP116:

Black Barn Doors	T74BL
Black Snoot	T558BL
Color Filters	T551-5
UV Filter	T5522
Diffuse Spread Lens	T5520
Dichroic Lenses	T5501-18
Linear Spread Lens	T559
Prismatic Spread Lens	T557
Uniformity Lens	T5521
Hexcell Louver	T5559BL



JUNO LIGHTING GROUP



TL143



TL117



TL196



TL296

Notch Back

The rectangular back of this contemporary design offers visual lines that parallel the trac itself.

FINISHES:

WHITE (WH)
BLACK (BL)

Flyback

Uniquely angled back from the trac at 45 degrees, Flybacks add visual energy into a space.

FINISHES:

WHITE (WH) SATIN CHROME (SC)
BLACK (BL)

Gimbal Ring

Choose the basic single yoke or the more elegant sculpted dual yoke design.

FINISHES:

WHITE (WH) SATIN CHROME (SC)
BLACK (BL)

CATALOG #	LAMP	DIMENSIONS
TL143	12V OR 24V 20-50W MR16	2 1/2" 2 1/4" 2 5/8"

FINISHES: WH, BL

ACCESSORIES:

Color Filters T551-5
UV Filter T5522
Dichroic Lenses T5501-18
Diffuse Spread Lens T5520
Linear Spread Lens T559
Prismatic Spread Lens T557
Uniformity Lens T5521
Hexcell Louver T5559BL

CATALOG #	LAMP	DIMENSIONS
TL117	12V OR 24V 20-50W MR16CG COVER GLASS	1 1/8" 3 3/4" 3"

FINISHES: WH, BL, SC

ACCESSORIES*:

Accessory Holder T7400BL, SA
Color Filters T741-6
UV Filters T7422
Dichroic Lenses T7401-18
Prismatic Spread Lens T7477
Linear Spread Lens T7478
Diffuse Spread Lens T7420
Uniformity Lens T7421
Hexcell Louver T7459BL

Gimbal Rings

CATALOG #	LAMP	DIMENSIONS
TL196	12V OR 24V 20-50W MR16	2 1/2" 2 1/4" 2"

FINISHES: WH, BL

CATALOG #	LAMP	DIMENSIONS
TL296	12V OR 24V 20-50W MR16	2 3/4" 2 1/4" 2 1/4"

FINISHES: WH, BL, SC

ACCESSORIES FOR TL196 AND TL296:

Color Filters T551-5
UV Filter T5522
Dichroic Lenses T5501-18
Diffuse Spread Lens T5520
Linear Spread Lens T559
Prismatic Spread Lens T557
Uniformity Lens T5521
Hexcell Louver T5559BL

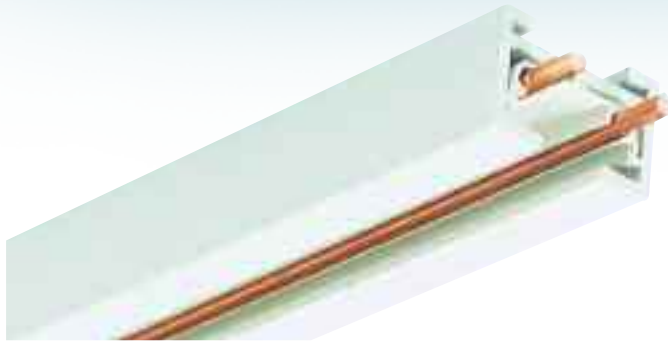


The background of the page is a photograph of two decorative pendant lights. The lights are conical in shape, with a warm, orange-glowing interior and a darker, textured exterior. They are suspended from a dark ceiling. The background wall is made of dark, rustic bricks. The lighting is soft and focused on the pendants, creating a moody atmosphere.

Decorative Pendants

Express your true colors through the radiant mystique of luminous, artisan-crafted glass or cast alluring pools of glare-free light using timeless shapes of lustrous metal. Juno's enticing array of eye-catching forms, colors and patterns provide effective and attractive illumination over tables, counters or feature displays. Complement virtually any personal taste and interior décor with designs that include Inferno Flames, Glacier Teardrops, Silver Flutes and more.

Trac 12/25 Low Voltage Trac System

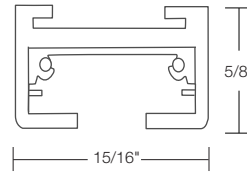
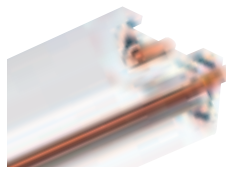


Trac 12/25 combines the 25-amp capacity of 10 gauge conductors with a miniature rigid profile that can be surface mounted or pendant suspended. The system operates off of remotely located 12-volt or 24-volt transformers. A maximum of 300 watts (12 volts) or 600 watts (24 volts) can be placed per circuit of trac.

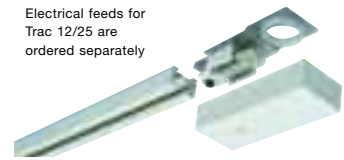
Key Features:

- 10 gauge solid copper conductors with 25-amp capacity
- Rigid aluminum miniature $\frac{5}{8}$ "H x $1\frac{1}{16}$ "W profile
- Accepts all standard Trac 12® lampholders
- Can be surface or pendant mounted
- White, black or silver finish

Trac 12/25 Trac Sections Includes dead-end and mounting hardware.



Electrical feeds for Trac 12/25 are ordered separately



CATALOG

TLR2	2' Trac (actual length 20 $\frac{3}{4}$ ")
TLR4	4' Trac (actual length 44 $\frac{3}{4}$ ")
TLR6	6' Trac (actual length 68 $\frac{3}{4}$ ")
TLR8	8' Trac (actual length 92 $\frac{3}{4}$ ")

FINISHES

White(WH), Black(BL), Silver(SL)
White(WH), Black(BL), Silver(SL)
White(WH), Black(BL), Silver(SL)
White(WH), Black(BL), Silver(SL)

Electrical Feeds and Dead End



TLR21 End Feed Connector and Outlet Box Cover

Allows trac to be fed via remote transformer from an outlet box. Includes terminal block, cover and mounting plate.

FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)



TLR36 Outlet Box/T-Bar Ceiling Canopy

Mounts over outlet boxes or on T-bar ceiling to feed up to four tracs via a remote transformer. Includes one TLR36TB, mounting plate and cover. To feed more than one trac, order additional TLR36TB connectors. Requires TLR37 for T-bar installation.

FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)



TLR38 End Feed Connector

Allows trac to be fed via remote transformer from top using standard electrical connectors. Includes terminal block connector and cover.

FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)



TLR36TB Terminal Block Connector

FINISHES: WHITE(WH), BLACK(BL)



TLR34 End Feed Connector and Conduit Feed

Allows trac to be fed via remote transformer with conduit through the end or top using standard $\frac{1}{2}$ " electrical connectors. Includes terminal block feed connector, mounting plate and cover.

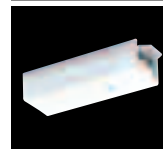
FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)



TLR28 Dead End

Dead end to use on extra field-cut trac sections.

FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)

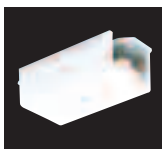


TLR50 Pendant Feed End Connector

For use in conjunction with TLR90/91 Pendant Stem assemblies to feed power into end of trac. Includes terminal block connector, support plate and cover.

FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)

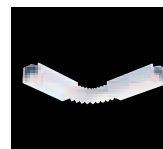
Joiners and T-Bar Attachment Clip



TLR23 Miniature Straight Connector

Joins two trac sections end-to-end. Includes terminal block joiner and cover.

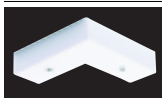
FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)



TLR20 Accordion Adjustable Joiner

Joins two trac sections at variable angles to left, right, up or down. Includes two terminal block connectors, joiner wires and covers.

FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)



TLR24 Adjustable Connector

Joins two trac sections to form a 90-degree corner or straight coupling. Includes two terminal block connectors, joiner wires and both 90-degree and straight covers.

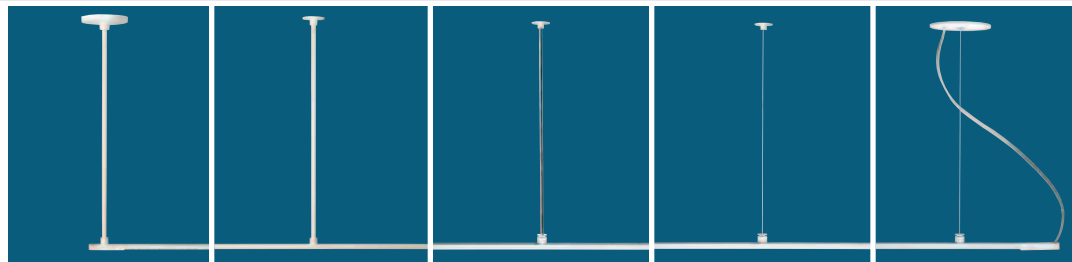
FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)



TLR37 T-Bar Attachment Clip

To attach trac to inverted $1\frac{1}{16}$ " T-bar ceiling runner. Compatible with either flush tile or drop tile installations.

Pendant Mounting Accessories



Pendant Stem Feed & Mechanical Support

TLR90 T-Bar Ceilings

TLR91 Rigid Ceilings

STEM LENGTHS:
-12 12"
-18 18"
-24 24"
-36 36"
-48 48"
FINISHES: WHITE(WH),
BLACK(BL), SILVER(SL)
ORDERING EXAMPLE:
TLR90-12-WH*

Pendant Stem Mechanical Support

TLR92

STEM LENGTHS:
-12 12"
-18 18"
-24 24"
-36 36"
-48 48"
FINISHES: WHITE(WH),
BLACK(BL), SILVER(SL)
ORDERING EXAMPLE:
TLR92-18-BL

10-24 Threaded Rod Mechanical Support

TLR93

Includes ceiling canopy and trac mounting hardware only; threaded rod by others.

FINISHES: WHITE(WH),
BLACK(BL), SILVER(SL)

ORDERING EXAMPLE:
TLR93BL

Stainless Steel Cable Mechanical Support

TLR95

CABLE LENGTHS:
-48 48"
-144 144"

FINISHES: WHITE(WH),
BLACK(BL), SILVER(SL)

ORDERING EXAMPLE:
TLR95-144-WH

Stainless Steel Cable Feed & Mechanical Support

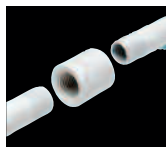
TLR96

CABLE LENGTHS:
-48 48"
-144 144"

FINISHES: WHITE(WH),
BLACK(BL), SILVER(SL)

ORDERING EXAMPLE:
TLR96-48-SL*

*Order TLR50 pendant end-feed connector separately.
Use 2 supports for each 2', 4' or 6' section of trac, 3 supports for each 8' section of trac. Stainless steel cable recommended only for trac patterns, not straight runs.



T96 Pendant Stem Coupling

Joins pendant stems for use in higher ceiling applications.

FINISHES: WHITE(WH), BLACK(BL), SILVER (SL)



T94 Sloped Ceiling Adapter

Permits pendant stems to be hung vertically from sloped ceilings. Used in conjunction with TLR90, TLR91 or TLR92 Ceiling Canopies (not included). Allows feeding of wires to trac at up to a 60 degree angle. Accommodates a maximum of two 12 gauge solid THHN copper wires. 20-amp capacity. FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)

Universal Surface Mount Transformers

Designed to mount over standard 4" ceiling outlet boxes, this versatile design can be used with a single pendant stem to support/feed one end of a trac run or with two pendant stems to support/feed up

to a 4' trac section. May also be used with a Flexible Feed Kit (TF950) to create a non-rigid floating feed, independent of mechanical support of the trac.



CATALOG #	OUTPUT VOLTAGE	TOTAL WATTAGE	NUMBER OF CIRCUITS/ WATTAGE PER CIRCUIT	RECOMMENDED WATTAGE RANGE PER CIRCUIT	DIMENSIONS
TF6150E-SL*	12V	150 watts	1 / 150 watts	50-150 watts	3"H x 12"Dia.
Electronic surface mount transformer with automatic resetting overload and short-circuit protection. Should be mounted within 5' of trac. 120VAC input.					
TF6300SL**	12V	300 watts	1 / 300 watts	150-300 watts	3"H x 12"Dia.
Magnetic toroidal surface mount transformer with resettable circuit breaker. 120VAC input.					

*Dimmable-for best results use dimmer designed for use with electronic transformers. **Dimmable-for best results use dimmer specifically designed for use with magnetic transformers.

Trac 12/25 Remote Mount Magnetic Transformers**

Trac 12/25 remote mount magnetic transformers are designed to be installed in remote locations such as basements, attics, plenums and electrical closets. The location must be accessible and well ventilated with ambient temperatures below 140-degrees Fahrenheit. 12-volt transformers are typically used for spotlighting applications due to the ready availability of 12-volt MR11 and MR16 lamps. 24-volt transformers double the wattage capacity vs. a 12-volt system and are more commonly selected for linear lighting due to their capacity for longer runs per

circuit. All magnetic transformers listed below are designed for 120-volt input** have premium resettable magnetic circuit breakers, dual-tap standard/boost tap primary input leads to adjust for voltage drop and may be dimmed using dimmers specifically designed for use with **magnetic** transformers. Primary and secondary circuits are physically and electrically isolated and grounded. Trac 12/25 may also be used with other transformers listed under the standard Trac 12 system on page 21 (except TL546).

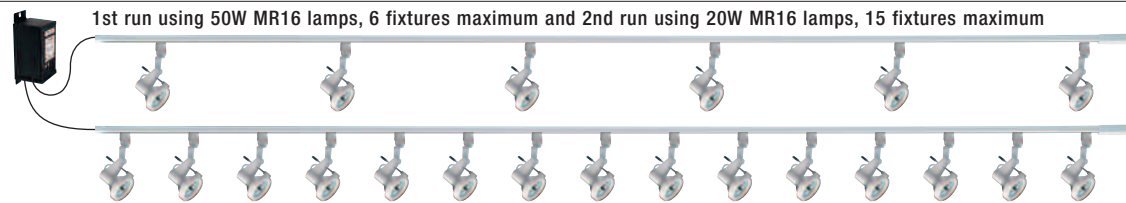


CATALOG #	OUTPUT VOLTAGE	TOTAL WATTAGE	NUMBER OF CIRCUITS/ WATTAGE PER CIRCUIT	RECOMMENDED WATTAGE RANGE PER CIRCUIT	DIMENSIONS
TF5150BL	12V	150 watts	1 / 150 watts	50-150 watts	10 1/2"H x 3 5/8"W x 3 7/8"D
TF5300BL	12V	300 watts	1 / 300 watts	150-300 watts	10 3/4"H x 4 3/8"W x 4 1/8"D
TF5600BL	12V	600 watts	2 / 300 watts	150-300 watts	11 1/8"H x 5 5/8"W x 5 1/8"D
TF5600BL-24V	24V	600 watts	1 / 600 watts	300-600 watts	11 1/2"H x 5 5/8"W x 5 1/8"D
TF51200BL-24V	24V	1200 watts	2 / 600 watts	300-600 watts	12 1/2"H x 6 1/8"W x 5 7/8"D

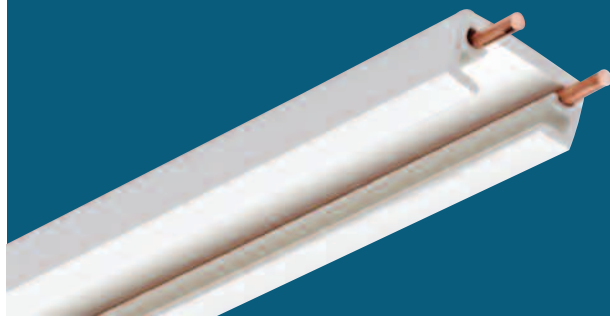
**277-volt transformers also available, consult factory.

Trac 12/25 Transformer/Fixture Loading Examples

TF5600BL
Transformer with
two 300 watt
12-volt circuits



Trac 12® Low Voltage Trac System



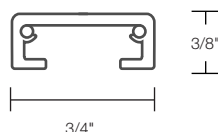
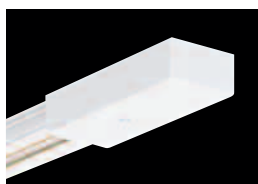
Trac 12® is the original miniature low voltage system that combines the 20-amp capacity with an extremely miniature engineered plastic profile. The system operates using remotely located or in-line 12-volt or 24-volt transformers. A maximum of 240 watts (12 volts) or 480 watts (24 volts) can be placed per circuit of trac.

Key Features:

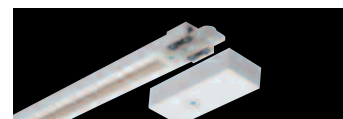
- 12 gauge solid copper conductors with 20-amp capacity
- Engineered thermoplastic ultra-miniature $\frac{3}{8}$ "H x $\frac{3}{4}$ "W profile
- Accepts all standard Trac 12 lampholders
- White or black finish

Trac 12® Trac Sections Includes end-feed connector, dead end and mounting hardware. End-feed connector converts to a straight connector when joining multiple trac sections.

NOTE: When joining trac sections, overall length is $1\frac{1}{8}$ " shorter than individual trac section lengths.



Electrical feeds with terminal block connector supplied with Trac 12. Converts to straight connector when joining multiple trac.



CATALOG

TL2 2' Trac (actual length 20 $\frac{3}{4}$ ")

TL4 4' Trac (actual length 44 $\frac{3}{4}$ ")

TL6 6' Trac (actual length 68 $\frac{3}{4}$ ")

TL8 8' Trac (actual length 92 $\frac{3}{4}$ ")

FINISHES

White(WH), Black(BL)

White(WH), Black(BL)

White(WH), Black(BL)

White(WH), Black(BL)

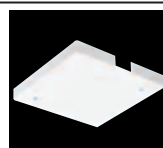
Electrical Feeds



TL38 End Feed Connector/Straight Joiner with Dead End

For use with field cut-offtrac sections. Includes terminal block connector with cover and dead end. Terminal block connector also serves as a straight joiner to join two trac sections.

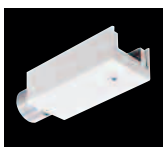
FINISHES: WHITE(WH), BLACK(BL)



TL21 Outlet Box/T-Bar Ceiling Canopy

May be mounted over outlet boxes or on T-bar ceiling runners to feed up to four trac sections via a remote transformer. Includes mounting plate and cover with four breakouts. Requires TLR37 for T-bar ceiling installation.

FINISHES: WHITE(WH), BLACK(BL)

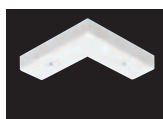


TL34 End Feed Connector for Conduit

Allows trac to be fed via remote transformer with conduit through the end or top using standard electrical connectors. Includes, mounting plate, surface conduit adapter and cover.

FINISHES: WHITE(WH), BLACK(BL)

Joiner Connectors



TL24 Right Angle Joiner

Joins two trac sections to form a 90-degree corner. Includes one terminal block connector with cover and joiner wires.

FINISHES: WHITE(WH), BLACK(BL)



TL20 Adjustable Joiner

Joins two trac sections at variable angles to left, right, up or down. Includes one terminal block connector with cover and 4" flexible joiner cable.

FINISHES: WHITE(WH), BLACK(BL)

Mounting Accessories



TLR37 T-Bar Attachment Clip

To attach trac to inverted $1\frac{1}{8}$ " T-bar ceiling runner. Compatible with either flush tile or drop tile installations.



TL4000 Extruded Aluminum Fascia

Conceals trac and Xenon linear lampholders. 6' length may be field cut to size. $1\frac{1}{8}$ " x $1\frac{1}{8}$ " profile.

FINISHES: WHITE(WH), BLACK(BL)

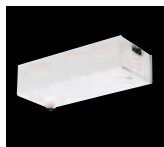
Transformers

Trac 12® Electronic Transformers

Electronic transformers are compact and lightweight and thus ideal for mounting in close proximity to the trac. They may be dimmed using better quality incandescent dimmers, but for optimal/consistent performance dimmers specifically designed for use with

low voltage electronic transformers are recommended. All electronic transformers include automatically resetting overload, short circuit and thermal protection. They are recommended for trac run lengths not exceeding 20 feet.

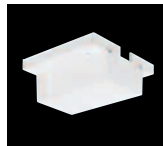
Direct Wire Electronic Transformers



TL547 150-Watt Surface Transformer

Low profile electronic 12-volt transformer for loads between 50-150 watts. May be installed in-line with trac (Trac 12® only) or remotely mounted up to 5' away (Trac 12® or Trac 12/25). 120-volt supply can be fed into end or top using standard ½" electrical connectors. Includes On/off push button switch.

DIMENSIONS: 1½"H x 2½"W x 7"L
FINISHES: WHITE(WH), BLACK(BL)



TL546 150-Watt Canopy Transformer

Canopy mount electronic 12-volt transformer for loads between 50-150 watts. Mounts over standard 120-volt ceiling outlet boxes and can end-feed one trac section or center feed two trac sections. NOTE: This is not a floating feed and is not suitable for use with Trac 12/25.

DIMENSIONS: 2½"H x 4¾"W x 5"L
FINISHES: WHITE(WH), BLACK(BL)

Portable Electronic Transformers



TL548 60-Watt Plug-In Transformer

Integral plug-in 12-volt transformer for loads up to 60 watts. Supplied with 10' of two-wire cord and on/off line cord switch.

DIMENSIONS: 3½"H x 1½"W x 1½"D
FINISHES: WHITE(WH), BLACK(BL)



TL544N 60-Watt Surface Mount Transformer

Surface mount electronic 12-volt transformer for loads up to 60 watts. Includes 6', 3-wire cord and plug, 4½" leads with mating connector for TL43 Monopoint and on/off switch.

DIMENSIONS: 1½"H x 2"W x 4¾"L
FINISHES: WHITE(WH), BLACK(BL)

Trac 12® Remote Mount Magnetic Transformers

Trac 12® remote mount magnetic transformers are designed to be installed in remote locations such as basements, attics, plenums and electrical closets. The location must be accessible and well ventilated with ambient temperatures below 140-degrees Fahrenheit. 12-volt transformers are typically used for spotlighting applications due to the ready availability of 12-volt MR11 and MR16 lamps. 24-volt transformers double the wattage capacity vs. a 12-volt system and are more

commonly selected for linear lighting due to their capacity for longer runs per circuit. All magnetic transformers listed below are designed for 120-volt input, have resettable thermal sensing circuit breakers, dual-tap standard/boost tap primary input leads to adjust for voltage drop and may be dimmed using dimmers specifically designed for use with **magnetic** transformers. Suitable for use with Trac 12 or Trac 12/25.

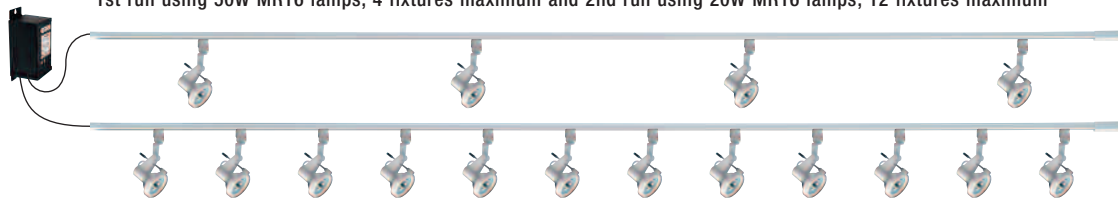


CATALOG #	OUTPUT VOLTAGE	TOTAL WATTAGE	NUMBER OF CIRCUITS/ WATTAGE PER CIRCUIT	RECOMMENDED WATTAGE RANGE PER CIRCUIT	DIMENSIONS
TL554BL	12V	150 watts	1 / 150 watts	50-150 watts	8"H x 3½"W x 3½"D
TL549BL	12V	240 watts	1 / 240 watts	120-240 watts	7¾"H x 4¾"W x 4"D
TL550BL	12V	480 watts	2 / 240 watts	120-240 watts	11¾"H x 5"W x 5"D
TL553BL-24V	24V	240 watts	1 / 240 watts	120-240 watts	8"H x 4¾"W x 4"D
TL551BL-24V	24V	480 watts	1 / 480 watts	240-480 watts	11¾"H x 5"W x 4¾"D
TL552BL-24V	24V	960 watts	2 / 480 watts	240-480 watts	12½"H x 6¾"W x 5¾"D

Trac 12® Transformer/Fixture Loading Examples

TL550BL
Transformer with
two 240 watt
12-volt circuits

1st run using 50W MR16 lamps, 4 fixtures maximum and 2nd run using 20W MR16 lamps, 12 fixtures maximum



TL549BL
Transformer with
one 240 watt
12-volt circuit

Run using 10W Xenon lamps in TL201 or TL211 fixtures, 24 fixtures maximum



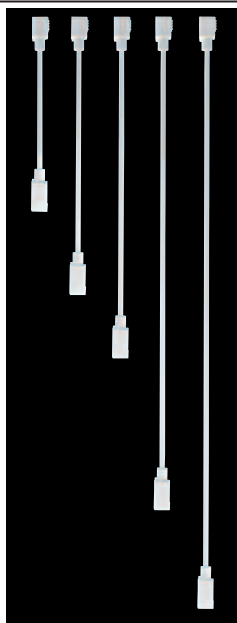
TL551BL
Transformer with
one 480 watt
24-volt circuit

Run using 10W Xenon lamps in TL201 or TL211 fixtures, 48 fixtures maximum



Trac 12® Mounting Accessories

Extension Wands



Extension wands allow any Trac 12® fixture to be suspended without having to lower the trac section itself. For use with either rigid aluminum Trac 12/25 or Trac 12 Trac or Monopoints.

CATALOG #	OVERALL LENGTH	FINISHES
TLRW12	14"	White(WH), Black(BL), Silver(SL)
TLRW18	20"	White(WH), Black(BL), Silver(SL)
TLRW24	26"	White(WH), Black(BL), Silver(SL)
TLRW36	38"	White(WH), Black(BL), Silver(SL)
TLRW48	50"	White(WH), Black(BL), Silver(SL)

Surface Monopoints



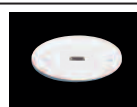
TL541 Conical Surface Monopoint w/ Integral Transformer

Mounts over standard ceiling outlet boxes. Includes 50VA electronic transformer. Accepts Juno Trac 12® spotlights and decorative pendants.
DIMENSIONS: 5 $\frac{3}{8}$ " DIA. X 2 $\frac{3}{8}$ " H
FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)



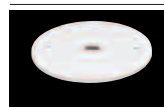
TL540 Cylindrical Surface Monopoint w/ Integral Transformer

Mounts over standard ceiling outlet boxes. Includes 50VA electronic transformer. Accepts Juno Trac 12® halogen spotlights and decorative pendants.
DIMENSIONS: 6 $\frac{1}{2}$ " DIA. X 1 $\frac{1}{8}$ " H
FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)



TL43 Mini-Monopoint for Remote Transformer

Mounts directly into ceiling, wall or cabinet surfaces with no visible mounting screws. Includes mounting retaining spring and 50' of wire with mating connector to TL544N transformer (ordered separately). Accepts all Juno Trac 12® spotlights and decorative pendants.
DIMENSIONS: 2 $\frac{1}{2}$ " DIA. X $\frac{1}{8}$ " H
FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)



TL40 Monopoint for Remote Transformer

Mounts over standard ceiling outlet boxes supplied with 12 or 24 volts from a remote transformer. Accepts Juno Trac 12® spotlights and decorative pendants.
DIMENSIONS: 5" DIA. X $\frac{1}{4}$ " H
FINISHES: WHITE(WH), BLACK(BL), SILVER(SL)

Monopoint Adapters for Recessed Housings



TL543 IC Recessed Monopoint, New Construction

Includes 50VA 12-volt electronic transformer, pre-wired IC rated recessed housing with adjustable real-nail bar hangers and canopy. Accepts Juno Trac 12® spotlights and decorative pendants.
HOUSING DEPTH: 6"
CANOPY DIMENSIONS: 5" DIA. X $\frac{1}{4}$ " H
FINISHES: WHITE(WH)



TL539 6" Recessed Housing Monopoint Adapter Trim

Includes 50VA 12-volt electronic transformer and screw in socket adapter. Mounts directly to all Juno 6" universal recessed incandescent housings. Accepts Juno Trac 12® spotlights and decorative pendants.
DIMENSIONS: 7 $\frac{7}{8}$ " DIA. X $\frac{3}{16}$ " H
FINISHES: WHITE(WH)



TL542 IC Recessed Monopoint, Remodel Construction

Includes 50VA 12-volt electronic transformer, pre-wired IC rated recessed housing for remodel construction. Accepts Juno Trac 12® spotlights and decorative pendants.
HOUSING DEPTH: 6"
CANOPY DIMENSIONS: 5" DIA. X $\frac{1}{4}$ " H
FINISHES: WHITE(WH)

Light Control Accessories

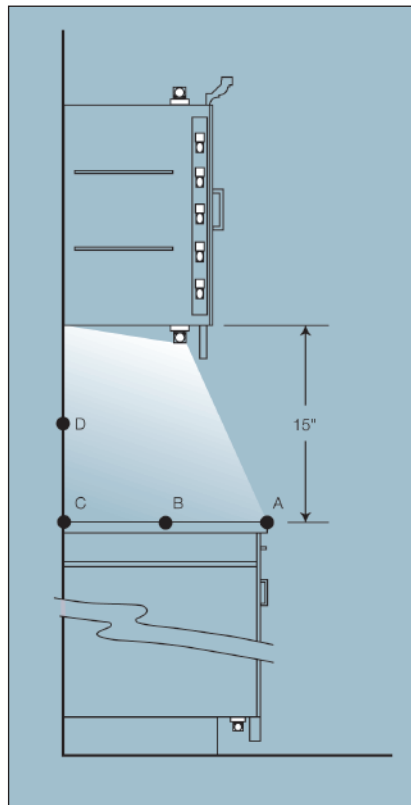
Juno offers a complete range of light control accessories to custom tailor effects:

			Lens/Louver Diameter	
			1 3/4" COMPATIBLE WITH	2" COMPATIBLE WITH
Accessory Holders Required for listed fixtures. Accepts one filter, lens, and louver except where noted.				T7400BL T7400SA Accepts up to 2 accessories TL117, TL130, TL301
Light Control Lenses These alter the light distribution of a given lamp, enlarging or elongating it, softening the beam edge or removing striations.		Light Control Lenses		
		Uniformity Lens	T5521	T7421 T7420 T7477 T7478 TL140* and fixtures with T7400 Accessory Holder
		Diffusion Lens	T5520	
		Prismatic Spread Lens	T557	
		Linear Spread Lens	T559	
UV Filters These museum quality lenses filter out ultraviolet radiation above 400 nanometers to protect fade sensitive art and objects.		UV Filter	T5522	T7422 TL140* and fixtures with T7400 Accessory Holder
			TL109, TL116, TLP116, TL143, TL160, TL165, TL191, TL196, TL296	
Color Correction Filters These correct the light, either to warm it up to approximate incandescent, or cool it down to approximate daylight.		Color Correction Filters		
		Halogen-to-Incandescent, 2700K	T5518	T7418 T7416 TL140* and fixtures with T7400 Accessory Holder
		Halogen-to-Daylight, 4250K	T5516	
Color Filters These change white light into colored light and are available in colored glass and more efficient/saturated dichroic filters.		Colored Glass Filters		
		Medium Pink	T551	T741 T742 T743 T744 T745 T746 TL140* and fixtures with T7400 Accessory Holder
		Warm Red		
		Daylight Blue		
		Medium Blue	T553	
		Medium Amber	T555	
		Medium Green		
		Dichroic Glass Filters		
		Red	T5501	T7401 T7403 T7404 T7405 T7406 T7411 TL140* and fixtures with T7400 Accessory Holder
		Medium Green	T5503	
		Medium Blue	T5504	
		Yellow	T5505	
		Magenta	T5506	
		Blue-Green (Cyan)	T5511	
Louvers Hexcell louvers reduce perceived fixture brightness.		Hexcell Louvers	T5559BL	T7459BL TL140* and fixtures with T7400 Accessory Holder
			TL109, TL116, TLP116, TL143, TL160, TL165, TL191, TL196, TL296	
Snoots and Eyebrows These extend lamp shielding and can reduce spill light in the edge of a beam pattern.		Snoot	T558BL	
			TL109, TL116, TLP116	
		Eyebrow	T556BL	
			TL109	
Barn Doors These create a theatrical look and allow control of the spill light coming off of a lamp.		Barn Doors	T74BL	T7470BL Also requires T7400 Accessory Holder TL117, TL130, TL301
		Does not require separate accessory holder except where noted.	TL109, TL116, TLP116	

*Simultaneously accepts any combination of up to two filters, lenses or louver.

Linear Lighting Application Data

Cabinetry Lighting Guidelines



Over Cabinets Trac 12®, using 10-watt lamps spaced 6" on center, generally provides excellent indirect lighting. For lower-level mood lighting, use 3-watt or 5-watt lamps with slightly closer spacing. Placing the fixture at the front edge of the cabinet top will project light into the space and illuminate any displayed objects. Locate top of lamp even with top edge of cove molding to prevent a harsh shadow line.

Inside Cabinets Running Trac 12® vertical on the front inside of cabinets avoids the need to put trac on each shelf. 3-watt Xenon lamps 3" on center will generally provide adequate lighting inside a cabinet.

Under Cabinets Placing Juno Trac 12® at the front lip of the cabinet conceals the fixture from view, minimizes veiling reflections, and provides maximum light on the working area of the countertop.

Footcandles on Horizontal Work Surface

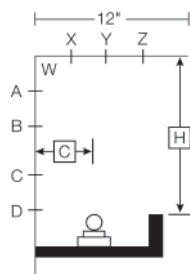
Lamp Type	Catalog Number	Number of Lamps	Volts/Watts	On-Center Spacing	Footcandles			
					A	B	C	D
Xenon Wedge Base	TL201	1	12V/5W	3"	10	31	20	22
		1	12V/10W	6"	12	36	23	25
	TL202	2	12V/5W	6"	10	29	18	20
		2	12V/10W	12"	12	36	23	25
Xenon Rigid Loop	TL211	1	12V/5W	3"	14	42	27	30
		1	12V/10W	6"	14	43	28	30
Halogen Bi-Pin	TL103	1	12V/20W	12"	16	66	56	60

Kick Spaces 3-watt Xenon lamps spaced on 4" centers provide adequate kick space lighting. Wider spacings can be used when

the distance from trac to floor is greater than 4" or when even illumination is not required.

NOTE: Shiny flooring or countertops may cause lamp image reflections.

Cove Lighting



Footcandles on Horizontal and Vertical Planes

Lamp Type	Lamp Spacing from Wall [C]	O.C. Lamp Spacing	Cove Height [H]	Footcandles on Vert. Plane (Wall)				Footcandles on Horiz. Plane (Ceiling)			
				A	B	C	D	W	X	Y	Z
24V, 10W Rigid Loop or Wedge Base Xenon Lamp. (Test conducted with 70% reflectances at 23.5 volts)	3"	3"	6"	111	155	162	31	176	164	93	44
	3"	3"	9"	62	89	155	21	118	121	93	54
	3"	3"	12"	42	56	120	15	83	87	78	56
	4"	4"	6"	88	111	105	23	124	123	85	38
Conversion factors for other lamps LAMP MULTIPLIER 12V, 10W Rigid Loop 1.11 12V, 10W Wedge Base 0.91 12V, 5W Rigid Loop 0.44 12V, 5W Wedge Base 0.32 12V, 5W Rigid Loop 0.50 12V, 5W Wedge Base 0.37	4"	4"	9"	53	74	99	16	88	89	76	46
	4"	4"	12"	36	49	96	11	63	66	61	46
	5"	5"	6"	68	71	67	19	85	96	81	35
	5"	5"	9"	44	57	61	13	66	69	63	43
	5"	5"	12"	31	42	58	8	48	51	48	40
	NOTE: Frosted lamps provide slightly less lumen output, but more uniformity with wider spacings.										

Maximum Run Length per 20-Amp Circuit

Lamp Type	Lamp Spacing					
		2"	3"	4"	5"	6"
10 Watt Xenon Lamps	Lumens/Foot (24V Lamp)	-	340	255	204	170
	Maximum Run Length-24V	-	12'	16'	20'	24'
	Maximum Run Length-12V	-	6'	8'	10'	12'
5 Watt Xenon Lamps	Lumens/Foot (24V Lamp)	162	108	81	65	54
	Maximum Run Length-24V	16'	24'	32'	40'	48'
	Maximum Run Length-12V	8'	12'	16'	20'	24'
3 Watt Xenon Lamps	Lumens/Foot	93	62	42	37	31
	Maximum Run Length-12V	13'	20'	27'	33'	40'

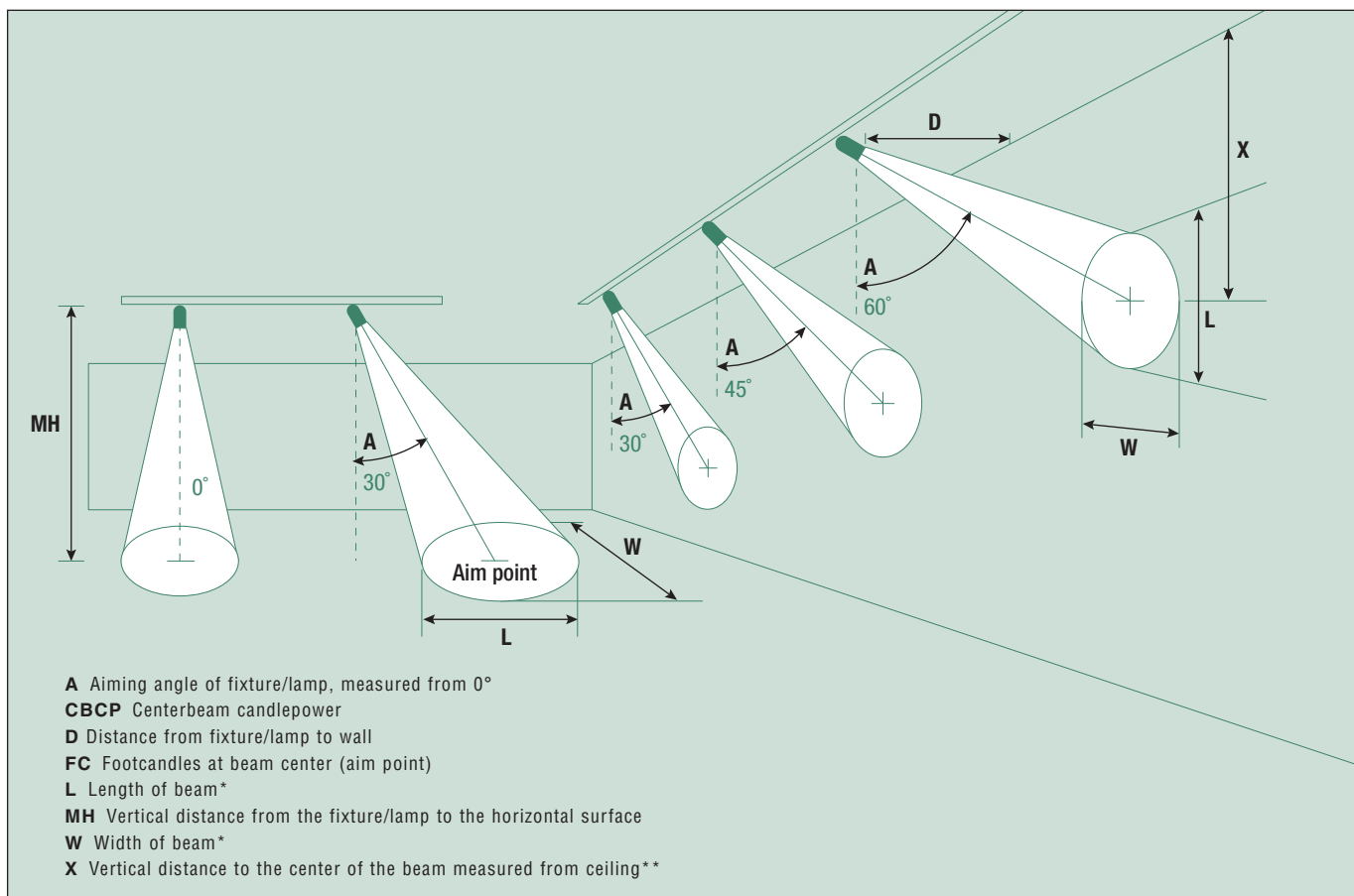
Maximum Run Length per 25-Amp Circuit

Lamp Type	Lamp Spacing					
		2"	3"	4"	5"	6"
10 Watt Xenon Lamps	Lumens/Foot (24V Lamp)	-	340	255	204	170
	Maximum Run Length-24V	10'	15'	20'	25'	30'
	Maximum Run Length-12V	5'	7.5'	10'	12.5'	15'
5 Watt Xenon Lamps	Lumens/Foot (24V Lamp)	162	108	81	65	54
	Maximum Run Length-24V	20'	30'	40'	50'	60'
	Maximum Run Length-12V	10'	15'	20'	25'	30'
3 Watt Xenon Lamps	Lumens/Foot	93	62	42	37	31
	Maximum Run Length-12V	17'	25'	34'	42'	50'

Photometric Data

The photometric charts on the following pages provide illumination levels (FC) and beam size (in feet) for lamps of various wattages and beam patterns. Data is given for lamps aimed at both horizontal and vertical surfaces.

Maximum candlepower and rated life is also indicated for each lamp. Lamp performance is based on bare lamp photometrics provided by lamp manufacturers. Additional information may be obtained from Juno.



12-Volt and 24-Volt MR11/MR16 (Mirrored Reflector)



These Mirrored Reflector (MR) lamps have smaller "point-source" filaments that are precisely aligned in a miniature multi-faceted reflector to produce exacting beam distributions of white, halogen light. For spot distributions they produce more usable light per watt of energy than comparable wattage halogen PAR lamps. Available in a wide range of beam spreads and wattages, the miniature 2" MR16 lamps allow for very compact fixture designs and, in combination with light control lenses, a high degree of specificity in lighting design. They are the best accent source for highlighting artwork, sculpture, or creating dramatic effects. Smaller, lower wattage 1-3/8" diameter MR11 lamps are also available for special situations where ultra-miniature fixture size is required. Like halogen PAR lamps, many MR16 lamps are now available in "IR" models whereby the infrared heat produced by the lamp is reflected back onto the filament, enabling it to burn hotter and brighter, improving energy efficiency up to 30%. Life ranges from 2000 to 6000 hours. MR lamps require a step-down transformer to supply their required 12 or 24 volts.

*The beam spread in degrees and the beam "L" and "W" in the following tables are computed at 50% of centerbeam candlepower and represent areas of "effective illumination."

**In vertical aiming applications, aim point (x) is determined by dividing distance from the wall (D) by the tangent of the desired aim angle (A) (0.577 for 30°, 1.0 for 45°, 1.732 for 60°)

Low Voltage HALOGEN

Horizontal Aiming Angles

Vertical Aiming Angles

LAMP	BEAM TYPE	BEAM SPREAD	RATED LIFE	CBCP	0 DEGREES				30 DEGREES			30 DEGREES					45 DEGREES				60 DEGREES							
					MH	FC	L	W	FC	L	W	D	FC	X	L	W	FC	X	L	W	D	FC	X	L	W			
20W MR11 Halogen 12 Volt 	SP	10° 	4000	5500	2	1375	0.3	0.3	893	0.5	0.4		1	688	1.7	0.7	0.3	1945	1.0	0.4	0.2		2	893	1.2	0.5	0.4	
					TL935	4	344	0.7	0.7	223	0.9	0.8		2	172	3.5	1.4	0.7	486	2.0	0.7	0.5		3	397	1.7	0.7	0.6
						6	153	1.0	1.0	99	1.4	1.2		3	76	5.2	2.1	1.0	216	3.0	1.1	0.7		4	223	2.3	0.9	0.8
						8	86	1.4	1.4	56	1.9	1.6		4	43	6.9	2.9	1.4	122	4.0	1.4	1.0		5	143	2.9	1.2	1.0
						10	55	1.7	1.7	36	2.3	2.0		5	28	8.7	3.6	1.7	78	5.0	1.8	1.2		6	99	3.5	1.4	1.2
	NFL	30° 	3500	600	1	600	0.5	0.5	390	0.7	0.6		1	75	1.7	2.7	1.1	212	1.0	1.2	0.8		2	97	1.2	1.5	1.2	
					2	150	1.1	1.1	97	1.5	1.2		2	19	3.5	5.5	2.1	53	2.0	2.3	1.5		3	43	1.7	2.2	1.9	
					3	67	1.6	1.6	43	2.2	1.9		3	8	5.2	8.2	3.2	24	3.0	3.5	2.3		4	24	2.3	2.9	2.5	
					4	38	2.1	2.1	24	2.9	2.5		4	5	6.9	10.9	4.3	13	4.0	4.6	3.0		5	16	2.9	3.7	3.1	
					5	24	2.7	2.7	16	3.7	3.1		5	3	8.7	13.7	5.4	8	5.0	5.8	3.8		6	11	3.5	4.4	3.7	
20W MR11 Halogen 24 Volt 	SP	12° 	2000	2200	2	550	0.4	0.4	357	0.6	0.5		1	275	1.7	0.9	0.4	778	1.0	0.4	0.3		2	357	1.2	0.6	0.5	
					TL938-24V	4	138	0.8	0.8	89	1.1	1.0		2	69	3.5	1.7	0.8	194	2.0	0.9	0.6		3	159	1.7	0.8	0.7
						6	61	1.3	1.3	40	1.7	1.5		3	31	5.2	2.6	1.3	86	3.0	1.3	0.9		4	89	2.3	1.1	1.0
						8	34	1.7	1.7	22	2.3	1.9		4	17	6.9	3.5	1.7	49	4.0	1.7	1.2		5	57	2.9	1.4	1.2
						10	22	2.1	2.1	14	2.8	2.4		5	11	8.7	4.3	2.1	31	5.0	2.1	1.5		6	40	3.5	1.7	1.5
	NFL	30° 	2000	500	1	500	0.5	0.5	325	0.7	0.6		1	63	1.7	2.7	1.1	177	1.0	1.2	0.8		2	81	1.2	1.5	1.2	
					2	125	1.1	1.1	81	1.5	1.2		2	16	3.5	5.5	2.1	44	2.0	2.3	1.5		3	36	1.7	2.2	1.9	
					3	56	1.6	1.6	36	2.2	1.9		3	7	5.2	8.2	3.2	20	3.0	3.5	2.3		4	20	2.3	2.9	2.5	
					4	31	2.1	2.1	20	2.9	2.5		4	4	6.9	10.9	4.3	11	4.0	4.6	3.0		5	13	2.9	3.7	3.1	
					5	20	2.7	2.7	13	3.7	3.1		5	3	8.7	13.7	5.4	7	5.0	5.8	3.8		6	9	3.5	4.4	3.7	
35W MR11 Halogen 12 Volt 	SP	10° 	4000	8500	4	531	0.7	0.7	345	0.9	0.8		2	266	3.5	1.4	0.7	751	2.0	0.7	0.5		4	345	2.3	0.9	0.8	
					6	236	1.0	1.0	153	1.4	1.2		3	118	5.2	2.1	1.0	334	3.0	1.1	0.7		5	221	2.9	1.2	1.0	
					8	133	1.4	1.4	86	1.9	1.6		4	66	6.9	2.9	1.4	188	4.0	1.4	1.0		6	153	3.5	1.4	1.2	
					10	85	1.7	1.7	55	2.3	2.0		5	43	8.7	3.6	1.7	120	5.0	1.8	1.2		7	113	4.0	1.6	1.4	
					12	59	2.1	2.1	38	2.8	2.4		6	30	10.4	4.3	2.1	83	6.0	2.1	1.5		8	86	4.6	1.9	1.6	
	NFL	35° 	3500	1500	1	1500	0.6	0.6	974	0.9	0.7		1	188	1.7	3.6	1.3	530	1.0	1.4	0.9		2	244	1.2	1.7	1.5	
					2	375	1.3	1.3	244	1.7	1.5		2	47	3.5	7.2	2.5	133	2.0	2.8	1.8		3	108	1.7	2.6	2.2	
					3	167	1.9	1.9	108	2.6	2.2		3	21	5.2	10.8	3.8	59	3.0	4.2	2.7		4	61	2.3	3.5	2.9	
					4	94	2.5	2.5	61	3.5	2.9		4	12	6.9	14.4	5.0	33	4.0	5.6	3.6		5	39	2.9	4.3	3.6	
					5	60	3.2	3.2	39	4.3	3.6		5	8	8.7	18.0	6.3	21	5.0	7.0	4.5		6	27	3.5	5.2	4.4	
20W MR16 Halogen 12 Volt 	VNSP	7° 	3000	7400	6	206	0.7	0.7	134	1.0	0.8		3	103	5.2	1.5	0.7	291	3.0	0.7	0.5		6	134	3.5	1.0	0.8	
					9	91	1.1	1.1	59	1.5	1.3		4	58	6.9	2.0	1.0	164	4.0	1.0	0.7		7	98	4.0	1.1	1.0	
					12	51	1.5	1.5	33	2.0	1.7		5	37	8.7	2.5	1.2	105	5.0	1.2	0.9		8	75	4.6	1.3	1.1	
					15	33	1.8	1.8	21	2.4	2.1		6	26	10.4	3.0	1.5	73	6.0	1.5	1.0		9	59	5.2	1.5	1.3	
					18	23	2.2	2.2	15	2.9	2.5		7	19	12.1	3.5	1.7	53	7.0	1.7	1.2		10	48	5.8	1.6	1.4	
	NSP	15° 	5000	3750	4	234	1.1	1.1	152	1.4	1.2		2	117	3.5	2.2	1.1	331	2.0	1.1	0.7		4	152	2.3	1.4	1.2	
					6	104	1.6	1.6	68	2.1	1.8		3	52	5.2	3.3	1.6	147	3.0	1.6	1.1		5	97	2.9	1.8	1.5	
					8	59	2.1	2.1	38	2.8	2.4		4	29	6.9	4.4	2.1	83	4.0	2.1	1.5		6	68	3.5	2.1	1.8	
					10	38	2.6	2.6	24	3.5	3.0		5	19	8.7	5.6	2.6	53	5.0	2.7	1.9		7	50	4.0	2.5	2.1	
					12	26	3.2	3.2	17	4.2	3.6		6	13	10.4	6.7	3.2	37	6.0	3.2	2.2		8	38	4.6	2.8	2.4	
	FL	40° 	5000	525	3	58	2.2	2.2	38	3.0	2.5		1	66	1.7	4.8	1.5	186	1.0	1.7	1.0		2	85	1.2	2.0	1.7	
					5	21	3.6	3.6	14	5.1	4.2		2	16	3.5	9.7	2.9	46	2.0	3.4	2.1		3	38	1.7	3.0	2.5	
					7	11	5.1	5.1	7	7.1	5.9		3	7	5.2	14.5	4.4	21	3.0	5.0	3.1		4	21	2.3	4.1	3.4	
					9	6	6.6	6.6	4	9.1	7.6		4	4	6.9	19.3	5.8	12	4.0	6.7	4.1		5	14	2.9	5.1	4.2	
					11	4	8.0	8.0	3	11.2	9.2		5	3	8.7	24.2	7.3	7	5.0	8.4	5.1		6	9	3.5	6.1	5.0	
20W MR16 Halogen 12 Volt Lensed 	NSP	15° 	5000	3150	4	197	1.1	1.1	128	1.4	1.2		2	98	3.5	2.2	1.1	278	2.0	1.1	0.7		4	128	2.3	1.4	1.2	
					6	88	1.6	1.6	57	2.1	1.8		3	44	5.2	3.3	1.6	124	3.0	1.6	1.1		5	82	2.9	1.8	1.5	
					8	49	2.1	2.1	32	2.8	2.4		4	25	6.9	4.4	2.1	70	4.0	2.1	1.5		6	57	3.5	2.1	1.8	
					10	32	2.6	2.6	20	3.5	3.0		5	16	8.7	5.6	2.6	45	5.0	2.7	1.9		7	42	4.0	2.5	2.1	
					12	22	3.2	3.2	14	4.2	3.6		6	11	10.4	6.7	3.2	31	6.0	3.2	2.2		8	32	4.6	2.8	2.4	
	FL	40° 	5000	475	3	53	2.2	2.2	34	3.0	2.5		1	59	1.7	4.8	1.5	168	1.0	1.7	1.0		2	77	1.2	2.0	1.7	
					5	19	3.6	3.6	12	5.1	4.2		2	15	3.5	9.7	2.9	42	2.0	3.4	2.1		3	34	1.7	3.0	2.5	
					7	10	5.1	5.1	6	7.1	5.9		3	7	5.2	14.5	4.4	19	3.0	5.0	3.1		4	19	2.3	4.1	3.4	
					9	6	6.6	6.6	4	9.1	7.6		4	4	6.9	19.3	5.8	10	4.0	6.7	4.1		5	12	2.9	5.1	4.2	
					11	4	8.0	8.0	3	11.2	9.2		5	2	8.7	24.2	7.3	7	5.0	8.4	5.1		6	9	3.5	6.1	5.0	

Low Voltage HALOGEN

LAMP	BEAM TYPE	BEAM SPREAD	RATED LIFE	CBCP	Horizontal Surface								Vertical Surface													
					0 DEGREES				30 DEGREES				30 DEGREES					45 DEGREES				60 DEGREES				
					MH	FC	L	W	FC	L	W	D	FC	X	L	W	FC	X	L	W	D	FC	X	L	W	
 20W MR16 Halogen IR 12 Volt Lensed	NSP		5000	6500	4	406	0.6	0.6	264	0.7	0.6		2	203	3.5	1.1	0.6	575	2.0	0.6	0.4	4	264	2.3	0.7	0.6
					6	181	0.8	0.8	117	1.1	1.0		3	90	5.2	1.7	0.8	255	3.0	0.8	0.6	5	169	2.9	0.9	0.8
					8	102	1.1	1.1	66	1.5	1.3		4	51	6.9	2.3	1.1	144	4.0	1.1	0.8	6	117	3.5	1.1	1.0
					10	65	1.4	1.4	42	1.9	1.6		5	33	8.7	2.8	1.4	92	5.0	1.4	1.0	7	86	4.0	1.3	1.1
					12	45	1.7	1.7	29	2.2	1.9		6	23	10.4	3.4	1.7	64	6.0	1.7	1.2	8	66	4.6	1.5	1.3
	FL		5000	1000	3	111	1.9	1.9	72	2.7	2.3		1	125	1.7	3.8	1.3	354	1.0	1.5	0.9	2	162	1.2	1.8	1.5
					5	40	3.2	3.2	26	4.5	3.8		2	31	3.5	7.6	2.6	88	2.0	2.9	1.8	3	72	1.7	2.7	2.3
					7	20	4.5	4.5	13	6.3	5.3		3	14	5.2	11.4	3.9	39	3.0	4.4	2.8	4	41	2.3	3.6	3.0
					9	12	5.8	5.8	8	8.1	6.8		4	8	6.9	15.2	5.2	22	4.0	5.8	3.7	5	26	2.9	4.5	3.8
					11	8	7.1	7.1	5	9.9	8.3		5	5	8.7	19.0	6.5	14	5.0	7.3	4.6	6	18	3.5	5.4	4.5
 35W MR16 Halogen 12 Volt	NSP T523		4000	8300	6	231	1.0	1.0	150	1.4	1.2		3	115	5.2	2.1	1.0	326	3.0	1.1	0.7	5	216	2.9	1.2	1.0
					8	130	1.4	1.4	84	1.9	1.6		4	65	6.9	2.9	1.4	183	4.0	1.4	1.0	6	150	3.5	1.4	1.2
					10	83	1.7	1.7	54	2.3	2.0		5	42	8.7	3.6	1.7	117	5.0	1.8	1.2	7	110	4.0	1.6	1.4
					12	58	2.1	2.1	37	2.8	2.4		6	29	10.4	4.3	2.1	82	6.0	2.1	1.5	8	84	4.6	1.9	1.6
					14	42	2.4	2.4	28	3.3	2.8		7	21	12.1	5.0	2.4	60	7.0	2.5	1.7	9	67	5.2	2.1	1.8
	SP T523		5000	3900	4	244	1.4	1.4	158	1.9	1.6		2	122	3.5	3.1	1.4	345	2.0	1.5	1.0	4	158	2.3	1.9	1.6
					6	108	2.1	2.1	70	2.9	2.4		3	54	5.2	4.7	2.1	153	3.0	2.2	1.5	5	101	2.9	2.4	2.0
					8	61	2.8	2.8	40	3.8	3.3		4	30	6.9	6.2	2.8	86	4.0	2.9	2.0	6	70	3.5	2.9	2.4
					10	39	3.5	3.5	25	4.8	4.1		5	20	8.7	7.8	3.5	55	5.0	3.6	2.5	7	52	4.0	3.3	2.9
					12	27	4.2	4.2	18	5.7	4.9		6	14	10.4	9.3	4.2	38	6.0	4.4	3.0	8	40	4.6	3.8	3.3
	NFL		4000	3100	4	194	1.8	1.8	126	2.4	2.0		2	97	3.5	4.2	1.8	274	2.0	1.9	1.3	4	126	2.3	2.4	2.0
					6	86	2.7	2.7	56	3.6	3.1		3	43	5.2	6.2	2.7	122	3.0	2.8	1.9	5	81	2.9	3.0	2.6
					8	48	3.5	3.5	31	4.8	4.1		4	24	6.9	8.3	3.5	69	4.0	3.7	2.5	6	56	3.5	3.6	3.1
					10	31	4.4	4.4	20	6.0	5.1		5	16	8.7	10.4	4.4	44	5.0	4.7	3.1	7	41	4.0	4.2	3.6
					12	22	5.3	5.3	14	7.2	6.1		6	11	10.4	12.5	5.3	30	6.0	5.6	3.8	8	31	4.6	4.8	4.1
	FL		4000	700	2	175	1.5	1.5	114	2.0	1.7		1	88	1.7	4.8	1.5	247	1.0	1.7	1.0	2	114	1.2	2.0	1.7
					4	44	2.9	2.9	28	4.1	3.4		2	22	3.5	9.7	2.9	62	2.0	3.4	2.1	3	51	1.7	3.0	2.5
					6	19	4.4	4.4	13	6.1	5.0		3	10	5.2	14.5	4.4	27	3.0	5.0	3.1	4	28	2.3	4.1	3.4
					8	11	5.8	5.8	7	8.1	6.7		4	5	6.9	19.3	5.8	15	4.0	6.7	4.1	5	18	2.9	5.1	4.5
					10	7	7.3	7.3	5	10.2	8.4		5	4	8.7	24.2	7.3	10	5.0	8.4	5.1	6	13	3.5	6.1	5.0
	WFL		4000	650	1	650	1.2	1.2	422	1.7	1.3		1	81	1.7	**	2.3	230	1.0	3.5	1.6	2	106	1.2	3.5	2.7
					2	163	2.3	2.3	106	3.5	2.7		2	20	3.5	**	4.6	57	2.0	6.9	3.3	3	47	1.7	5.2	4.0
					3	72	3.5	3.5	47	5.2	4.0		3	9	5.2	**	6.9	26	3.0	10.4	4.9	4	26	2.3	6.9	5.3
					4	41	4.6	4.6	26	6.9	5.3		4	5	6.9	**	9.2	14	4.0	13.9	6.5	5	17	2.9	8.7	6.7
					5	26	5.8	5.8	17	8.7	6.7		5	3	8.7	**	11.5	9	5.0	17.3	8.2	6	12	3.5	10.4	8.
 35W MR16 Halogen 12 Volt Lensed	SP T5234		5000	3200	4	200	1.4	1.4	130	1.9	1.6		2	100	3.5	3.1	1.4	283	2.0	1.5	1.0	4	130	2.3	1.9	1.6
					6	89	2.1	2.1	58	2.9	2.4		3	44	5.2	4.7	2.1	126	3.0	2.2	1.5	5	83	2.9	2.4	2.0
					8	50	2.8	2.8	32	3.8	3.3		4	25	6.9	6.2	2.8	71	4.0	2.9	2.0	6	58	3.5	2.9	2.4
					10	32	3.5	3.5	21	4.8	4.1		5	16	8.7	7.8	3.5	45	5.0	3.6	2.5	7	42	4.0	3.3	2.9
					12	22	4.2	4.2	14	5.7	4.9		6	11	10.4	9.3	4.2	31	6.0	4.4	3.0	8	32	4.6	3.8	3.3
	FL T5232		5000	900	2	225	1.5	1.5	146	2.0	1.7		1	113	1.7	4.8	1.5	318	1.0	1.7	1.0	2	146	1.2	2.0	1.7
					4	56	2.9	2.9	37	4.1	3.4		2	28	3.5	9.7	2.9	80	2.0	3.4	2.1	3	65	1.7	3.0	2.5
					6	25	4.4	4.4	16	6.1	5.0		3	13	5.2	14.5	4.4	35	3.0	5.0	3.1	4	37	2.3	4.1	3.4
					8	14	5.8	5.8	9	8.1	6.7		4	7	6.9	19.3	5.8	20	4.0	6.7	4.1	5	23	2.9	5.1	4.2
					10	9	7.3	7.3	6	10.2	8.4		5	5	8.7	24.2	7.3	13	5.0	8.4	5.1	6	16	3.5	6.1	5.0

**Due to steep aiming angle, length of beam extends beyond 25°. Each angle listed is measured from 0° vertical.

Low Voltage HALOGEN

Horizontal Surface											Vertical Surface														
LAMP	BEAM TYPE	BEAM SPREAD	RATED LIFE	CBCP	0 DEGREES				30 DEGREES			30 DEGREES					45 DEGREES				60 DEGREES				
					MH	FC	L	W	FC	L	W	D	FC	X	L	W	FC	X	L	W	D	FC	X	L	W
35W MR16 Halogen 24 Volt Lensed 	SP	12° 	4000	4950	6	138	1.3	1.3	89	1.7	1.5	3	69	5.2	2.6	1.3	194	3.0	1.3	0.9	5	129	2.9	1.4	1.2
					8	77	1.7	1.7	50	2.3	1.9	4	39	6.9	3.5	1.7	109	4.0	1.7	1.2	6	89	3.5	1.7	1.5
					10	50	2.1	2.1	32	2.8	2.4	5	25	8.7	4.3	2.1	70	5.0	2.1	1.5	7	66	4.0	2.0	1.7
					12	34	2.5	2.5	22	3.4	2.9	6	17	10.4	5.2	2.5	49	6.0	2.6	1.8	8	50	4.6	2.3	1.9
					14	25	2.9	2.9	16	3.9	3.4	7	13	12.1	6.1	2.9	36	7.0	3.0	2.1	9	40	5.2	2.5	2.2
	FL	24° 	3500	1200	2	300	0.9	0.9	195	1.2	1.0	1	150	1.7	2.0	0.9	424	1.0	0.9	0.6	2	195	1.2	1.2	1.0
					4	75	1.7	1.7	49	2.3	2.0	2	38	3.5	3.9	1.7	106	2.0	1.8	1.2	3	87	1.7	1.7	1.5
					6	33	2.6	2.6	22	3.5	2.9	3	17	5.2	5.9	2.6	47	3.0	2.7	1.8	4	49	2.3	2.3	2.0
					8	19	3.4	3.4	12	4.6	3.9	4	9	6.9	7.9	3.4	27	4.0	3.6	2.4	5	31	2.9	2.9	2.5
					10	12	4.3	4.3	8	5.8	4.9	5	6	8.7	9.8	4.3	17	5.0	4.5	3.0	6	22	3.5	3.5	2.9
37W MR16 Halogen IR 12 Volt 	SP	10° 	4000	12500	6	347	1.0	1.0	226	1.4	1.2	3	174	5.2	2.1	1.0	491	3.0	1.1	0.7	7	166	4.0	1.6	1.4
					9	154	1.6	1.6	100	2.1	1.8	4	98	6.9	2.9	1.4	276	4.0	1.4	1.0	8	127	4.6	1.9	1.6
					12	87	2.1	2.1	56	2.8	2.4	5	63	8.7	3.6	1.7	177	5.0	1.8	1.2	9	100	5.2	2.1	1.8
					15	56	2.6	2.6	36	3.5	3.0	6	43	10.4	4.3	2.1	123	6.0	2.1	1.5	10	81	5.8	2.3	2.0
					18	39	3.1	3.1	25	4.2	3.6	7	32	12.1	5.0	2.4	90	7.0	2.5	1.7	11	67	6.4	2.6	2.2
	NFL	25° 	4000	4400	4	275	1.8	1.8	179	2.4	2.0	2	138	3.5	4.2	1.8	389	2.0	1.9	1.3	4	179	2.3	2.4	2.0
					6	122	2.7	2.7	79	3.6	3.1	3	61	5.2	6.2	2.7	173	3.0	2.8	1.9	5	114	2.9	3.0	2.6
					8	69	3.5	3.5	45	4.8	4.1	4	34	6.9	8.3	3.5	97	4.0	3.7	2.5	6	79	3.5	3.6	3.1
					10	44	4.4	4.4	29	6.0	5.1	5	22	8.7	10.4	4.4	62	5.0	4.7	3.1	7	58	4.0	4.2	3.6
					12	31	5.3	5.3	20	7.2	6.1	6	15	10.4	12.5	5.3	43	6.0	5.6	3.8	8	45	4.6	4.8	4.1
FL	40° 	4000	2200	3	244	2.2	2.2	159	3.0	2.5	1	275	1.7	4.8	1.5	778	1.0	1.7	1.0	2	357	1.2	2.0	1.7	
				5	88	3.6	3.6	57	5.1	4.2	2	69	3.5	9.7	2.9	194	2.0	3.4	2.1	3	159	1.7	3.0	2.5	
				7	45	5.1	5.1	29	7.1	5.9	3	31	5.2	14.5	4.4	86	3.0	5.0	3.1	4	89	2.3	4.1	3.4	
				9	27	6.6	6.6	18	9.1	7.6	4	17	6.9	19.3	5.8	49	4.0	6.7	4.1	5	57	2.9	5.1	4.2	
				11	18	8.0	8.0	12	11.2	9.2	5	11	8.7	24.2	7.3	31	5.0	8.4	5.1	6	40	3.5	6.1	5.0	
42W MR16 Halogen 12 Volt 	VNSP	9° 	3500	12300	8	192	1.3	1.3	125	1.7	1.5	4	96	6.9	2.6	1.3	272	4.0	1.3	0.9	7	163	4.0	1.5	1.3
					10	123	1.6	1.6	80	2.1	1.8	5	62	8.7	3.2	1.6	174	5.0	1.6	1.1	8	125	4.6	1.7	1.5
					12	85	1.9	1.9	55	2.5	2.2	6	43	10.4	3.8	1.9	121	6.0	1.9	1.3	9	99	5.2	1.9	1.6
					14	63	2.2	2.2	41	2.9	2.5	7	31	12.1	4.5	2.2	89	7.0	2.2	1.6	10	80	5.8	2.1	1.8
50W MR16 Halogen 12 Volt 	NSP T526	15° 	6000	9100	8	142	2.1	2.1	92	2.8	2.4	3	126	5.2	3.3	1.6	357	3.0	1.6	1.1	6	164	3.5	2.1	1.8
					10	91	2.6	2.6	59	3.5	3.0	4	71	6.9	4.4	2.1	201	4.0	2.1	1.5	7	121	4.0	2.5	2.1
					12	63	3.2	3.2	41	4.2	3.6	5	46	8.7	5.6	2.6	129	5.0	2.7	1.9	8	92	4.6	2.8	2.4
					14	46	3.7	3.7	30	4.9	4.3	6	32	10.4	6.7	3.2	89	6.0	3.2	2.2	9	73	5.2	3.2	2.7
					16	36	4.2	4.2	23	5.6	4.9	7	23	12.1	7.8	3.7	66	7.0	3.8	2.6	10	59	5.8	3.5	3.0
	NFL T527	25° 	6000	3200	6	89	2.7	2.7	58	3.6	3.1	2	100	3.5	4.2	1.8	283	2.0	1.9	1.3	4	130	2.3	2.4	2.0
					8	50	3.5	3.5	32	4.8	4.1	3	44	5.2	6.2	2.7	126	3.0	2.8	1.9	5	83	2.9	3.0	2.6
					10	32	4.4	4.4	21	6.0	5.1	4	25	6.9	8.3	3.5	71	4.0	3.7	2.5	6	58	3.5	3.6	3.1
					12	22	5.3	5.3	14	7.2	6.1	5	16	8.7	10.4	4.4	45	5.0	4.7	3.1	7	42	4.0	4.2	3.6
					14	16	6.2	6.2	11	8.4	7.2	6	11	10.4	12.5	5.3	31	6.0	5.6	3.8	8	32	4.6	4.8	4.1
	FL T528	40° 	6000	1700	3	189	2.2	2.2	123	3.0	2.5	1	213	1.7	4.8	1.5	601	1.0	1.7	1.0	2	276	1.2	2.0	1.7
					5	68	3.6	3.6	44	5.1	4.2	2	53	3.5	9.7	2.9	150	2.0	3.4	2.1	3	123	1.7	3.0	2.5
					7	35	5.1	5.1	23	7.1	5.9	3	24	5.2	14.5	4.4	67	3.0	5.0	3.1	4	69	2.3	4.1	3.4
					9	21	6.6	6.6	14	9.1	7.6	4	13	6.9	19.3	5.8	38	4.0	6.7	4.1	5	44	2.9	5.1	4.2
					11	26	4.9	4.9	17	6.6	5.6	5	16	8.7	10.4	4.4	45	5.0	4.7	3.1	6	58	3.5	3.6	3.1
	WFL	55° 	6000	900	3	100	3.1	3.1	65	4.6	3.6	1	113	1.7	22.3	2.1	318	1.0	2.9	1.5	2	146	1.2	3.1	2.4
5					36	5.2	5.2	23	7.6	6.0	2	28	3.5	**	4.2	80	2.0	5.7	2.9	3	65	1.7	4.6	3.6	
7					18	7.3	7.3	12	10.7	8.4	3	13	5.2	**	6.2	35	3.0	8.6	4.4	4	37	2.3	6.1	4.8	
9					11	9.4	9.4	7	13.7	10.8	4	7	6.9	**	8.3	20	4.0	11.4	5.9	5	23	2.9	7.6	6.0	
11					7	11.5	11.5	5	16.8	13.2	5	5	8.7	**	10.4	13	5.0	14.3	7.4	6	16	3.5	9.2	7.8	

Low Voltage HALOGEN

					Horizontal Surface								Vertical Surface														
LAMP	BEAM TYPE	BEAM SPREAD	RATED LIFE	CBCP	0 DEGREES				30 DEGREES				30 DEGREES					45 DEGREES				60 DEGREES					
					MH	FC	L	W	FC	L	W	D	FC	X	L	W	FC	X	L	W	D	FC	X	L	W		
50W MR16 Halogen IR 12 Volt 	SP	10° 	4000	15000	8	234	1.4	1.4	152	1.9	1.6		4	117	6.9	2.9	1.4	331	4.0	1.4	1.0		7	199	4.0	1.6	1.4
					12	104	2.1	2.1	68	2.8	2.4		5	75	8.7	3.6	1.7	212	5.0	1.8	1.2		8	152	4.6	1.9	1.6
					16	59	2.8	2.8	38	3.7	3.2		6	52	10.4	4.3	2.1	147	6.0	2.1	1.5		9	120	5.2	2.1	1.8
					20	38	3.5	3.5	24	4.7	4.0		7	38	12.1	5.0	2.4	108	7.0	2.5	1.7		10	97	5.8	2.3	2.0
	24	26	4.2	4.2	17	5.6	4.8		8	29	13.9	5.7	2.8	83	8.0	2.8	2.0		11	81	6.4	2.6	2.2				
	NFL	25° 	4000	5700	4	356	1.8	1.8	231	2.4	2.0		2	178	3.5	4.2	1.8	504	2.0	1.9	1.3		5	148	2.9	3.0	2.6
					8	89	3.5	3.5	56	4.8	4.1		3	79	5.2	6.2	2.7	224	3.0	2.8	1.9		6	103	3.5	3.6	3.1
					12	40	5.3	5.3	26	7.2	6.1		4	45	6.9	8.3	3.5	126	4.0	3.7	2.5		7	76	4.0	4.2	3.6
					16	22	7.1	7.1	14	9.6	8.2		5	29	8.7	10.4	4.4	81	5.0	4.7	3.1		8	58	4.6	4.8	4.1
	20	14	8.9	8.9	9	12.0	10.2		6	20	10.4	12.5	5.3	56	6.0	5.6	3.8		9	46	5.2	5.4	4.6				
	FL	40° 	4000	2850	4	178	2.9	2.9	116	4.1	3.4		1	356	1.7	4.8	1.5	1008	1.0	1.7	1.0		4	116	2.3	4.1	3.4
					6	79	4.4	4.4	51	6.1	5.0		2	89	3.5	9.7	2.9	252	2.0	3.4	2.1		5	74	2.9	5.1	4.2
8					45	5.8	5.8	29	8.1	6.7		3	40	5.2	14.5	4.4	112	3.0	5.0	3.1		6	51	3.5	6.1	5.0	
10					29	7.3	7.3	19	10.2	8.4		4	22	6.9	19.3	5.8	63	4.0	6.7	4.1		7	38	4.0	7.1	5.9	
12	20	8.7	8.7	13	12.2	10.1		5	14	8.7	24.2	7.3	40	5.0	8.4	5.1		8	29	4.6	8.1	6.7					
50W MR16 Halogen 24 Volt Lensed 	NSP	15° 	4000	8400	8	131	2.1	2.1	85	2.8	2.4		3	117	5.2	3.3	1.6	330	3.0	1.6	1.1		6	152	3.5	2.1	1.8
					10	84	2.6	2.6	55	3.5	3.0		4	66	6.9	4.4	2.1	186	4.0	2.1	1.5		7	111	4.0	2.5	2.1
					12	58	3.2	3.2	38	4.2	3.6		5	42	8.7	5.6	2.6	119	5.0	2.7	1.9		8	85	4.6	2.8	2.4
					14	43	3.7	3.7	28	4.9	4.3		6	29	10.4	6.7	3.2	82	6.0	3.2	2.2		9	67	5.2	3.2	2.7
	FL	40° 	4000	1570	16	33	4.2	4.2	21	5.6	4.9		7	21	12.1	7.8	3.7	61	7.0	3.8	2.6		10	55	5.8	3.5	3.0
					3	174	2.2	2.2	113	3.0	2.5		1	196	1.7	4.8	1.5	555	1.0	1.7	1.0		2	255	1.2	2.0	1.7
					5	63	3.6	3.6	41	5.1	4.2		2	49	3.5	9.7	2.9	139	2.0	3.4	2.1		3	113	1.7	3.0	2.5
					7	32	5.1	5.1	21	7.1	5.9		3	22	5.2	14.5	4.4	62	3.0	5.0	3.1		4	64	2.3	4.1	3.4
	TL947-24V	40°	4000	1570	9	19	6.6	6.6	13	9.1	7.6		4	12	6.9	19.3	5.8	35	4.0	6.7	4.1		5	41	2.9	5.1	4.2
					11	13	8.0	8.0	8	11.2	9.2		5	8	8.7	24.2	7.3	22	5.0	8.4	5.1		6	28	3.5	6.1	5.0



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