

XALV PL LOW VOLTAGE INSTALLATION INSTRUCTIONS

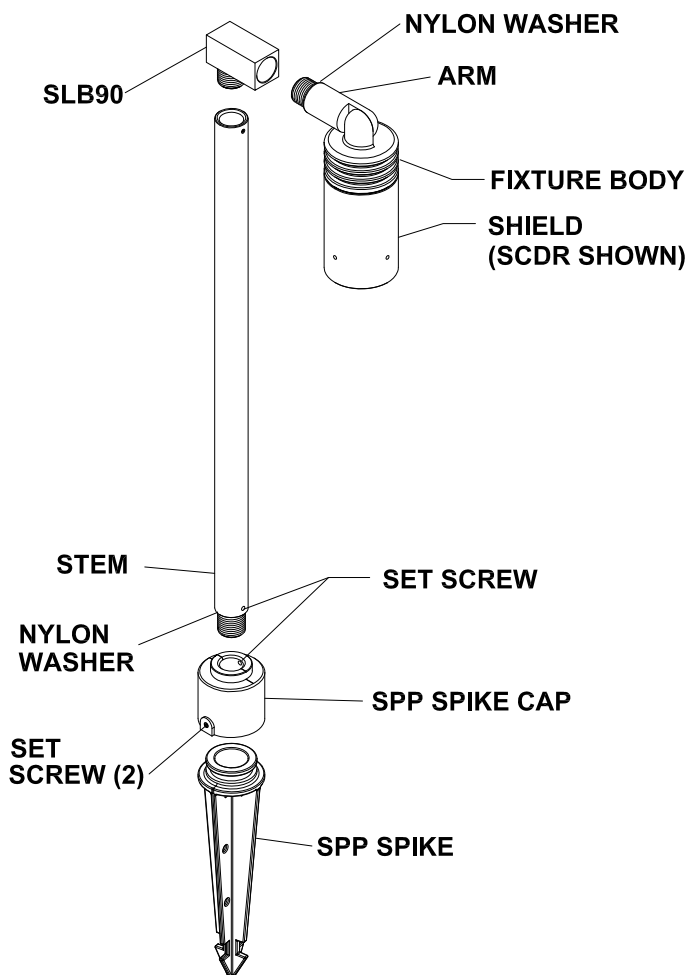
- WARNING:** BEFORE PROCEEDING, READ ALL INSTRUCTIONS CAREFULLY TO INSURE PROPER AND SAFE INSTALLATION.
- WARNING:** RISK OF FIRE OR ELECTRICAL SHOCK. DISCONNECT POWER BEFORE INSTALLING OR SERVICING.
- WARNING:** RISK OF ELECTRICAL SHOCK. HIGH TEMPERATURES INSIDE LUMINAIRE. MAKE CERTAIN LINE VOLTAGE CORRESPONDS WITH STEPDOWN TRANSFORMERS PRIMARY VOLTAGE. (SEE TRANSFORMER LABEL)
- WARNING:** ALL WIRING TO BE PERFORMED PER NATIONAL ELECTRICAL CODE AND LOCAL CODE BY A QUALIFIED ELECTRICIAN.
- IMPORTANT:** WHEN SERVICING, ALWAYS WEAR EYE PROTECTION. MAKE SURE AREA BELOW FIXTURE IS CLEAR.
- NOTE:** IF LED MODULE IS DIRTY, OPERATING HOURS AND PERFORMANCE WILL SIGNIFICANTLY DECREASE.

IMPORTANT SAFETY INSTRUCTIONS INSTRUCTIONS PERTAINING TO A RISK OF FIRE OR INJURY TO PERSONS CAUTION! LIGHTED FIXTURE & LED MODULE ARE HOT!

WARNING: TO REDUCE THE RISK OF FIRE OR INJURY TO PERSONS FOLLOW THESE IMPORTANT SAFETY INSTRUCTIONS.

1. FIXTURES GET HOT QUICKLY! TURN OFF/UNPLUG AND ALLOW TO COOL BEFORE REPLACING LED MODULE. CONTACT ONLY SWITCH OR PLUG WHEN TURNING ON OR OFF.
2. DO NOT TOUCH HOT LENS, SHIELD, REAR BODY, OR ARM WHEN FIXTURE IS OPERATING OR RECENTLY TURNED OFF.
3. KEEP FIXTURE AWAY FROM COMBUSTIBLE MATERIALS. CONTACT WITH HOT FIXTURE MAY START A FIRE!
4. DO NOT INSTALL WITHIN 10 FEET OF A POOL, SPA, FOUNTAIN, OR OTHER BODY OF WATER.
5. DO NOT OPERATE WITH MISSING OR DAMAGED PARTS.
6. SAVE THESE INSTRUCTIONS

PATHWAY MOUNTING SLB90 SINGLE MOUNT ON SPP SPIKE



- XALV PL FIXTURE MOUNTING ON SLB90 MOUNT, MSXX STEM, & SPP SPIKE MOUNTED ALONG PATHWAY
1. MAKE SURE NYLON WASHER IS IN PLACE ON FIXTURE ARM.
 2. FEED FIXTURE LEADS THRU SLB90 MOUNT HUB, AND SCREW ARM FULLY INTO MOUNT.
 3. FEED FIXTURE LEADS THRU MSXX STEM & SCREW STEM FULLY ONTO SLB90 MOUNT.
 4. USING 2 X 4 & HAMMER POUND SPP SPIKE INTO DESIRED FIXTURE MOUNTING LOCATION.
 4. FEED FIXTURE LEADS THRU WIREWAYS ON SPP SPIKE, AND PLACE FIXTURE/CAP ASSY ONTO SPP. ROTATE TO DESIRED AIMING DIRECTION & TIGHTEN 2EA SET SCREWS WITH 3/32 HEX KEY.
 5. MAKE FINE ROTATIONAL ADJUSTMENT OF ARM IN SPIKE CAP, AND TIGHTEN SET SCREW WITH 5/64 HEX KEY TO LOCK IN POSITION.
 6. CONNECT FIXTURE TO MAIN LV CABLE SEE PG-3 ELECTRICAL CONNECTIONS.
 7. TO ADJUST FINAL AIMING ANGLE, & TIGHTEN SET SCREWS AT ALL POINTS TO LOCK IN ADJUSTMENTS.
 8. TO SERVICE FIXTURE SEE PG-3 FOR DETAILED INSTRUCTION.

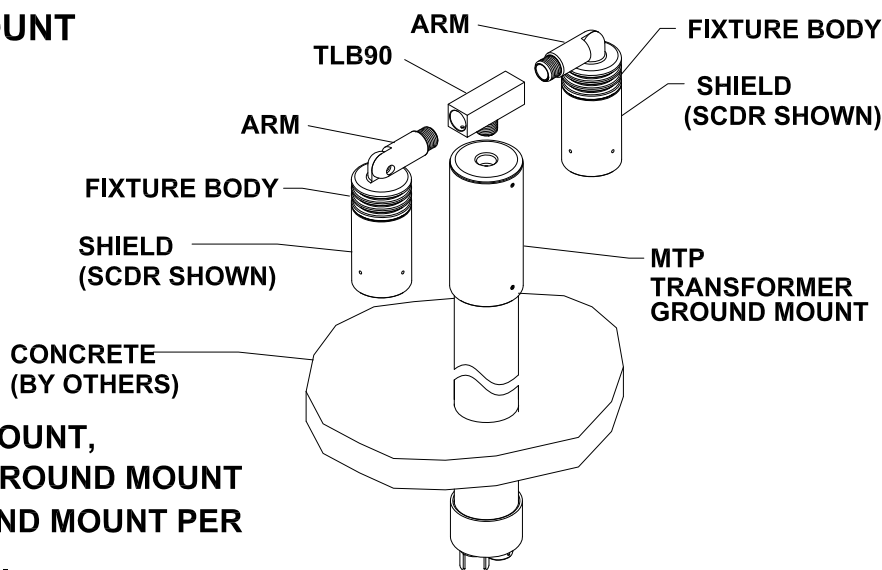


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INSTALLATION QUESTIONS?
CALL LSI FIELD SERVICE
800-436-7800 EXT 3300
FAX 513-984-9723

XALV PL LOW VOLTAGE INSTALLATION INSTRUCTIONS

PATHWAY MOUNTING PL TWIN MOUNT ON MTP TRANSFORMER MOUNT



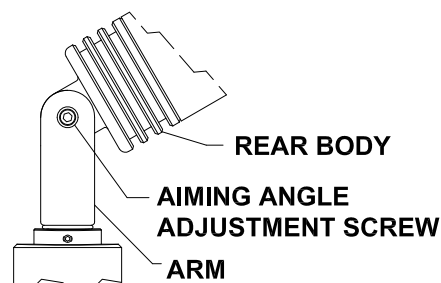
XALV PL TWIN MOUNTED ON TLB90 MOUNT,
MSXX STEM, & MTP TRANSFORMER GROUND MOUNT

1. INSTALL MTP TRANSFORMER GROUND MOUNT PER INSTRUCTIONS INCLUDED WITH MTP.
2. MAKE SURE POWER IS TURNED OFF TO MTP BEFORE CONNECTING XALV PL FIXTURES.
3. ALL THREADED CONNECTIONS MUST BE SEALED WITH TEFLON TAPE OR PIPE SEALANT TO MAKE CERTAIN WATER IS EXCLUDED. USE SILICONE GEL FILLED WIRE NUTS SUPPLIED.
4. REMOVE MTP MOUNT CAP, AND SCREW TLB90 FULLY INTO CAP, THEN SCREW 1/2 LOCKNUT ONTO TLB90 NIPPLE TO LOCK ROTATION.
5. FEED FIXTURE LEADS THRU TLB90, AND SCREW FIXTURES FULLY INTO TLB90.
6. MAKE CONNECTIONS FROM FIXTURES TO MTP 12V XFORMER SECONDARY LEADS WITH WIRENUTS PROVIDED WITH XALV PL FIXTURES.
7. INSTALL MTP TOP CAP BACK INTO MTP HOUSING, ORIENT FIXTURES & TIGHTEN SET SCREWS.
8. MAKE DESIRED AIMING ADJUSTMENTS, AND TIGHTEN ALL SET SCREWS TO LOCK.

AIMING ANGLE ADJUSTMENT

XALV PL AIMING ANGLE ADJUSTMENT

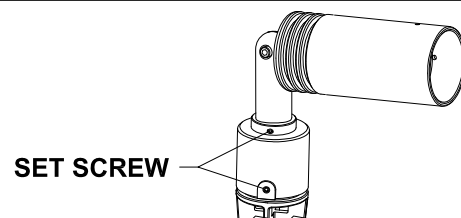
1. LOOSEN ADJUSTMENT SCREW WITH 5/32 HEX KEY
2. TILT FIXTURE TO DESIRED AIMING ANGLE
3. TIGHTEN ADJUSTMENT SCREW WITH 5/32 HEX KEY



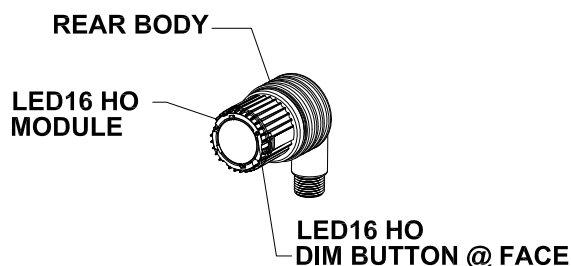
ROTATIONAL ADJUSTMENT

XALV PL ROTATIONAL ADJUSTMENT

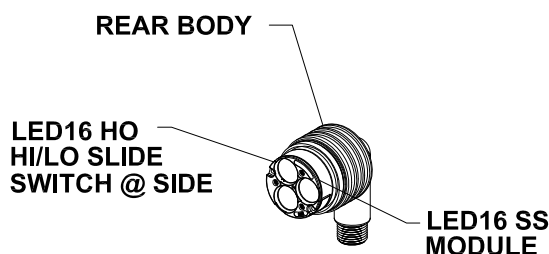
1. LOOSEN SET SCREW WITH 5/64 HEX KEY
2. ROTATE FIXTURE TO DESIRED AIMING ANGLE
3. TIGHTEN SET SCREW WITH 5/64 HEX KEY



ADJUSTING LED16 MODULE BRIGHTNESS



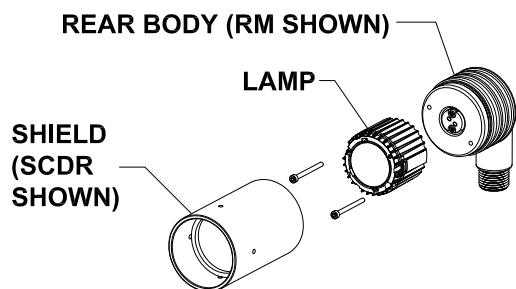
LED16 HO PUSH BUTTON TO ADJUST BRIGHTNESS
USE PEN TO TOGGLE BETWEEN 4 INTENSITY SETTINGS



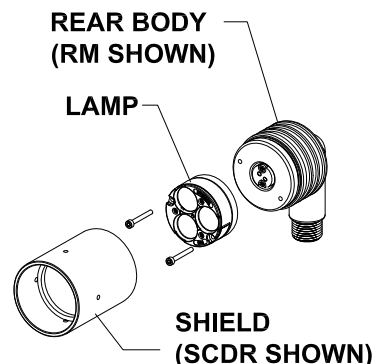
LED16 SS SLIDE SWITCH TO ADJUST BRIGHTNESS
USE PEN TO SWITCH BETWEEN HI/LO SETTINGS

XALV PL LOW VOLTAGE INSTALLATION INSTRUCTIONS

SERVICING LED16 MODULE 12V HO



12V LED16 SS



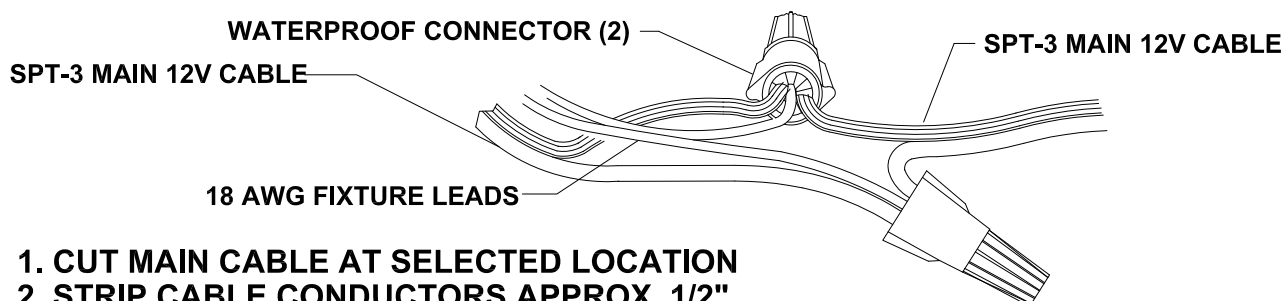
XALV PL FIXTURE LED16 MODULE SERVICE

1. ROTATE SHIELD COUNTER CLOCKWISE & UNSCREW FROM REAR BODY.
2. REMOVE LED MODULE RETAINING SCREWS (2X).
3. PULL LED MODULE STRAIGHT OUT OF SOCKET.
3. HOLDING RIM OF MODULE, ALIGN PINS & PUSH NEW MODULE INTO SOCKET.
4. RE-INSTALL LED MODULE RETAINING SCREWS (2X), AND TIGHTEN UNTIL MODULE HEATSINK IS IN TIGHT CONTACT WITH REAR BODY OF FIXTURE.
5. IF SHIELD / REAR BODY O-RING IS DRY LUBRICATE WITH DOW CORNING 55 O-RING LUBRICANT. CONTACT LSI TO PURCHASE DOW CORNING 55 LUBRICANT IN 5.3-OZ TUBES.
6. REPLACE SHIELD BY SCREWING CLOCKWISE ONTO REAR BODY. TIGHTEN UNTIL SHIELD SEATS AGAINST REAR BODY. ORIENT WEEP HOLES OR DRAINAGE OPENINGS TO ALLOW WATER & DEBRIS TO BE WASHED FROM LENS.
7. CLEAN GLASS LENS WITH AMMONIA BASED CLEANER OR VINEGAR TO REMOVE MINERAL SCALE. CLEAN LENS AT LEAST ANNUALLY FOR OPTIMUM LIGHTING.

ELECTRICAL CONNECTION OF FIXTURE TO POWER UNIT

WARNING: TURN POWER UNIT OFF BEFORE CUTTING CABLE AND MAKING CONNECTIONS.

THE XALV SPLICE CONNECTORS PROVIDED WITH FIXTURE ARE WATERPROOF & ACCEPT NO.22 AWG THRU 10 AWG WIRE. (MIN. (4) NO. 20 AWG, MAX (3) NO. 12 AWG)



1. CUT MAIN CABLE AT SELECTED LOCATION
2. STRIP CABLE CONDUCTORS APPROX. 1/2".
3. CONNECT FIXTURE AS SHOWN MAKING SURE TO OBSERVE POLARITY OF MAIN CABLE FROM POWER UNIT. TWIST CONNECTORS FIRMLY.
4. ROUTE CABLE IN CLOSE PROXIMITY TO FIXTURE, MOUNT, OR BUILDING STRUCTURE TO PROTECT CONDUCTORS. SPLICE CONNECTIONS SHOULD BE 6" MAX. FROM FIXTURES.



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LSI Industries Inc. ♦ 10000 Alliance Road ♦ Cincinnati, OH 45242 ♦ 513-793-3200 ♦ www.lsi-industries.com ♦ Fax (513) 984-0147

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XALV PL LOW VOLTAGE INSTALLATION INSTRUCTIONS

BASIC FUNDAMENTALS OF LOW VOLTAGE LIGHTING

DESIGNING LOW VOLTAGE LIGHTING SYSTEMS TO MINIMIZE VOLTAGE DROP, AND MAXIMIZE UNIFORMITY OF LIGHTING EFFECT IS EVERY INSTALLERS GOAL. THERE ARE A FEW FACTORS, AND SEVERAL TECHNIQUES TO CONSIDER WHEN DESIGNING A LOW VOLTAGE LIGHTING SYSTEM. A MAXIMUM VOLTAGE DROP OF 10% OR MINIMUM VOLTAGE OF 10.8 VOLTS AT ANY POINT IN THE SYSTEM IS DESIRED. TO ACHIEVE NO MORE THAN A 10% VOLTAGE DROP USE THE FOLLOWING TECHNIQUES:

1. CABLE LAYOUT DESIGN USING MULTIPLE STRAIGHT RUNS IN SEVERAL DIRECTIONS. TEE CONNECTIONS REDUCE VOLTAGE DROP BY USING HEAVIER GAUGE CABLE FOR PRIMARY FEED. LOOPING THE MAIN CABLE GREATLY REDUCES VOLTAGE DROP, AND PROVIDES BETTER LIGHT UNIFORMITY. CARE MUST BE TAKEN TO MATCH CABLE POLARITY WHEN CONNECTING TO POWER UNIT.
2. CENTRALLY LOCATE YOUR POWER UNIT, OR IF BUDGET PERMITS USE SEVERAL SMALL POWER UNITS AT MULTIPLE LOCATIONS.
3. USE A MULTIPLE TAP SECONDARY POWER UNIT THAT PROVIDES 12V, 13V, 14V, OR 15V OUTPUT. MULTIPLE TAP POWER UNITS ARE VERY EFFECTIVE WHEN RUNNING LONGER DISTANCES, OR WHERE THE 1ST FIXTURE IS QUITE FAR FROM THE POWER UNIT. TO DETERMINE WHICH TAP TO USE MEASURE ACTUAL VOLTAGE WITH A DIGITAL VOLTMETER AT 1ST FIXTURE. FOR EXAMPLE START OUT USING THE 12V TAP, & MEASURED 1ST FIXTURE VOLTAGE IS 10V, SUBTRACT $(12V - 10V) = 2V$ CORRECTION REQUIRED, $(12V + 2V) = 14V$ TAP IS REQUIRED FOR PROPER VOLTAGE.
4. USE PROPER GAUGE CABLE FOR THE LOAD & RUN LENGTH. VERIFY WITH AMP PROBE YOU HAVE NO MORE THAN 16 AMPS ON EACH 12/2 CABLE, AND NO MORE THAN 25 AMPS FOR ANY LARGER CABLE (10GA OR 8GA).
5. AT THE POWER UNIT USE YOUR AMP PROBE TO VERIFY YOU HAVE NOT EXCEEDED THE MAXIMUM ALLOWABLE AMPERAGE FOR THE STEPDOWN TRANSFORMER. SEE POWER UNIT RATINGS LABEL FOR MAXIMUM CURRENT ALLOWABLE.
6. TO CALCULATE VOLTAGE DROP ON A CABLE RUN USE THE FOLLOWING FORMULA:

$$\text{AMPS} = \frac{\text{WATTS}}{\text{VOLTS}}$$

EXAMPLE: $\text{AMPS} = \frac{100W}{12V} = 8.33A$ $(8.33A \times 100FT \times 2 \times .00162) = 2.698V$ DROP
IN A 100FT RUN OF 12GA CABLE

VOLTAGE DROP RESISTANCE PER FOOT OF CABLE (CONSTANTS)					
WIRE SIZE	18GA	0.006385	10GA	0.001080	
	16GA	0.004016	8GA	0.000640	
	14GA	0.002525	6GA	0.000395	
	12GA	0.001620	4GA	0.000249	

