

Louisiana
Department of Transportation
And
Development

**Traffic Control Standard
Number 1A**

Mast Arm Bracket for Signal Heads



3/15/2019

Revised March 15, 2019

GENERAL

The signal head mast arm mounting brackets specified herein, will be used to mount standard traffic signal heads and optically programmed signal heads to rigid cylindrical structures. The devices shall conform to the latest AASHTO standards for wind loading and ITE standards for attaching to the signal. The AASHTO and ITE standards will be followed except where exceptions are taken within this standard.

SAP Material Master No. 10956: Mast Arm Mounting Bracket for Standard Signal Heads
SAP Material Master No. 51344: Mast Arm Mounting Bracket for Optically Programmed Signal Heads

DESIGN

The signal head mast arm mounting brackets shall be multi piece assemblies that provide adjustable components to mount a signal in horizontal or vertical positions relative to the roadway surface. The devices shall mount to any type of structure and provide complete adjustment of the mounting hardware, as shown in Figure 1 and Figure 2, to align the traffic signal toward the driver. Adjustment and installation shall be accomplished by use of simple hand tools without the need to modify, mill, drill, or thread the supporting structure.

The mast arm mounting brackets shall include the following:

- Clamp Assembly
 - Main Mount (back)
 - Cable locking plates (front sides)
 - Swivel Plate (front middle) with tube clamp(s)
 - Cable(s)
 - Nuts
 - Bolts
 - Washers
- Tube
- Upper Arm
- Lower Arm

CLAMP ASSEMBLY

Main Mount and Cable Locking Plates:

The main mount shall be approximately 9-1/2 inches long and 4-1/2 inches wide and a uniformly curved or v-shaped mounting surface. The mounting surface shall rest against the mast arm and be held in place by a cable or cables attached to the main mount and wrapped around the structure to provide stable positioning of the mount against various shaped structures.

The main mount of the cable assembly, shall be designed to allow a swivel plate to be secured to the main mount using bolts and washers placed through the slotted holes of the swivel plate and into the threaded bosses of the main mount. The main mount shall be provided with two (2) sets of bosses located ninety degrees (90°) apart. The main mount and swivel plate shall be designed to provide an alignment mechanism for positioning the plate correctly on the main mount, an axis for rotating the swivel plate on the main mount, and alignment of the swivel plate's slotted holes with the main mounts threaded bosses

The cable locking plate shall attach to the main mount with bolts to secure the cable(s) to the main mount. During installation of the main mount, the locking plates shall allow the cable(s) to be hand tightened against the mast arm by permitting the free end to be pulled through the locking plate. Once the locking plate is tightened against the cable(s), the cable(s) is then tightened against the mast arm using the nuts and washers installed on the cable assembly.

Swivel Plate:

The swivel plate shall be approximately 5 inches in diameter and cast in one piece providing a matched surface to the main mount. The swivel plate shall have slotted holes and a removable tube clamp(s) to allow for adjustment and attachment to the main mount. An alignment boss shall be provided on the swivel plate that will fit into an alignment hole, approximately 2 inches in diameter, centered in the main mount. Prior to attaching the plate to the main mount with bolts, the swivel plate shall have an unrestricted rotation of three hundred and sixty degrees (360°). After attaching the plate to the main mount with bolts, the swivel plate shall be able to rotate a minimum of fifty-four degrees (54°).

The removable tube clamp(s) shall have bosses and bolts to secure it to the swivel plate. The tube clamp(s) shall be designed to compress around the aluminum tube to prevent movement in any direction when the manufacturer specified torque on the bolts is applied.

Cable Assemblies:

The cable assembly shall have either one (1) or two (2) cables that are a minimum of 3/16-inch diameter stainless steel aircraft cable.

Cable assemblies with one (1) cable shall have, on each end, a securely attached threaded stud, a hex locking nut that shall not bind, and a flat washer. As shown in Figure 1 and Figure 2, the single cable shall be 96 inches long including the threaded studs.

Cable assemblies with two (2) cables shall have, on one end of each cable, a securely attached threaded stud with a hex locking nut that shall not bind, and a flat washer. The free end of each cable must be fused, crimped or welded to prevent fraying. As shown in Figure 1 and Figure 2, each cable shall be 50 inches long including the threaded stud.

ALUMINUM TUBE

The tube shall be manufactured from aluminum alloy 6061-T6 material with a minimum thickness of schedule 40 and a minimum length of 60 inches. The outside of the tube shall be smooth for positioning within the tube clamp(s) on the swivel plate throughout the length of the tube. All threaded tubes shall have a thread protector installed to protect the threads from damage during shipping.

MOUNTING BRACKET ARMS

Each mounting arm shall be designed to slip fit onto the aluminum tube and be secured to the tube using set screws. Upper arms shall be able to be positioned at any point on the tube. The lower arm shall have a wireway from the interior of the lower arm into the tube with a black ABS plastic cap to cover the wireway.

Mounting Bracket Arms for Standard Signal Heads:

Each arm, upper and lower, shall be 6 ½ inches in length and cast in one (1) piece. A serrated fitting shall be provided to fit against the mounting point of the signal and secured to the signal using a single bolt/tri-stud mount for the upper arm and a tri-stud mount for the lower arm, with a washer device. The lower arm shall have a stop for the tube to be positioned against when the arm is secured to the tube.

Mounting Bracket Arms for Optically Programmed Signal Heads:

Each arm, upper and lower, shall be 16 inches in length, cast in one (1) piece. The upper and lower arm shall have a 1-1/2 inch, 11-1/2 National Pipe Straight Mechanical (NPSM) nipple fitting, a minimum 2 inches in length, to fit against the mounting point of the signal and secured using set screws.

CAST MATERIAL

All cast parts shall be 713 alloy aluminum that shall meet ASTM B179 standards.

PACKAGING

Each SAP Material Master including all hardware, parts, and components shall be packaged together to make a complete unit as specified. Split units packaged for bulk shipment will not be accepted.



