

**MOFFATT INC**



## Flexible Arm Design Guide

Moffatt Flexible Arms can be custom ordered to your exact needs!

This Design Guide was developed for **OEMs (Original Equipment Manufacturers)** to discover the possibilities which Moffatt has to offer, so you can create your own custom-designed, flexible arm sample.



**Moffatt Products** makes "gooseneck" flexible arm assemblies for all kinds of OEMs and user applications. We have standard lengths, colors, and mounts or we'll design a custom solution just for you. You'll find an easy to fill out "Create A Sample" form at the end of this brochure for you to fill out and fax to us. Please feel free to call us at **1 800 346 0761** so we can speak directly with you about your needs. The more you can tell us about your application and your specific needs, the more we can help you get the arm just right.

***We look forward to working with you!***

**We're more than you expect!**

# Flexible Arm Design Guide

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### RELATED PRODUCTS AVAILABLE

Flexible Arms are only part of the Moffatt product line.  
 For information on our task lighting, magnifiers and safety shields,  
 see our website at [www.moffattproducts.com](http://www.moffattproducts.com) or give us a call at 800-346-0761.



**Our Basic Options are some manufacturer's special order specifications.**

# BASIC OPTIONS

- **Sizes:** The following chart details our seven most common sizes, though special larger and smaller diameters are available. See pages 9 and 10 for how much load each size will hold. Load is usually what determines size, but sometimes factors like inner diameter requirements or "looks" determine the size for a specific application. We can help you with these choices.

Arm Type	Type A	Type B	Type C	Type M	Type O	Type P	Type R
Outer Diameter	.675"	.640"	.580"	.460"	.395"	.360"	.340"
Inner Diameter	.325"	.325"	.320"	.263"	.157"	.203"	.160"

- **Lengths:** Standard lengths are generally every three inches from 3" to 30", and that's how we refer to most arm lengths. The choice of end fittings determines the actual overall length. Custom lengths are available.



**Our Basic Options are some manufacturer's special order specifications.**

# BASIC OPTIONS CONT.

## For Arm Type C (.580 diameter) and Larger

- **Color Options:** Gloss Colors include black, dark blue, red, gold, gray, beige, autumn white, warm white, and bright white. Matte Colors include black and smoke tan. Custom colors are available depending on quantity.

## For Arm Type M (.460 diameter) and Smaller

- **Color Options:** Gloss black, white, and gray.

### GLOSS COLORS



### MATTE COLORS



The color choices shown above are an approximate representation of our standard choices. To receive our Color Sample Kit with actual material samples for direct color matching, please call or email us.

## Rigid and Dual Arms

Moffatt can create vinyl-covered arms from rigid steel tubing and pre-bend them to specific shapes. We also produce "dual" arms with rigid tubing joined to flexible arms. Dual arms can be used to reach farther than a flexible arm by using the

strength of the rigid tubing for the base of the arm and using flexible material only for the portion near the top that needs adjusting. Last, we can couple together flexible arms of different strengths for similar reasons.



**We can make the connection that fits any base you need!**

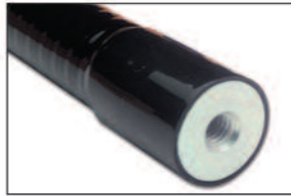
# STANDARD FITTINGS, CONNECTORS & BASES

Choose from these standard ends for **Type C (.580 diameter)** and larger flex arms.

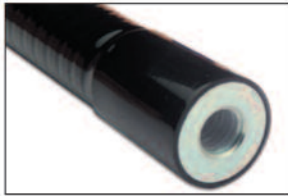
**Type M (.460 diameter)** and smaller arm sizes have more limited choices (ex. 1/8 - 27 NPSM or 1/4 - 20) or require a custom solution. Request samples or drawings as needed.

## FEMALE THREADS:

Choose from the following common threads or specify any thread you need.



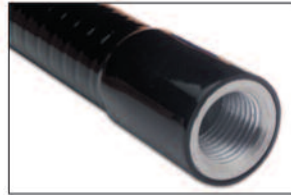
1/4 - 20



3/8 - 16



3/8 - 24 UNF



9/16 - 18



5/8 - 27 UNF (microphone)

## MALE THREADS:

These common threads are available. Standard male threads are all 1/2" long and locknuts are available for all threads. You can also specify custom male threads.

### CONVENTIONAL THREADS



1/4 - 20



3/8 - 16



3/8 - 24 UNF



5/8 - 27 UNF  
(microphone)

### STRAIGHT PIPE THREADS



1/8 - 27 NPSM  
(1/8 straight pipe)



3/8 - 18 NPSM  
(3/8 straight pipe)



3/8 - 18 NPSM  
(3/8 straight pipe  
with hex)



**We can make the connection that fits any base you need!**

# STANDARD FITTINGS, CONNECTORS & BASES

## For Type C (.580 diameter) and Larger

**SHAFT FITTINGS:** Our standard shaft fitting is 5/8" OD and 1-1/4" long, for mounting in a pre-drilled hole and is usually secured by a set screw. Any diameter and length can be produced.

**DIRECT SIDE MOUNT:** Our direct side mount is a great side-mount or wall-mount. It uses two 1/2" screws for mounting, and allows any wiring to pass through the mounting surface.

**DIRECT MOUNT:** This surface mount also uses two 1/2" screws, and permits any wiring to either exit from the side of the mount or pass right through the mounting surface



Shaft Fitting

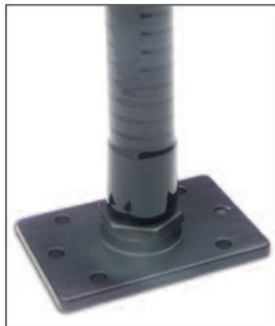


Direct Side Mount



Direct Mount

**PLATES OR BRACKETS:** A wide variety of die-cast plates or stamped brackets are designed for use with our 3/8 straight pipe thread fittings. Custom brackets can be developed.



Rectangular Plate  
With #8 Holes



Universal Plate  
With #10 Holes



Right-Angle Bracket  
With Two 1/4" Holes



Long Flat Bracket  
With 3/8" Hole



Short Flat Bracket  
With 1/4" Hole



Flanged Bracket  
With #10 Holes



**We can make the connection that fits any base you need!**

# STANDARD FITTINGS, CONNECTORS & BASES CONT.

## For Type C (.580 diameter) and Larger



Offset  
Quick-Coupler Base



Right Angle  
Quick-Coupler Base

**QUICK-COUPLER MOUNTS:**  
Try our unique quick-disconnect couplers which mount on steel mounting studs or interchangeable magnetic, c-clamp, or weighted bases!



Magnetic Base

*Just 2 of the available Quick-Coupler base options! Many others are available, ask us!*



C-Clamp  
Base



*The Moffatt Quick-Coupler easily attaches any Flex Arm with any Base, without special tools!*



MS1



MS2

**Quick-Coupler  
Mounting Studs  
& Bracket**



MS1/MSRA



Magnet Base



C-Clamp  
Base

**MAGNET AND CLAMP MOUNTS:** Magnet and clamp mounts are available which attach directly to a flex arm for all arm types.

**SPECIALS:** Shown below are just a few of the unusual fittings we've created for special projects.



**Our flexible arms offer unlimited adjustment possibilities and long term holding power!**

# HOW MUCH LOAD WILL A FLEX ARM SUPPORT?

You'll be surprised at the strength of a Moffatt Flexible Arm! The answer to exactly how much load a given arm will support depends on several factors. The obvious ones are the flex arm length, the load, and

the distance to the center of the load from the tip of the flex arm because this adds more leverage to the load. Not so obvious factors are vibration, any shock loading (such as in

a moving vehicle), frequency of adjustment (a flex arm gives up a certain amount of its strength with repeated adjustments because it operates by friction), and the overall position of the flex arm (the spring action of the arm supports the most load with the base of the arm starting out in a vertical position, if that's possible). Moffatt makes flex arms in a variety of stiffnesses and the load capacity of even the stiffest arm can be increased with an internal stiffener or by substituting rigid tubing for a portion of the base of the arm. Flex arms of different stiffness can even be joined in a dual construction for special applications.

In general, don't specify more flex arm length than you really need – the shortest flex arm that will accomplish the task will

be the most durable and satisfactory choice. The load capacity tables on pages 9 and 10, contain our recommended maximum loads for common flex arm constructions that we



produce. The flex arm will actually support higher loads, but these are loads that can be specified with confidence under average conditions. Of course the only way to determine

the true capacity of a specific flex arm is to test it thoroughly in the actual application. That's why we believe strongly in supplying samples for your own testing.

Note: The charts include our ten most common sizes in standard constructions. Softer versions of each flex arm are also available and internal stiffeners can be added to increase these loads (but the stiffener fills up the inside diameter). If you like one of these sizes but want different properties, let us know.



**Moffatt flexible arms have unlimited adjustability!**

# MAXIMUM LOADS FOR VERTICALLY MOUNTED FLEX ARMS



Flex Arm	A	B	C	F	G	H	M	O	P	R
OD plain <sup>1</sup>	.675	.640	.580	.590	.545	.668	.460	.395	.360	.340
OD covered <sup>2</sup>	.730	.695	.655	.660	.625	.735	.500	.435	.400	.380
ID	.325	.325	.320	.260	.255	.400	.263	.157	.203	.160
WIRE DIA	.155	.135	.118	.156	.135	.120	.090	.099	.072	.086
description	standard large arms, widest choice of fittings <sup>3</sup>			special stiff	special stiff	special large ID	standard small arms, limited choice of threaded fittings			
6"	12.0 lb	9.0 lb	7.0 lb	18 lb	10.4 lb	5.0 lb	2.3 lb	3.5 lb	1.6 lb	2.9 lb
9"	8.5 lb	6.0 lb	4.9 lb	9.0 lb	6.3 lb	3.1 lb	1.4 lb	1.8 lb	1.0 lb	1.5 lb
12"	6.3 lb	4.0 lb	3.6 lb	7.5 lb	4.3 lb	2.2 lb	0.9 lb	0.9 lb	0.6 lb	0.6 lb
15"	4.7 lb	3.0 lb	2.3 lb	6.0 lb	3.2 lb	1.7 lb	0.6 lb	0.8 lb	0.5 lb	0.5 lb
18"	3.4 lb	2.5 lb	1.7 lb	5.0 lb	2.7 lb	1.4 lb	0.5 lb	0.6 lb	0.4 lb	0.3 lb
21"	2.6 lb	2.0 lb	1.3 lb	4.0 lb	2.2 lb	0.9 lb	0.4 lb	0.4 lb	0.3 lb	0.2 lb
24"	2.2 lb	1.5 lb	1.0 lb	2.8 lb	1.7 lb	0.7 lb	0.3 lb	0.3 lb	0.2 lb	0.1 lb
27"	1.6 lb	1.0 lb	0.8 lb	2.0 lb	-	0.6 lb	0.2 lb	-	-	-
30"	1.4 lb	0.8 lb	-	1.6 lb	-	0.3 lb	-	-	-	-
33"	1.2 lb	-	-	1.4 lb	-	-	-	-	-	-
36"	0.8 lb	-	-	1.0 lb	-	-	-	-	-	-

<sup>4</sup> Recommended loads at different lengths, all dimensions in inches.

**Notes:**

1. OD plain is the diameter of the flex arm before any covering is added.  
Typical variation is ± .010" or less.
2. OD covered is the nominal outer diameter with vinyl covering.
3. Certain cast fittings like couplers and direct mounts are only available for arms A through H.
4. If the center of the load is beyond the tip of the flexible arm, use data for a longer arm length.



**Moffatt's strong vinyl-covered flex arms will support almost anything!**

# MAXIMUM LOADS FOR HORIZONTALLY MOUNTED FLEX ARMS



Flex Arm	A	B	C	F	G	H	M	O	P	R
OD plain <sup>1</sup>	.675	.640	.580	.590	.545	.668	.460	.395	.360	.340
OD covered <sup>2</sup>	.730	.695	.655	.660	.625	.735	.500	.435	.400	.380
ID	.325	.325	.320	.260	.255	.400	.263	.157	.203	.160
WIRE DIA	.155	.135	.118	.156	.135	.120	.090	.099	.072	.086
description	standard large arms, widest choice of fittings <sup>3</sup>			special stiff	special stiff	special large ID	standard small arms, limited choice of threaded fittings			
3"	9.6 lb	9.1 lb	8.0 lb	18 lb	11.5 lb	8.6 lb	3.5 lb	3.5 lb	3.1 lb	1.0 lb
6"	7.2 lb	6.5 lb	5.5 lb	8.4 lb	6.8 lb	3.9 lb	1.4 lb	1.4 lb	1.2 lb	0.6 lb
9"	4.4 lb	3.6 lb	3.4 lb	5.1 lb	3.9 lb	2.5 lb	0.9 lb	0.9 lb	0.7 lb	0.5 lb
12"	2.8 lb	2.4 lb	2.2 lb	3.6 lb	2.6 lb	1.6 lb	0.6 lb	0.6 lb	0.5 lb	0.4 lb
15"	2.0 lb	1.8 lb	1.6 lb	2.1 lb	2.0 lb	0.8 lb	0.3 lb	0.5 lb	0.3 lb	0.3 lb
18"	1.6 lb	1.4 lb	1.2 lb	1.7 lb	1.6 lb	0.6 lb	0.2 lb	0.4 lb	-	0.2 lb
21"	1.4 lb	1.0 lb	0.7 lb	1.5 lb	1.2 lb	0.5 lb	-	0.3 lb	-	-
24"	1.3 lb	0.9 lb	0.5 lb	1.4 lb	1.1 lb	0.4 lb	-	0.2 lb	-	-
27"	0.8 lb	0.5 lb	-	0.9 lb	-	0.3 lb	-	-	-	-
30"	-	-	-	0.8 lb	-	-	-	-	-	-

<sup>4</sup> Recommended loads at different lengths, all dimensions in inches.

**Notes:**

1. OD plain is the diameter of the flex arm before any covering is added. Typical variation is ± .010" or less.
2. OD covered is the nominal outer diameter with vinyl covering.
3. Certain cast fittings like couplers and direct mounts are only available for arms A through H.
4. If the center of the load is beyond the tip of the flexible arm, use data for a longer arm length.



**If you can describe it, sketch it or envision it we can build it!**

# CREATE A SAMPLE

**How to get started.** The information on pages 3 through 10 is to help you see the design possibilities of Moffatt Flexible Arms. What did you see that you liked? Just make notes on this simple form and send it to us by fax or mail and we can work out the specs on a sample to send you! Do you need something you didn't see? Let us know, you'll be surprised at what we can do. . . **we're more than you expect!**

Your Name \_\_\_\_\_ Company Name \_\_\_\_\_

Address/City/State/Zip \_\_\_\_\_

Phone Number \_\_\_\_\_ email address \_\_\_\_\_

**FILL IN FORM & FAX TO: 605-886-5756**

Give us a brief description of the application:

\*Sketch: We Require a simple line sketch of the application prior to sampling indicating weight supported and general positioning.

Describe where the flex arm will mount:

**Size:** Outside Diameter \_\_\_\_\_  
 (see page 3) Inside Diameter \_\_\_\_\_

\* Application sketch will help us determine the proper arm type (size) for your application.

**Length:** \_\_\_\_\_  
 (see page 3)

**Color:** Gloss Color Options for Type C (.580 diameter) and Larger  
 (see page 4)

<input type="checkbox"/> Gloss Black	<input type="checkbox"/> Dark Blue	<input type="checkbox"/> Red
<input type="checkbox"/> Gold	<input type="checkbox"/> Gray	<input type="checkbox"/> Beige
<input type="checkbox"/> Autumn White	<input type="checkbox"/> Warm White	<input type="checkbox"/> Bright White

Matte Color Options for Type C (.580 diameter) and Larger

<input type="checkbox"/> Matte Black	<input type="checkbox"/> Matte Smoke Tan
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Color Options for Type M (.460 diameter) and Smaller

<input type="checkbox"/> Gloss Black	<input type="checkbox"/> Bright White	<input type="checkbox"/> Gray
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*continued on next page*



# CREATE A SAMPLE *continued*

## Arm Styles:

(see page 4)

- All Flexible Arm
- All Rigid Steel Tubing
- Dual Arm/Part Rigid, Part Flex
- Pre-Bend
- Couple Flexible Arms of Different Strengths

## Top Fitting:

(see page 5 & 6)

Thread Size: \_\_\_\_\_

Minimum Length: \_\_\_\_\_

Other Mount Shown: \_\_\_\_\_

Custom

\*Full Range of fittings and brackets available on Arm Types A-C. Limited male and female threads available on type M-R arms. (See page 5 of Design Guide)

## Base Fitting:

(see pages 6 & 7)

Thread Size: \_\_\_\_\_

Minimum Length: \_\_\_\_\_

Elbow     Shaft Fitting     Direct Mount

Plates or Brackets

Rectangle Plate     Universal Plate

Right-Angle Bracket     Long Flat Bracket

Short Flat Bracket     Flanged Bracket

Quick-Coupler Mount     Magnet Mount     Clamp Mount

Custom

\*Full Range of fittings and brackets available on Arm Types A-C. Limited male and female threads available on type M-R arms. (See page 5 of Design Guide)

Tell us as much as you can about your application, and the mounting surface involved.

Sketches or e-mailed photos can also help us understand your needs better!

We'll ask a few more questions and propose a design for you. There will be a charge for creating a sample, which we can usually have to you immediately.

Additional design services available for a nominal fee.

***We're more than you expect!***

