

# TSMX/TSEFX

3-Piece, Metal to Metal,  
Heat Treated Alloy Steel Body



## Rod Ends Precision/ Heavy Duty

Suitable for many heavy load, high precision motion control applications, the Tuthill TSMX/TSEFX Series brings an upgrade of heavy duty performance to a precision 3-piece metal to metal rod end design (housing uses a heat treated alloy material instead of standard steels used in other 2- and 3-piece designs).

The ball is produced from bearing quality steel that is thru hardened and finish ground, adding to its precision fit and increased wear performance. The body and raceway are machined from heat treated alloy steel and are zinc plated for extended corrosion resistance. Its clear chromate finish is suited for high visibility exposed surfaces requiring "aesthetically pleasing" bright metal surfaces. Studded and right or left-handed thread versions are available. Grease fittings are optionally available.

The TSMX/TSEFX Series is just one of many within our broad line of precision rod ends. For full product line detail, contact us for a comprehensive catalog or visit [www.tuthill.com](http://www.tuthill.com) and download individual product data sheets and other product information.



### Description:

TSMX/TSEFX  
Precision/Heavy Duty Rod Ends  
3-Piece, Metal to Metal,  
Heat Treated Alloy Steel Body

### Applications:

Higher load, precision motion control devices and applications, including:

- Racing
- Construction equipment
- Scales
- Wide range of heavy industrial equipment

### Features:

- 3-piece metal to metal design uses an upgraded alloy steel body and raceway for increased rod end strength
- Precision spherical bearing insert allows for optimum contact between the ball and race extending the product life
- Can be used in a wide range of temperatures: -65°F — 250°F (-54°C — 121°C)
- Offered in studded and right or left-handed versions
- Custom assemblies can be built to your specifications
- Meets SAE spec J1120

### Other Related Products:

- MTSM/MTSF Precision/Heavy Duty, 3-Piece, Metal to Metal
- TSMX-T/TSEFX-T Precision/Heavy Duty, 3-Piece, PTFE Lined



**TUTHILL**  
Controls Group

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The Tuthill Solution

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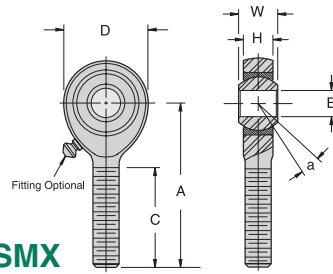
## Material

### Ball

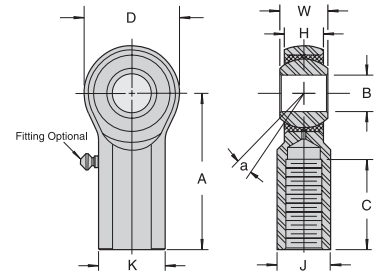
- 52100 Steel
- Rc 56 Min.
- Hard Chrome Plated

### Body & Race

- Alloy Steel, Heat Treated
- Zinc Plated, Clear Chromate Treated



TSMX



TSFX

## TSMX CHART

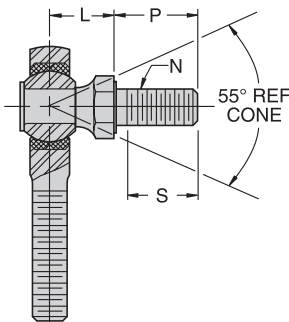
Part Number		B +.0025 -.0005	W +.000 -.005	H ±.015	A ±.015	D ±.010	REF	C +.062 -.031	UNF-3A	a°	Ultimate Radial Static Load Capacity (Pounds)	Approx. Weight (Pounds)
Right Hand	Left Hand	Ball Bore	Ball Width	Housing Width	Centerline Length	Head Diameter	Ball Diameter	Thread Length	Thread Size	Misalign Angle		
TSMX3	TSMXL3	.1900	.312	.250	1.250	.625	.437	.750	10-32	13	2,851	.028
TSMX4	TSMXL4	.2500	.375	.281	1.562	.750	.500	1.000	1/4-28	16	5,260	.043
TSMX5	TSMXL5	.3125	.437	.344	1.875	.875	.625	1.250	5/16-24	14	7,639	.072
TSMX6	TSMXL6	.3750	.500	.406	1.938	1.000	.719	1.250	3/8-24	12	9,544	.112
TSMX7	TSMXL7	.4375	.562	.437	2.125	1.125	.812	1.375	7/16-20	14	10,285	.160
TSMX8	TSMXL8	.5000	.625	.500	2.438	1.312	.937	1.500	1/2-20	12	16,238	.249
TSMX10	TSMXL10	.6250	.750	.562	2.625	1.500	1.125	1.625	5/8-18	16	17,955	.382
TSMX12	TSMXL12	.7500	.875	.687	2.875	1.750	1.312	1.750	3/4-16	14	28,081	.602

## TSFX CHART

Part Number		B +.0025 -.0005	W +.000 -.005	H ±.015	A ±.015	D ±.010	K ±.010	J ±.010	REF	C +.062 -.031	UNF-2B	a°	Ultimate Radial Static Load Capacity (Pounds)	Approx. Weight (Pounds)
Right Hand	Left Hand	Ball Bore	Ball Width	Housing Width	Centerline Length	Head Diameter	Shank Diameter	Wrench Flat	Ball Diameter	Thread Length	Thread Size	Misalign Angle		
TSFX3	TSFXL3	.1900	.312	.250	1.062	.625	.406	.312	.437	.500	10-32	13	3,733	.038
TSFX4	TSFXL4	.2500	.375	.281	1.312	.750	.469	.375	.500	.687	1/4-28	16	6,190	.059
TSFX5	TSFXL5	.3125	.437	.344	1.375	.875	.500	.437	.625	.687	5/16-24	14	7,639	.092
TSFX6	TSFXL6	.3750	.500	.406	1.625	1.000	.687	.562	.719	.812	3/8-24	12	9,544	.152
TSFX7	TSFXL7	.4375	.562	.437	1.812	1.125	.750	.625	.812	.937	7/16-20	14	10,285	.198
TSFX8	TSFXL8	.5000	.625	.500	2.125	1.312	.875	.750	.937	1.062	1/2-20	12	15,336	.329
TSFX10	TSFXL10	.6250	.750	.562	2.500	1.500	1.000	.875	1.125	1.375	5/8-18	16	17,955	.477
TSFX12	TSFXL12	.7500	.875	.687	2.875	1.750	1.125	1.000	1.312	1.562	3/4-16	14	28,081	.723

Chart Notes: 1. For standard lubrication fitting, add "Z" to suffix. Example: TSMX10Z 2. This series is also available in a studded configuration. Specify by adding "S" to suffix. Example: TSMX10S

## Studded Dimensions



Rod End Bore Size	L	P	S	N
	REF	±.030	Min. Thread Length	Thread Size UNF-2A
3/16"	.437	.438	.375	10-32
1/4"	.469	.563	.500	1/4-28
5/16"	.531	.688	.594	5/16-24
3/8"	.625	.875	.781	3/8-24
7/16"	.844	1.062	.937	7/16-20
1/2"	.875	1.125	1.000	1/2-20
5/8"	1.000	1.125	1.000	5/8-18
3/4"	1.187	1.812	1.625	3/4-16

## Product Selector Guide

- Rod Ends — Industrial/Commercial
- Rod Ends — Precision/Heavy Duty
- Spherical Bearings
- Ball Joints
- Swivels
- Clevises/Safety Fasteners/Pins



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• Please refer to the Warning statement and appropriate installation usage information in the Tuthill Technical/Application Data brochure  
• For application assistance/technical questions, please contact (tlttech@tuthill.com) or phone (260-749-5105)

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