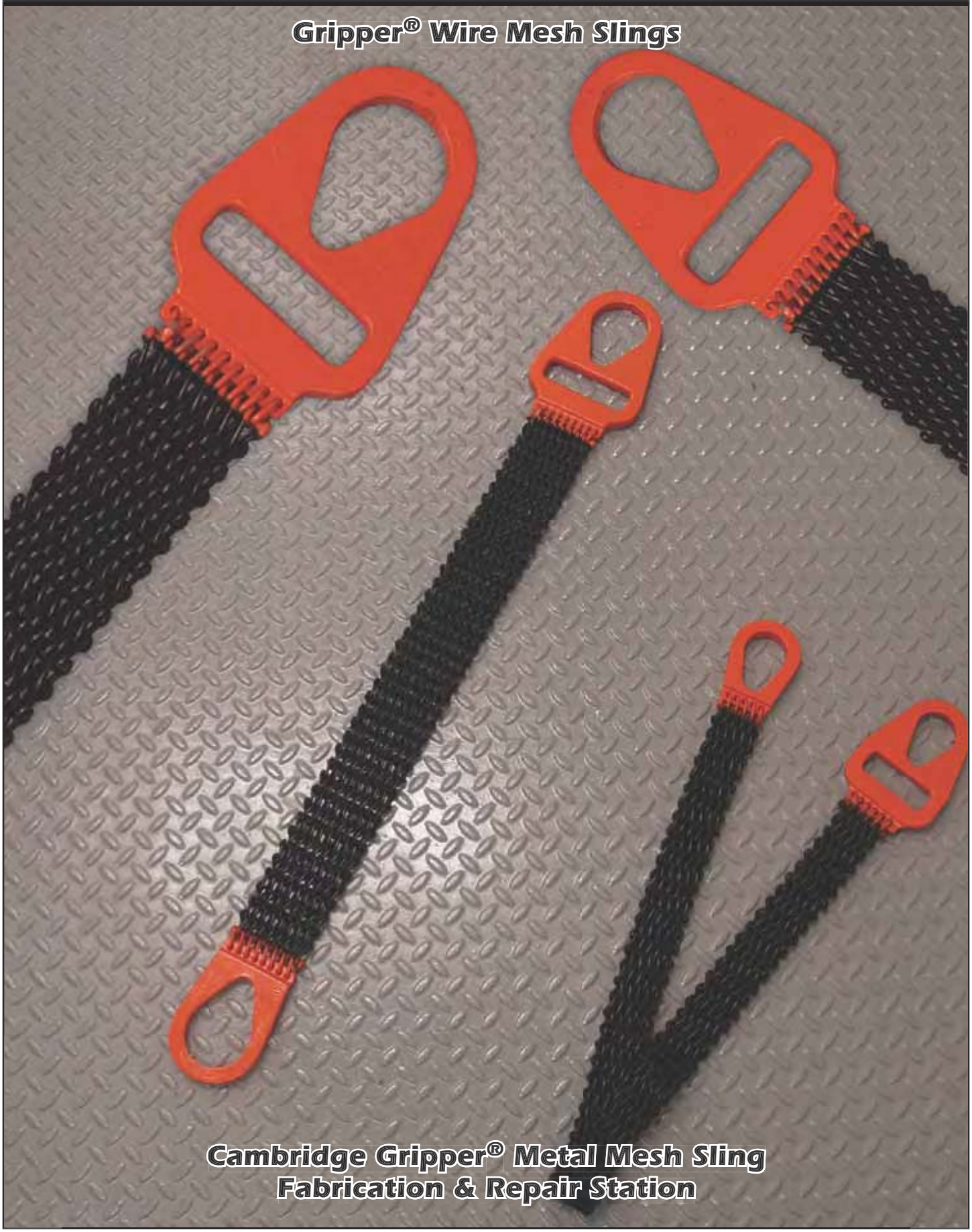
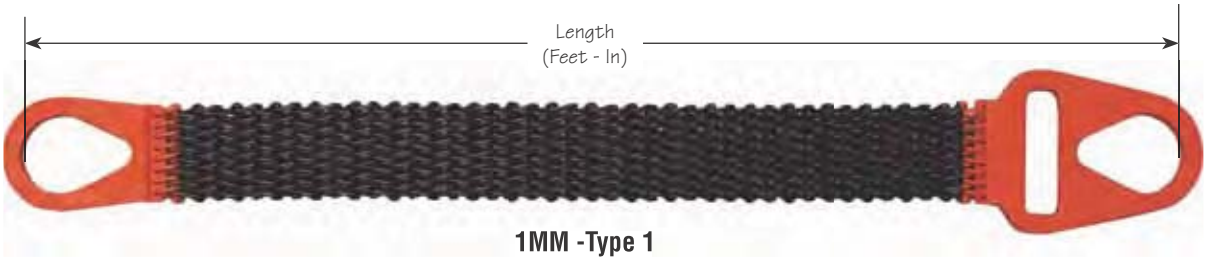
Metal Mesh Slings

Gripper® Wire Mesh Slings



Cambridge Gripper® Metal Mesh Sling
Fabrication & Repair Station



1MM -Type 1
Metal mesh sling with choker and basket fitting

Features:

- G-35 heavy duty metal mesh, carbon steel, 10 gauge
- Tolerates temperatures up to 550° F, or even higher, when made of special alloy
- Available in T-304 stainless steel, T-316 stainless steel, monel, and 4130 alloy upon request
- Proof tested to 2X rated capacity
- Design factor of 5 to 1

WARNING
See metal mesh slings warnings page for warnings and inspection criteria

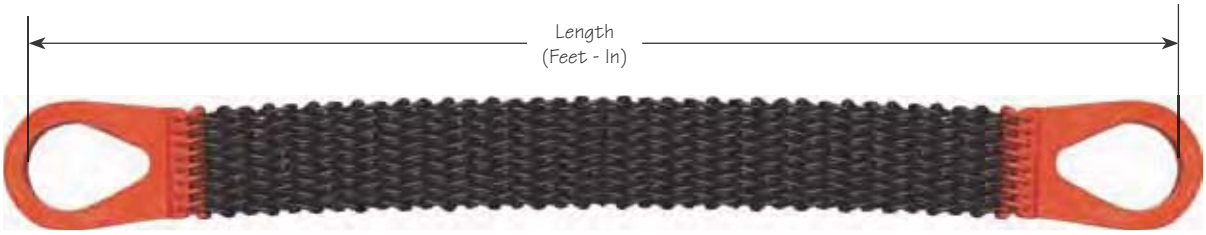
How to order:

- Combine model and length in feet

Part Number		Width Inches	Rated Capacities in Lbs.				
Model Type 1	Length Feet		Choker	Vertical Basket	Basket 60° from Horizontal	Basket 45° from Horizontal	Basket 30° from Horizontal
1MM02X	*	2	1,600	3,200	2,700	2,000	1,600
1MM03X	*	3	3,000	6,000	5,100	3,800	2,800
1MM04X	*	4	4,400	8,800	7,480	5,600	4,400
1MM06X	*	6	6,600	13,200	11,225	8,400	6,600
1MM08X	*	8	8,800	17,600	15,000	11,250	8,800
1MM10X	*	10	11,000	22,000	18,700	14,000	11,000
1MM12X	*	12	13,200	26,400	22,440	16,800	13,200
1MM14X	*	14	15,400	30,800	26,180	19,600	15,400
1MM16X	*	16	17,600	35,200	29,920	22,400	17,600
1MM18X	*	18	19,800	39,600	33,660	25,200	19,800
1MM20X	*	20	22,000	44,000	37,400	28,000	22,000

Note:

- See dimensional data page for weights



2MM -Type 2
Metal mesh sling with basket fitting each end

Features:

- G-35 heavy duty metal mesh, carbon steel, 10 gauge
- Tolerates temperatures up to 550° F, or even higher, when made of special alloy
- Available in T-304 stainless steel, T-316 stainless steel, monel, and 4130 alloy upon request
- Proof tested to 2X rated capacity
- Design factor of 5 to 1

WARNING
See metal mesh slings warnings page for warnings and inspection criteria

How to order:

- Combine model and length in feet

Part Number		Width Inches	Rated Capacities in Lbs.			
Model Type 2	Length Feet		Vertical Basket	Basket 60° from Horizontal	Basket 45° from Horizontal	Basket 30° from Horizontal
2MM02X	*	2	3,200	2,700	2,000	1,600
2MM03X	*	3	6,000	5,100	3,800	2,800
2MM04X	*	4	8,800	7,480	5,600	4,400
2MM06X	*	6	13,200	11,225	8,400	6,600
2MM08X	*	8	17,600	15,000	11,250	8,800
2MM10X	*	10	22,000	18,700	14,000	11,000
2MM12X	*	12	26,400	22,440	16,800	13,200
2MM14X	*	14	30,800	26,180	19,600	15,400
2MM16X	*	16	35,200	29,920	22,400	17,600
2MM18X	*	18	39,600	33,660	25,200	19,800
2MM20X	*	20	44,000	37,400	28,000	22,000

Note:

- See dimensional data page for weights

⚠ METAL MESH SLING WARNINGS

When inspecting a metal mesh sling, it shall be taken out of service immediately and returned for repair or replacement when any of the below defects are present.

Missing or illegible sling identification	
Broken weld or a broken brazed joint along the sling edge	
Broken wire in any part of the mesh	
Reduction in wire diameter of 25% due to abrasion, or 15% due to corrosion	
Lack of flexibility in the mesh due to distortion of the mesh	
Distortion of the choker fitting so the depth of the slot is increased by more than 10%	

Distortion of either fitting so that the width of the eye opening is decreased more than 10%	
A 15% reduction of the original cross-sectional area of any point around the hook opening of the end fitting	
Visible distortion of either end fitting out of its plane	
Cracked end fitting	
Slings in which the spirals are locked or without free articulation shall not be used	
Fittings that are pitted, corroded, cracked, bent, or twisted, gouged, or broken	

and... Any condition that causes doubt about the continued use of the sling

Dimensional Data

Sling Width	See drawing above								Hook Size	Approx. Wt. per 36" sling length	10 ga. fabric lbs. per foot
A"	B"	C"	D"	E"	F"	G"	H"	DD"			
2	4	6	2	.5	2.75	1.75	4	3.75	5T	5	1.25
3	5.25	7.5	3	.75	3.5	2.5	5.25	5	10T	8	1.87
4	5.5	7.75	4	.75	3.5	2.5	6.25	5	10T	10	2.5
6	6.5	9	6	1	4	2.75	8.5	6	15T	15	3.87
8	8.75	12	8	1.25	5.5	4	11.25	8.5	25T	20	5.12
10	9.375	12.93	9.93	1.37	5.5	4	13.5	9.87	25T	33	6.37
12	10.25	13.93	12	1.5	6	4.5	15.75	10.5	30T	42	7.62
14	10.62	14.69	13.87	1.62	6	4.5	18	10.62	30T	47	8.87
16	11.25	15.56	15.87	1.75	6	4.5	20.25	10.75	30T	55	10.25
18	11.87	16.56	17.87	1.87	6	4.5	22.5	10.87	30T	64	11.37
20	12.5	17.56	19.87	2	6	4.5	24.75	11	30T	73	12.75

Chemical Environment Data

Metal Mesh	Weak Sulphuric Acid	Weak Hydrochloric Acid	Alkaline Caustic Solutions	Salt Solutions	Organic Solvents	Water
Carbon Steel	No	No	No	No	Yes	No
T-304 Stainless Steel	No	No	Yes	No	Yes	Yes
T-316 Stainless Steel	No	No	Yes	No	Yes	Yes
Monel	No	No	Yes	Yes	Yes	Yes
AISI 4130 Alloy Steel	No	No	No	No	Yes	No

Metal Mesh Slings

Identification, Inspection, and Rigging Practices

Metal Mesh Slings are designed and built for rugged lasting service. As with any quality product certain precautions and standards of treatment should be observed. Proper care will extend the useful life of the metal mesh sling.

Follow the Guidelines set forth in ASME B30.9 “Slings” standard, OSHA 1910.184 and 1926.251.

Sling Identification

- Each Metal mesh sling shall be marked to show the following
- Name or Trademark of manufacturer
- Rated loads for the type(s) of hitch(es) used and the angle upon with it is based
- Width and gauge
- Number of legs, if more than one
- Individual sling identification (e.g., serial numbers)

Sling identification shall be done by the sling manufacturer, and should be maintained by the user so as to be legible during the life of the sling.

Inspection

Metal Mesh Sling inspection falls into 3 categories. Initial, Frequent, and Periodic.

- **Initial Inspection**– Prior to use, all new, altered, modified, or repaired slings shall be inspected by a designated person to verify compliance with the applicable provisions of this chapter
- **Frequent Inspection**
  - o A visual inspection for damage shall be performed by the user of other designated person each day or shift the sling is used
  - o Conditions such as those listed in the removal criteria section or any other condition that may result in a hazard shall not be returned to service until approved by a qualified person
  - o Written records are not required for frequent inspections
- **Periodic Inspections**
  - o A complete inspection for damage to the sling shall be periodically performed by a designated person. Inspection shall be conducted on the entire length including splices, end attachments, and fittings. The sling shall be examined for conditions such as those listed in the removal criteria section and a determination made as to whether they constitute a hazard
  - o Periodic Inspection Frequency – Periodic inspection intervals shall not exceed 1 year. The frequency of periodic inspections should be based on:
    - ▪ Frequency of sling use
    - ▪ Severity of service condition
    - ▪ Nature of lifts being made
    - ▪ Experience gained on the service life of slings used in similar circumstances
  - o Guidelines for time intervals
    - ▪ Normal service – yearly
    - ▪ Severe service – monthly to quarterly
    - ▪ Special service – as recommended by a qualified person
  - o A written record of the most recent periodic inspection shall be maintained

Removal Criteria

A wire rope sling shall be removed from service if the following conditions are present.

- o Missing or illegible sling identification (tag or markings)
- o Broken weld or broken brazed joint along the sling edge
- o Broken wire in any part of the mesh
- o Reduction in the wire diameter of 25% due to abrasion or 15% due to corrosion
- o Lack of flexibility due to distortion of the mesh
- o Distortion of the choker fitting so the depth of the slot is increased by more than 10%
- o Distortion of either end fitting so the width of the eye opening is decreased by more than 10%
- o A 15% reduction of the original cross-sectional area of any point around the hook opening of the end fitting
- o Visible distortion of either end fitting out of its plane
- o Cracked end fitting
- o Slings in which the spirals are locked or without free articulation shall not be used
- o Fittings that are pitted, corroded, cracked, bent, twisted, gouged or broken
- o Other conditions, including visible damage that can cause doubt as to the continued use of the sling

Rigging Practices

- Slings shall be shortened or adjusted only by methods approved by the sling manufacturer or a qualified person
- The load shall be evenly distributed across the width of the metal mesh
- The sling shall be hitched in a manner providing control of load
- Slings in contact with edges, corners, or protrusions should be protected with a material of sufficient strength, thickness, and construction to prevent damage

- Shock loading should be avoided
- Loads should not be rested on the sling
- Slings should not be pulled from under a load while the load is resting on the sling
- Twisting and kinking shall be avoided
- During lifting, with or without load, personnel shall be alert for possible snagging
- In a basket hitch, the load should be balanced to prevent slippage
- When using a basket hitch, the sling should contain or support the load from the sides, above the center of gravity, so that the load remains under control
- Slings should not be dragged on the floor or over an abrasive surface
- In a choker hitch, and angle of choke less than 120° should not be used without reducing the rated load
- Slings should not be constricted, bunched, or pinched by the load, hook, or any fitting
- In a choker hitch, the load should be balanced to prevent edge overload
- Straightening a spiral or cross rod or forcing a spiral into position shall not be done
- Slings used in pairs should be attached to a spreader beam

Environmental Considerations

Temperature

- Metal mesh slings shall not be subjected to a reduction in rated capacity if used in temperatures below -20°F (-29°C) and above 550°F (288°)
- Metal mesh slings coated in elastomer should be used only in a temperature range of 0°F (-18°C) to 200°F (93°C)

Chemically Active Environments

- The strength of metal mesh slings can be degraded by chemically active environments. This includes exposure to chemicals in the form of solids, liquids, gases, vapors, or fumes. The sling manufacturer or qualified person should be consulted before slings are used in chemically active environments

Sources:
ASME B30.9 “Slings” Standard
OSHA 1910.184 “Slings”
OSHA 1926.251 “Rigging Equipment for material handling”