ENERPAC

Operation and Maintenance Manual

Enerpac Load Skates
MLSF, MLSD, MLSR

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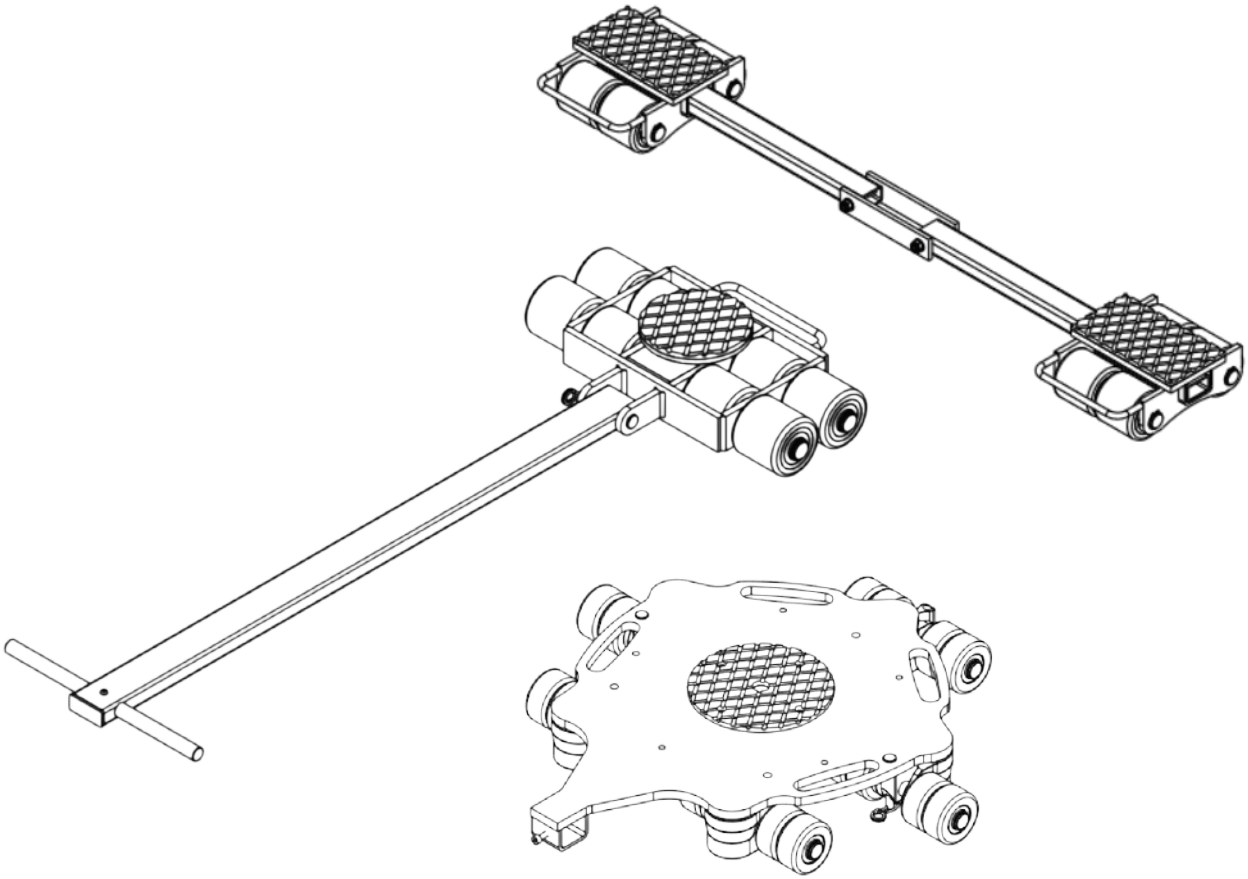

⚠ To reduce the risk of injury, user must read and understand this document before use.

ABOUT US

Enerpac is a global market leader in high pressure hydraulic tools, controlled force products, portable machining, on-site services and solutions for precise positioning of heavy loads. As a leading innovator with a 110-year legacy, Enerpac has helped move and maintain some of the largest structures on earth. When safety and precision matters, elite professionals in industries such as aerospace, infrastructure, manufacturing, mining, oil & gas and power generation rely on Enerpac for quality tools, services and solutions. For additional information, visit www.enerpac.com.

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WARRANTY

Refer to the Enerpac Global Warranty document for terms and conditions of the product warranty. Such warranty information can be found at www.enerpac.com.

NAMEPLATE

AVAILABLE LANGUAGES

L4535 is available in the following languages, visit www.enerpac.com for a copy.

- Weitere Sprachen finden Sie unter www.enerpac.com.
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Contents

1. Safety

Read all instructions carefully. Follow all recommended safety precautions to avoid personal injury as well as damage to the product and / or damage to other property. Enerpac cannot be responsible for any damage or injury from unsafe use, lack of maintenance, or incorrect operation. Do not remove warning labels, tags, or decals. In the event that any questions or concerns arise, contact Enerpac or a local Enerpac distributor for clarification.

Save these instructions for future use.

If you have never been trained on high-pressure hydraulic safety, consult your distributor or service center for information about Enerpac Hydraulic Safety Courses.

This manual follows a system of safety alert symbols, signals, words, and safety messages to warn the user of specific hazards. Failure to comply with these warnings could result in death or serious personal injury, as well as damage to the equipment or other property.

The Safety Alert Symbol appears throughout this manual. It is used to alert you to potential physical injury hazards. Pay close attention to Safety Alert Symbols and obey all safety messages that follow this symbol to avoid the possibility of death or serious injury.

Safety Alert Symbols are used in conjunction with certain Signal Words that call attention to safety messages or property damage messages and designate a degree or level of hazard seriousness. The Signal Words used in this manual are DANGER, WARNING, CAUTION, and NOTICE.

DANGER Indicates a hazardous situation that, if not avoided, will result in death or serious personal injury.

WARNING Indicates a hazardous situation that, if not avoided, could result in death or serious personal injury.

CAUTION Indicates a hazardous situation that, if not avoided, could result in minor or moderate personal injury.

NOTICE Indicates information considered important, but not hazard related (e.g. messages related to property damage). Please note that the Safety Alert Symbol will not be used with the signal word.

1.1 Safety Precautions

WARNING

Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

- Always wear protective head-wear, ear protectors, footwear and gloves (at a minimum rigger type gloves) suitable for safe operation of the tool. The protective clothing must not interfere with safe operation of the tool or restrict the ability to communicate with co-workers.
- Be sure your workplace is safe. Follow the instructions in your workplace's standard operating procedures and be sure to observe all communicated safety precautions.
- Before placing the device into operation, check that all components (including protective equipment) are securely attached. Be sure that all bolts and other fasteners are properly tightened. Verify that all moving parts operate smoothly.
- Read and completely understand the safety precautions and instructions in this manual before operating the load skates. Always follow all the safety precautions and instructions, including those that are contained within the procedures of this manual
- Do not use the device if you are tired, ill, under the influence of drugs, alcoholic drinks, or medications
- Even when the device is used properly and all safety guidelines are followed, understand that some residual risks may remain.
- Abide by all the safety instructions and precautions stated in this manual. Act responsively toward others when using the device.
- Be sure the operator has completed safety induction training, specific to the work surroundings. The operator should be thoroughly familiar with the controls and the proper use of the tool.
- The operator must be of at least the minimum age required by applicable local regulations, laws and the facility standard operating procedures.
- Do not overload the equipment. Never attempt to move a load weighing more than the capacity of the load skates. Over loading causes equipment failure and possible personal injury.
- Ensure the skate/load setup is stable before moving the load.
- While the load is positioned on the skates, no person is to be on the load and must maintain a minimum of 5 ft (1.5 m) from the load to avoid injury. Staying under lifted load is strictly prohibited.
- Keep hands away from load skate wheels to avoid injury. This especially applies while the load is on the skates, but also as a general guideline to avoid risk of injury even when the skates are unloaded and stationary.
- Verify the floor can successfully support the load

capacity and provides a flat, level surface. Failure to do so can result in damage to the floor, the skates, or cause the load to tip.

- Do not use the load skates on inclines, uneven floor surfaces, near floor edge drop offs, over stairs, or over gaps in the floor exceeding 0.4 in (1.0 cm) in width.
- Do not use the load skates if the load pad is damaged or slick with oil. This could result in the load unintentionally shifting.
- No person is to be present in between the wall and the load being moved.
- Do not use the load skates if the wheels appear to be deformed or damaged.
- Do not push the load with the load skate handle.

⚠ CAUTION

Failure to observe and comply with the following precautions could result in minor or moderate personal injury. Property damage could also occur.

- Do not allow people to ride on the device.
- Only start to move the load after you have ensured that all persons have moved away from the danger area and that the load can sit safely and stably on the transport skate.
- When placing or moving a load from the skates, do so in a slow controlled manner.
- Do not load the skates quickly, as this can damage the skates.
- The loaded skate must never be left unsupervised and can only remain in the same position for a short period of time (PU rollers max. 15 min).
- Lowering of the load onto the skate must be controlled and executed slowly. Excessive lowering speed poses a safety hazard and can lead to damage to the device.
- Secure the load to be transported so it does not roll away or tip over.
- Do not exceed 1.25 mi/h (2.0 Km/h) when moving the load to ensure a short stopping distance.
- Do not make abrupt changes of direction.
- Verify that the rated capacity of the load skate set is adequate for the load to be moved. This also applies to loads with uneven centers of gravity. Some applications may require front and rear skates of different capacities. This calculations must be done prior to moving the load by the lead person responsible.
- When moving load, verify there is vertical clearance between both fixed and movable objects. It is best to block off areas where unintended contact could occur to avoid possible damage to the load or the facility in which the load is being moved.

NOTICE

Failure to observe and comply with the following precautions could result in property damage and/or void the product warranty.

- Always use Enerpac replacement parts.
- In severe service conditions, be aware that the load skate must be inspected, cleaned and lubricated more frequently than normal.
- Monitor the skate and the load during all movements so that you can react quickly if a problem arises.
- If you must overcome a gradient, use a towing vehicle with sufficient braking force. Make sure that the steerable transport skate is not pulled out from under the load when pulling with the towing vehicle, or establish a fixed connection with the load to be transported.
- If the load skate is dropped from a significant height, have the tool inspected and checked for proper operation before placing it back into service.
- Always follow the inspection and maintenance instructions contained in this manual. Perform maintenance and inspection activities at the specified time intervals.
- When placing a load onto the skates, evenly distribute the load.
- When moving the load, do so in a controlled direction and avoid non-linear travel when possible.
- When moving a load, maintain a minimum clearance of 1.6 ft (0.5 m) to walls from the load.
- The angle of the handle when pulling the load is not to exceed 25° from horizontal to the floor.
- Maintain a clean load path free of debris. Verify that the load will not travel over any speed bumps or drainage grates.
- When the MSLR skates are used, verify that the wheels are unlocked so they can freely rotate.
- The operator is responsible for accidents or risks to other persons.
- Do not overreach. Always maintain proper footing and balance during use.
- Provide adequate lighting when working with the device. Keep your work area clean and tidy.
- To avoid any uncertainties during the process, plan your procedure before starting work.

2. Compliance Statement

2.1 EU Declaration of Conformity

•MLSF •MLSD •MLSR

CE UKCA These tools conform with the requirements for CE and UKCA.

Enerpac declares that these product(s) have been tested and conforms to applicable standards and the product(s) are compatible to all EU and UK Requirements.

Copies of the EU Declaration as well as the UK Self-Declaration are enclosed with each shipment.

3. Features & Components

3.1 MLSF Features Diagram

1. MLSF Chassis
2. Handle
3. Load Pad
4. Polyurethane (or optional Nylon) wheels
5. Wheel box

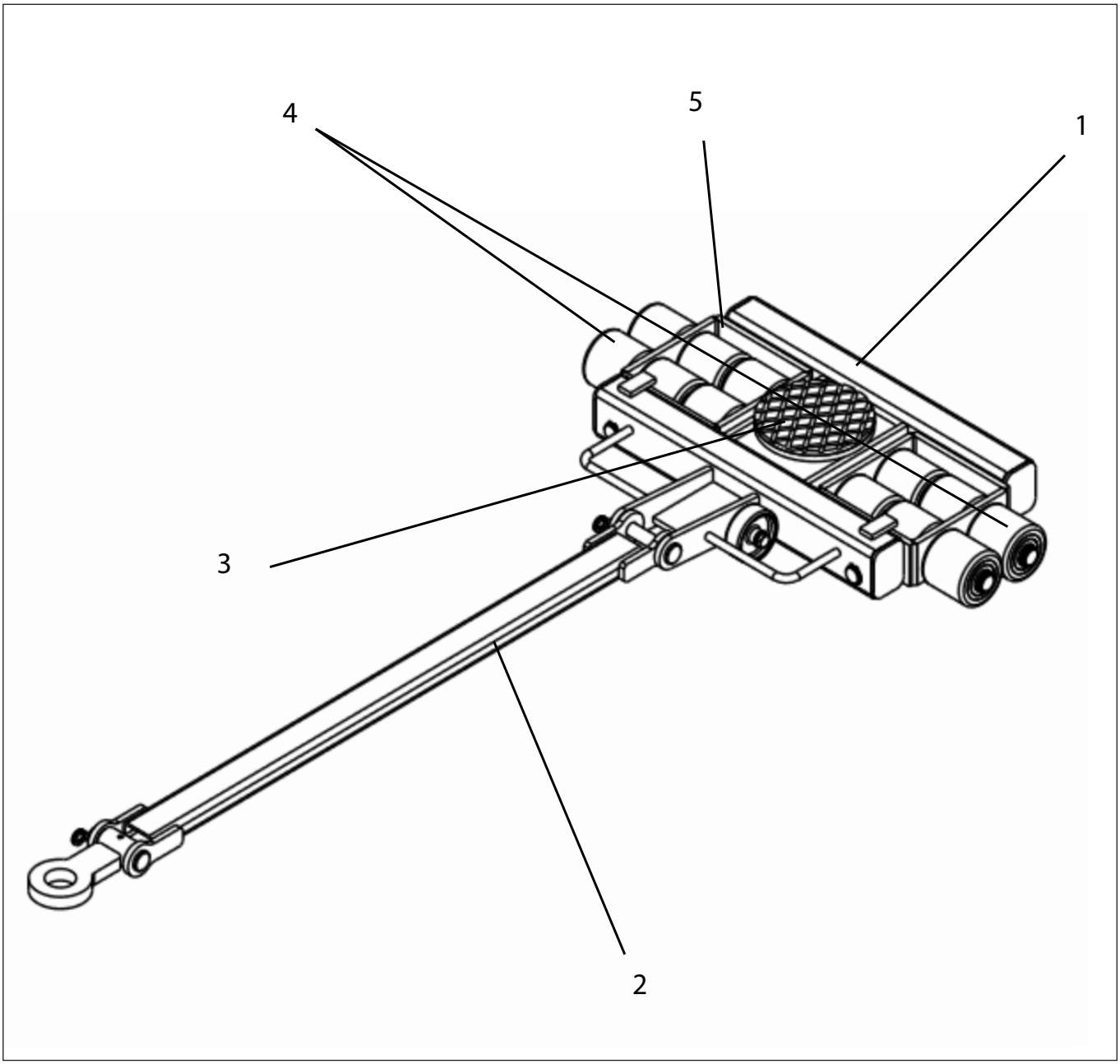

Figure 1: Major features and components of MLSF load skates

3.2 MLSD Features Diagram

1. MLSD Chassis
2. Load Pad
3. Connecting Bar
4. Polyurethane (or optional Nylon) wheels

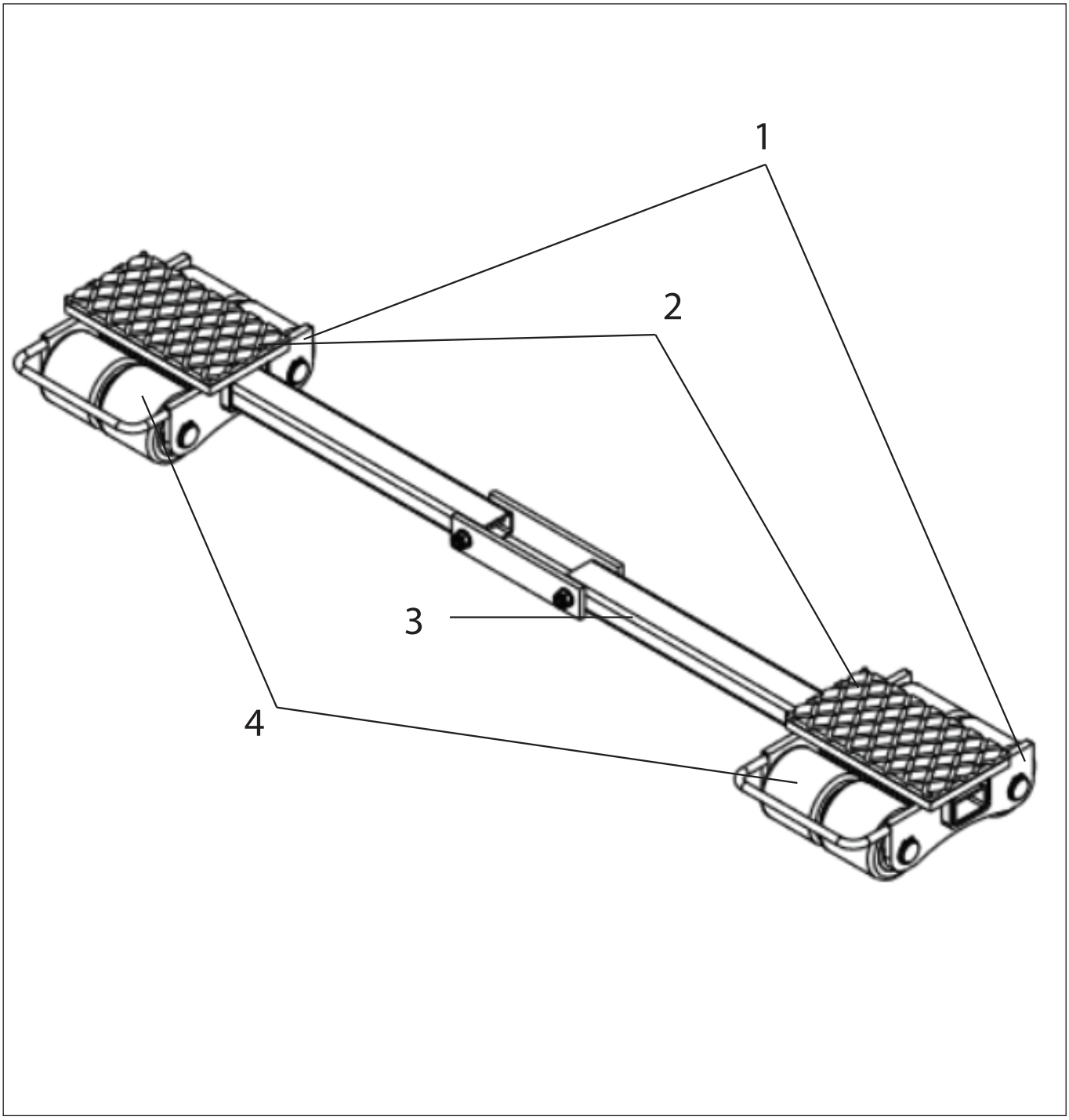

Figure 2: Major features and components of MLSD load skates

3.3 MLSR Features Diagram

1. MLSR Chassis
2. Wheel Box
3. Nylon Wheels
4. Load Pad

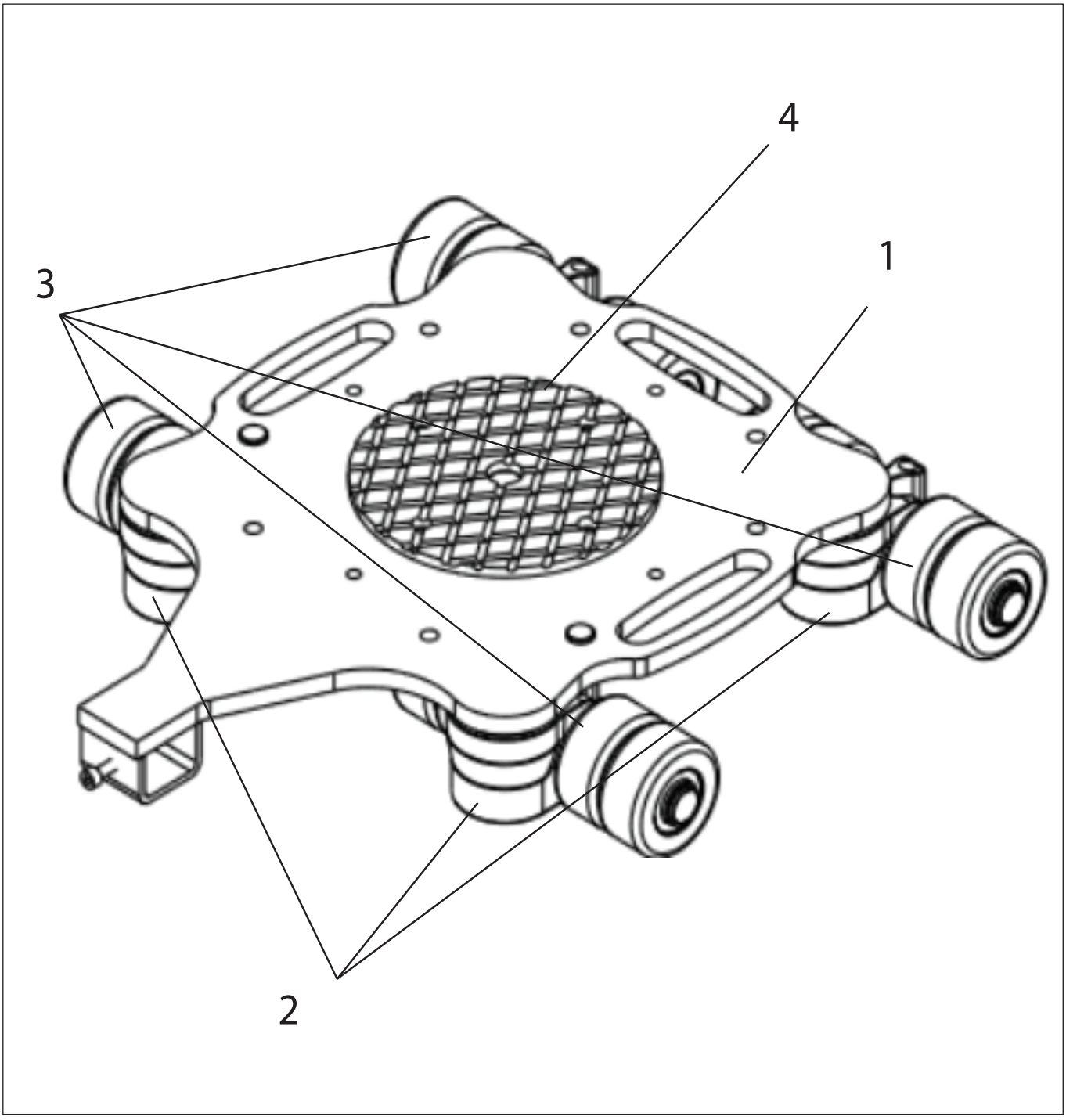

Figure 3: Major features and components of MLSR load skates

4. Technical Product Data

4.1 MLSF Load Skate

4.1.1 Dimensional Callout Art

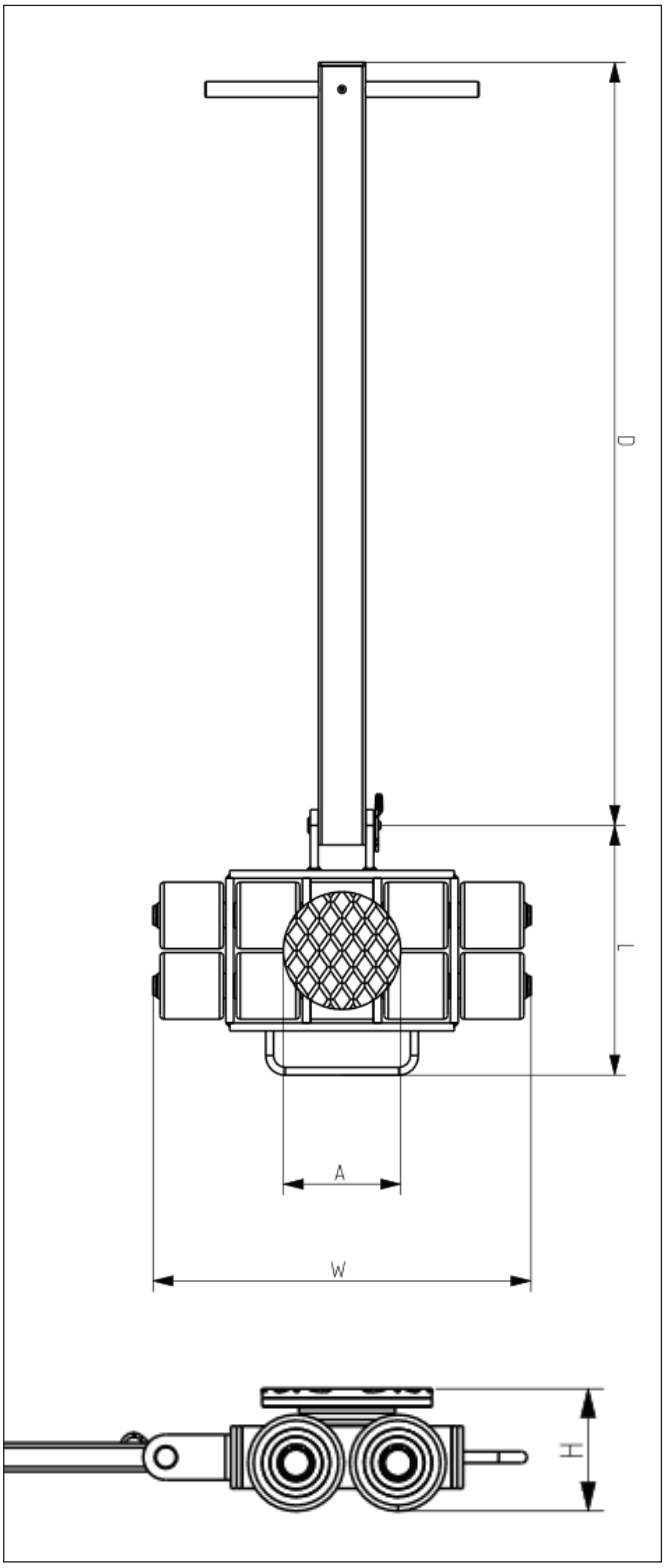

Figure 4: MLSF load skate dimensions

4.1.2 Dimensional Table

Product	A in [mm]	W in [mm]	L in [mm]	D in [mm]	H in [mm]
MLSF3	5.8 [150]	10.4 [268]	9.3 [238]	39 [1000]	4.3 [110]
MLSF7	5.8 [150]	18.8 [483]	13.2 [339]	39 [1000]	4.3 [110]
MLSF10	6.6 [170]	30.4 [780]	20.6 [525]	45.6 [1170]	4.3 [110]
MLSF13	6.6 [170]	38.3 [982]	20.7 [528]	45.6 [1170]	4.3 [110]
MLSF17	8.6 [220]	28.2 [724]	22.1 [567]	63.8 [1620]	7.0 [180]
MLSF27	8.6 [220]	36.3 [931]	22.1 [567]	63.8 [1620]	7.0 [180]
MLSF35	9.7 [250]	45 [1142]	22.1 [567]	63.8 [1620]	7.0 [180]

4.1.3 MLSF Load Skate Description

Enerpac MLSF load skates are an ideal solution for a wide variety of transporting applications, in which moving high weight material in a non linear path is required.

MLSF load skates are high load capacity carts with different number of wheels depending on the load capacity, which ranges from 3 to 35 tons. Integrated with all MLSF models is an articulated handle (either manual or towable depending on the capacity) that should be used to pull the skate.

4.1.4 MLSF Load Skate Capabilities

	Product	Capacity		Weight		Nº. of wheels
		lbs	kg	lbs	kg	
Polyurethane Wheels	MLSF3	6,614	3,000	30.8	14	4
	MLSF7	13,228	6,000	57.3	26	8
	MLSF10	19,842	9,000	125.6	57	12
	MLSF13	26,455	12,000	149.9	68	16
	MLSF17	35,274	16,000	291	132	8
	MLSF27	52,911	24,000	348.3	158	12
	MLSF35	70,548	32,000	432.1	196	16
Nylon Wheels *	MLSF3	8,818	4,000	30.8	14	4
	MLSF7	17,637	8,000	57.3	26	8
	MLSF10	26,455	12,000	1225.6	57	12
	MLSF13	35,274	16,000	149.9	68	16
	MLSF17	44,092	20,000	291	132	8
	MLSF27	66,139	30,000	348.3	158	12
	MLSF35	88,185	40,000	432.1	196	16
*NOTE: Nylon Wheels are optional.						

4.2 MLSD Load Skate

4.2.1 Dimensional Callout Art

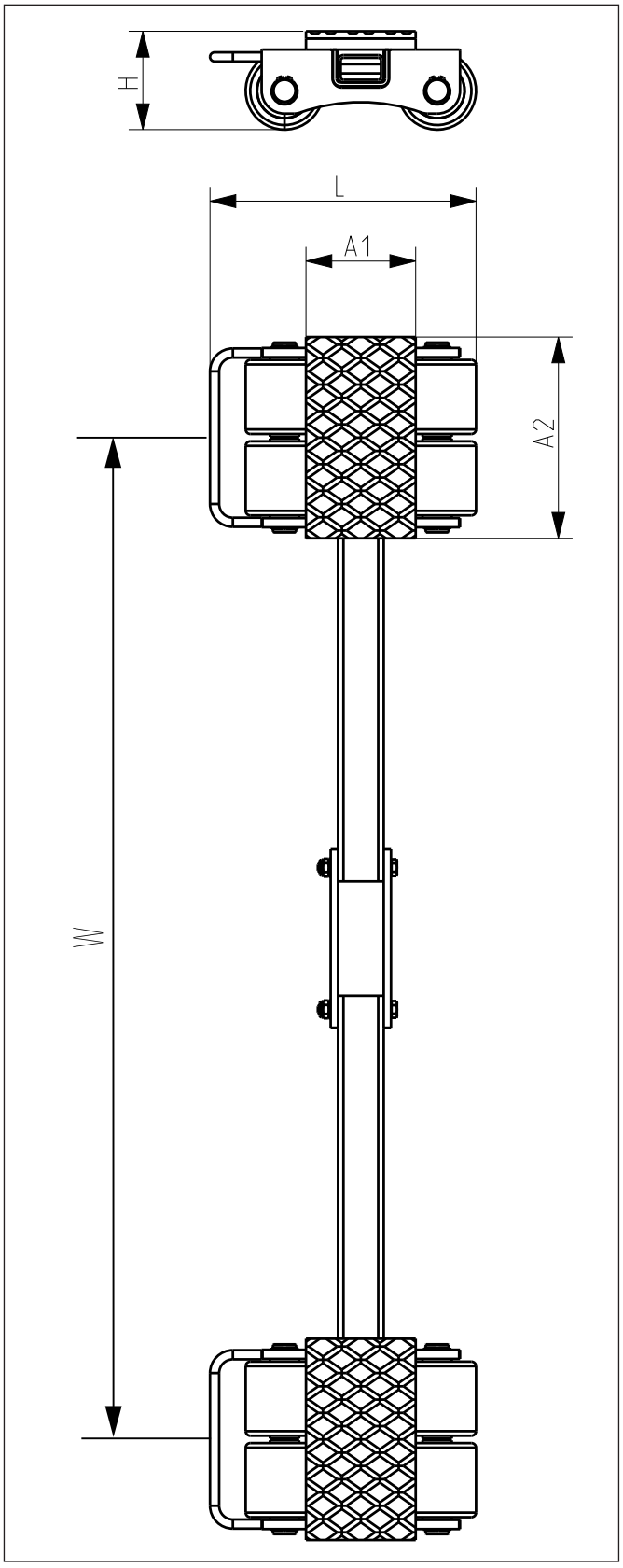

Figure 5: MLSD load skate dimension

4.2.2 Dimensional Tables

Product	A1 in [mm]	A2 in [mm]	L in [mm]
MLSD3	5.9 [150]	2.9 [75]	9.7 [246]
MLSD7	4.7 [120]	8.7 [220]	11.5 [291]
MLSD10	6.7 [170]	7.1 [180]	11.6 [295]
MLSD13	7.9 [200]	8.7 [220]	11.5 [291]
MLSD17	12.5 [318]	7.5 [190]	17.9 [456]
MLSD27	12.5 [318]	11.2 [285]	17.9 [456]
MLSD35	12.5 [318]	15.0 [382]	17.9 [456]

Product	Skate Width in [mm]	W in [mm]	H in [mm]
MLSD3	4.7 [120]	4.7-39.3 (120-1000)	4.3 [110]
MLSD7	8.7 [220]	16.5-43.3 (420-1100)	4.3 [110]
MLSD10	11.6 [295]	18.1-45 (460-1145)	4.3 [110]
MLSD13	15.0 [382]	22-43.1 (560-1095)	4.3 [110]
MLSD17	8.5 [216]	8.6-76.4 (220-1940)	7.0 [180]
MLSD27	12.3 [313]	12.6-76.4 (320-1940)	7.0 [180]
MLSD35	16.1 [410]	16.5-65.4 (420-1660)	7.0 [180]

4.2.3 MLSD Load Skate Description

Enerpac MLSD load skates are an ideal solution for a wide variety of transporting applications, in which moving high weight materials is required.

MLSD load skates are high load capacity carts composed of two MLS single load skates joined by a connecting bar. Their load capacity ranges from 3 to 35 tons. MLSD dual skates are typically used as trailing or tracking skates behind an MLSF skate, usually part of an MLSS set.

MLSD load skates come with standard polyurethane wheels, but also nylon wheel kits will be available for this skate

4.2.4 MLSD Load Skate Capabilities

	Product	Capacity		Weight		Nº. of wheels
		lbs	kg	lbs	kg	
Polyurethane Wheels	MLSD3	6,614	3,000	30.9	14	4
	MLSD7	13,228	6,000	63.9	29	8
	MLSD10	19,842	9,000	79.4	36	12
	MLSD13	26,455	12,000	99.2	45	16
	MLSD17	35,274	16,000	202.8	92	8
	MLSD27	52,911	24,000	262.3	119	12
	MLSD35	70,548	32,000	335.1	152	16
* Nylon Wheels	MLSD3	8,818	4,000	30.9	14	4
	MLSD7	17,637	8,000	63.9	29	8
	MLSD10	26,455	12,000	79.4	36	12
	MLSD13	35,274	16,000	99.2	45	16
	MLSD17	44,092	20,000	202.8	92	8
	MLSD27	66,139	30,000	262.3	119	12
	MLSD35	88,185	40,000	335.1	152	16
*NOTE: Nylon Wheels are optional.						

4.3 MLSR Load Skate

4.3.1 Dimensional Callout

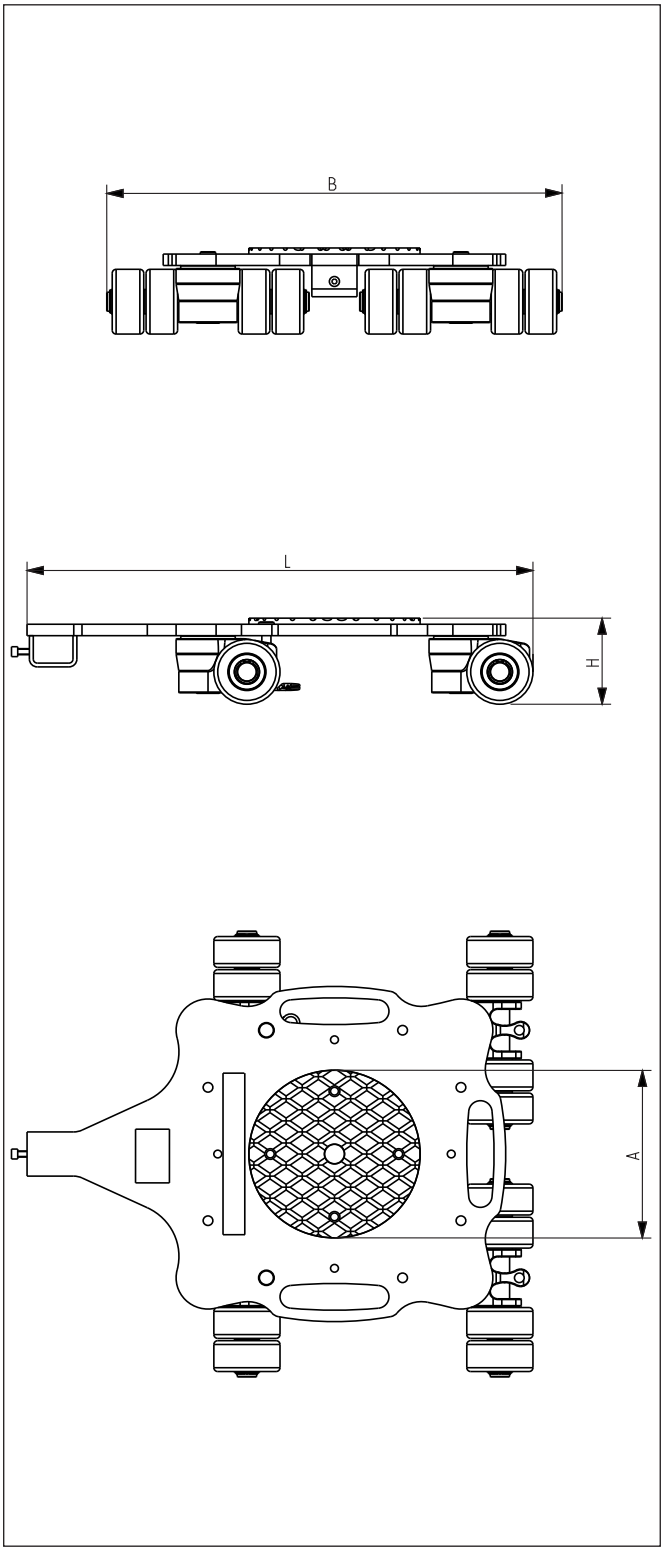

Figure 6: MLSR load skate dimensions

4.3.2 Dimensional tables

Product	A in [mm]	L in [mm]	B in [mm]	H in [mm]
MLSR3	6.7 [170]	23.1 [588]	18.4 [467]	4.3 [110]
MLSR7	8.6 [220]	25.6 [650]	23 [585]	4.3 [110]
MLSR9	8.6 [220]	32.6 [829]	30.9 [786]	4.3 [110]

Product	Skate width with connecting bar	
	in	mm
MLSR3	21.3 - 76.4	540 - 1940
MLSR7	31.2 - 76.4	792 - 1940
MLSR9	36.3 - 76.4	922 - 1940

4.3.3 MLSR Load Skate Description

Enerpac MLSR load skates are an ideal solution for a wide variety of transporting applications, in which moving high weight material with high manoeuvrability is required.

MLSR load skates are high load capacity carts with different number of nylon wheels depending on the load capacity required, which ranges from 3 to 9 tons.

⚠ WARNING

MLSR skates come standard with nylon wheels. Polyurethane wheels have a lower capacity than nylon wheels and should not be used unless approved by Enerpac.

MLSR models have pivoting wheel boxes which allow the skate to rotate 360º with minimal linear travel. The slot situated on the front of the skate allows connecting bars or handles to be installed.

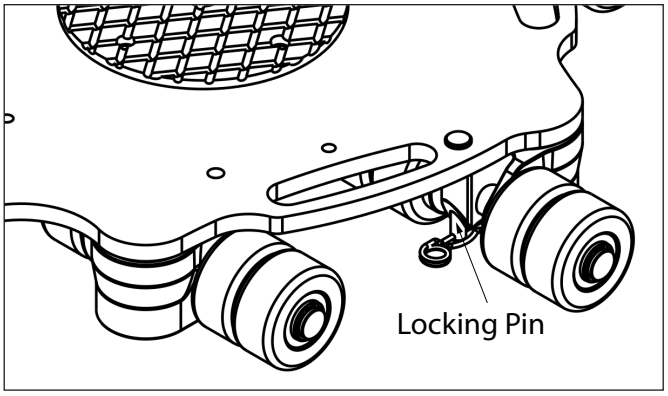

Figure 7: MLSR locking mechanism detailed view

MLSR skates are meant to be combined as various sets depending on the type of application.

4.3.4 MLSR Load Skate Capabilities

Product (NY Wheels)	Capacity		Weight		Nº. of wheels
	lbs	kg	lbs	kg	
MLSR3	6,614	3,000	77	35	8
MLSR7	13,200	6,000	94.6	43	16
MLSR9	17,600	8,000	129.8	59	20

4.4 Connecting bars

Depending on the load capacity, MLSD skate models come standard with a connecting bar. Optional connecting bars are available for MLSR models.

Reference	Compatible models	Length	
		mm	in
MLSCDR	MLSD3	1000	39.4
MLSCDS	MLSD17 MLSD27 MLSD35	2000	78.7
MLSCDF	MLSD7 MLSD10 MLSD13	1315	51.8
MLSCR6	MLSR3 MLSR7 MLSR9	2000	78.7
MLSCR8	MLSR3 MLSR7 MLSR9	2500	98.4
MLSCRH8*	MLSR3 MLSR7 MLSR9	2,500	98.4

*MLSCRH8 has handle joint to accept handle.

4.5 Handles

Depending on the load capacity, MLSF skate models come standard with either a manual or towable handle for easy maneuvering of heavy loads. Optional handles are available for MLSR models.

Product visual	Reference	Compatible models
	MLSHT	MLSF3 MLSF7
	MLSHR	MLSF10 MLSF13
	MLSHF	MLSF17 MLSF27 MLSF35
	MLSHRR	MLSR3 MLSR7 MLSR9
	MLSHRT	MLSR3 MLSR7 MLSR9

4.6 Available Sets

MLSF and MLSD skates can be ordered as 1 single set. The available sets are in the following table.

Set Model Nº.	Components	Set Capacity (Tons)
MLSS7	x1 MLSF3 and x1 MLSD3	6.6
MLSS13	x1 MLSF7 and x1 MLSD7	13.2
MLSS20	x1 MLSF10 and x1 MLSD10	19.8
MLSS27	x1 MLSF13 and x1 MLSD13	26.4
MLSS35	x1 MLSF17 and x1 MLSD17	35.3
MLSS53	x1 MLSF27 and x1 MLSD27	52.9
MLSS70	x1 MLSF35 and x1 MLSD35	70.6

5. Operation

5.1 Placing load on skates (Figure 9)

⚠ CAUTION

Do not use skates if the wheels appear to be damaged or deformed.

To position the load onto the skates, lift one end of the load to allow the load skate to move underneath the load.

Once the load is lifted, MLSD or MLSR trailing skates must be positioned at 90 degrees from (or perpendicular to) the center axis of the load. The load can now be lowered slowly to rest on the rear skates.

Repeat this operation to position the front skate (MLSF or MLSR) under a suitable location on the opposite end of the load. If necessary, block the rear skate wheels so the load is not able to move.

If enough lifting devices or a crane or forklift are available, the load can be lifted evenly and set on all skates simultaneously.

⚠ WARNING

While the load is positioned on the skates, no person is to be on the load and must mantain a minimum of 5 ft (1.5 m) from the load to avoid injury

Before disconnecting the lifting device and trying to move the skates, verify that the front skate (MLSF or MLSR) is located along the center axis of the load.

⚠ CAUTION

When placing or removing load from the skates, do so in a slow, controlled manner

⚠ CAUTION

Verify that the rated capacity of the load skate set is adequate for the load to be moved. This also applies to loads with uneven centers of gravity. Some applications may require front and rear skates of different capacities. These calculations must be done prior to moving the load by the lead person responsible.

NOTICE

Ensure that the load is distributed equally between the two skates to avoid any potential overloading.

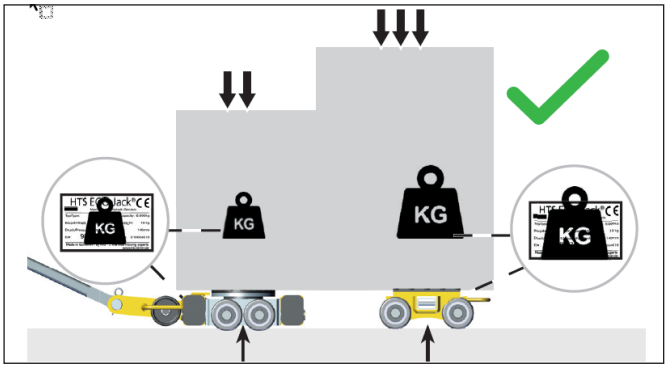

Figure 8: Distribution of the load

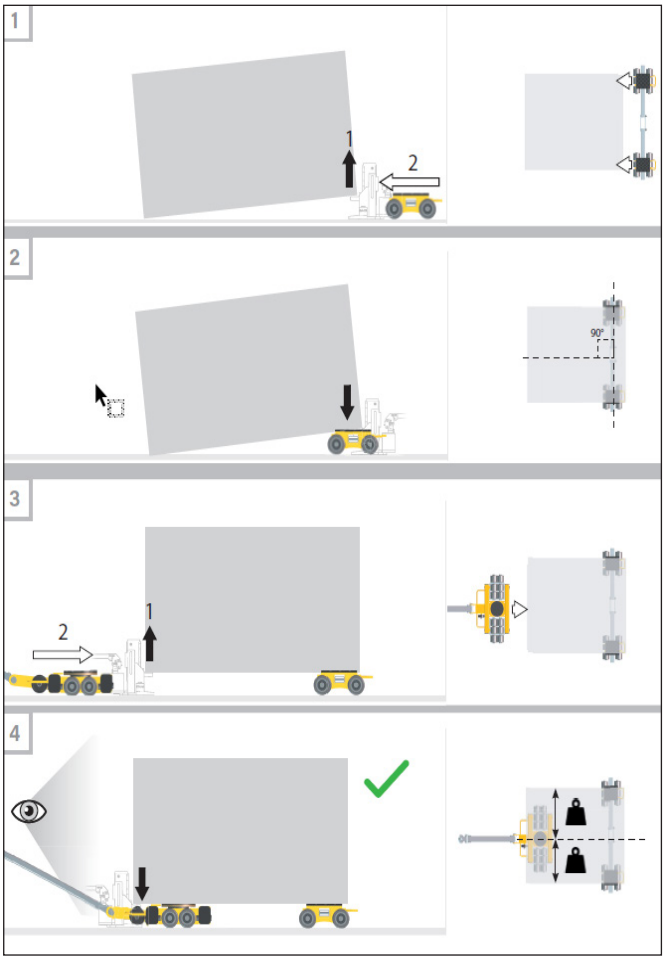

Figure 9: Lifting process

When lifting a load onto skates of different capacities and heights, a spacer block may need to be installed between the shorter skate and the load to ensure the load is level or a minimally inclined angle.

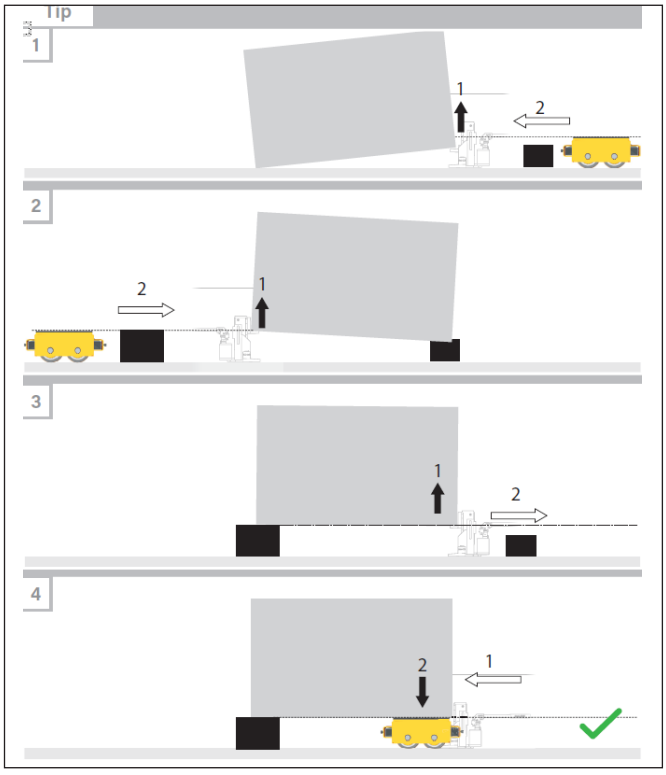

Figure 10: Secondary lifting process

⚠ WARNING

Keep hands away from the load skate wheels to avoid injury. This especially applies while the load is on the skates, but also as a general requirement to avoid risk of injury even when the skates are unloaded and stationary.

⚠ WARNING

Do not use the load skates if the load pad is damaged or slick with oil. This could result in the load unintentionally shifting.

5.2 Moving the load

When moving a load there has to be a vertical clearance between the load and fixed objects. Properly secure any movable object in the load to avoid possible damage to the facility where the load is moved.

Use the proper handle depending on the skate that is being used and the load that is been moved.

⚠ WARNING

Verify the floor supporting the load is able to do so and provides a flat and level surface. Failure to do so could result in damage to the floor, the skates, or cause the load to tip.

⚠ WARNING

Do not use the load skates on inclines, uneven floor surfaces, near floor edge drop offs, over stairs, or over gaps in the floor excceding 0.4 in (1.0 cm).

Move the load slowly and carefully, maintain a minimum distance of 1.6 ft (0.5 m) to walls from the load. The angle of the handle when pulling the load is not to exceed 25° from horizontal to the floor.

NOTICE

When moving the load do so in a controlled direction and try to avoid non - linear travel when possible.

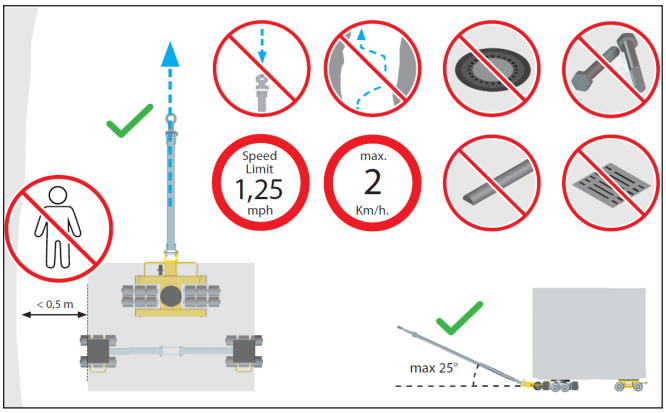

Figure 11: Safety measures when moving the load

NOTICE

If using MSLR load skates, verify that the rotating skates are unlocked before begin to move the load. Also verify that the rotational load pad functions correctly.

When moving a load over a step, approach the step with the steering skate. Once at the step verify there is enough of the load overhanging the step to then allow

the steering skate to be repositioned under the load on the higher elevation of the step.

Lift the load with the lifting device and then reposition the steering skate under the load on the other side of the step. Lower the load slowly to rest again on the repositioned front skate. Move the load forward and repeat this operation for the rear trailing skate.

5.3 Removing the load

To remove the load from the skates, lift the end of the load, which is on the steering skate, with a lifting device. Remove the skate and lower the load to the floor. Repeat same process on the other side of the load.

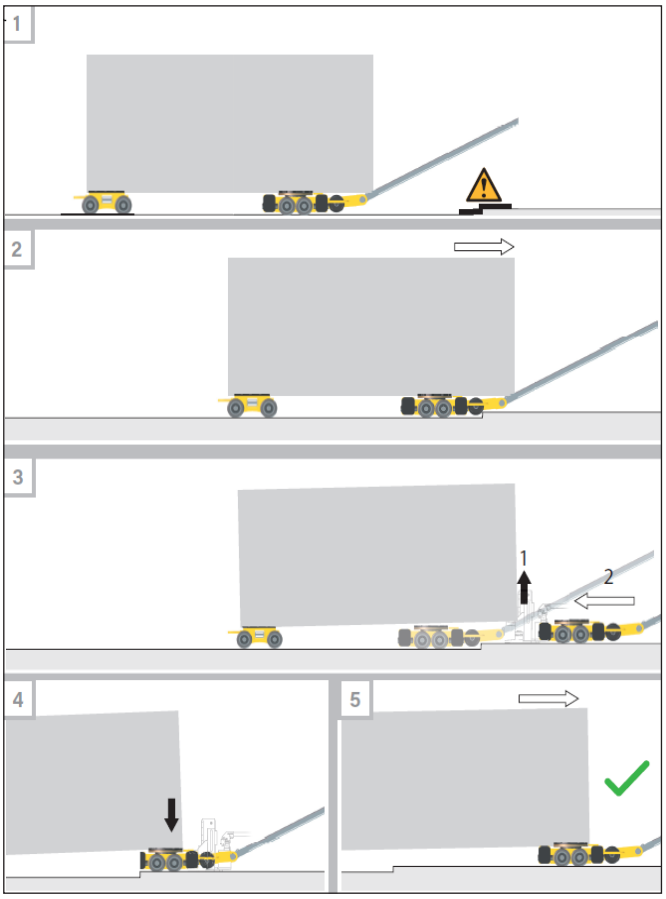

Figure 12: Moving a load over a step

⚠ CAUTION

Load removal must be done as carefully and slowly as load lifting and moving

⚠ WARNING

Keep body parts away from lifted loads and movable parts and never put them below the load.

6. Storage & Maintenance

Use appropriate lifting equipment for transportation.

The device must be stored in a dry place and protected from frost.

Lock the device in a proper place to protect it from unauthorised use.

Ensure that the warning labels are always in good working order.

Before placing the device into operation, check all components (including protective equipment) are securely attached. Be sure that all bolts and other fasteners are properly tightened. Verify that all moving parts operate smoothly.

If your device requires repair, reach out to your nearest Authorized Enerpac Service Center and source replacement components only from Enerpac. This will ensure that the safety of the device is maintained.

Insufficient maintenance and care can lead to unforeseen accidents and injuries.

Keep the device handle clean, dry and free of spilled oil or grease. Never clean the device and it´s components with solvents, flammable or toxic liquids. Use only a damp cloth.

7. Service Parts List

7.1 MLSF Exploded View

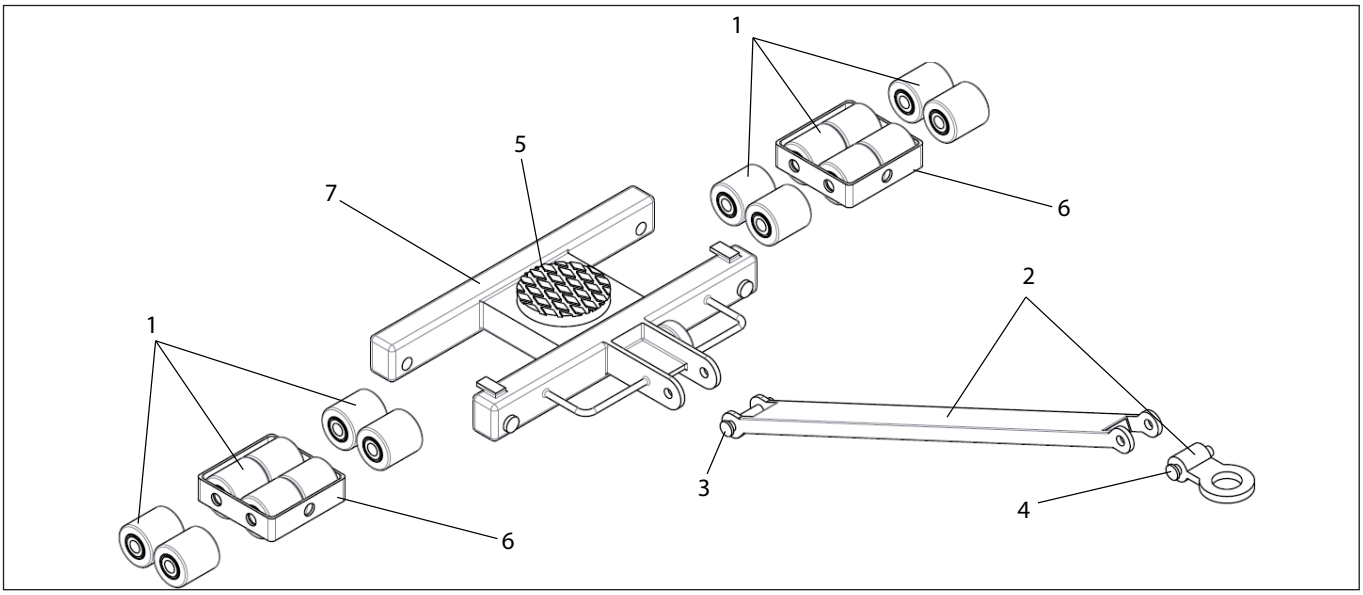

Figure 13: MLSF load skate exploded view

7.1.1 MLSF Service Parts List

MLSF Load Skate Service Parts List				
Item	**Compatible Skates**	**Part Number**	**Description**	**Qty. Per Skate**
1	MLSF3	MLSWPU85874	Polyurethane Wheel Kit 85mm diameter X 87mm width Kit includes 4 wheels	1
	MLSF7			2
	MLSF10			3
	MLSF13			4
	MLSF17	MLSWPU140854	Polyurethane Wheel Kit 140mm diameter X 85mm width Kit includes 4 wheels	2
	MLSF27			3
	MLSF35			4
2	MLSF3, MLSF7	MLSHT	T Handle, Load Skate	1
	MLSF10, MLSF13	MLSHR	Ring Handle, Load Skate	1
	MLSF17, MLSF27, MLSF35	MLSHF	Frame Handle, Load Skate	1
3	MLSF3, MLSF7	DD9199202	Galvanized Lock Pin, 12mm x 82mm	1
	MLSF10,MLSF13	DD9201202	Galvanized Lock Pin, 20mm x 85mm	1
	MLSF17, MLSF27, MLSF35	DD9203202	Galvanized Lock Pin, 20mm x 95mm	1
4	MLSF3, MLSF7	N/A	-	-
	MLSF10,MLSF13	DD9202202	Galvanized Lock Pin, 20mm x105mm	1
	MLSF17, MLSF27, MLSF35	DD9204202	Galvanized Lock Pin, 20mm x 50mm	2
5	MLSF3, MLSF7	MLSFRP37	Rubber Pad, Round 150mm x 8mm	1
	MLSF10, MLSF13	MLSFRP1013	Rubber Pad, Round 170mm x 8mm	1
	MLSF17, MLSF27	MLSFRP1727	Rubber Pad, Round 220mm x 8mm	1
	MLSF35	MLSFRP35	Rubber Pad, Round 250mm x 8mm	1
6	All Models	N/A	Wheel Box	N/A
7	All Models	N/A	Skate Chassis	N/A

7.1.2 MLSF Accessories

MLSF Load Skate Accessories				
Item	**Compatible Skates**	**Part Number**	**Description**	**Qty. Per Skate**
1	MLSF3	MLSWNY85874	Nylon Wheel Kit 85mm diameter X 87mm width Kit includes 4 wheels	1
	MLSF7			2
	MLSF10			3
	MLSF13			4
	MLSF17	MLSWNY140854	Nylon Wheel Kit 140mm diameter X 85mm width Kit includes 4 wheels	2
	MLSF27			3
	MLSF35			4

7.2 MLSD Exploded View

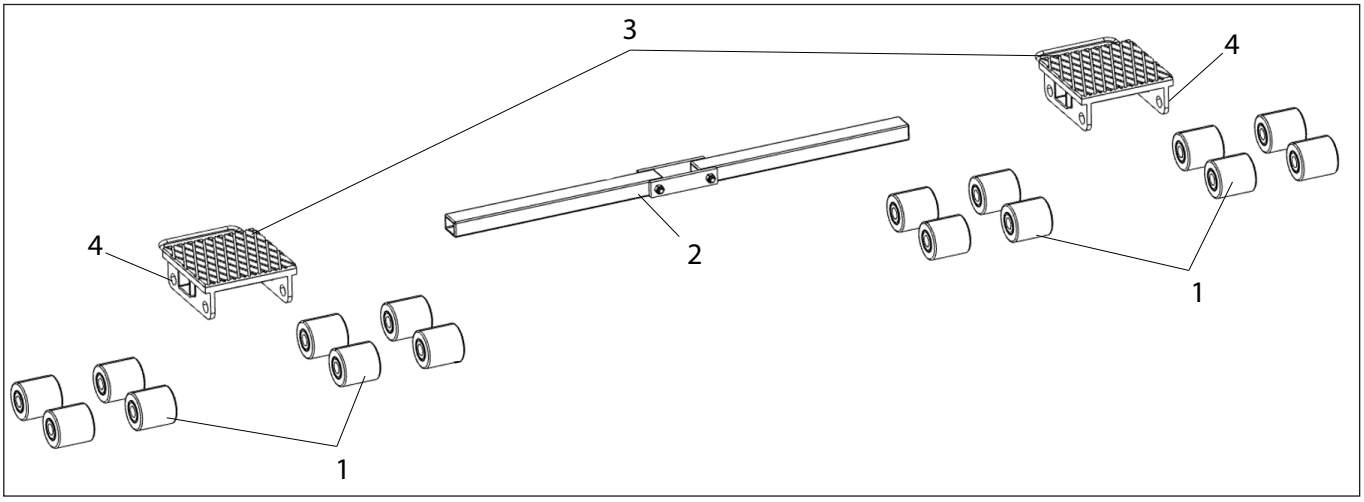

Figure 14: MLSD load skate exploded view

7.2.1 MLSD Service Parts List

MLSD Load Skate Service Parts List				
Item	**Compatible Skates**	**Part Number**	**Description**	**Qty. Per Skate**
1	MLSF3	MLSWPU85874	Polyurethane Wheel Kit 85mm diameter X 87mm width Kit includes 4 wheels	1
	MLSF7			2
	MLSF10			3
	MLSF13			4
	MLSF17	MLSWPU140854	Polyurethane Wheel Kit 140mm diameter X 85mm width Kit includes 4 wheels	2
	MLSF27			3
	MLSF35			4
2	MLSD3	MLSCDR	Round Connecting Bar, Dual Load Skate	1
	MLSD7, MLSD10, MLSD13	MLSCDF	Folding Connecting Bar, Dual Load Skate	1
	MLSD17, MLSD27, MLSD35	MLSCDS	Square Connecting Bar, Dual Load Skate	2
3	MLSD3	MLSRP1	Rubber Pad, 75mm x 150mm x 8mm	2
	MLSD7	MLSRP3	Rubber Pad, 120mm x 220mm x 8mm	2
	MLSD10	MLSRP5	Rubber Pad, 170mm x 180mm x 8mm	2
	MLSD13	MLSRP7	Rubber Pad, 200mm x 220mm x 8mm	2
	MLSD17	MLSRP9	Rubber Pad, 318mm x 188mm x 8mm	2
	MLSD27	MLSRP13	Rubber Pad, 318mm x 285mm x 8mm	2
	MLSD35	MLSRP17	Rubber Pad, 318mm x 382mm x 8mm	2
4	All Models	N/A	Skate Chassis	N/A

7.2.2 MLSD Accessories

MLSD Load Skate Accessories				
Item	**Compatible Skates**	**Part Number**	**Description**	**Qty. Per Skate**
1	MLSD3	MLSWNY85874	Nylon Wheel Kit 85mm diameter x 87mm width Kit includes 4 wheels"	1
	MLSD7			2
	MLSD10			3
	MLSD13			4
	MLSD17	MLSWNY140854	Nylon Wheel Kit 140mm diameter X 85mm width Kit includes 4 wheels	2
	MLSD27			3
	MLSF35			4

7.3 MLSR Exploded View

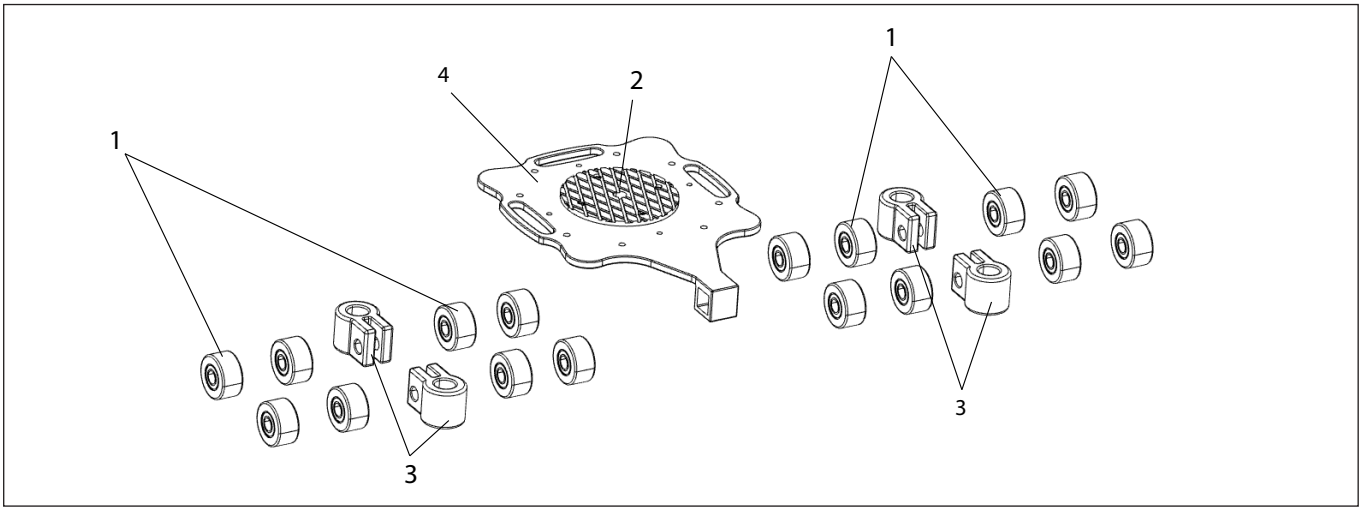

Figure 15: MLSR load skate exploded view

7.3.1 MLSD Service Parts

MLSR Load Skate Service Parts List				
Item	**Compatible Skates**	**Part Number**	**Description**	**Qty. Per Skate**
1	MLSR3	MLSWNY85434	"Nylon Wheel Kit 85mm diameter X 43.5mm width Kit includes 4 wheels"	2
	MLSR7			4
	MLSR9			5
2	MLSR3	MLSRRP3	Rubber Pad, Round 170mm x 8mm, including center and lock pin holes	1
	MLSR7, MLSR9	MLSRRP79	Rubber Pad, Round 220mm x 8mm, including center and lock pin holes	1
3	All Models	N/A	Wheel Box	N/A
4	All Models	N/A	Skate Chassis	N/A
5*	All Models	DD9199202	Galvanized Lock Pin, 12mm x 82mm	2
*NOTE: Item not Shown				

7.3.2 MLSR Accessories

MLSR Load Skate Service Parts List				
Item	**Compatible Skates**	**Part Number**	**Description**	**Qty. Per Skate**
1	MLSR3, MLSR7, MLSR9	MLSHRT	T Handle, Rotational Load Skate	1
2	MLSR3, MLSR7, MLSR9	MLSHRR	Ring Handle, Rotational Load Skate	1
3	MLSR3, MLSR7, MLSR9	MLSCR6	6.5 Ft Connecting Bar, Rotational Load Skate	1
4	MLSR3, MLSR7, MLSR9	MLSCR8	8.0 Ft Connecting Bar, Rotational Load Skate	1
5	MLSR3, MLSR7, MLSR9	MLSCRH8	8.0 Ft Connecting Bar with Handle Joint, Rotational Load Skate	1
6	MLSR3, MLSR7, MLSR10	MLSRTT	Turntable Assembly, Rotational Load Skate, Round 170mm x 37mm	1

8. Troubleshooting

Troubleshooting Guide		
Symptom	**Possible Cause**	**Solution**
1. Load is more difficult to move.	a. Fatigue or corrosion on the skate body.	Clean corrosion. If damaged, reach out to your nearest Authorized Enerpac Service Center for repair/replacement options.
	b. Corrosion on the wheel bearings.	
	c. Load path with debris.	Clean load path.
	d. Deformed PU or NY layer on wheel.	Change old wheels for new ones.
	e. MLSR skates have locking pins installed, preventing rotation	If the application requires rotation of the MLSR skate, remove the locking pins
2. Load gets stuck in position and is not able to be moved.	a. Fatigue or corrosion on the skate body.	Clean corrosion. If damaged, reach out to your nearest Authorized Enerpac Service Center for repair/replacement options.
	b. Corrosion on the wheel bearings.	
	c. Fatigue or corrosion on the wheel box.	
	d. Corrosion or fatigue on the skate´s handle.	
3. Load is not be able to be steered in the correct direction.	a. Corrosion on the load pad top swivel.	Clean corrosion. If damaged, reach out to your nearest Authorized Enerpac Service Center for repair/replacement options.
	b. Load path with debris.	Clean load path.
	c. Corrosion or fatigue on the skate´s handle.	Clean corrosion. If damaged, reach out to your nearest Authorized Enerpac Service Center for repair/replacement options.
4. Load shifts from the rubber pad.	a. Oil spilled on the rubber pad.	Clean rubber load pad or if necessary, replace rubber load pad.

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