Form MHD56073

PARTS, OPERATION AND MAINTENANCE MANUAL

for

" Lo-Pro™" SERIES BARGE WINCH

MODELS

Left Hand

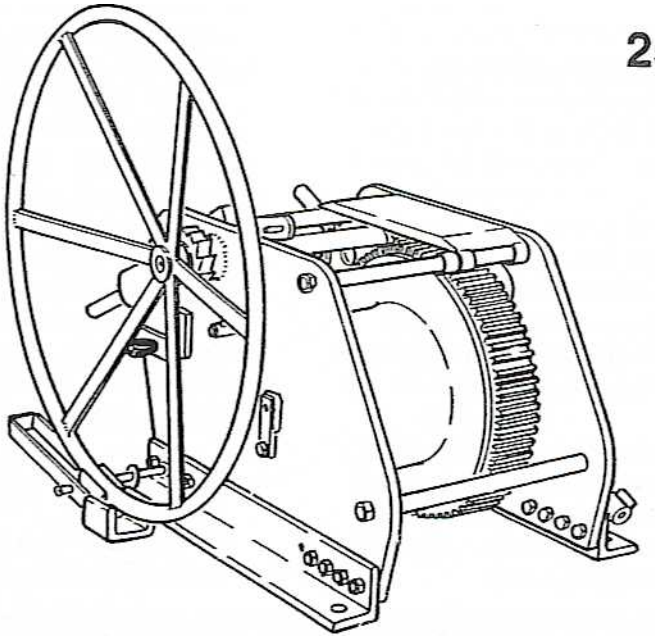
25HL 50HL

75HL

Right Hand

25HR 50HR

75HR



READ THIS MANUAL BEFORE USING THESE PRODUCTS. This manual contains important safety, installation, operation and maintenance information. Make this manual available to all persons responsible for the operation, installation and maintenance of these products.

⚠WARNING

Do not use this winch for lifting, supporting, or transporting people or lifting or supporting loads over people.

Always operate, inspect and maintain this winch in accordance with American National Standards Institute Safety Code (ANSI B30.7) and any other applicable safety codes and regulations.

Refer all communications to WINTECH or your nearest Distributor.

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WINTECH
INTERNATIONAL, L.L.C.

SAFETY INFORMATION

Inspection and safety information contained in this manual is based, in part, on the American National Standards Institute Safety Code (ASME B30.7). However, it should be noted that ASME B30.7 covers "Base Mounted Hoists" and does not specifically apply to winches used as barge pullers or in horizontal pulling applications.

This manual provides important information for all personnel involved with the safe installation, operation and proper maintenance of this product. Even if you feel you are familiar with this or similar equipment, you should read and understand this manual before operating the product.

Danger, Warning, Caution and Notice

Throughout this manual there are steps and procedures which, if not followed, may result in an injury. The following signal words are used to identify the level of potential hazard.

⚠ DANGER Danger is used to indicate the presence of a hazard which ***will*** cause ***severe*** injury, death, or substantial property damage if the warning is ignored.

⚠ WARNING Warning is used to indicate the presence of a hazard which ***can*** cause ***severe*** injury, death, or substantial property damage if the warning is ignored.

⚠ CAUTION Caution is used to indicate the presence of a hazard which ***will*** or ***can*** cause ***minor*** injury or property damage if the warning is ignored.

NOTICE Notice is used to notify people of installation, operation, or maintenance information which is important but not hazard-related.

Safety Summary

⚠ WARNING

• Do not use this winch for lifting or lowering loads or for supporting, or transporting people.

• The supporting structures and load-attaching devices used in conjunction with this winch must provide an adequate safety factor to handle the rated load, plus the weight of the winch and attached equipment. This is the customer's responsibility. If in doubt, consult a registered structural engineer.

The National Safety Council, Accident Prevention Manual for Industrial Operations, Eighth Edition and other recognized safety sources make a common point: Employees who work near material handling equipment or assist in hooking on or arranging a load should be instructed in safe rigging procedures. From a safety standpoint, one factor is paramount: conduct all pulling operations in such a manner that if there were an equipment failure, no personnel would be injured. This means keep out of the line of force of any load.

The Occupational Safety and Health Act of 1970 generally places the burden of compliance with the owner/employer, not the manufacturer. Many OSHA requirements are not concerned or connected with the manufactured product but are, rather, connected with the final installation. It is the owner's responsibility and user's responsibility to determine the suitability of a product for any particular use. Check all applicable industry, trade association, federal, state and local regulations. Read all operating instructions and warnings before operation.

Rigging: It is the responsibility of the operator to exercise caution, use common sense and be familiar with proper rigging techniques. See ANSI/ASME B30.9 for rigging information, American National Standards Institute, 1430 Broadway, New York, NY 10018.

NOTICE

• Using other than genuine WINTECH parts will void the warranty.

SAFE OPERATING INSTRUCTIONS

The following warnings and operating instructions have been adapted in part from American National (Safety) Standard ASME B30.7 and are intended to avoid unsafe operating practices which might lead to injury or property damage.

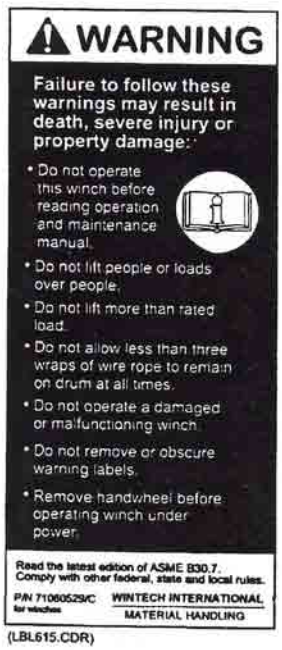
WINTECH recognizes that most companies who use winches have a safety program in force at their facility. In the event that some conflict exists between a rule set forth in this publication and a similar rule already set by an individual company, the more stringent of the two should take precedence.

Safe Operating Instructions are provided to make an operator aware of dangerous practices to avoid and are not necessarily limited to the following list. Refer to specific sections in the manual for additional safety information.

1. Only allow personnel trained in safety and operation of this product to operate and maintain the winch.
2. Only operate a winch if you are physically fit to do so.
3. When a "DO NOT OPERATE" sign is placed on the winch, do not operate the winch until the sign has been removed by designated personnel.
4. Before each shift, the operator should inspect the winch for wear or damage.
5. Never use a winch which inspection indicates is defective.
6. Do not use winch if hook latch on a hook has been sprung or is broken.
7. Only pull loads less than or equal to the rated capacity of the winch.
8. Check that the hook latches are engaged before using.
9. When using two winches on one load ensure that each winch has a rated capacity equal to or more than the load. This provides adequate safety in the event of a sudden load shift.
10. Never place your hand in the throat area of a hook or in the vicinity of the wire rope as it spools onto the drum.
11. Position load correctly. Only pull in a straight line. Do not "side pull" or "yard".
12. Keep hands, clothing, etc., clear of moving parts.
13. Do not force a hook into place by hammering.
14. Be certain the load is properly seated in the saddle of the hook.
15. Do not pull the load on the tip of the hook.
16. Never run the wire rope over a sharp edge. Use a sheave.
17. Pay attention to the load at all times when operating the winch.
18. Make sure all people are clear of the loadpath.
19. Never use the winch for lifting or lowering loads and never allow anyone to stand on a moving load.
20. Ease the slack out of the wire rope when starting a pull.
21. Never weld or cut on a load held by the winch.
22. Do not operate winch if jamming, overloading, or binding occurs.
23. After use, properly secure winch and all loads.
24. Always rig loads properly and carefully.

WARNING LABEL

Each winch is supplied from the factory with the warning label shown. If the label is not attached to your winch, order a new label and install it. See the parts list for the part number. Read and obey all warnings and other safety information attached to this winch. Label may not be shown actual size.



(LBL615.CDR)

Model Code Explanation:

Example: 50HL-41-16B — **50H L - 41 - 16 B**

Series/Capacity:

25H	=	25 US Tons	22,680 kg ~ 22.5 metric tons
50H	=	**50 US Tons**	**45,360 kg ~ 45 metric tons**
75H	=	75 US Tons	68,039 kg ~ 68 metric tons

Configuration:(handwheel to wire rope take-off)

R	=	Right hand.
L	=	**Left hand.**

Drum Lengths Available:

25H	=	9 inches	229 mm
	=	17 inches	432 mm
	=	35 inches	889 mm
	=	52 inches	1321 mm
	=	69 inches	1753 mm
50H	=	11 inches	280 mm
	=	20 inches	508 mm
	=	**41 inches**	**1041 mm**
	=	61 inches	1549 mm
	=	82 inches	2083 mm
75H	=	10 inches	254 mm
	=	20 inches	508 mm
	=	40 inches	1016 mm
	=	61 inches	1549 mm
	=	81 inches	2057 mm

Wire Rope Size (number equals rope diameter in sixteenths of an inch):

10	=	10/16 inch	=	5/8 inch	16 mm
12	=	12/16 inch	=	3/4 inch	18 mm
14	=	14/16 inch	=	7/8 inch	22 mm
16	=	16/16 inch	=	**1 inch**	**26 mm**
18	=	18/16 inch	=	1-1/8 inch	28 mm
20	=	20/16 inch	=	1-1/4 inch	32 mm
22	=	22/16 inch	=	1-3/8 inch	36 mm
24	=	24/16 inch	=	1-1/2 inch	40 mm

Options:

B	=	**Angled deck bracket.**
C	=	Overload clutch with handwheel.
D	=	Drum divider with second wire rope anchor.
G	=	Grooved drum.
P	=	Special paint: Marine 812 top coat.
Z	=	Sand blasted/carbozinc plating.

(TBL.MODELCD)

Drum Length (inches)	Wire Rope Capacity ft. (m)											
	5/8	16 mm	3/4	18 mm	7/8	22 mm	1	26 mm	1-1/8	28 mm	1-1/4	32 mm
25H	**4 layers**		**4 layers**		**4 layers**		**3 layers**					
9	248	75	162	52	142	43	88	26	---	---	---	---
17	479	146	314	100	277	84	174	52	---	---	---	---
35	975	297	643	205	568	173	359	107	---	---	---	---
52	1472	449	971	309	860	262	544	163	---	---	---	---
69	1969	600	1299	414	1151	351	729	218	---	---	---	---
50H					**4 layers**		**4 layers**		**3 layers**		**3 layers**	
11	---	---	---	---	194	59	174	51	110	34	100	30
20	---	---	---	---	377	115	338	101	216	66	197	60
41	---	---	---	---	773	236	694	207	445	136	408	124
61	---	---	---	---	1168	356	1051	314	674	205	619	189
82	---	---	---	---	1564	477	1407	421	903	275	830	253
75H	**3 layers**		**3 layers**		**3 layers**		**2 layers**					
	1-1/8	**28 mm**	**1-1/4**	**32 mm**	**1-3/8**	**36 mm**	**1-1/2**	**40 mm**				
10	119	36	108	33	98	29	56	16				
20	247	75	225	69	207	61	119	35				
40	523	159	478	146	441	131	254	74				
61	798	243	731	223	675	200	390	114				
81	1074	327	983	300	909	270	525	154				

Note: Wire rope capacities are calculated for full drum storage and do not comply with ASME/ANSI or any other standards which may require that the top layer not exceed a specified distance below the drum flange diameter. Figures may vary from those published elsewhere.

(TBL.CAPACITY)

Model Number	Drum Length	Weight * (without wire rope)		Load Capacities on 1st Wire Rope Layer **						Drum Diameter	
				Holding Capacity		Tensioning Ratchet		Tensioning Handwheel			
		lbs.	kgs.	US Tons	Metric tons	US Tons	Metric tons	US Tons	Metric tons	inches	mm
25H	9	650	295	25	22.5	10	9	5	4.5	10-3/4	273
	17	735	333								
	35	920	417								
	52	1100	499								
	69	1285	583								
50H	11	1175	533	50	45	15	13.6	7.5	6.8	12-3/4	324
	20	1315	597								
	41	1615	733								
	61	1920	871								
	82	2220	1007								
75H	10	1880	853	75	68	20	18	10	9	16	406
	20	2085	946								
	40	2525	1145								
	61	2965	1345								
	81	3405	1544								

* Weights listed are for units manufactured before 15 July 1993; for actual weight of a specific unit reference the shipping invoice.

** Capacities based on the following wire rope sizes: 25H = 1 inch wire rope; 50H = 1-1/4 inch wire rope; 75H = 1-1/2 inch wire rope.

(TBL.SPECCHRT)

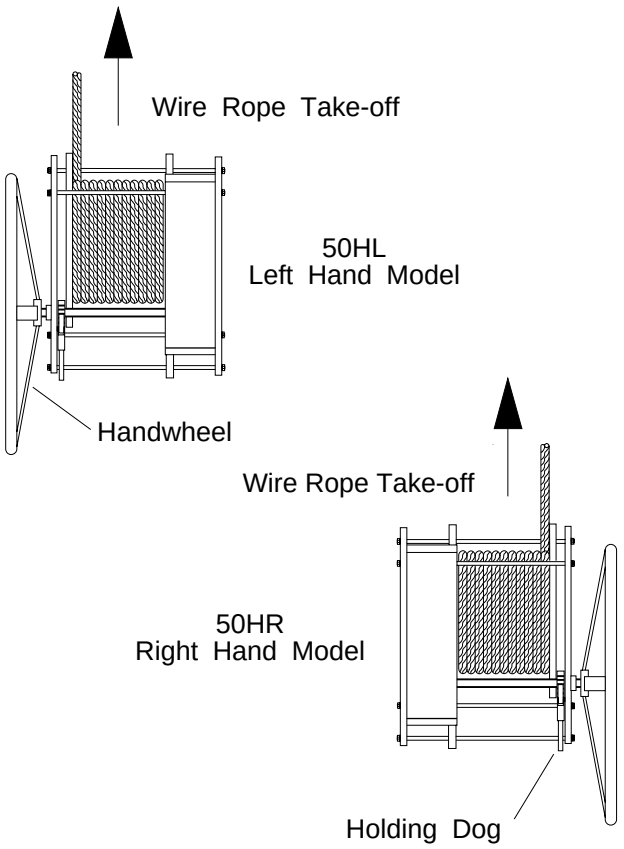
Prior to installing the winch, carefully inspect it for possible shipping damage.
Winches are supplied fully lubricated from the factory.

⚠ CAUTION

• Owners and users are advised to examine specific, local and other regulations, including American National Standards Institute and/or OSHA Regulations which may apply to a particular type of use of this product before installing or putting winch to use.

Winch Configuration

(Ref. Dwg. MHTPA0457)
As viewed from the handwheel side of the winch, the direction of wire rope take-off determines if winch is left or right hand.



(Dwg. MHTPA0457)

Mounting

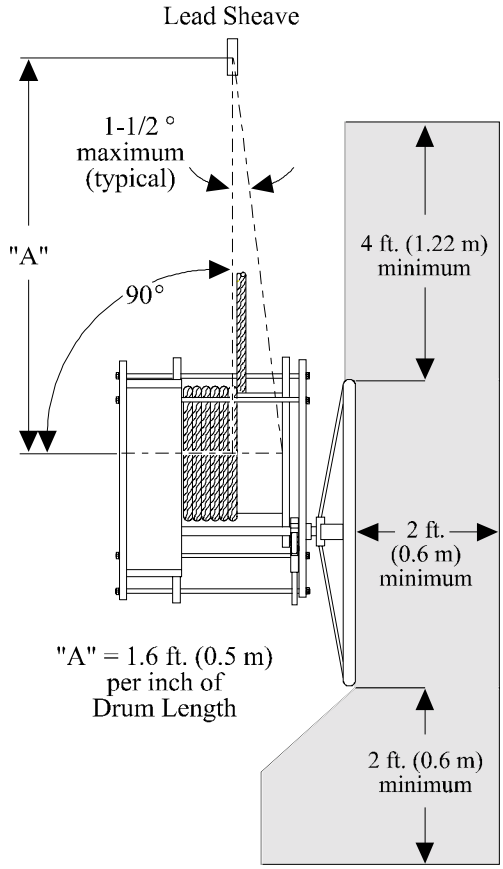
(Ref. Dwgs. MHTPA217 and MHTPA0470.)

1. Mount the winch on a rigid surface capable of supporting the winch and that will prevent deflecting or distortion of the winch when operated at maximum capacity.
2. Choose a site that uses as short a wire rope as practical.

⚠ WARNING

• The winch is not a balanced load and may weigh as much as 3405 lbs. (1544 kgs.). Use extreme care when lifting winch into position.

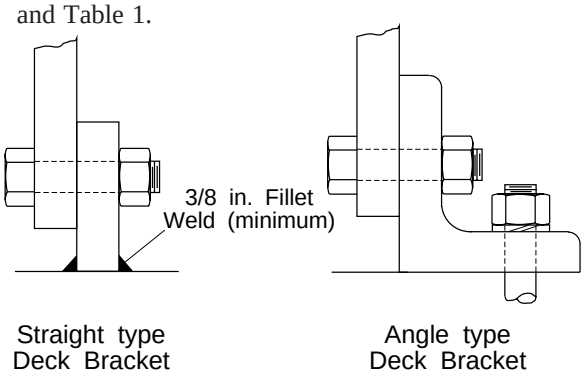
3. When a lead sheave is used, it should be aligned with the center of the drum. The diameter of the lead sheave must be at least 18 times the diameter of the wire rope.
4. Maintain a fleet angle between the sheave and winch of no more than 1-1/2°. For every inch (25 mm) of drum length the lead sheave must be at least 1.6 feet (0.5 m) from the drum.



(Dwg. MHTPA0470)

5. Make sure the mounting surface is flat to within 1/16 in. (1.6 mm). Place shims at winch base to align as required.
6. Position the winch so there is enough space for the operator to operate the handwheel, ratchet lever (tensioning), foot brake and holding dog (releasing) and for maintenance personnel to access the winch for inspection, maintenance and repair. The handwheel rotation must be unobstructed for the full 360 degree rotation. Reposition winch if necessary. Refer to the shaded area shown on Dwg. MHTPA0470 for recommended clearances.

7. Mount the winch using the straight type deck bracket when welding to a steel deck. Mount the winch using the angle type deck bracket when bolting the winch to the mounting surface. Refer to Dwg. MHTPA0217 and Table 1.



(Dwg. MHTPA0217)

Table 1

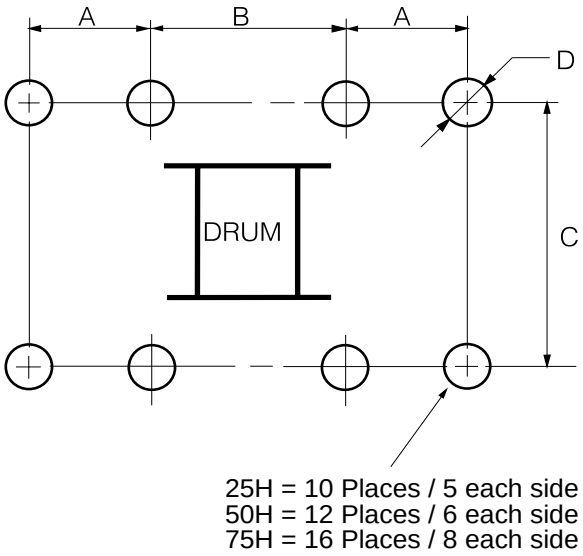
(Refer to Dwg. MHTPA0206.)

Bolt Pattern Dimensions						
Model	**"A"**		**"B"**		**"D"**	
	in.	**mm**	**in.**	**mm**	**in.**	**mm**
25H	4	102	2	51	13/16	21
50H			7	178	1-1/8	28
75H						

Drum Length (inches)	**"C"**					
	25H		**50H**		**75H**	
	in.	**mm**	**in.**	**mm**	**in.**	**mm**
9	21	533	- - -	- - -	- - -	- - -
10	- - -	- - -	- - -	- - -	26-1/4	667
11	- - -	- - -	25-1/4	641	- - -	- - -
17	29	737	- - -	- - -	- - -	- - -
20	- - -	- - -	34-3/4	883	35-3/4	908
35	46-1/4	1175	- - -	- - -	- - -	- - -
40	- - -	- - -	- - -	- - -	56-1/4	1429
41	- - -	- - -	55-1/4	1403	- - -	- - -
52	63-1/2	161	- - -	- - -	- - -	- - -
61	- - -	- - -	75-3/4	1924	76-3/4	1949
69	80-3/4	2051	- - -	- - -	- - -	- - -
81	- - -	- - -	- - -	- - -	97-1/4	2470
82	- - -	- - -	96-1/4	2445	- - -	- - -

(TBL.BOLTPATN)

8. Mount the winch to the deck brackets:
   a. When using the straight brackets, install with one side frame mounted to the inside of the deck bracket and the other side frame mounted to the outside of the other deck bracket.
   b. When using the angled brackets, both side frames must be mounted to the inside of the deck brackets.
9. Mounting bolts or screws must be Grade 8 or better. Size for 25H winches is 3/4 inch (19 mm) diameter; for 50H/75H winches, 1 inch (25 mm) diameter. Secure using nuts with lockwashers or self-locking nuts.
10. Tighten mounting bolts evenly. For dry thread fasteners torque to 200 ft. lbs. (28 kg.m) for 3/4 inch bolts and 500 ft. lbs. (69 kg.m) for 1 inch bolts. If the fasteners are plated, lubricated or a thread locking compound is used, torque to 166 ft. lbs. (23 kg.m) for 3/4 inch bolts and 400 ft. lbs. (55 kg.m) for 1 inch bolts.



(Dwg. MHTPA0206)

Safe Installation Procedures

1. Do not use wire rope as a ground (earth) for welding.
2. Do not attach a welding electrode to winch or wire rope.
3. Never run the wire rope over a sharp edge. Use a correctly sized sheave. Refer to the "MOUNTING" section for specific instructions.
4. Do not weld on or to any part of the winch.
5. Always maintain at least three full wraps of wire rope on the drum.
6. Verify the gears and winch components are lubricated before using winch. Refer to the "LUBRICATION" section for specific information.

Wire Rope

Wire Rope Selection

Consult a reputable wire rope manufacturer or distributor for assistance in selecting the appropriate type and size of wire rope and, where necessary, a protective coating. Use a wire rope which provides an adequate safety factor to handle the actual working load and meets all applicable industry, trade association, federal, state and local regulations.

When considering wire rope requirements the actual working load must include not only the static or dead load but also loads resulting from acceleration, retardation and shock load. Consideration must also be given to the size of the winch drum, sheaves, anchor wedge and the method of reeving.

⚠ CAUTION

• Ensure the wire rope diameter provides an adequate safety factor.

Table 2

Minimum and Maximum Wire Rope Size Applicability				
Model	**Minimum Wire Rope Size**		**Maximum Wire Rope Size**	
	inch	**mm**	**inch**	**mm**
25H	5/8	16	1	26
50H	7/8	22	1-1/4	32
75H	1-1/8	28	1-1/2	40

Wire rope maximum diameter is limited by the size of the wire rope anchor hole (located on the winch drum).

(TBL.WIREROPE)

Safe Wire Rope Handling Procedures

1. Always use gloves when handling wire rope.
2. Never use wire rope which is twisted, frayed or kinked.
3. Never use wire rope as a sling.
4. Always ensure wire rope is correctly spooled and first layer is tight.

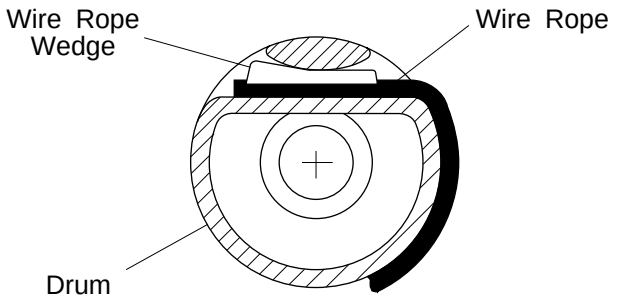
Installing Wire Rope

⚠ CAUTION

• Install the wire rope so that it comes off the bottom of the drum (underwind).

• Maintain at least 3 wraps of wire rope on the drum at all times.

1. Cut wire rope to length. To prevent fraying of strands, fuse wire rope ends in accordance with the wire rope manufacturer's instructions.
2. Feed the end of wire rope into the wire rope anchor hole. Position the end of the wire rope just beneath the drum surface. Refer to Dwg. MHTPA0218.



(Dwg. MHTPA0218)

3. Make sure the wire rope wedge is the correct size for the wire rope. Cast numbers on the wedge indicate the required wire rope size with which it is to be used.
4. Install the wire rope wedge into anchor hole. Install the wedge from the side of the hole with the wire rope end. Position the wedge so the serrated surface is on the wire rope. Insert the narrow end of the wedge first. Position the wedge such that it is nearest the surface of the drum.
5. Hammer the wedge into the wire rope anchor hole to secure the wire rope.
6. Maintain tension on the wire rope while winding onto the drum at slow speed.

⚠ CAUTION

• Make sure the first wrap of wire rope is flush against the drum flange.

Wire Rope Spooling

To compensate for uneven spooling and the decrease in line pull capacity as the drum fills up, use as short a wire rope as practical. When rewinding wire rope apply tension to the end of the wire rope to eliminate line slack. This helps achieve level winding and tight spooling.

Rigging

Make sure all wire rope blocks, tackle and fasteners have sufficient safety margin to handle the required load. To prevent wire rope damage, **do not** allow wire rope to contact sharp edges or make sharp bends. Use a sheave. Refer to wire rope manufacturer's handbook for proper sizing, use and care of wire rope.

The four most important aspects of winch operation are:
1. Follow all safety instructions when operating the winch.
2. Allow only people trained in safety and the operation of this winch to operate this equipment.
3. Subject each winch to a regular inspection and maintenance procedure.
4. Be aware of the winch capacity and weight of load at all times.

⚠ WARNING

• Only allow personnel trained in safety and operation of this winch to operate this product.
• To avoid damage to the rigging, the structure supporting the rigging, and the winch, do not "two-block" the end of the wire rope.

Inspection

Before each shift inspect winch as described in "Frequent Inspection" of the "INSPECTION" section. Repair or replace damaged parts. Lubricate as recommended in the "LUBRICATION" section.

Tensioning

(Refer to Dwg. MHTPA0479.)

Handwheel Tensioning

1. Connect wire rope to the load.
2. Engage the holding dog by placing the holding dog lever in the forward position.
3. Take up slack wire rope by turning the handwheel in the clockwise direction (viewed facing handwheel). Ensure wire rope is spooled evenly and tightly onto drum.
4. Using the handwheel, tension the wire rope. Maximum tensioning capacities are listed in Table 3.

Table 3

Tensioning Capacities				
Model	Handwheel		Ratchet	
	US Tons	Metric tons	US Tons	Metric tons
25H	5	4.5	10	9.1
50H			15	13.6
75H	10	9.1	20	18.1

(TBL.HNDTNSNG)

Ratchet Tensioning

1. To operate the ratchet dog, rotate the ratchet lever from the stored position to engage the ratchet dog with the drive shaft ratchet gear at approximately 45° up from the horizontal.
2. Place the ratchet extention tube over the ratchet lever handle and, from the front of the winch, pull down on the ratchet lever.
3. Using the ratchet, tension the wire rope. Maximum tensioning capacities are listed in Table 3.

⚠ CAUTION

• When tensioning is complete, ensure the holding dog is engaged and then remove and store the ratchet extension handle, place the ratchet lever to its stowed position, and ensure the ratchet dog is dis-engaged.

Releasing Tension

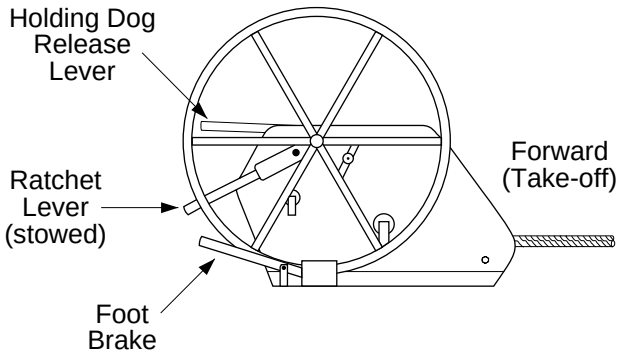
(Refer to Dwg. MHTPA0479.)

To release wire rope tension:
1. Make sure the ratchet lever is in the stowed position.
2. Make sure the ratchet dog is disengaged from the drive shaft ratchet gear.
3. Rotate the holding dog release lever to the rear of the winch.
4. Place foot on the foot brake lever to apply firm pressure to the handwheel. This will prevent uncontrolled release of wire rope tension when the holding dog is disengaged.

⚠ WARNING

• Do not release holding dog with winch holding load unless the ratchet dog is disengaged from the handwheel shaft ratchet gear.
• Before releasing holding dog ensure handwheel rotation is not obstructed. Ensure personnel remain clear of spinning handwheel.

5. Using a mallet, strike the end of the holding dog release lever until the holding dog is disengaged from the drive shaft holding gear.



(Dwg. MHTPA0479)

Foot Brake

(Refer to Dwg. MHTPB0477.)

⚠ DANGER

• Use of the foot brake to control drum speed is limited to the pay out of unloaded wire rope. Do not attempt to use the foot brake to control the rate of release of wire rope under load.

1. Engage the foot brake by depressing the brake pedal bar (50) to control the rate of release on **unloaded** wire rope to prevent uncontrolled release and "birdnesting" of the wire rope.

INSPECTION

Inspection information is based in part on the American National Standards Institute Safety Codes (ASME B30.7). However, it should be noted that ASME B30.7 applies specifically to "Base Mounted Drum Hoists" and not to winches used as barge pullers or in horizontal pulling applications.

⚠ WARNING

• All new, altered or modified equipment should be inspected and tested by personnel trained in safety, operation and maintenance of this equipment to ensure safe operation at rated specifications before placing equipment in service.

Frequent and periodic inspections should be performed on equipment in regular service. Frequent inspections are visual examinations performed by operators or personnel trained in safety and operation of this equipment and include observations made during routine equipment operation. Periodic inspections are thorough inspections conducted by personnel trained in the safety, operation and maintenance of this equipment. Inspection intervals depend upon the nature of the critical components of the equipment and the severity of usage. Frequent and periodic inspection intervals for equipment use under various operating conditions are listed below:

1. Frequent Inspection:

NORMAL	HEAVY	SEVERE
monthly	weekly	daily

2. Periodic Inspection:

NORMAL	HEAVY	SEVERE
yearly	yearly	quarterly

Careful inspection on a regular basis will reveal potentially dangerous conditions while still in the early stages, allowing corrective action to be taken before the condition becomes dangerous.

Deficiencies revealed through inspection, or noted during operation, must be reported to designated personnel trained in safety, operation and maintenance of this equipment. A determination as to whether a condition constitutes a safety hazard must be decided, and the correction of noted safety hazards accomplished and documented by written report before placing the equipment in service.

Records and Reports

Inspection records, listing all points requiring periodic inspection should be maintained for all load bearing equipment. Written reports, based on severity of service, should be made on the condition of critical parts as a method of documenting **periodic** inspections. These reports should be dated, signed by the person who performed the inspection, and kept on file where they are readily available for review.

Wire Rope Reports

Records should be maintained as part of a long-range wire rope inspection program. Records should include the condition of wire rope removed from service. Accurate records will establish a relationship between visual observations noted during frequent inspections and the actual condition of wire rope as determined by periodic inspections.

Frequent Inspection

On equipment in continuous service, frequent inspection should be made by operators at the beginning of each shift. In addition, visual inspections should be conducted during regular operation for damage or evidence of malfunction.

1. WINCH. Prior to operation, visually inspect winch shafts, gears, brakes, sideplates and drum for indications of damage. Do not operate the winch unless the wire rope feeds onto the drum smoothly, and any discrepancies noted have been reviewed and inspected further by personnel trained in the operation, safety and maintenance of this winch.
2. WIRE ROPE. Visually inspect all wire rope which can be expected to be in use during the day's operations. Inspect for damage indicated by distortion of wire rope such as kinking, "birdcaging," core protrusion, main strand displacement, corrosion, broken or cut strands. Also inspect the drum flange points, crossover points and repetitive pickup points. If damage is evident, do not operate winch until the discrepancies have been reviewed and inspected further by personnel trained in the operation, safety and maintenance of this winch.

NOTICE

• The full extent of wire rope wear cannot be determined by visual inspection. At any indication of wear inspect the wire rope in accordance with instructions in "Periodic Inspection."

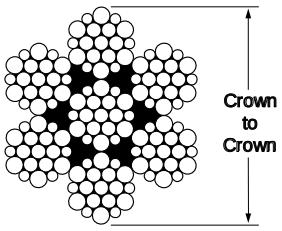
Periodic Inspection

The frequency of periodic inspection depends on severity of usage:

NORMAL	HEAVY	SEVERE
yearly	yearly	quarterly

Disassembly may be required as a result of initial indications of inspections or in order to properly inspect the individual components. Disassembly steps are described in the "MAINTENANCE" section. Maintain written records of periodic inspections to provide an accumulative basis for continuing evaluation. Inspect all items listed in "Frequent Inspection." Also inspect the following:

1. SIDE FRAMES. Check for deformed, cracked or corroded main components. Replace damaged parts.
2. FASTENERS. Check retainer rings, split pins, capscrews, nuts, and other fasteners on winch, including mounting bolts. Replace if missing or damaged and tighten if loose.
3. DRUM AND SHEAVES. Check for cracks, wear or damage. Replace if necessary.
4. WIRE ROPE. Additionally inspect for the following:
   a. Build-up of dirt and corrosion. Clean with steam or a stiff wire brush to remove dirt and corrosion if necessary.
   b. Loose or damaged end connection. Replace if loose or damaged.
   c. Check wire rope anchor is securely mounted in drum.
   d. Verify wire rope diameter. Measure the diameter of the wire rope from crown-to-crown throughout the life of the wire rope. Recording of the actual diameter should only be done with the wire rope under equivalent loading and in the same operating section as accomplished during previous inspections. If the actual diameter of the wire rope has decreased more than 1/64 in. (0.4 mm) a thorough examination of the wire rope should be conducted by an experienced inspector to determine the suitability of the wire rope to remain in service. (Refer to Dwg. MHTPA0056).



(Dwg. MHTPA0056)

5. ALL COMPONENTS. Inspect for wear, damage, distortion, deformation and cleanliness. If external evidence indicates damage, disassemble as required to conduct a detailed inspection. Inspect gears, shafts, bearings, sheaves, springs and covers. Replace worn or damaged parts. Clean, lubricate and reassemble.
6. FOOT BRAKE. Ensure proper operation. Visually inspect foot brake during operation. Brake should prevent the pay out of **unloaded** wire rope. If indicated by poor operation or visual damage, disassemble and repair brake. Check all brake surfaces for wear, deformation or foreign deposits. Clean and replace components as necessary.
7. SUPPORTING STRUCTURE. Check for distortion, wear and continued ability to support winch. Ensure winch is firmly mounted and that fasteners are in good condition and tight.
8. DOGS AND RATCHET GEARS. Check condition of gears and dogs. Verify smooth engagement and release with winch unloaded. Replace gears and dogs indicating cracked, chipped or worn surfaces.
9. OVERLOAD CLUTCH. Verify overload clutch disengages handwheel shaft from gears at specified line pull rating (maximum of 110% of winch rated line pull). Adjust or repair as necessary.
10. LABELS AND TAGS. Check for presence and legibility of labels. Replace if damaged or missing.

Equipment Not in Regular Use

1. Equipment which has been idle for a period of one month or more, but less than six months, shall be given an inspection conforming to the requirements of "Frequent Inspection" before being placed in service.
2. Equipment which has been idle for a period of over six months shall be given a complete inspection conforming with the requirements of "Periodic Inspection" before being place in service.
3. Standby equipment shall be inspected at least semi-annually in accordance with the requirements of "Frequent Inspection". In abnormal operating conditions equipment should be inspected at shorter intervals.

Testing

Operational Tests

Prior to initial use, all new, altered or repaired winches should be tested to ensure proper operation.

a) Operate winch in both directions with no load.
b) Check foot brake, ratchet dog, handwheel and holding dog operation.
c) Check operation of limit switches, and locking or safety devices when provided.
d) Check all mounting bolts are in good condition and properly secured.

Load Test

Prior to initial use, all new, extensively repaired, or altered winches shall be load tested by or under the direction of a person trained in safety, and the operation and maintenance of this winch. A written report must be completed confirming the testing and confirming the rating of the winch. Test loads should not be more than **110%** of the rated line pull.

INSPECTION AND MAINTENANCE REPORT
(Lo-Pro Barge Winch)

Model Number:		**Date:**
Serial Number:		**Inspected by:**
Reason for Inspection: (Check Applicable Box)		
	1. Scheduled Periodic Inspeciton (___ Monthly ___ Yearly).	**Operating Environment:**
	2. Descrepancy(s) noted during Frequent Inspection.	___ Normal ___ Heavy ___ Severe
	3. Descrepancy(s) noted during maintenance.	
	4. Other: _____	

Refer to the Parts, Operation and Maintenance Manual "INSPECTION" section for general inspection criteria. Refer to applicable component and unit safety codes for specific technical requirements. If in doubt about an existing condition contact the nearest WINTECH distributor or the factory for technical assistance.

COMPONENT	CONDITION		CORRECTIVE ACTION		NOTES
	Pass	Fail	Repair	Replace	
Bearings			- - -		
Foot Brake (Winch Unloaded)			- - -		
Covers					
Fasteners					
Gears					
Labels and Tags			- - -		
Load Bearing Sheaves			- - -		
Shafts					
Springs					
Supporting Structure					
Holding Dog					
Holding Gear					
Ratchet Dog					
Ratchet Gear					
Wire Rope Wedge			- - -		
Other Components (list in NOTES section)					

TESTING	Pass	Fail	NOTES
Operational (No Load)			
Operational (10% Load)			
Operational (Maximum Test Load *)			
Overload Clutch Slip Setting **			

* Refer to the Parts, Operation and Maintenance manual, Form #MHD56073, 'Testing' in the "INSPECTION" section to determine maximum test load.

** Maximum recommended overload clutch setting is 110% of rated line pull.

(TBL.WNCHNSPC)

LUBRICATION

Lubrication intervals are based on intermittent operation of the winch eight hours each day, five days per week. If the winch is operated continuously, more than eight hours per day, or under heavy or severe environments lubrication should be performed more frequently. Use only recommended lubricants. Other lubricants may affect the performance of the winch. Recommended lubricants are based on winch operation in environments relatively free of dust, moisture, and corrosive fumes. Approval for the use of other lubricants, or recommendations on the proper lubricant use in specific environmental situations should be obtained from **Wintech International** . Failure to observe this precaution may result in damage to the winch and/or the associated components.

Bushings and Pivot Points

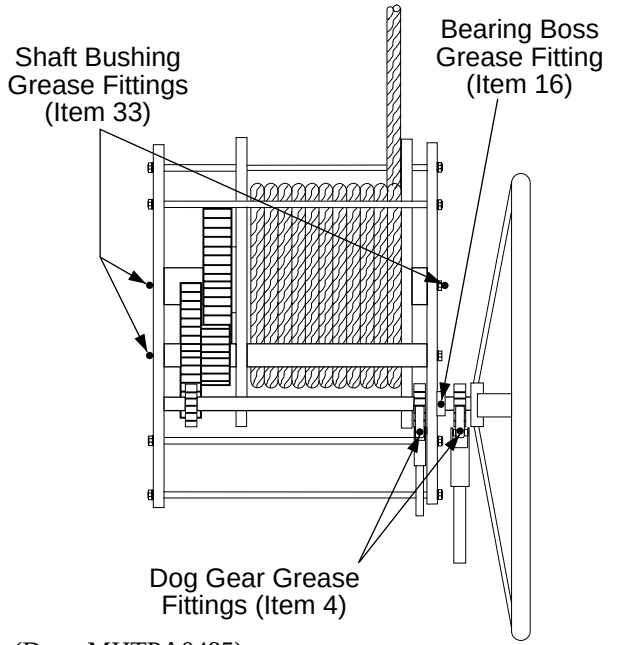
(Refer to Dwg. MHTPA0485 for locations. Refer to parts lists for Dwgs. MHTPC0475 and MHTPC0486 item information.)

Components with grease fittings should be lubricated monthly with 2 or 3 pumps from a grease gun, or more frequently, depending on severity of service. Rotate components slowly as grease is applied.

When the winch is disassembled, clean all parts thoroughly and coat bushings and shafts with clean grease. Apply sufficient grease to provide a good protective coat.

For temperatures -20° to 50° F (-29° to 10° C) use a multipurpose lithium-based EP 1 grease.

For temperatures 30° to 120° F (0° to 49° C) use a multipurpose lithium-based EP 2 grease.



(Dwg. MHTPA0485)

Gears

Lubricate working surfaces of all gear teeth. Brush with grease as often as necessary to keep teeth liberally covered. If grease becomes contaminated with sand, dirt or other abrasive materials clean off old grease and apply new grease.

For temperatures -20° to 50° F (-29° to 10° C) use a multipurpose lithium-based EP 1 grease.

For temperatures 30° to 120° F (0° to 49° C) use a multipurpose lithium-based EP 2 grease.

Wire Rope

Follow the wire rope manufacturer's instructions. At a minimum, observe the following guidelines.

1. Clean with a brush or steam to remove dirt, rock dust or other foreign material on the surface of the rope.

⚠ CAUTION

• Do not use an acid-based solvent. Only use cleaning fluids and lubricants specified by the wire rope manufacturer.

2. Apply a wire rope lubricant or SAE 30W oil.
3. Brush, drip or spray lubricant weekly, or more frequently, depending on severity of service.

Overload Clutch

(Refer to Dwg. MHTPB04984.)

Replace overload clutch lubrication fluid yearly if operated in normal conditions or more frequently in severe conditions. Always replace fluid if assembly has been repaired or disassembled.

Filling and draining of the overload clutch lubricating fluid requires the removal of the two rim plug screws (64).

1. To drain:
   a. Rotate the handwheel shaft (80) to locate the rim plug screws (64) on the bottom.
   b. Place a container under the overload clutch assembly to collect the lubricant.
   c. Remove the two rim plug screws (64).
2. To fill:
   a. Rotate the handwheel shaft to locate the rim plug screws (64) on the top.
   b. Using Type 'F' automatic transmission fluid, fill through one hole, while allowing air to vent through the other. Capacity = 1 pint (0.47 liter).
   c. Install the two rim plug screws (64).

TROUBLESHOOTING

This section provides basic troubleshooting information. Determination of specific causes to problems are best identified by thorough inspections performed by personnel trained in safety, operation and maintenance of this equipment. The chart below provides a brief guide to common winch problems, probable causes and solutions.

PROBLEM	CAUSE	SOLUTION
Winch will not operate.	Winch is overloaded.	Reduce load to within rated capacity.
	Holding dog not released.	Ensure holding dog disengages from the drive shaft holding gear.
	Damaged gears and/or shafts.	Inspect gears and shafts for indications of abnormal wear and damage.
Load continues to move when winch is stopped.	Winch is overloaded.	Reduce load to within rated capacity.
	Holding Dog is not engaged.	Check holding dog is engaged in handwheel shaft holding gear.
Winch does not haul in or hold rated capacity.	Damaged gears.	Inspect winch gears as described in the "INSPECTION" section. Examine all parts and replace any that are worn or damaged.
Winch runs hot or makes excessive noise during operation.	Lubrication inadequate.	Inspect, clean components and lubricate as directed in the "LUBRICATION" section.
	Winch is misaligned and may be binding.	Check mounting, side frames, shafts, gears, etc. for alignment. Check fasteners are tight.
Foot brake fails to stop drum during unloaded wire rope pay out.	Worn brake pad.	Inspect foot brake assembly for worn or damaged parts. Repair or replace parts as necessary.

MAINTENANCE

⚠WARNING

• Before performing maintenance, disconnect the load from the winch.
• Before starting maintenance, tag winch:
DANGER - DO NOT OPERATE -
EQUIPMENT BEING REPAIRED
• Only allow service personnel trained in maintenance and operation of this equipment to perform maintenance.
• After performing maintenance on load bearing parts, test unit to 110% of its rated capacity before returning to service. Refer to 'Testing' in the "INSPECTION" section.

Adjustments

Overload Clutch (optional feature) Adjustment

(Refer to Dwg. MHTPB0484.)

⚠ DANGER

• Maximum allowable overload clutch setting is 110% of rated line pull. Do not adjust setting greater than 110% of rated line pull.

To adjust the overload clutch perform the following:

1. Loosen setscrew in set collar (82) and move out of the way by sliding along shaft (80).
2. Using adjustment wrench (part number 51925), rotate the adjustment nut (81) to set the overload clutch at the desired line pull release.

Adjustments should be done with the winch unloaded. When an adjustment has been made, load the winch with the desired line pull load and test the operation of the overload clutch. Repeat the following steps as required to set the desired line pull load.

a. From the adjusting nut (81) end of the clutch assembly, rotate the adjusting nut clockwise to increase the line pull load allowed.
b. From the adjusting nut (81) end of the clutch assembly, rotate the adjusting nut counterclockwise to decrease the line pull load allowed.

3. When adjustments have been completed, slide set collar (82) fully against the adjustment nut (81) and secure in place with setscrew. Use a thread sealing compound on the threads of the setscrew.

General Disassembly

The following instructions provide the necessary information to disassemble, inspect, repair, and assemble the winch. Drawings of the winch and associated components are provided in the parts section to assist in part indentification. If a winch is being completely disassembled for any reason, follow the order of the topics as they are presented. It is recommended that all maintenance work on the winch be performed in a clean, dust free work area.
During winch disassembly observe the following:

1. Never disassemble the winch any further than is necessary to accomplish the needed repair. A good part can be damaged during the course of disassembly.
2. Never use excessive force when removing parts. Tapping gently around the perimeter of a part with a soft hammer should be sufficient to loosen the part.
3. Do not heat a part with a flame to free it for removal, unless the part being heated is already worn or damaged beyond repair and no additional damage will occur to other parts.

In general, the winch is designed to permit easy disassembly and assembly. The use of heat or excessive force should not be required.

4. To prevent dirt and other foreign matter from getting into bearings or other moving parts keep the work area as clean as practical.
5. When grasping a part in a vise always use leather or copper-covered vise jaws to protect the part. This is especially important when clamping threaded areas and machined surfaces of parts.
6. When installing do not tap on the bushing edge. Place a wood block between the bushing and the hammering tool to prevent damage.

Disassembly

Handwheel and Foot Brake
(Refer to Dwg. MHTPB0477.)

1. To remove handwheel (90) loosen setscrew (95) and slide handwheel straight out. Remove key (94) and safely store until re-installation.

On models before 15 July 1993: loosen four setscrews (95) on handwheel (90).

2. To remove the foot brake as an assembly, remove the cotter pin (55) and nut (58) from shaft (57). Pull brake assembly from side frame (1).

Ratchet Assembly
(Refer to Dwgs. MHTPC0475 and MHTPC0486.)

1. Slide ratchet lever (7) and ratchet gear (11) off of handwheel shaft (39). Remove key (10) and safely store until reinstallation.
2. If complete disassembly of ratchet is required, remove retaining ring (8) from either end of shaft (9). Tap shaft through ratchet lever (7).

When removing shaft (9) from ratchet lever (7) the washers (5), ratchet dog (6), spring (13) and spring guide (12) will be separated from the ratchet assembly. Collect these pieces and safely store until reinstallation.

B-C (Cluster) Gear
(Refer to Dwgs. MHTPC0475 and MHTPC0486.)

1. Using a hoist, support the B-C gear (36) (50H unit), or the cluster gear (36) (25H and 75H units).
2. Remove all paint and surface imperfections from the intermediate shaft (22). Coat the exposed shaft surface with oil.
3. **25H (after 15 July 1993), 50H and 75H units**: loosen setscrew located in collar (38) until collar rotates freely on intermediate shaft (22).
4. Remove the capscrew (24) securing the intermediate shaft (22) to the side frame (1).
5. **25H unit (before 15 July 1993)**: slide intermediate shaft (22) through cluster gear (36), collar (38) and side frames (1 and 2).
   50H units: slide intermediate shaft (22) through B-C gears and side frames (1 and 2).
   25H (after 15 July 1993) and 75H units: slide the intermediate shaft (22) through cluster gear and side frames (1 and 2).
6. Cover B-C (cluster) gear assembly to protect from damage and lower to the ground after shaft has been removed.

(Refer to Dwgs. MHTPC0475 and MHTPC0486.)

1. Using a hoist, support the drum (26). If the wire rope is on the drum, secure the wire rope end to keep it out of the way.
2. Remove all accessible paint and surface imperfections from the drum shaft (23). Coat the exposed shaft surface with oil.
3. Remove the capscrew (24) securing the drum shaft (23) to the side frame (1).
4. Using a soft material rod and mallet, drive the drum shaft (23) through the drum (26) and side frames (1 and 2).
5. Carefully lower the drum to the ground after shaft has been removed.

Side Frames

(Refer to Dwgs. MHTPC0475 and MHTPC0486.)

1. If installed using **straight deck brackets**, one side frame (1 or 2) should be attached to the inside and the other side frame (1 or 2) to the outside of the deck brackets (19). Remove the deck bracket capscrews (20) and nuts (21) to free the side frame attached to the outside of deck bracket (19).
2. If installed using **angled deck brackets**, both side frames should be installed inside the deck brackets. To disassemble unit, remove capscrews and nuts holding deck brackets (19) to the foundation.
3. On one side frame (1 or 2):
   a. remove the nuts (34) securing the three spacer shafts (28) to the side frame (1 or 2).
   b. remove the nut (34) securing the holding dog shaft (43).
4. Carefully pull the side frame (1 or 2) away to provide enough clearance to remove the handwheel shaft (39).
5. Remove the nuts (34) from the spacer shafts (28) and holding dog shaft (43). Remove the shafts.

If installed, the wire rope guards are welded to two of the spacer tubes (29) on spacer shafts (28). To remove, use a hoist to support the wire rope guard when removing the spacer shafts. When shafts are removed, lower the wire rope guard to the ground.

Cleaning, Inspection and Repair

Use the following procedures to clean, inspect, and repair the winch and associated components.

Cleaning

Clean all winch component parts in solvent (except for the brake shoes). The use of a stiff bristle brush will facilitate the removal of accumulated dirt and sediments on the gears, frames and drum. If bushings have been removed it may be necessary to carefully scrape old sealant from the bushing bores. Dry each part using low pressure, filtered compressed air. Clean the brake shoes using a wire brush or emery cloth. Do not wash the brake shoe in liquid. If the brake shoe linings are oil soaked, they must be replaced.

Inspection

WARNING

• Bushings that are loose, worn or rotate in the frame, gears or drum must be replaced. Failure to observe this precaution will result in additional component damage. (Reference "Bushing Chart" for maximum allowable bushing wear.)

All disassembled parts should be inspected to determine their fitness for continued use. Pay particular attention to the following:

1. Inspect all gears for worn, cracked, or broken teeth.
2. Inspect all bushings for wear, scoring, or galling. Measure bushing inside diameters. Reference Table 4, "Bushing Chart". Replace the bushing(s) if measurements are greater than the bore size (replace) shown.

Table 4

Bushing Chart

25H Winch

Bushing Location	Bushing Item No.	Bore Size Original		Bore Size Replace	
		inch	mm	inch	mm
Frame (1)	14	1.133	28.8	1.195	30.4
Gear (36)	35	2.199	55.9	2.261	57.4
Drum (26)	25	3.016	76.6	3.078	78.2

50H Winch

Bushing Location	Bushing Item No.	Bore Size Original		Bore Size Replace	
		inch	mm	inch	mm
Frame (1)	14	1.508	38.3	1.570	39.9
Gear (36)	35	2.765	70.2	2.827	71.8
Drum (26)	25	4.018	102	4.080	103.6

75H Winch

Bushing Location	Bushing Item No.	Bore Size Original		Bore Size Replace	
		inch	mm	inch	mm
Frame (1)	14	1.760	44.7	1.822	46.3
Gear (36)	35	3.204	81.4	3.267	83
Drum (26)	25	5.018	127.5	5.080	129

3. Inspect shafts for ridges caused by wear. If ridges caused by wear are apparent on shafts, replace the shaft.
4. Inspect all threaded items and replace those having damaged threads.

Repair

Component repairs are limited to the removal of small burrs and other minor surface imperfections from gears, bushings and shafts. Use a fine stone or emery cloth for this work.

1. Inspect all parts for evidence of damage. Worn or damaged parts must be replaced. Refer to the applicable parts listing for specific replacement parts information.
2. Using a fine stone or emery cloth, smooth out all minor nicks, burrs, or galled spots on shafts, bores, pins, and bushings.
4. Examine the gear teeth carefully. Using a fine stone or emery cloth, remove any small nicks or burrs. Replace the gear if any teeth are chipped, cracked, stretched or missing.
5. Using a fine stone or emery cloth, polish the edges of all shaft shoulders to remove small nicks which may have been caused during handling.
6. Remove any nicks and burrs caused by capscrews, nuts and lockwashers.

Bushings

(Refer to Dwgs. MHTPC0475 and MHTPC0486.)
Repair of bushings is limited to the removal of small nicks and burrs, using fine emory cloth or a stone. If the bushing bore is worn, scored or exceeds the maximum allowable diameter, it must be replaced. Refer to Table 4 for bushing bore information. In components where there are more than one bushing (i.e., gears, drums), it is recommended that all bushings be replaced at the same time to ensure uniform wear and component alignment.

1. Bushings are press fit into the gear and drum housings. To remove, use an inside puller. Carefully remove the bushing, ensuring it is pulled out as straight as possible to prevent binding and scoring of the housing.
2. Clean the component bushing housing. Remove minor nicks and burrs using fine emory cloth or a stone. Lightly lubricate with grease recommended in the "LUBRICATION" section.
3. Inspect the new bushing. Remove minor nicks and burrs using fine emory cloth or a stone. Lightly lubricate the outside of the bushing with grease recommended in the "LUBRICATION" section.
4. To install:
    a. Place the bushing on the housing lip. Ensure the bushing edge mates with the sleeve edge in a full 360° contact.
    b. Place a block of wood, or similar soft material, on the opposite end of the bushing. Using a mallet, carefully tap the bushing into the housing. Make sure the bushing alignment remains straight during installation.
    c. After bushing has been installed in side frame, remove grease fitting (16). Using the grease fitting hole as a guide, drill a hole through the bushing. Reinstall grease fitting.

Assembly

Overload Clutch (optional feature) Assembly

(Refer to Dwg. MHTPB0484.)

1. Slide set collar (82) over end of handwheel shaft (80).
2. Slide the following parts on the handwheel shaft (80) in the order in which they are listed:
    a. Adjusting nut (81).
    b. Shaft seal (61). Lightly lubricate seal with type 'F' automatic transmission fluid.
    c. Pilot plate (79).
        (1) Before sliding pilot plate (79) on shaft, install 'O'-ring (78) in groove on inside lip of pilot plate. Lightly lubricate 'O'-ring and shaft with type 'F' automatic transmission fluid.
    d. Plate seal (77).
    e. Disc springs (76).
    f. Spacer (75).
    g. Pressure plate (74).
3. Place stop sleeve (69) on adjustment hub (67).
4. Place inner spline (68) on adjustment hub (67) and secure in place using capscrews (71) and lockwashers (70).
5. Install the friction plates (72) and separator plates (73) on inner spline (68). Stagger the installation. Begin with a friction plate, followed by a separator plate, followed by a friction plate, etc. When installed there should be a friction plate at both ends of the assembly.
6. Install shaft key (66) on handwheel shaft (80). Slide adjustment hub (67) over end of shaft. Align groove with shaft key. If required, using a soft mallet, tap adjustment hub into place on shaft key.
7. Slide the parts listed in paragraph 2.b and 2.d through 2.g onto the adjustment hub (67). Engage adjusting nut (81) on threads of adjusting hub (67) to hold parts in place.
8. If required, install pinion sleeve bushings (62) in pinion drive assembly (63). Install shaft seal (61) in geared end of pinion drive assembly. Lightly lubricate seal and bushings with type 'F' automatic transmission fluid.
9. Slide thrust washer (65) on handwheel shaft (80).
10. Slide pinion drive assembly (63) on handwheel shaft (80). Align the splines in the pinion drive assembly with the friction disc (72) splines and slide pinion drive assembly over the adjustment hub assembly.
11. Install handwheel shaft (80) on winch as described in the 'Winch Assembly' section. After pinion gear has been meshed with the B-C (cluster) gear assembly, adjust the overload clutch assembly.
    a. Slide the pinion drive assembly fully over the adjustment hub assembly.
    b. Tighten the adjustment nut (81) enough to remove all slack from the adjustment hub assembly.
    c. Fill with type 'F' automatic transmission fluid after removing screws (64). Reinstall screws (64).

Winch Assembly

1. Install the deck brackets (19). Angled deck brackets must be bolted to the foundation. Straight deck brackets must be welded to the foundation. Refer to the "INSTALLATION" section for detailed information.
2. Install one side frame (1 or 2) by placing it inside the deck bracket. Attach securely with capscrews (20) and nuts (21).
3. Install holding dog shaft (43) (with holding dog assembly attached) and the spacer shafts (28) to the installed side frame (1 or 2). Secure with nuts (34). Slide spacer tubes (29) on spacer shafts (28).
4. Place the remaining side frame (1 or 2) on the outside of deck bracket (19) for straight type deck brackets; place on the inside of deck bracket for angled type deck bracket. Loosely install capscrews (20) and nuts (21). **Do not tighten**.
    a. Align holding dog shaft (43) with holes on side frame (1 or 2).
    b. Align spacer shafts with holes in side frame (1 or 2).
    c. Install and align handwheel shaft (39) with holes in side frame (1 or 2).
    d. Tighten capscrews (20) and nuts (21); ensure side frame (1 or 2) and shafts align as the side frame is secured.
    e. Install and tighten nuts (34) on holding dog shaft (43) and spacer shafts (28).
5. Lightly lubricate the drum (26) bushings (25) with grease recommended in the "LUBRICATION" section. Using a hoist, lower the drum (26) between the side frames.
6. Clean, lightly oil and install the drum shaft (23) from the handwheel side of the winch. Secure drum shaft to side frame (1) using capscrew (24).

The drum gear must be on the side opposite from the handwheel. Installation of the drum shaft requires that the drum alignment be as straight as possible to prevent binding of the bushings by the shaft.

7. Lightly lubricate the B-C (cluster) gear (36) bushings (35) with grease recommended in the "LUBRICATION" section. Using a hoist, lower the B-C (cluster) gear (36) between the side frames.

The large gear must be on the side opposite from the handwheel.

8. Clean, lightly oil and install the intermediate shaft (22) from the handwheel side of the winch. During installation, after gear is on shaft, align the drive gear, B-C (cluster) gear and drum gear teeth to mesh smoothly. Secure drum shaft to side frame (1) using capscrew (24).
9. Slide collar (38) against B-C (cluster) gear and secure with setscrew. Apply a thread sealing compound to setscrew threads before tightening.
9. When assembled, lubricate as described in the "LUBRICATION" section.
10. Test winch operation as described in 'Testing' in the "INSPECTION" section.

Ratchet Dog Assembly

(Refer to Dwgs. MHTPC0475 and MHTPC0486.)

1. To assemble ratchet lever, install spring (13) and spring guide (12). Place ratchet dog (6) with a washer (5) on each side in ratchet lever (7), install shaft (9) and secure with retaining rings (8).
2. Install key (10) on handwheel shaft (39).
3. Slide ratchet lever (7) assembly and ratchet wheel (11) on to handwheel shaft (39). Align ratchet wheel groove with key (10) and tap assembly into place.

Handwheel and Foot Brake Assembly

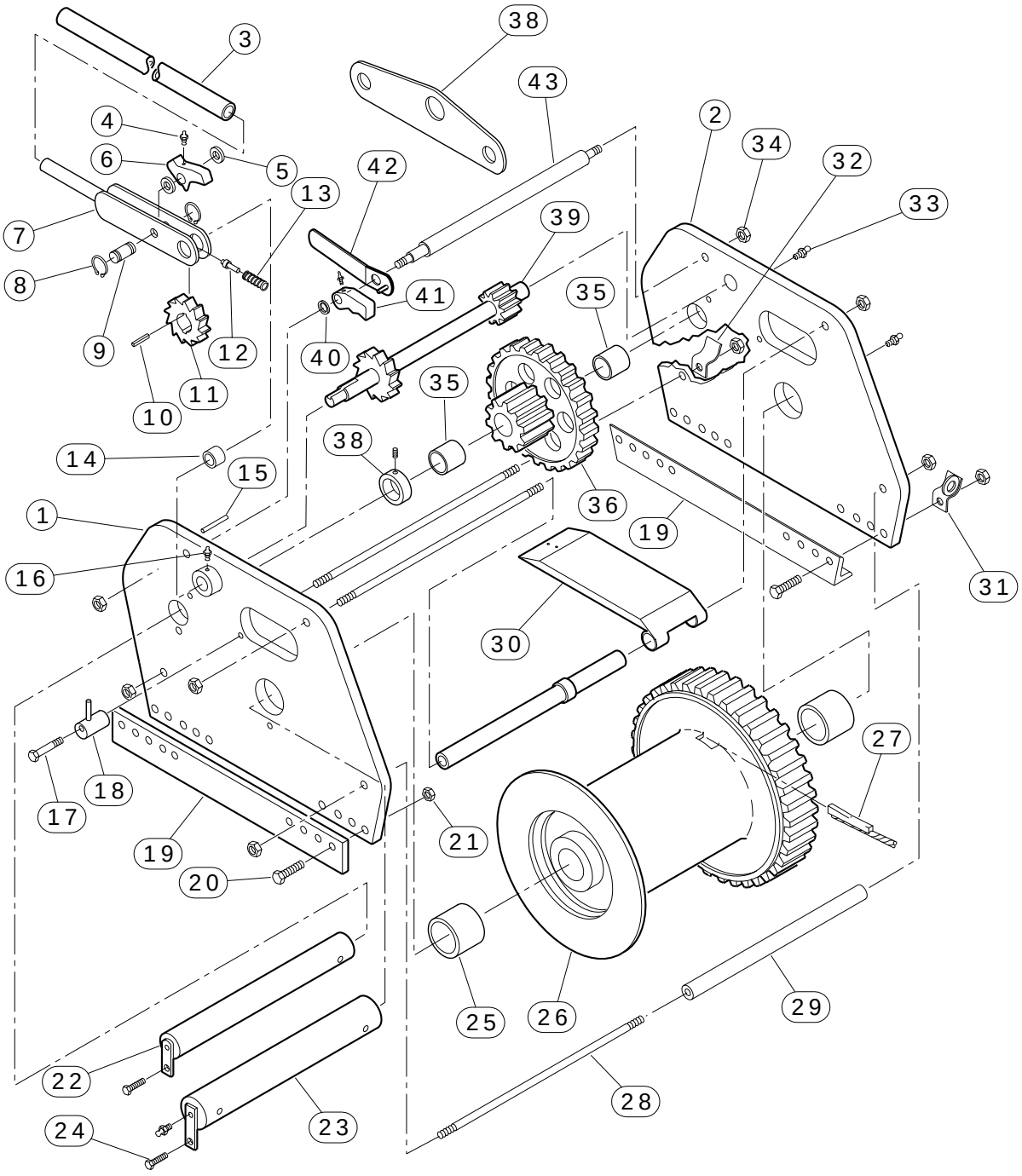
(Refer to Dwg. MHTPB0477.)

1. Align handwheel (90) with key (94) on handwheel shaft (39) and tap into place. Secure with setscrew (95).

On models before 15 July 1993: Tighten four setscrews (95) on handwheel (90).

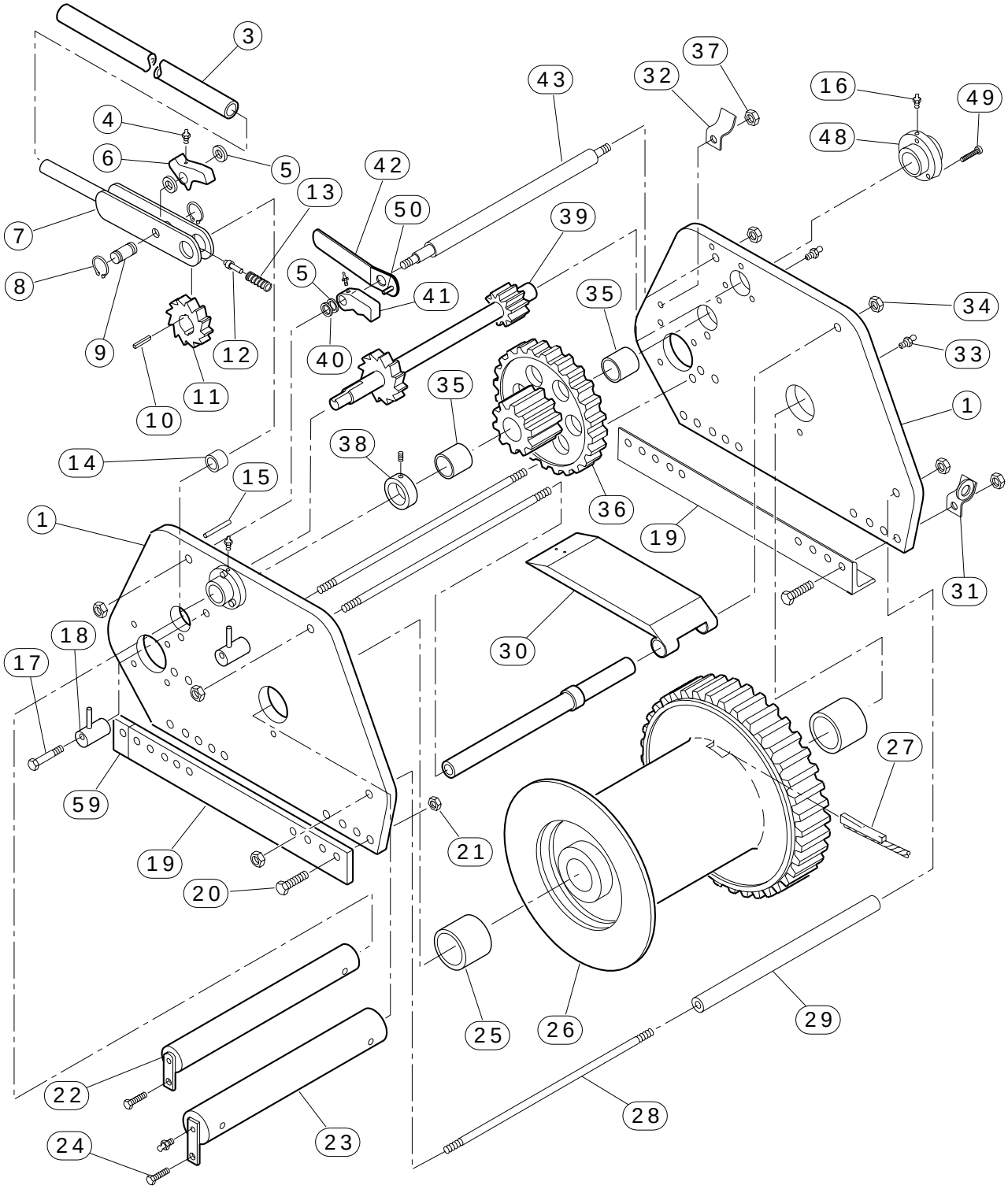
2. To install the foot brake as an assembly, install brake assembly to side frame (1). To secure install the cotter pin (55) and nut (58) to shaft (57).

25H, 50H AND 75H BARGE WINCH ASSEMBLY DRAWING (BEFORE 15 JULY 1993)



(Dwg. MHTPC0475)

25H, 50H AND 75H BARGE WINCH ASSEMBLY DRAWING (AFTER 15 JULY 1993)



(Dwg. MHTPC0486)

25H BARGE WINCH ASSEMBLY PARTS LIST

Common Parts

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
1	Right Side Frame (before 15 July 1993) *	1	22948
	Side Frame		
2	Left Side Frame (before 15 July 1993) *	1	
	Side Frame		
3	Ratchet Lever Extension	1	7900-35
4	Grease Fitting, Dog	2	52676
5	Washer	3	9779
6	Ratchet Dog	1	7907
7	Ratchet Lever	1	7966
8	Retaining Ring	2	50810
9	Shaft	1	7914
10	Key, Ratchet Wheel	2	19465-125
11	Ratchet Wheel	1	7965
12	Spring Guide	1	7911
13	Spring	1	50807
14	Bushing	2	1293-6
15	Pin	1	50823
16	Grease Fitting, Bushing	2	53497
17	Capscrew	2	50884
18	Ratchet Stop	2	7917
19	Deck Bracket, Straight	2	589
	Deck Bracket, Angled		513
20	Capscrew, Deck Bracket	17	50902
21	Nut	18	50880

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
24	Capscrew	2	50160
25	Bushing, Drum	2	1293-1
27	Anchor Wedge 5/8 inch	1	530
	Anchor Wedge 3/4 inch		529
	Anchor Wedge 7/8 inch		528
	Anchor Wedge 1 inch		527
30	Gear Cover	1	7963
31	Lower Bracket, Left	1	7967-L
	Lower Bracket, Right		7967-R
32	Upper Bracket	1	7967
33	Grease Fitting	3	53095
34	Nut, Shaft	8	50825
35	Cluster Gear Bushing	3	1293-2
36	Cluster Gear	1	9104
38	Shaft Collar (Old Style)	1	**
	Set Collar		4046-6
40	Washer	1	9779-1
41	Holding Dog	1	7968
42	Holding Dog Lever	1	7969
44	Washer, Holding Dog	1	18492
45	Capscrew	1	50824
46	Warning Tag ***	1	71087035
47	Model Label ***	1	71108831
48	Bearing Boss	2	22943
49	Capscrew	6	51766
50	Pin (Holding Dog Stop)	1	****
59	Deck Bracket Extension	1	8104

(TBL.25HPRTSA)

Parts by Drum size (inches)

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER				
			9	17	35	52	69
22	Intermediate Shaft	1	511-1	511-2	511-4	511-5	511-6
23	Drum Shaft	1	512-1	512-2	512-4	512-5	512-6
26	Drum	1	7902-A-9	7902-A-17	7902-A-34	7902-A-51	7902-A-69
28	Spacer Shaft	3	7908-1	7908-2	7908-3	7908-4	7908-5
29	Spacer Tube	3	8291-8	8291-9	8291-10	8291-11	8291-12
39	Handwheel Shaft - Right hand unit	1	7905-1R	7905-2R	7905-3R	7905-4R	7905-5R
	Handwheel Shaft - Left hand unit		7905-1L	7905-2L	7905-3L	7905-4L	7905-5L
43	Holding Dog Shaft	1	7906-A-1	7906-A-2	7906-A-3	7906-A-4	7906-A-5

* Right and left side frames purchased before 15 July 1993 have been replaced by new side frames which are completely interchangeable. For replacement parts, order new side frame (part number 22948) for both right and left applications.

** Old style Shaft Collar (38) not available. To replace purchase item 38 Set Collar.

*** Not shown on drawings.

**** Item 50, Pin, not sold separately. To replace order item 42, Holding Dog Lever.

(TBL.25HPRTSB)

50H BARGE WINCH ASSEMBLY PARTS LIST

Common Parts

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
1	Right Side Frame (before 15 July 1993) * Side Frame	1	22937
2	Left Side Frame (before 15 July 1993) * Side Frame	1	
3	Ratchet Lever Extension	1	7960-35
4	Grease Fitting, Dog	2	52676
5	Washer	3	9779
6	Ratchet Dog	1	7907
7	Ratchet Lever	1	7966
8	Retaining Ring	2	50810
9	Shaft, Ratchet Dog	1	7914
10	Key, Ratchet Wheel	2	19465-125
11	Ratchet Wheel	1	7965
12	Spring Guide, Ratchet	1	7911
13	Spring, Ratchet	1	50807
14	Bushing, Bearing Boss	2	1293-6
15	Pin, Holding Dog	1	50823
16	Grease Fitting, Bushing	1	53497
17	Capscrew, Ratchet Stop	2	50884
18	Ratchet Stop	2	7917
19	Deck Bracket, Straight	2	324
	Deck Bracket, Angled		1111
20	Capscrew, Deck Bracket	17	54221
21	Nut, Deck Bracket	18	50880
24	Capscrew	2	50878
25	Bushing, Drum	2	1293-4
27	Anchor Wedge 7/8 inch	1	334
	Anchor Wedge 1 inch		333
	Anchor Wedge 1-1/8 inch		332
	Anchor Wedge 1-1/4 inch		331
30	Gear Cover	1	7963
31	Lower Bracket, Left	1	7967L
	Lower Bracket, Right		7967R
32	Upper Bracket	1	7967
33	Grease Fitting, Shaft	3	53095
34	Nut, Shaft	8	50825
35	B-C Gear Bushing	1	1293-5
36	B-C Gear	1	338
38	Set Collar	1	4046-4
40	Washer		9779-1
41	Holding Dog	1	7968
42	Holding Dog Lever	1	7969
44	Washer, Holding Dog	1	18492
45	Capscrew	1	50160
46	Warning Tag **	1	71087035
47	Model Label **	1	71108831
48	Bearing Boss	2	22943
49	Capscrew	6	51766
50	Pin (Holding Dog Stop)	1	***

(TBL.50HPRTSA)

Parts by Drum size (inches)

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER				
			11	20	41	61	82
22	Intermediate Shaft	1	326-1	326-2	326-4	326-5	326-7
23	Drum Shaft	1	325-1	325-2	325-4	325-5	325-7
26	Drum	1	7962-A-11	7962-A-20	7962-A-41	7962-A-61	7962-A-82
28	Spacer Shaft	3	7971-1	7971-2	7971-4	7971-5	7971-7
29	Spacer Tube	3	8291-1	8291-2	8291-4	8291-5	8291-7
39	Handwheel Shaft - Left hand unit	1	7964-1L	7964-2L	7964-4L	7964-5L	7964-7L
	Handwheel Shaft - Right hand unit		7964-1R	7964-2R	7964-4R	7964-5R	7964-7R
43	Holding Dog Shaft	1	7970-1	7970-2	7970-4	7970-5	7970-7

* Right and left side frames purchased before 15 July 1993 have been replaced by new side frames which are completely interchangeable. For replacement parts, order new side frame (part number 22937) for both right and left applications.

** Items not shown on drawing.

*** Item 50, Pin, not sold separately. To replace order item 42, Holding Dog Lever.

(TBL.50HPRTSB)

75H BARGE WINCH ASSEMBLY PARTS LIST

Common Parts

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
1	Right Side Frame (before 15 July 1993) * Side Frame	1	22939
2	Left Side Frame (before 15 July 1993) * Side Frame	1	22939
3	Ratchet Lever Extension	1	7960-35
4	Grease Fitting, Dog	2	52676
5	Washer	3	9779
6	Ratchet Dog	1	7907
7	Ratchet Lever	1	7966
8	Retaining Ring	2	50810
9	Shaft, Ratchet Dog	1	7914
10	Key, Ratchet Wheel	2	19465-125
11	Ratchet Wheel	1	7965
12	Spring Guide, Ratchet	1	7911
13	Spring, Ratchet	1	50807
14	Bushing, Bearing Boss	2	1293-6
15	Pin, Holding Dog	1	50823
16	Grease Fitting, Bushing	1	53497
17	Capscrew, Ratchet Stop	2	50884
18	Ratchet Stop	2	7917
19	Deck Bracket, Straight	2	8068
	Deck Bracket, Angled		8069
20	Capscrew, Deck Bracket	17	54232
21	Nut, Deck Bracket	18	50880
24	Capscrew	2	50878
25	Bushing, Drum	2	1293-8
27	Anchor Wedge 1-1/8 inch	1	8070-1
	Anchor Wedge 1-1/4 inch		8070-2
	Anchor Wedge 1-3/8 inch		8070-3
	Anchor Wedge 1-1/2 inch		8070-4
30	Gear Cover	1	8064
31	Lower Bracket, Left	1	7967L
	Lower Bracket, Right		7967R
32	Upper Bracket	1	7967
33	Grease Fitting, Shaft	3	53095
34	Nut, Shaft	8	50825
35	Cluster Gear Bushing	1	1289-1
36	Cluster Gear	1	8063-E
38	Set Collar	1	4046-5
40	Washer		9779-1
41	Holding Dog	1	7968
42	Holding Dog Lever	1	7969
44	Washer, Holding Dog	1	18492
45	Capscrew	1	50160
46	Warning Tag **	1	71087035
47	Model Label **	1	71108831
48	Bearing Boss	2	22944
49	Capscrew	6	51766
50	Pin (Holding Dog Stop)	1	***

(TBL.75HPRTSA)

Parts by Drum size (inches)

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER				
			10	20	40	61	81
22	Intermediate Shaft	1	8066-1	8066-2	8066-3	8066-4	8066-5
23	Drum Shaft	1	8065-1	8065-2	8065-3	8065-4	8065-5
26	Drum	1	8062-10	8062-19	8062-40	8062-60	8062-81
28	Spacer Shaft	3	7971-1	7971-2	7971-4	7971-5	7971-7
29	Spacer Tube	3	8291-1	8291-2	8291-4	8291-5	8291-7
39	Handwheel Shaft - Left hand unit	1	7964-1L	7964-2L	7964-4L	7964-5L	7964-7L
	Handwheel Shaft - Right hand unit		7964-1R	7964-2R	7964-4R	7964-5R	7964-7R
43	Holding Dog Shaft	1	7970-1	7970-2	7970-4	7970-5	7970-7

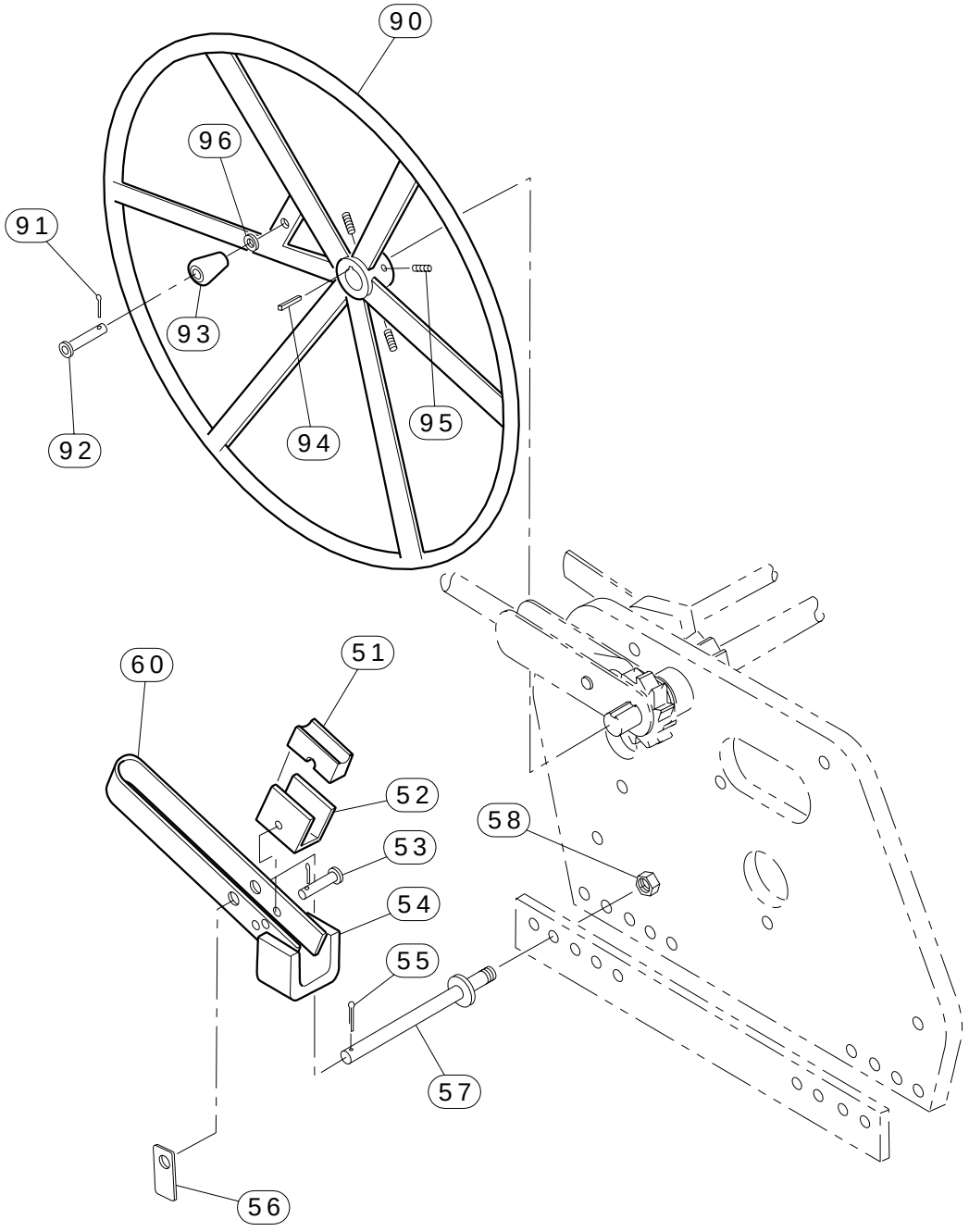
* Right and left side frames purchased before 15 July 1993 have been replaced by new side frames which are completely interchangeable. For replacement parts, order new side frame (part number 22939) for both right and left applications.

** Items not shown on drawing.

*** Item 50, Pin, not sold separately. To replace order item 42, Holding Dog Lever.

(TBL.75HPRTSB)

HANDWHEEL AND FOOT BRAKE ASSEMBLY DRAWING



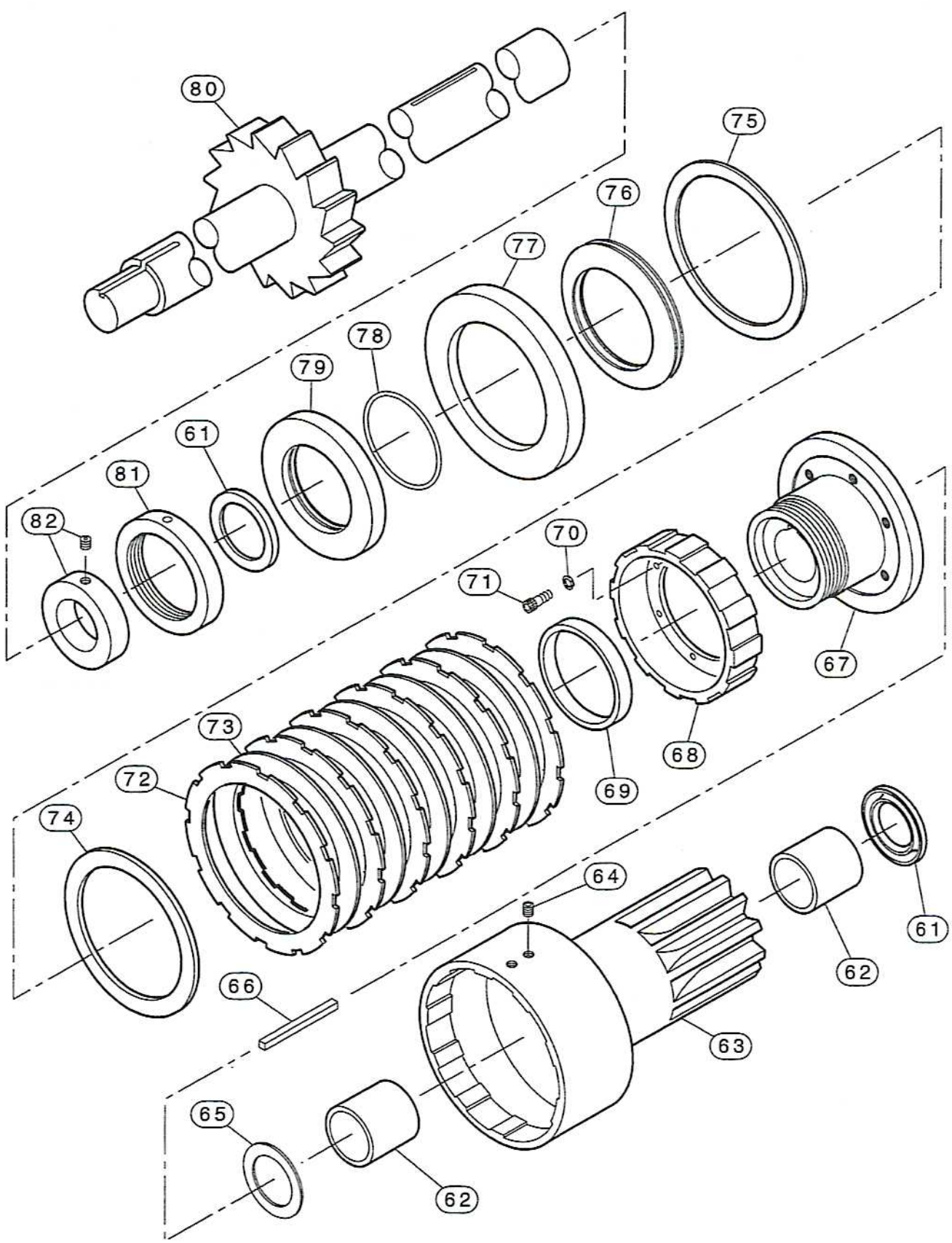
(Dwg. MHTPB0477)

HANDWHEEL AND FOOT BRAKE ASSEMBLY PARTS LIST

ITEM NUMBER	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER		
			25H	50H	75H
Handwheel					
90	Handwheel	1	7927	347	8067
91	Cotter Pin (before 15 July 1993)	1	51996		
	Nut (after 15 July 1993)		51750		
92	Shaft, Spinner Knob (before 15 July 1993)	1	4867		
	Capscrew (after 15 July 1993)		71059851		
93	Spinner Knob, Handwheel	1	4868		
94	Key, Shaft	1	19886-175		
95	Setscrew (before 15 July 1993)	4	50900		
	Setscrew (after 15 July 1993)	1			
96	Washer (before 15 July 1993)	1	50808		
	Washer (after 15 July 1993)	3			
Foot Brake					
---	Foot Brake Assembly	1	22956	323	
60	Brake Pedal Bar	1	322		
51	Brake Block, Oak	1	315		
52	Brake Pad	1	316		
53	Pin, Clevis	1	318		
54	Brake Pedal Counterbalance	1	Not sold separately. Order item 60.		
55	Pin, Cotter	2	51996		
56	Bracket	1	317		
57	Shaft	1	591	319	
58	Nut	1	50880		

(TBL.HANDL-FTB)

OVERLOAD CLUTCH (OPTIONAL FEATURE) ASSEMBLY DRAWING



(Dwg. MHTPB0484)

OVERLOAD CLUTCH (OPTIONAL FEATURE) ASSEMBLY PARTS LIST

ITEM NUMBER	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
*	Overload (Slip) Clutch Assembly	1	8040
61	Shaft Seal	2	50552
62	Pinion Sleeve Bushing	2	50522
63	Pinion Drive Assembly	1	8041
64	Screw, Rim Plug	2	71061840
65	Thrust Washer	1	52527
66	Key, Shaft	1	19465-275
67	Adjustment Hub	1	8042
68	Inner Spline	1	8043
69	Stop Sleeve	1	8048
70	Lockwasher	6	51941
71	Capscrew, Hub Seal	6	51025
72	Friction Plate	6	51923
73	Separator Plate	5	51924
74	Pressure Plate	1	8044
75	Spacer	1	8049
76	Disc Spring	2	8045
77	Plate Seal	1	50555
78	'O'-Ring, Hub Seal	1	51555
79	Pilot Plate	1	8046
80	Shaft (50H and 75H)	1	8050
	Shaft (25H)		8050-1
81	Adjustment Nut	1	8047
82	Set Collar (with setscrew)	1	4046-3

* Includes item numbers 61 through 79, 81 and 82.

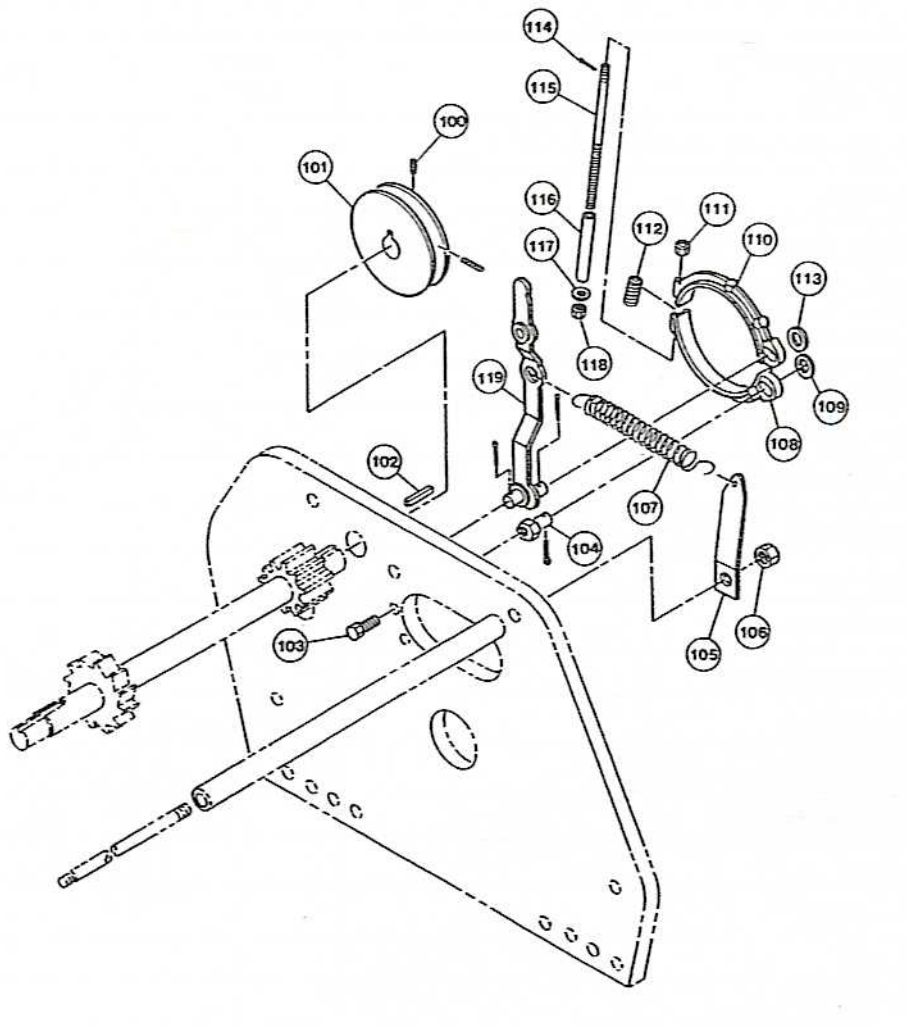
(TBL.CLUTCH)

ACCESSORIES

DESCRIPTION OF ACCESSORY	ACCESSORY PART NUMBER
Lubricant	LUBRI-Link®
Touch-up Paint	MHD-OR
Overload Clutch Adjustment Wrench	51925

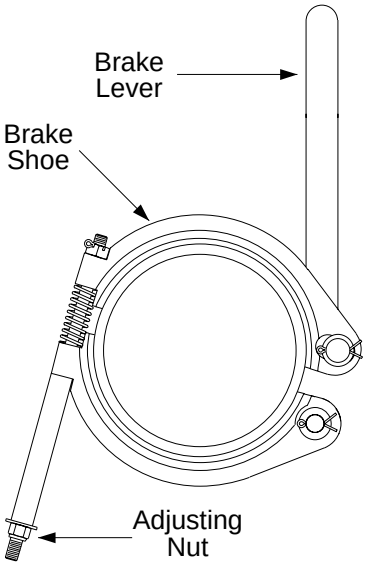
(TBL.ACCESORY)

HOLDING BRAKE ASSEMBLY (SPECIAL FEATURE) DRAWINGS



(Dwg. MHTPB0476)

Holding Brake Adjustment Drawing



(Dwg. MHTPA0478)

HOLDING BRAKE ASSEMBLY (SPECIAL FEATURE) PARTS LIST

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER	
			Right Hand Winch	Left Hand Winch
100	Setscrew	2	54563	
101	Brake Drum	1	10947	
102	Key, shaft	2	19866-125	
103	Capscrew	1	51981	
104	Anchor Eccentric	1	1639	
105	Bracket, Spring	1	7277	
106	Nut	1	50825	
107	Spring	1	443	
108	Brake Shoe, Anchor Side *	1 set	1640A	
109	Washer, Brake Shoe Anchor Side	1	50165	
110	Brake Shoe, Lever Side *	1 set	1640A	
111	Nut, Slotted	1	2972-12	
112	Spring, Adjustment	1	1647	
113	Washer, Brake Shoe Lever side	1	50166	
114	Cotter Pin	3	50157	
115	Stud, Brake Adjustment	1	1645	
116	Spacer, Brake Adjustment	1	1646	
117	Washer	1	50177	
118	Nut, Brake Adjustment	1	50170	
119	Brake Lever	1	1793	1796

* Brake shoe set includes items 108 and 110.

(TBL.BRAKE)

NOTICE

• The holding brake was a special order item provided on a few units prior to 15 July 1993. The information supplied is to be used for technical information on units containing the holding brake.

Holding Brake Adjustment

(Refer to Dwg. MHTPA0478.)

1. Inspect spring (107). Spring tension should cause brake lever (119) to engage the brake shoes (108 and 110) with the brake drum (101) and prevent drum rotation.
2. Pull brake lever (119) fully to disengage brake and hold in this position. Adjust the nut (118) on adjustment stud (115) until nut is flush with the end of the stud. Brake shoes (108 and 110) should be free of brake drum (101).
3. Release the brake lever (119) to engage brake.
4. Operate winch **with no load** while gradually tightening the adjusting nut (118) on adjustment stud (115).
5. Brake is correctly adjusted when brake shoes (108 and 110) have engaged the brake drum (101) enough to stop drum rotation.

Operation

1. The brake is normally engaged. The spring (107) maintains tension on the brake lever (119), which causes the brake shoes (108 and 110) to engage the brake drum (101).
2. To disengage the brake, pull the brake lever (119) in the opposite direction of spring tension.

Inspection

1. Inspect brake shoe linings. If linings are oil soaked, replace brake shoes as a set. If linings are slightly glazed, the glaze may be removed carefully with fine emory cloth.
2. Measure the brake lining thickness. Acceptable thickness is between 1/8 and 3/16 inch (3.2 and 4.8 mm). If the brake lining is less than 1/8 inch (3.2 mm) replace the brake shoes (108 and 110) as a set to ensure uniform wear.
3. Verify spring (107) tension causes brake lever (119) to engage brake.
4. Verify parts are not worn or damaged. Replace as necessary.

PARTS ORDERING INFORMATION

The use of other than **WINTECH** replacement parts will invalidate the Company's warranty.
For your convenience and future reference it is recommended that the following information be recorded.

Model Number _____

Serial Number _____

Date Purchased _____

When ordering replacement parts, please specify the following:

1. Complete model number and serial number as it appears on the nameplate.
2. Part number(s) and part description as shown in this manual.
3. Quantity required.

The nameplate is located on the side frame.
Each unit is supplied from the factory with the nameplate shown. If a nameplate is not attached to your unit, order a new nameplate and install it. See the parts list for the part numbers.

NOTICE

• Continuing improvement and advancement of design may cause changes to this equipment which are not included in this manual. Manuals are periodically revised to incorporate changes. Always check the manual edition number on the front cover for the latest issue.

Return Goods Policy

WINTECH will not accept any returned goods for warranty or service work unless prior arrangements have been made and written authorization has been provided from the location where the goods were purchased.

When the life of the unit has expired, it is recommended that it be disassembled, degreased and parts separated as to materials so that they may be recycled.

For additional information contact:

WINTECH
5319 Shreveport-Blanchard Hwy.
Shreveport, La. 71107

Phone: (318) 929-1242
1-888-946-8325
Fax: (318) 929-1245

HOIST AND WINCH LIMITED WARRANTY

WINTECH warrants to the original user its Hoists and Winches (Products) to be free of defects in material and workmanship for a period of one year from the date of purchase. Wintech will repair, without cost, any Product found to be defective, including parts and labor charges, or at its option, will replace such Products or refund the purchase price less a reasonable allowance for depreciation, in exchange for the Product. Repairs or replacements are warranted for the remainder of the original warranty period.

If any Product proves defective within its original one year warranty period, it should be returned to any Authorized Hoist and Winch Service Distributor, transportation prepaid with proof of purchase or warranty card.

This warranty does not apply to Products which **WINTECH** has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine **WITNCH** parts.

WINTECH makes no other warranty, and all implied warranties including any warranty of merchantability or fitness for a particular purpose are limited to the duration of the expressed warranty period as set forth above. WINTECH's maximum liability is limited to the purchase price of the Product and in no event shall WINTECH be liable for any consequential, indirect, incidental, or special damages of any nature rising from the sale or use of the Product, whether based on contract, tort, or otherwise.

Note: Some states do not allow limitations on incidental or consequential damages or how long an implied warranty lasts so that the above limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

IMPORTANT NOTICE

It is our policy to promote safe delivery of all orders.

This shipment has been thoroughly checked, packed and inspected before leaving our plant and receipt for it in good condition has been received from the carrier. Any loss or damage which occurs to this shipment while enroute is not due to any action or conduct of the manufacturer.

VISIBLE LOSS OR DAMAGE
If any of the goods called for on the bill of lading or express receipt are damaged or the quantity is short, do not accept them until the freight or express agent makes an appropriate notation on your freight bill or express receipt.

CONCEALED LOSS OR DAMAGE
When a shipment has been delivered to you in apparent good condition, but upon opening the crate or container, loss or damage has taken place while in transit, notify the carrier's agent immediately.

DAMAGE CLAIMS
You must file claims for damage with the carrier. It is the transportation company's responsibility to reimburse you for repair or replacement of goods damaged in shipment. Claims for loss or damage in shipment must not be deducted from the **WINTECH** invoice, nor should payment of the **WINTECH** invoice be withheld awaiting adjustment of such claims as the carrier guarantees safe delivery.

You may return products damaged in shipment to us for repair, which services will be for your account and form your basis for claim against the carrier.

United States Office Location

For Order Entry, Order Status, and Technical Support:

Wintech International, L.L.C.
5301 Shreveport/Blanchard Hwy.
Shreveport, LA. 71107

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