

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

General Instructions for Operation of Model MC-4 Roustabout Crane
Mounted on Model I-9 International Tractor

CONTROL LEVERS

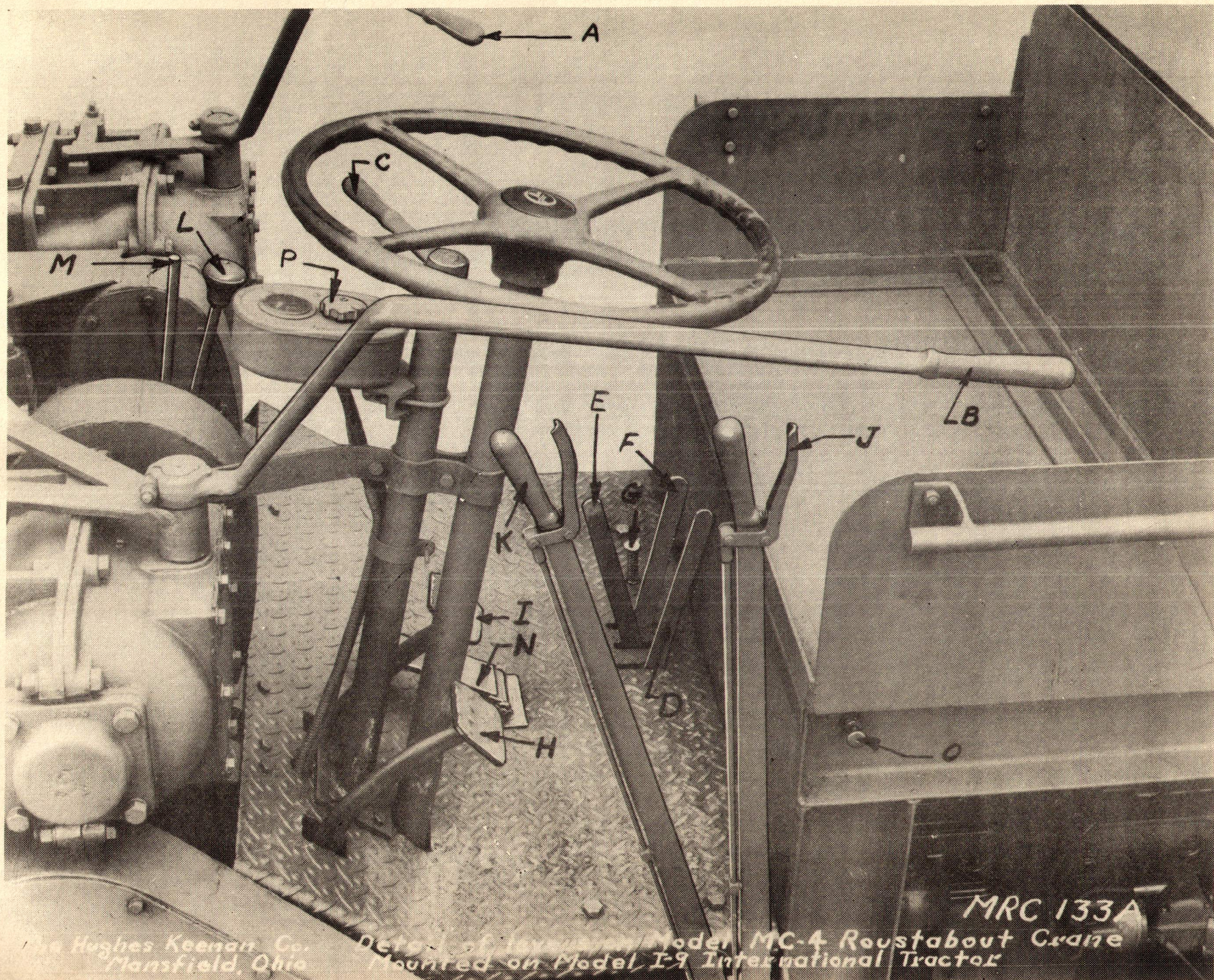
(See Photograph MRC - 133-A)

CRANE CONTROL LEVERS

- Lever "A" -- Controls Load Hoist. PULL back to RAISE load. PUSH forward to LOWER load. Set in center (neutral) position to hold load.
- Lever "B" -- Controls Boom Swing. PULL IN to swing boom LEFT. PUSH OUT to swing boom RIGHT. Set in center (neutral) position to hold boom.
- Lever "C" -- Controls Boom Topping. PULL back to RAISE boom. PUSH forward to LOWER boom. Set in center (neutral) position to hold boom at any desired height.

TRACTOR CONTROL LEVERS -- See Tractor Operating Instructions

- Lever "D" -- Tractor FRONT power Take-Off (for boom topping winch control) PULL back to DISENGAGE. PUSH forward to ENGAGE.
- Lever "E" -- Tractor SIDE power Take-Off (for Load Hoist and Boom Swing Control). PUSH forward to DISENGAGE. PULL back to ENGAGE.
- Lever "F" -- Tractor Choke Rod. Pull back when starting motor.
- Lever "G" -- Tractor Starting Switch.
- Lever "H" -- Tractor Clutch Pedal.
- Lever "I" -- Tractor Brake Pedal.
- Lever "J" -- Tractor Hand Brake Lever (Outside lever). Controls brake on right wheel.
- Lever "K" -- Tractor Hand Brake Lever (Inside lever). Controls brake on left wheel.
- Lever "L" -- Tractor Gear Shift Lever.
- Lever "M" -- Tractor Hand Throttle. Pull back to open.
- Lever "N" -- Tractor Foot Throttle.
- Lever "O" -- Tractor Ignition Switch.
- Lever "P" -- Tractor Light Switch.



The Hughes Keenan Co.
Mansfield, Ohio

Detail of operation Model MC-4 Roustabout Crane
Mounted on Model I-9 International Tractor

MRC 133A

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

Instructions for Care and Operation of
Model MC-4 Mechanical Roustabout Crane

GENERAL NOTES

These instructions cover care and operation of crane attachment only. See tractor instructions for care and operation of tractor. Read these instructions and tractor instructions carefully before operating the crane.

TRACTOR DRIVE is reversed so that the usual forward speeds are with drive wheels at forward end instead of steering wheels. Tractor is steered same as standard tractor by turning steering wheel in the direction operator wishes to turn. Standard tractor controls are used but location changed to suit new location of operator.

TRACTOR HYDRAULIC BRAKES on drive axles are controlled by foot brake pedal at operator's right, this pedal operating both brakes. The levers "J" and "K" (see photograph), at left of operator's seat, permit individual control of each drive wheel brake so that one wheel can be locked to get traction on the opposite wheel. Outside lever ("J") controls brake for right hand drive wheel, and inside lever ("K") controls brake for left hand drive wheel. Leave levers "J" and "K" in unlocked position and use foot brake pedal "I" except when tractor is standing still or when it is necessary to lock one wheel to get traction on opposite wheel.

BOOM SWING MUST NOT BE USED to pull material from pile or drag it along ground. It is designed and recommended only for swinging load, with load hanging free of the ground.

LOAD CHART attached shows maximum recommended loads at all points around tractor with tractor sitting level on solid ground. *Maximum recommended loads are: --* 15,000 pounds with triple hoist line; 10,000 pounds with double hoist line; 5,000 pounds with single hoist line.

INSTRUCTIONS FOR OPERATING CRANE

Place Levers "A" and "B" (on gear and clutch housings at rear of turntable -- see photograph attached) in neutral (central) position. Disengage tractor clutch and engage tractor power take-off (see tractor manufacturer's Instruction Book). It may be necessary to slip tractor clutch to get power take-off gears into proper position to engage take-off. Run motor slowly when shifting lever and do not use unnecessary force in shifting. As soon as power take-off is engaged, tractor clutch is to be engaged, crane chain drive will start to operate, and crane is ready for service. It is not necessary to disengage power take-off when moving tractor from one location to another, but it is advisable to disengage this take-off if crane is not to be used for any length of time.

The two clutch and gear housings with Levers "A" and "B" (at rear side of turntable -- see attached photograph) control raising and lowering of load and boom, and swinging boom either right or left. Each housing contains a nest of three bevel gears and a double multiple disc friction clutch running in oil. Cen-

Instructions for Care and Operation of Model MC-4 Mechanical Roustabout Crane (cont'd)

tral position of each lever is neutral position. It is not necessary to disengage tractor clutch when shifting either Lever "A" or "B" to any position.

To raise load pull Lever "A" (at right front of operator) in towards operator as far as possible. To lower load push this lever away from operator as far as possible. To hold load in any position, place lever in neutral (central) position. Single thread hoist worm and gear and brake on hoist drum shaft hold load securely. It is not necessary to hold Lever "A" in position. Shift lever smoothly and without unnecessary force as it works with slight effort.

To swing boom to LEFT pull lever "B" (at left of operator) in towards operator as far as possible. To swing boom to RIGHT push Lever "B" away from operator as far as possible. To hold boom in any position of its swing, place Lever "B" in neutral (central) position, and the single thread worm and gear holds it locked in that position. It is not necessary to hold Lever "B" in position. Shift lever smoothly and without unnecessary force as it works with slight effort.

Boom is raised or lowered through winch at front of crane, which controls boom topping lift line. Winch is operated by worm and gear drive with automatic brake on worm shaft to hold boom at desired angle. Brake is adjusted by increasing compression of spring on brake band by tightening nut. Do not adjust too tightly. Winch is power operated in both directions with direction of drive controlled by jaw clutch through lever "C" (in front of steering column). Lever "C" is in center position, or neutral, to hold boom at any angle. Always disengage tractor master clutch Lever "H" when shifting winch Lever "C". Pull Lever "C" back to raise boom; push forward to lower boom.

AUTOMATIC HOIST BRAKE -- On hoist drum shaft at left side of hoist drum is an automatic brake to assist in holding load in position. This brake is adjusted properly at time of shipment of crane from factory. It automatically releases when drum shaft is turned to raise load, but acts as brake when load is lowered. Tighten up on band through nuts on screw end attached to band, to increase tension of spring. Do not tighten up too much so that it will bind on drum when load is being raised. Only little tension is required.

ADJUSTMENT OF BRAKE ON BOOM SWING AND LOAD HOISTING CLUTCH GEARS -- A brake band is provided on brake drum attached to boom swing and load hoisting bevel gears in clutch housings at rear side of turntable to assist in holding boom at any position of its swing and to hold load. Brakes are controlled by Levers "A" and "B" which automatically release brakes when boom is to be swung or load raised and lowered, and to lock brakes when levers are in neutral (holding) position. Brake band tension is adjusted through nut on bolt extending through top of clutch housing. Screw down to tighten band. Do not make brake bands too tight.

ADJUSTMENT OF DOUBLE CLUTCHES FOR LOAD AND BOOM SWING -- Double multiple disc clutches in housings at rear side of turntable for raising and lowering load and boom swing are properly adjusted at time of shipment of crane from factory. If clutch does not hold, heats, or operating lever jumps out, the clutch must be adjusted. A new clutch requires frequent adjustments until friction discs are worn in. Remove inspection plate at rear side of housing. At inside end of each clutch next to shifting collar is a notched collar. A small spring which engages with a notch in this

Instructions for Care and Operation of Model MC-4 Mechanical Roustabout Crane (cont'd)

collar holds it in position. Turn clutch until this spring is within reach. Lift spring and turn notched collar one notch only. Each notched collar, as you face it from the shifting collar, turns clockwise or right hand to tighten clutch. Allow spring to drop back into notch to hold collar in position. Do not turn more than one notch at a time and try out clutch after each adjustment to see if proper tension is obtained. A single notch is sufficient to add considerable tension to clutch.

TO CHANGE FROM TRIPLE TO DOUBLE OR TO SINGLE, OR FROM SINGLE TO DOUBLE OR TO TRIPLE HOIST LINE -- Crane is rigged with triple hoist line. When rigged with triple hoist line the load cable dead end is attached to a pin at the top of load block and passes around sheave in outer end of boom and then around sheave in load block. To change to double line disconnect dead end of load cable from pin in load block, remove from around sheave in end of boom and attach cable dead end to dead end in pin in outer end of boom. To change from double to single line disconnect dead end of load cable from pin in end of boom, remove from around sheave in load block and attach cable dead end to dead end pin at the top of load block. To change from single to double or to triple hoist line reverse the above process.

AUTOMATIC STOPS

BOOM TOPPING -- Electrical contact on lower left main channel of boom contacts ground, welded to mast, and shuts off tractor motor when boom is at highest angle. To restart motor, place a piece of paper, or other non-conductor, between contact and ground -- being sure that boom topping winch operating lever is in neutral position. After motor has been started, boom can be lowered until it is out of contact with automatic stop.

BOOM SWING -- Small steel blocks welded to turntable contact a lever attached to boom swing control lever shaft and throw Lever "B" into neutral at limit of boom swing in either direction. No adjustment is necessary.

LUBRICATION OF CRANE

TURNTABLE LOWER HOUSING should be filled half full, about to bottom of worm shaft, with heavy oil having an SAE rating of about 140 for summer and about 90 for winter service. In very cold weather light machine oil, or a little kerosene for extremely cold weather, should be added. A lighter oil may be used but there is a possibility of leakage, and lubrication is not so satisfactory. There is an inspection plate on top of left side of turntable housing. Use this for inspection and filling turntable. Check oil level occasionally, length of time depending on amount of service. Use only good quality of clean oil.

THE TWO CLUTCH AND GEAR HOUSINGS at rear side of turntable each have a small street ell or oil fitting on outside of lower side of housing for filling and inspection. Use best quality of *clean* SAE 10 oil. Oil must flow freely. Fill to level of bottom of street ell or fitting. Do not overfill and check every few days to be sure proper level is maintained. Oil type multiple disc clutch is used and must not run dry.

Instructions for Care and Operation of Model MC-4 Mechanical Roustabout Crane (cont'd)

LUBRICATION OF CRANE (Continued)

CHAIN GUARDS have small street ell or oil fitting at lower end for filling and inspection. Use best quality of *clean* oil, SAE 30 for summer and SAE 20 for winter. For outside service in extremely cold weather add very light oil to make sure oil flows freely. Fill to level of bottom of street ell or oil fitting. Do not overfill as only sufficient oil to allow lower sprocket and chain to dip in oil is required. Check frequently.

BALL BEARING PILLOW BLOCKS at each end of lower chain sprocket drive shaft at rear side of turntable are designed for grease lubrication and therefore lubrication with oil should not be attempted. To grease bearings, remove 1/8" pipe plug in top of bearing pillow block and in its place put 1/8" 90-degree Zerk Fitting. Use good grade of medium weight mineral grease and do not fill blocks too full as this will cause bearings to heat up. After greasing, replace Zerk Fittings with the 1/8" pipe plugs as these bearings do not require frequent lubrication and can be over-lubricated. Although lubrication is not required often, it is a good idea to inspect bearing blocks at frequent intervals to prevent them from running dry.

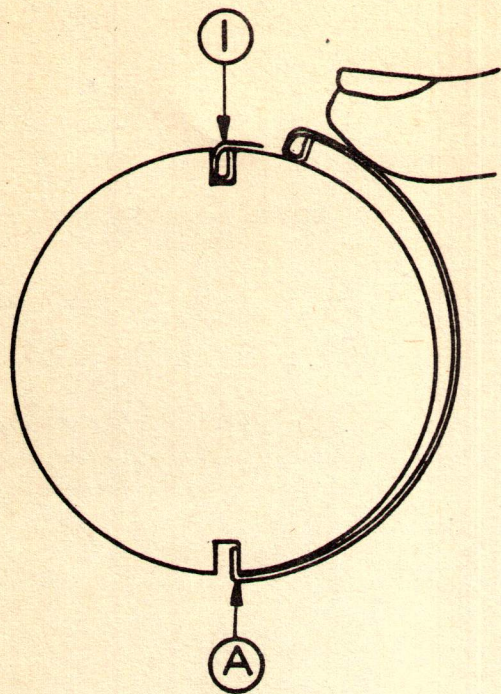
BEARING AT LEFT SIDE OF HOIST DRUM SHAFT is equipped with Zerk Fitting. Use best quality of cup grease and grease frequently. Bearing at right end of hoist drum shaft and worm gear are lubricated from turntable and require no special attention.

BOOM TOPPING LIFT WINCH is to be kept full of proper grade of oil up to small plug at right of worm gear case at center of worm drive shaft. Use SAE 140 oil in summer or SAE 90 oil at temperatures below 32° F. Use best grade of oil and check oil level frequently. Bearing at left side has grease fitting and should be kept well lubricated.

ALL SHEAVES are equipped with special self-lubricating bushings that do not require greasing. However, on some cranes the sheave pins are fitted with Zerk grease fittings and when so equipped should be greased occasionally.

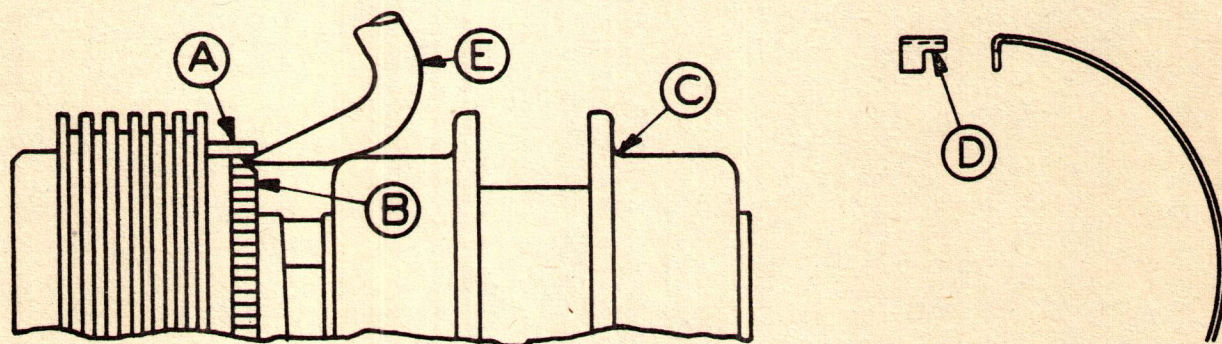
TRACTOR is lubricated in accordance with separate instruction sheet furnished with tractor.

Use only best quality of good CLEAN oil. If in doubt about proper SAE rating, use the lighter grade and inspect frequently to make sure oil is maintained at proper level.



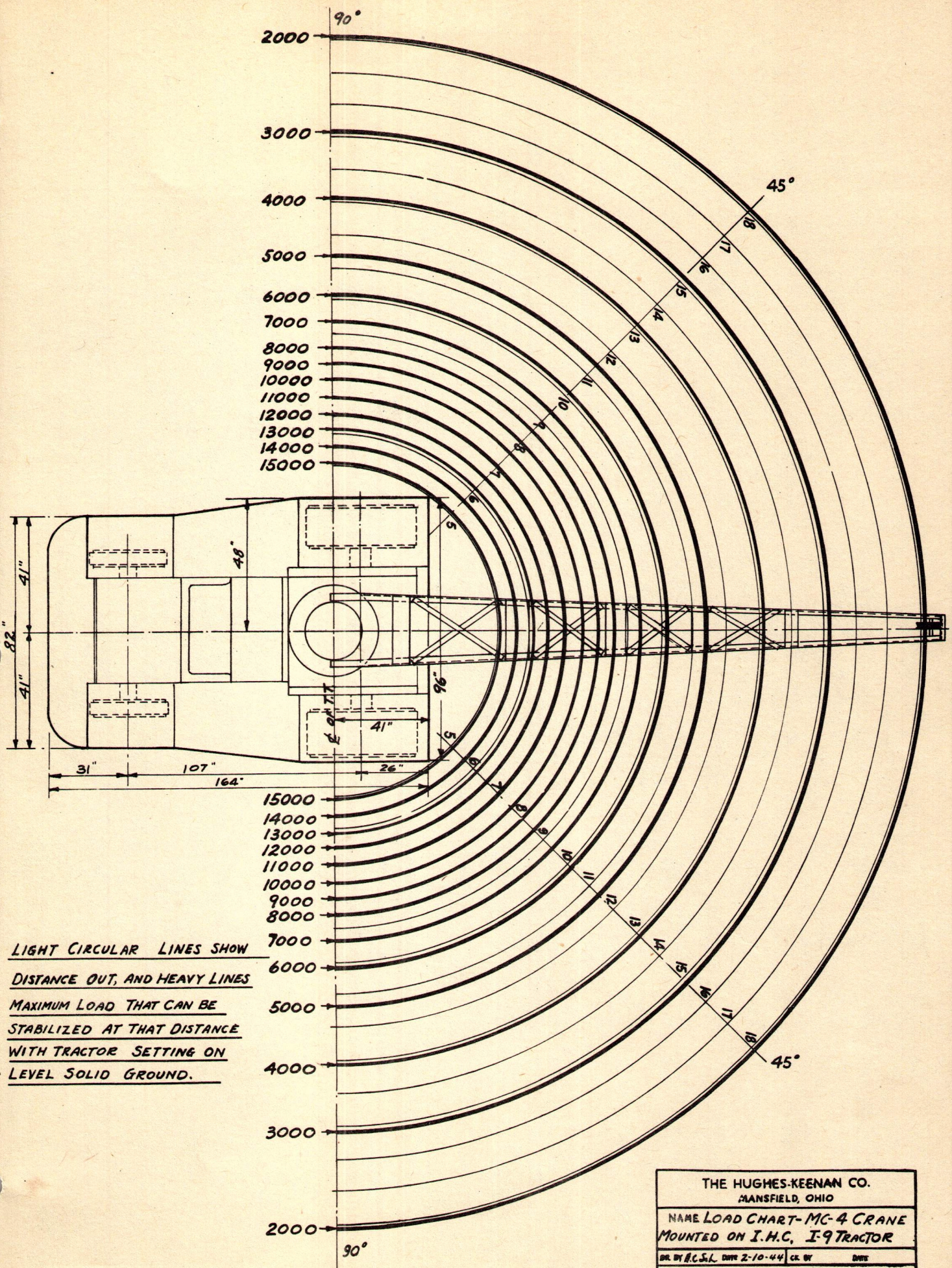
INSTRUCTIONS FOR ASSEMBLING ADJUSTMENT SPRING

1. FIRST INSERT DOUBLE WIDTH END (A) OF SPRING IN ONE SLOT OF PRESSURE PLATE.
2. ROLL LOOP END INTO POSITION ① WITH THE THUMB.
3. ADJUSTMENT MADE BY RAISING END (A) AS PER SKETCH BELOW.



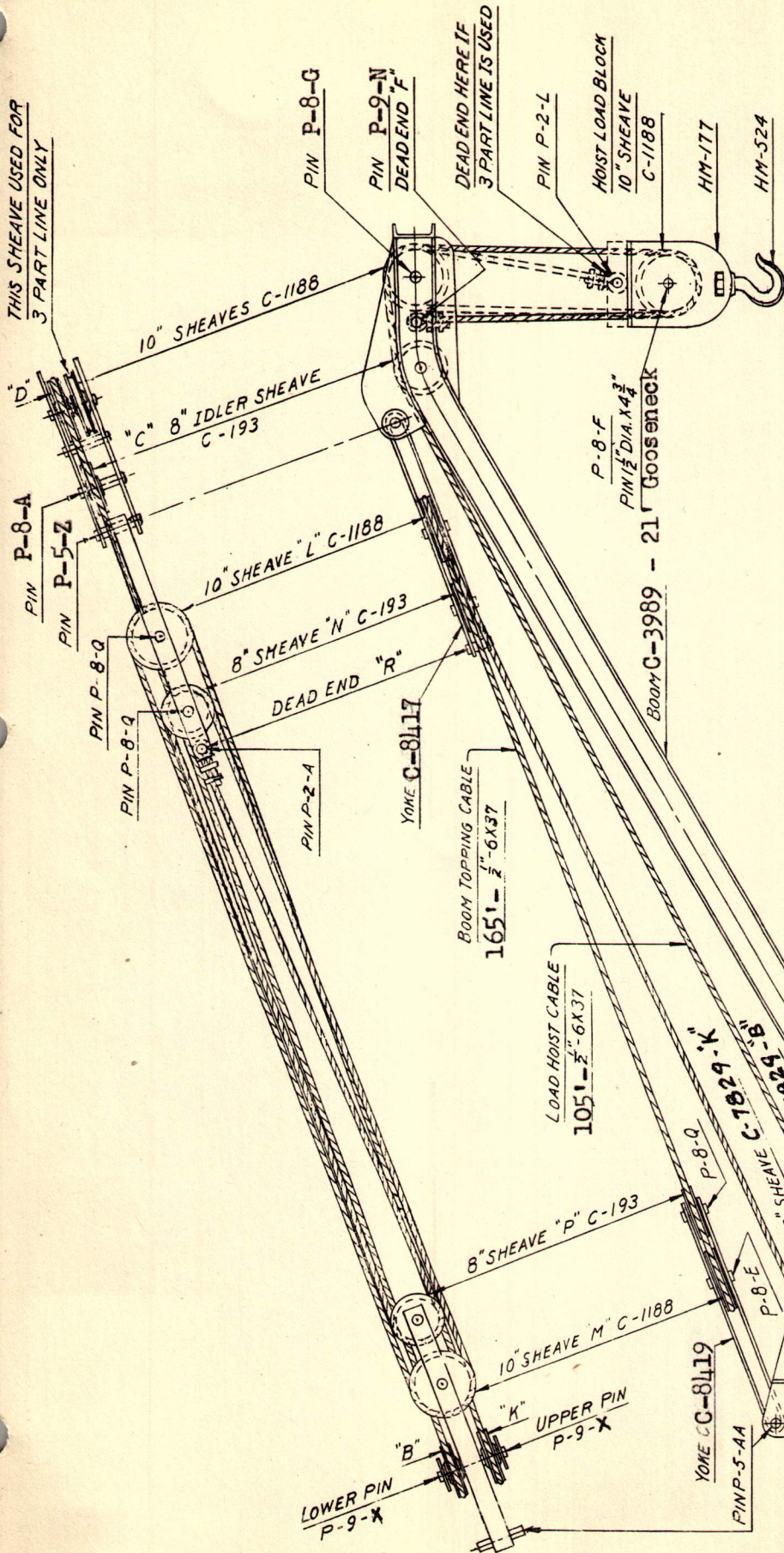
INSTRUCTIONS FOR ADJUSTING PULLMORE CLUTCH

1. WITH SHIFTER SLEEVE (C) IN NEUTRAL LIFT END (A) WITH TOOL (E) RESTING ON SLEEVE (C) AS SHOWN.
2. LIFT SPRING JUST HIGH ENOUGH FOR LIP (D) TO CLEAR TEETH ON COLLAR (B).
3. TURN COLLAR (B) ONE NOTCH AT A TIME — BY HAND.
4. TURN CLOCKWISE TO TIGHTEN—COUNTERCLOCKWISE TO LOOSEN.



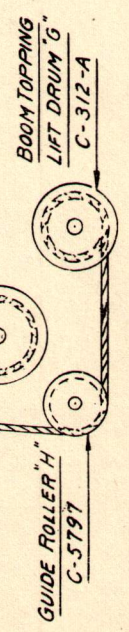
LIGHT CIRCULAR LINES SHOW
DISTANCE OUT, AND HEAVY LINES
MAXIMUM LOAD THAT CAN BE
STABILIZED AT THAT DISTANCE
WITH TRACTOR SETTING ON
LEVEL SOLID GROUND.

THE HUGHES-KEENAN CO.	
MANSFIELD, OHIO	
NAME LOAD CHART-MC-4 CRANE	
MOUNTED ON I.H.C. I-9 TRACTOR	
DR. BY R.C.S.L.	DATE 2-10-44
CR. BY	DATE
No.	



INSTRUCTIONS
 LOAD LINE RUNS FROM LOAD HOIST DRUM
 "A" TO 8" SHEAVE "B" TO 8" IDLER SHEAVE "C" TO
 10" SHEAVE "D" TO LOAD HOIST BLOCK "E" AND
 DEAD END AT "F".
 BOOM TOPPING LIFT LINE RUNS FROM BOOM
 TOPPING LIFT DRUM "G" TO GUIDE ROLLER "H"
 TO 8" SHEAVE "K" TO 10" SHEAVE "L" TO 10" SHEAVE
 "M" TO 8" SHEAVE "N" TO 8" SHEAVE "P" AND DEAD
 END AT "R".

THE HUGHES-KEENAN CO. MANSFIELD, OHIO	
NAME CABLE REEVING DIAGRAM	
FOR MC-4 CRANE	
DR. BY W.M.	DATE 6-10-46
No. C-6625-F	



PARTS LIST
FOR
MODEL MC-4
ROUSTABOUT CRANE

Always Give Crane Serial Number When Ordering Parts

THE HUGHES - KEENAN COMPANY
MANSFIELD, OHIO

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

Parts List for Model MC-4 Roustabout Crane
Mounted on Model 1-9 International Tractor

All prices are F.O.B. factory and are subject to change without notice. All taxes imposed by law must be added to prices. Boxing for export is an extra charge.

Always give Crane Serial Number when ordering parts.

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>FRAME, REAR AND SIDE COUNTERWEIGHTS, BUFFER PLATE, GAS TANK, SEAT, FRONT AND REAR FENDERS</u>			
C-5205-H	1	Frame Welded Assembly	
C-6373	2	Axle Bearing (welds to frame)	
	16	3/4" x 1-3/4" USS Cap Screw -- for bolting frame to tractor	
	16	3/4" Lock Washer	
C-6377	2	Yoke for live axle	
C-8844	2	Yoke for dead axle	
	16	3/4" x 11" Machine Bolt -- for bolting yokes to frame	
	16	3/4" USS Hex Nut	
	16	3/4" Lock Washer	
	8	3/4" Tapered Washer	
	8	3/4" Flat Washer	
C-5205-F	1	Front Bumper	
	4	5/8" x 1-3/4" SAE Cap Screw -- for bolting bumper to frame	
	2	5/8" x 2-1/4" SAE Cap Screw -- for bolting bumper to frame	
	6	5/8" SAE Hex Nut	
	6	5/8" Lock Washer	
C-4582	1	Buffer Plate	
	4	5/8" x 1-3/4" SAE Cap Screw -- for bolting buffer plate to frame	
	6	5/8" x 3-1/4" SAE Cap Screw -- for bolting buffer plate to frame	
	10	5/8" SAE Hex Nut	
	10	5/8" Lock Washer	
	4	3/4" x 2-1/4" USS Cap Screw -- for bolting buffer plate to tractor	
	4	3/4" Lock Washer	
C-6599	1	Rear Counterweight Casting	
	4	3/4" x 6" Machine Bolt -- for bolting counterweight to frame	
	4	3/4" USS Hex Nut	
	4	3/4" Lock Washer	
C-6603	2	Side Counterweight Casting	
	6	3/4" x 13" Machine Bolt -- for bolting counterweight to frame	
	6	3/4" x 16" Machine Bolt -- for bolting counterweight to frame	
	6	3/4" x 20" Machine Bolt -- for bolting counterweight to frame	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>FRAME, REAR AND SIDE COUNTERWEIGHTS, BUFFER PLATE, GAS TANK, SEAT, FRONT AND REAR FENDERS (Continued)</u>			
	18	3/4" USS Hex Nut.....	
	18	3/4" Lock Washer.....	
C-4584	1	Gas Tank.....	
	6	3/8" x 3/4" USS Cap Screw -- for bolting gas tank to frame.....	
	6	3/8" x 1" SAE Cap Screw -- for bolting gas tank to frame.....	
	6	3/8" SAE Hex Nut.....	
	12	3/8" Lock Washer.....	
T-2802	1	Cap for Gas Tank.....	
55474-DX	1	Needle Valve for Gas Tank (Order from International Harvester Co.).....	
C-398	1	Cover Plate for water filler hole.....	
	2	3/8" x 3/4" USS Wing Screw -- for cover plate.....	
C-1307	1	Seat Welded Assembly.....	
C-6082	1	Seat Insulating Plate.....	
	4	3/8" x 1-1/2" SAE Cap Screw for bolting seat to frame.....	
	4	3/8" SAE Hex Nut.....	
	4	3/8" Lock Washer.....	
C-6542	1	Seat Cushion for C-1307.....	
C-6544	1	Back Cushion for C-1307.....	
C-6547	2	Arm Rest for C-1307.....	
	8	3/8" x 3/4" USS Cap Screw for bolting Cushions to seat.....	
C-6635-R	1	Fender for Drive Wheels -- right hand.....	
C-6635-L	1	Fender for Drive Wheels - left hand.....	
C-6635-C	2	Skirt for C-6635 Fenders.....	
C-6613-R	1	Fender for Steering Wheel -- right hand.....	
C-6613-L	1	Fender for Steering Wheel -- left hand.....	
C-6617	2	Skirt for C-6613 Fenders.....	
	6	1/2" x 1" USS Cap Screw for C-6613 Fenders.....	
	22	1/2" x 1-1/4" SAE Cap Screw -- (6 for C-6613, 16 for C-6635).....	
	22	1/2" SAE Hex Nut.....	
	28	1/2" Lock Washer.....	
	4	5/8" x 1-3/4" SAE Cap Screw for bolting C-6635 Fender Braces to frame.....	
	4	5/8" SAE Hex Nut.....	
	4	5/8" Lock Washer.....	
	4	5/8" Tapered Washer.....	
	6	3/8" x 1" SAE Cap Screw (2 for C-6617, 4 for C-6635-C).....	
	6	3/8" SAE Hex Nut.....	
	6	3/8" Lock Washer.....	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts.

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>FRAME, REAR AND SIDE COUNTERWEIGHTS, BUFFER PLATE, GAS TANK, SEAT, FRONT AND REAR FENDERS (Continued)</u>			
C-6614-R	1	Running Board (Checker Plate) - Right Hand.....	
C-6614-L	1	Running Board (Checker Plate) - Left Hand.....	
	8	1/2" x 1-1/4" SAE Cap Screw for Running Boards.....	
	8	1/2" SAE Hex Nut.....	
	8	1/2" Lock Washer.....	
C-6938	1	Guard Cover for Boom Topping Winch.....	
	4	3/8" x 1" USS Cap Screw for C-6938.....	
	4	3/8" Lock Washer.....	
	3	1/2" x 1-3/4" USS Cap Screw for C-6938.....	
	3	1/2" USS Hex Nut (Welds to Front Bumper).....	
	3	1/2" Lock Washer.....	
<u>GUIDE ROLLER FOR BOOM TOPPING CABLE.</u>			
C-5797	1	Guide Roller for Boom Topping Cable.....	
C-5798	1	Shaft --- 1-3/8" dia. x 5" For C-5797 Roller.....	
P-16-A	1	Retaining Plate for C-5798 Shaft.....	
	2	3/8" x 3/4" USS Cap Screw for P-16-A.....	
	2	3/8" Lock Washer.....	
88507	2	Bearing for C-5797.....	

THE HUGHES - KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts.

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>DEAD AXLE, DRIVE WHEELS, DRIVE SPROCKETS, DRIVE CHAINS, ETC.</u>			
C-6363	2	Drive Sprocket -- 22 tooth -- 2" Pitch for Drive Axle	
	12	5/8" x 1-3/4" USS Cap Screw for bolting C-6363 to brake drum	
	12	5/8" Lock Washer	
C-8846	1	Dead Axle	
C-6759	2	Drive Wheel	
782-772	2	Timken Roller Bearing for Drive Wheel (inner)	
780-772	2	Timken Roller Bearing for Drive Wheel (outer)	
K-10438	2	2-1/2" Retaining Washer	
K-10340	2	2-1/2" Castellated Nut	
	2	5/16" x 3-1/2" Cotter Pin	
C-6567	2	Driven Sprocket -- 22 tooth -- 2" Pitch for C-6759 Wheels	
	16	3/4" x 2" USS Cap Screw	
	16	3/4" Lock Washer	
C-4967	2	Closure Cap	
	12	3/8" x 1-1/4" USS Cap Screw for C-4967 Cap	
	12	3/8" Lock Washer	
P-22-T	2	Roller Chain -- 2" Pitch -- 42 links each -- connects C-6363 and C-6567 Sprockets	
<u>SPROCKET SHAFT, SPROCKETS, CHAIN, CHAIN GUARDS, ETC., FOR SIDE POWER TAKE OFF, FRONT POWER TAKE OFF, SLEWING & HOIST CLUTCH DRIVE (See Drawing C-5465-H)</u>			
C-5473	1	Extension for Side Power Take-Off	
	8	1/2" x 1-3/4" SAE Cap Screw for bolting C-5473 to Power Take-Off	
	8	1/2" SAE Hex Nut	
	8	1/2" Lock Washer	
C-5794	1	Sprocket for Side Power Take-Off -- 15 tooth -- 1" Pitch	
P-69-H	1	Key -- 3/8" x 3/8" x 1-1/4" -- for C-5794 Sprocket	
C-3089-A	1	Retaining Washer for C-5794 Sprocket	
	1	1/2" x 1" SAE Cap Screw for C-3089-A Washer	
C-6714	1	Driven Sprocket -- 26 tooth - 1" Pitch -- on C-6668 Sprocket Shaft	
P-69-G	1	Key -- 3/8" x 3/8" x 1-15/16" -- for C-6714 Sprocket	
P-19-C	1	1-1/4" SAE Castellated Half Nut for C-6714 Sprocket	
P-57-H	1	Cotter Pin -- 3/16" x 2"	
P-22-Y	76	Link -- 1" Pitch Roller Chain to connect C-5794 and C-654 Sprockets	
C-6679	1	Chain Guard and Cover for above chain	
C-6677	1	Vellumoid Gasket for Chain Guard	
2992	1	Oil Seal for C-6679 Chain Guard	
	16	5/16" x 3/4" USS Cap Screw	
	16	5/16" Lock Washer	
P-53-C	1	3/8" Pipe Plug for C-6679	
C-6668	1	Sprocket Shaft	

THE HUGHES-KEENAN COMPANY

Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts.

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<p><u>SPROCKET SHAFT, SPROCKETS, CHAIN, CHAIN GUARDS,</u> <u>ETC., FOR SIDE POWER TAKE-OFF, FRONT POWER TAKE-OFF,</u> <u>SLEWING AND HOIST CLUTCH DRIVE. (See drawing C-5465-H)</u> (Continued)</p>			
P-73-A	2	Pillow Block Bearing Assembly	
	4	5/8" x 2-1/2" SAE Cap Screw for P-73-A Bearings	
	4	5/8" SAE Hex Nut	
	4	5/8" Lock Washer	
	4	5/8" Flat Washer	
C-6716	1	Drive Sprocket for Slewing Clutch -- 14 tooth -- 1" pitch	
C-6717	1	Drive Sprocket for Hoist Clutch -- 17 tooth -- 1" pitch	
P-68-G	2	Key -- 3/8" x 3/8" x 2-1/4" for C-6716 and C-6717 Sprockets	
	2	Allen Set Screw -- 3/8" x 3/4" for C-6716 and C-6717 Sprockets	
C-654	1	Driven Sprocket for Slewing Clutch -- 26 Tooth -- 1" Pitch	
C-4608	1	Driven Sprocket for Hoist Clutch -- 14 tooth -- 1" Pitch	
C-6169	1	Spacer for C-4608 Sprocket	
P-20-G	2	#G Woodruff Key for C-654 and C-4608 Sprockets	
P-19-C	2	1-1/4" SAE Castellated Half Nut for C-654 and C-4608 Sprockets	
P-57-H	2	Cotter Pin -- 3/16" x 2"	
P-22-G	40	Link -- 1" Pitch Roller Chain -- connects C-4608 and C-6717 sprockets	
P-22-H	45	Link -- 1" Pitch Roller Chain -- connects C-654 and C-6716 sprockets	
C-6887	1	Chain Guard and Cover for slewing Clutch Drive	
C-6889	1	Vellumoid Gasket for C-6887 Chain Guard	
C-6887	1	Chain Guard and cover for Hoist Clutch Drive	
C-6889	1	Vellumoid Gasket for C-6887 Chain Guard	
	24	5/16" x 3/4" USS Cap Screw for C-6887 Chain Guards	
	24	5/16" Lock Washer	
P-54-C	2	3/8" Street Ell for C-6887 Chain Guards	
P-53-C	2	3/8" Pipe Plug for P-54-C	
	2	3/8" x 1" SAE Cap Screw for Chain Guard Brackets	
	2	3/8" SAE Hex Nut	
	2	3/8" Lock Washer	
287128	4	Oil Seal for 1-7/8" Shaft -- for C-6887 Chain Guards	
C-5273	1	Sprocket for Front Power Take-Off -- 21 tooth -- 1" Pitch	
	1	1/2" x 1" Allen Set Screw for C-5273 Sprocket	
C-5274	1	Sprocket for Boom Topping Winch -- 15 tooth -- 1" Pitch	
P-26-L	1	Spacer for C-5274 Sprocket	
C-3089-B	1	Retaining Washer for C-5274 Sprocket	
	1	3/8" x 3/4" SAE Cap Screw for C-3089-B	
	1	3/8" Lock Washer	
P-22-S	60	Link -- 1" Pitch Roller Chain to connect C-5273 and C-5274 sprockets	
C-5902	1	Chain Guard for above Chain	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts.

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<i>TURNTABLE ASSEMBLY (See drawings C-415 and C-405)</i>			
C-559	1	Turntable Housing	} Sold as a unit -- order C-559-X
C-567	1	Turntable Housing Cover	
HM-595	3	Housing Gasket	
	18	5/8" x 4-1/4" SAE Cap Screw	
	4	5/8" x 4-1/2" SAE Cap Screw	
	4	5/8" x 6-1/2" SAE Cap Screw	
	26	5/8" Lock Washer	
HM-2079	1	Turntable	
P-21-A	181	1-1/2" Steel Ball	
C-712	1	Hoist Worm	
C-707	1	Hoist Worm Shaft	
	1	1-1/2" SAE Castellated Nut for C-712	
	1	3/16" x 2-1/2" Cotter	
P-19-C	1	1-1/4" SAE Castellated Half Nut for C-707	
P-69-D	1	Key -- 3/8" x 3/8" x 4" long - for C-712	
HM-93-X	1	Bearing for C-707 with HM-94 Bushing	
HM-94	1	Bronze Bushing for HM-93	
HM-92	1	Bearing for C-712	
20211	2	Thrust Ball Bearing for HM-92	
	8	5/8" x 1-3/4" SAE Cap Screw, drilled for wire for HM-92 and HM-93	
	8	5/8" Lock Washer	
HM-49	1	Slewing Worm	
C-727	1	Slewing Worm Shaft	
P-68-B	1	Key -- 3/8" x 3/8" x 6-1/4" --- for HM-49	
P-19-C	2	1-1/4" SAE Castellated Half Nut for C-727	
HM-187	2	Spring for Slewing Worm	
HM-42	2	Bronze Thrust Washer for between HM-187 and Worm Shaft Bearings	
C-3214	2	Flat Washer 2-3/4" O.D. x 1-9/16" I.D. for between HM-49 and HM-187	
HM-96-X	1	Bearing for C-727 with HM-41 Bushing	
HM-41	1	Bronze Bushing for HM-96	
HM-96-AX	1	Bearing for C-727 with HM-94 Bushing	
HM-94	1	Bronze Bushing for HM-96A	
	8	5/8" x 1-3/4" SAE Cap Screw, drilled for wire for HM-96 and HM-96A	
	8	5/8" Lock Washer	
C-3469	1	Inspection Plate -- 5" dia. x 10 Ga.	
C-7021	1	Gasket for C-3469	
	4	3/8" x 3/4" USS Cap Screw	
	4	3/8" Lock Washer	
	1	1-1/2" Flat Washer for between HM-92 and 1-1/2" Nut	
	1	1-1/4" Flat Washer for between HM-96 and 1-1/4" Nut	
	6	7/8" x 2" SAE Cap Screw for bolting turntable to frame	
	4	7/8" x 2-1/2" SAE Cap Screw for bolting turntable to frame	
	2	7/8" x 3" SAE Cap Screw for bolting turntable to frame	
	12	7/8" Lock Washer	
	2	7/8" SAE Hex Half Nut	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>LOAD HOIST AND BOOM SWING CLUTCH</u>			
<u>AND GEAR ASSEMBLY (See Drawing C-5475-H)</u>			
C-587-XL	1	Clutch Housing with C-589 Cover for slewing clutch, L.H.	
C-587-XR	1	Clutch Housing with C-589 Cover for hoist clutch, R.H.	
C-6027	4	Vellumoid Gasket for between C-587 and C-589	
	8	5/8" x 2-3/4" SAE Cap Screw for bolting C-587 to turntable	
	4	5/8" x 1-3/4" SAE Cap Screw for bolting C-587 to turntable	
	8	5/8" SAE Hex Nut	
	12	5/8" Lock Washer	
P-83-A	2	Welch Plug for C-589	
C-7011	2	Vellumoid Gasket for between C-587 and turntable	
	16	1/2" x 2-1/2" SAE Cap Screw for bolting C-589 to C-587	
	16	1/2" SAE Hex Nut	
	16	1/2" Lock Washer	
29924	2	Oil Seal -- for C-707 and C-727 shafts	
C-2359	2	Retainer for Oil Seals	
	6	1/4" x 1/2" USS Cap Screw for C-2359	
	6	1/4" Lock Washer	
3209	2	Ball Bearing for C-707 and C-727 Shafts	
C-661	2	Housing Cap	
C-662	2	Housing Cap	
C-6026	4	Vellumoid Gasket -- for C-661 and C-662	
	16	1/2" x 1-1/4" USS Cap Screw for C-661 and C-662	
	16	1/2" Lock Washer	
C-644	2	22 Tooth 4/5 pitch Gear -- SAE 1045 Heat Treated Steel	
P-10-M	4	Key -- 3/8" x 3/8" x 1-3/4" for C-644	
	2	1-1/4" SAE Castellated Half Nut (retaining nut for C-644)	
	2	1/4" x 2" Cotter Pin	
C-3227	4	30-Tooth 4/5 Pitch Gear -- SAE 1045 Heat treated steel, with brake drum	
C-3132	2	Brake Band for C-3227	
	2	3/8" SAE Adjusting Nut for C-3132	
C-2514	2	Spring -- for C-3132 Brake	
P-81-A	2	Felt Washer -- for C-3132 Brake	
C-3134	2	Lever for C-3132 Brake	
C-3133	2	Fulcrum for C-3134 Brake Lever	
	2	1/2" x 1-1/2" SAE Cap Screw for bolting C-3133 to C-587	
	2	1/2" SAE Hex Nut	
	2	1/2" Lock Washer	
C-1028-A	4	Bronze Bushing for C-3227	
C-1028-B	4	Bronze Thrust Washer for C-3227	
C-649	4	Steel Thrust Washer for C-3227	
C-668	2	Clutch Shaft	
1209	4	Ball Bearing for C-668	
306122	2	Oil Seal for C-668	
N-09	2	Special Retaining Nut for Ball Bearing on C-668 Shaft	
W-09	2	Special Lock Washer for N-09	
P-19-C	2	1-1/4" SAE Castellated Half Nut (Retaining Nut for Ball Bearing on C-668 Shaft)	
P-57-A	2	1/4" x 2" Cotter Pin	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts.

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>LOAD HOIST AND BOOM SWING CLUTCH AND GEAR ASSEMBLY (Cont'd) (See Dwg. C-5475-H)</u>			
P-76-A	2	Pullmore Clutch (See separate list below for clutch parts)	
C-663	2	Shifting Yoke -- Bronze	
C-723	2	Shifting Yoke Fork	
P-26-F	1	Spacer for C-723	
P-52-G	4	Pin -- 3/8" x 1" -- for joining C-663 and C-723	
P-52-H	4	Pin -- 5/32" x 1" -- for fastening above pin to C-723	
C-4679	2	3/8" x 1/2" Set Screw for C-723	
C-1261	2	Shaft for C-723	
P-10-E	2	Key -- 1/4" x 1/4" x 4" -- for C-723	
C-5586	1	Shifting Lever for Boom Swing Clutch	
C-5587	1	Shifting Lever for Load Hoist Clutch	
P-10-F	2	Key -- 1/4" x 1/4" x 3-1/2" for C-5586 and C-5587 Levers	
C-6708	1	Lever for Boom Swing Throwout and Slewing Brake Control	
C-5427	1	Lever for Hoist Brake Control	
C-724	2	Closure Plate -- for C-589 Housing Cover	
C-6028	2	Vellumoid Gasket for C-724	
	20	3/8" x 3/4" SAE Cap Screw for C-724	
	20	3/8" Flat Washer	
P-54-C	2	3/8" Street Ell -- for C-587 Housing	
P-53-C	2	3/8" Pipe Plug -- for above street ell	
C-4418	2	1/8" Pipe Plug, drilled for air hole -- for Top of C-589	
P-53-A	2	1/8" Pipe Plug -- for bottom of C-589	
	35 #	Transmission Grease - for turntable	
	4 Qts.	SAE #10 Oil -- for Clutches	
P-98-A	1	Clutch Adjusting Tool	
 <u>PARTS FOR NO. 5 FRICTION CLUTCH</u> (Two Clutches required)			
PMS-5-948	2	Hardened Thrust Washer	
PM-508	2	Split Ring	
PM-506	12	Inner Disc	
PM-526	14	Outer Disc	
PM-511	2	Thrust Plate	
PM-521	2	Pressure Plate	
PM-522	2	Adjustment Lock Spring	
PM-501	1	Clutch Body	
PM-502	1	Shipper Sleeve	
PM-503	1	Anchor Pin	
PM-504	6	Dog	
PM-505	6	Dog Pressure Pin	
PM-510	6	Dog Pivot Pin	
PM-507	2	Adjustment Collar	
	6	*C Hi-Pro Key	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>SINGLE DRUM SHAFT ASSEMBLY</u>			
<u>(See Drawing C-405)</u>			
HM-152	1	Drum Shaft	
P-65-D	1	Key -- 3/4" x 3/4" x 6-1/2" for C-7612 Drum	
C-7612	1	Hoist Drum	
HM-142-BX	1	Drum Shaft Bearing with C-5954 bushing	
C-5954	1	Bronze Bushing for HM-142-B	
	1	90° Zerk Fitting for HM-142-B	
	4	5/8" x 2-1/4" SAE Cap Screw for HM-142-B	
	4	5/8" Lock Washer	
HM-74 -X	1	Worm Gear Housing with HM-78 Bushing	
C-7016	1	Vellumoid Gasket for HM-74	
	8	5/8" x 1-3/4" SAE Cap Screw for HM-74	
	8	5/8" Lock Washer	
HM-78	1	Bronze Bushing for HM-74	
4003	1	Oil Seal for HM-74	
HM-79	1	Cap for HM-74	
	4	1/2" x 1-1/2" USS Cap Screw for HM-79	
	4	1/2" Lock Washer	
C-7017	1	Vellumoid Gasket for HM-79	
C-714	1	Bronze Worm Gear	
C-717	1	Steel Hub for C-714	
	12	1/2" x 1-3/4" SAE Cap Screw for C-714 and C-717	
	12	1/2" Lock Washer	
P-65-E	2	Key -- 3/4" x 3/4" x 2-1/2" -- for C-717 Hub	
HM-153	1	Worm Gear Washer	
	1	3/4" x 1-1/4" SAE Cap Screw for HM-153	
	1	3/4" Lock Washer	
P-53-D	1	1/2" Pipe Plug for HM-74	
C-7412	1	Brake Band Assembly on Hoist Drum C-7612	
C-1813	1	Adjusting Screw for C-7412	
C-2248	1	Steel Spring for C-1813	
	2	1/2" Flat Washer for C-1813	
	2	1/2" SAE Hex Nut for C-1813	
C-1813-A	1	3/8" x 2-3/4" Pin, for pinning C-1813 to C-7412	
C-1813-B	1	1/2" x 4-3/4" Pin, for pinning C-7412 to support bracket	
	4	1/8" x 3/4" Cotter pin for above Pins	

THE HUGHES - KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts.

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>BOOM TOPPING LIFT WINCH ASSEMBLY</u>			
<u>(See Assembly Drawing C-3065-H)</u>			
C-1407-X	1	Winch Gear Case complete with C-1408 case, C-6427 and C-6422 gaskets and C-5947 Bronze Bushings	
	11	1/2" x 1-1/2" SAE Cap Screw	
	2	1/2" x 3" SAE Cap Screw	
	13	1/2" SAE Hex Nut	
	13	1/2" Lock Washer	
P-52-B	2	3/8" x 3/4" Dowel Pin for C-1407-X	
P-53-E	2	3/4" Pipe Plug for C-1407-X	
P-53-D	4	1/2" Pipe Plug for C-1407-X	
C-6422	1	Gasket for C-1407-X (Upper Gasket)	
C-6427	1	Gasket for C-1407-X (Lower Gasket)	
C-5947	2	Bronze Bushing for C-1407-X Housing	
C-1404	2	Closure Plate with 1-11/32" hole for C-1407-X gear case	
C-1409	2	Closure Plate (no hole) for C-1407-X gear case	
	12	1/2" x 1-1/4" USS Cap Screw	
	12	1/2" Lock Washer	
C-3019	4	Gasket for C-1404 and C-1409 Closure Plate	
C-1772	1	Shaft for Winch Drum	
C-312-A	1	Winch Drum	
P-12-E	1	Key -- 1/2" x 1/2" x 3-3/4" -- for C-312-A Drum	
C-1622-A	1	Spacing Collar -- 5-1/4" long -- for C-312-A Drum	
C-1622-B	1	Spacing Collar -- 3-1/4" long -- for C-312-A Drum	
C-1424-X	1	Shaft Support with C-5946 Bronze Bushing for C-1772 Drum Shaft	
C-5946	1	Bronze Bushing for C-1424 Shaft Support	
C-1412	1	Worm Gear for C-1772 Shaft	
P-12-D	2	Key -- 1/2" x 1/2" x 2-3/4" -- for C-1412 Worm Gear	
C-1414	1	Hoist Worm	
C-1439	1	Shaft for C-1414 Hoist Worm	
P-10-U	1	Key -- 3/8" x 3/8" x 8-3/4" -- for C-1414 Hoist Worm	
C-1431-X	1	Double Jaw Clutch -- with 1/2" SAE Nut welded on	
C-1437	1	Shaft for C-1431 jaw clutch	
P-21-B	1	Poppet Ball (1/2" steel ball) -- for C-1431 jaw clutch	
P-13-A	1	Poppet Ball Spring -- for C-1431 jaw clutch	
C-2478	1	Retaining Screw for poppet ball and spring	
C-1417	1	Jaw Clutch Pinion -- 33 tooth	
C-1416	1	Pinion for C-1439 Worm Shaft -- 33 tooth	
C-1419	1	Jaw Clutch Sprocket -- 15 tooth -- 3/4" pitch	
C-1418	1	Sprocket for C-1439 Worm Shaft -- 15 tooth -- 3/4" pitch	
P-10-R	2	Key -- 3/8" x 3/8" x 1-3/8" -- for C-1416 pinion and C-1418 sprocket	
WRA-206	2	Hyatt Roller Bearing -- for C-1417 pinion and C-1419 Sprocket	
P-22-A	1	Length 3/4" pitch single roller chain -- 26 links -- connects C-1418 and C-1419 sprockets	
C-1462	2	Closure Spacer for WRA-206 bearing	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts.

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<i>BOOM TOPPING LIFT WINCH ASSEMBLY (Cont'd)</i>			
<i>(See Assembly Drawing C-3065-H)</i>			
7307	2	Ball Bearing -- for C-1439 Shaft	
208-S	2	Ball Bearing -- for C-1437 Shaft	
C-1461	2	Ball Bearing Collar for 208-S bearing	
20018	2	Oil Seal -- for C-1404 closure plate	
C-1466	2	End Collar -- for C-1624 Drum Shaft	
P-52-C	2	Pin -- 3/8" dia. x 3-1/2" long -- for C-1466 collar	
C-1428	1	Bronze Shifting Fork for C-1431 jaw clutch	
C-1432	1	Shifting Rod -- for C-1428 fork	
	1	5/8" SAE Hex Nut	
18328	2	Oil Seal -- for C-1432 Rod	
C-1433	1	Tubing Spacer -- for C-1432 Rod	
C-1434	1	Shifting Lever with 3/8" x 2" SAE Clamp Bolt -- for C-1432 Rod	
C-1443	1	Cast Brake Drum -- for C-1439 Worm Shaft	
P-11-G	2	Key -- 5/16" x 1-1/2" for C-1434 and C-1443	
C-1444	1	Brake Band Assembly	
	2	5/16" SAE Hex Nut	
	2	5/16" Wrought (Flat) Washer	
C-2473	1	Spring -- for C-1444 Brake Band	
C-1489	1	Bracket -- for C-1444 Brake Band	
	2	5/16" x 3/4" USS Cap Screw	
	2	5/16" Lock Washer	
C-1773	1	Winch Operating Shaft	
P-15-D	1	Winch Operating Sub-Lever -- with 3/8" x 2" SAE Clamp Bolt	
P-20-D	1	#D Woodruff Key -- for P-15-D Sub-Lever	
C-5921	1	Column for Winch Shifting Lever Shaft	
C-5922	1	Shaft for Winch Shifting Levers	
C-6114	1	Top Shifting Lever	
C-6113	1	Bottom Shifting Lever	
P-20-H	2	#9 Woodruff Key -- for C-6113 and C-6114 Shifting Levers	
C-6123	1	Shifting Lever Column Clamp	
C-6122	1	Reach Rod -- connects P-15-D and C-6113 Levers	
	2	1/2" SAE Yoke End and Pin	
	2	1/2" SAE Hex Nut	
C-1771	1	Winch Support Frame welded assembly (welds to main frame)	
	12	5/8" x 2-1/4" SAE Cap Screw -- for bolting winch assembly to frame	
	12	5/8" SAE Hex Nut	
	12	5/8" Lock Washer	
	12	5/8" Tapered Washer	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts.

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>MAST, BOOM, SHEAVES, WIRE ROPE, LOAD BLOCK, ETC.</u>			
C-6672	1	Rain Protection Cover for Turntable	
C-4805	1	Turntable Mast welded Assembly	
	14	1" x 3-3/4" USS Cap Screw for bolting mast to turntable	
	4	1" x 3" SAE Cap Screw for bolting mast to turntable	
	14	1" USS Hex Nut	
	18	1" Lock Washer	
C-3989	1	Boom Welded Assembly -- 21' Gooseneck	
HM-807	2	Support casting for lower end of boom (welds to mast)	
P-9-F	2	Pin -- 1-1/2" dia. x 4-1/4" long to connect boom to HM-807	
P-57-A	2	1/4" x 2" Cotter Pin for P-9-F	
C-8419	1	Sheave Yoke at top of Mast	
P-5-AA	1	Pin -- 1-1/2" dia. x 7-7/8" long to connect to mast to mast	C-8419
P-57-A	2	1/4" x 2" Cotter Pin for P-5-AA	
C-8417	1	Sheave Yoke at end of boom	
P-5-Z	1	Pin -- 1-1/2" dia. x 6-1/2" long to connect to boom to boom	C-8417
P-57-A	2	1/4" x 2" Cotter Pin for P-5-Z	
P-8-E	1	Pin -- 1-1/2" dia. x 3-3/4" long for 10" Sheave in to mast C-8419	C-8419
P-8-Q	3	Pin -- 1-1/2" dia. x 3-1/8" long for sheaves in to mast and to boom C-8417 C-8419	C-8417 C-8419
P-57-A	3	1/4" x 2" Cotter Pin for P-8-E and P-8-Q	
C-5413	4	Retaining Clip for P-8-E and P-8-Q Pins	
	4	3/8" x 3/4" USS Cap Screw for C-5413	
	4	3/8" Lock Washer	
P-51-B	4	1/8" Zerk Grease Fitting for P-8-E and P-8-Q	C-8417
P-2-A	1	Pin -- 1" dia. x 3-1/2" long for boom topping cable dead end in to mast C-8417	C-8417
P-57-B	2	1/4" x 1-3/4" Cotter Pin for P-2-A	
P-9-X	2	Pin -- 1-1/2" dia. x 7-1/4" long for sheaves in mast	
P-57-A	2	1/4" x 2" Cotter Pin for P-9-X	
P-51-B	2	1/8" Zerk Grease Fitting for P-9-X	
P-8-G	1	Pin -- 1-1/2" dia. x 6-1/8" long for sheaves in end of boom	
P-8-A	1	Pin -- 1-1/2" dia. x 6-1/8" long for idler sheave in boom	
P-57-A	2	1/4" x 2" Cotter Pin for P-8-G and P-8-A	
C-5413	2	Retaining Clip for P-8-G and P-8-A	
P-51-B	2	1/8" Zerk Grease Fitting for P-8-G and P-8-A	
P-9-N	1	Pin -- 1-1/2" dia. x 6-1/8" long - for load line cable dead end in boom	
P-57-A	1	1/4" x 2" Cotter Pin for P-9-N	
HM-177	1	Cast Load Block	
HM-524-X	1	Load Hook for HM-177 with nut and pin	
HM-524-A	1	1-1/4" USS Nut for HM-524 (Machined Round)	
P-52-F	1	Pin -- 1/4" x 1-7/8" (drill rod) for fastening nut to HM-524	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts.

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>MAST, BOOM, SHEAVES, WIRE ROPE,</u>			
<u>LOAD BLOCK, ETC. (Continued)</u>			
P-8-F	1	Pin -- 1-1/2" dia. x 4-3/4" long, for sheave in HM-177 Load Block	
P-57-A	1	1/4" x 2" Cotter Pin for P-8-F	
P-51-B	1	1/8" Zerk Grease Fitting for P-8-F	
C-7829-X	2	8" Sheave with Bronze Bushing for 1-1/2" pin (in mast)	
C-193-X	3	8" Sheave with Bronze Bushing for 1-1/2" pin (two in sheave yokes, one in boom)	
C-7414 C-1188-X	1	12" sheave with bushing (in sheave yoke)	
	5	10" Sheave with Bronze Bushing for 1-1/2" pin (two in boom, two in sheave yokes, one in load block)	
	1	Lenth wire rope for boom topping winch -- 1/2" -- 6 x 37 -165' long	
	1	Lenth wire rope for load line -- 1/2" -- 6 x 37 -105' long	
P-59-C	5	1/2" Cable Clamp for Wire Rope	
P-59-E	2	3/4" Cable Thimble	
C-1029-A	2	Angle Bracket for 3 Part Line -- bolts to load block	
	4	3/4" x 1-1/2" USS Cap Screw for C-1029-A	
	4	3/4" Lock washer	
P-2-L	1	Pin -- 1" dia. x 2-3/4" long for 3 Part Line dead end	
P-57-A	2	1/4" x 2" Cotter Pin for P-2-L	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>PLATFORM AND TRACTOR CONTROLS</u>			
C-5572	1	Platform	
C-6117	2	Brace for Platform	
	4	1/2" x 1-1/4" SAE Cap Screw	
	4	1/2" SAE Hex Nut	
	4	1/2" Lock Washer	
	2	3/8" x 1" SAE Cap Screw	
	2	3/8" SAE Hex Nut	
	2	3/8" Lock Washer	
C-5578	1	Shaft for foot pedals -- 1-1/4" dia. C.R.S. x 30" long	
C-5433	2	Bracket for C-5578 Shaft (one R.H. and one L.H.)	
	4	1/2" x 1-1/2" SAE Cap Screw	
	4	1/2" SAE Hex Nut	
	4	1/2" Lock Washer	
P-51-A	2	90° Zerk Fitting	
C-6112	1	Foot Brake Pedal	
T-1391	1	Pull back spring for C-6112 Pedal	
69381-DM	1	Cross Shaft for Hydraulic Brake (Furnished by International Harvester Company)	
C-5579	1	Brake Sub-Lever for 69381-DM Shaft	
P-20-D	1	#D Woodruff Key	
C-5574	1	Reach Rod to connect C-6112 pedal to C-5579 Sub-lever	
	2	5/8" SAE Yoke End and Pin	
	2	5/8" SAE Hex Nut	
C-6249	1	Sub-lever for Cross Shaft	
P-10-G	1	Key -- 1/4" x 1/4" x 4-1/2" for C-6249 Sub-lever	
P-51-B	1	Zerk Fitting -- straight -- for C-6112 pedal	
C-5483-A	1	Clutch Pedal	
P-26-P	1	Spacer for between Clutch and Brake Pedals	
P-26-N	1	Spacer for between clutch pedal and Shaft Bracket	
C-6119	1	Clutch sub-lever on C-5578 Shaft	
T-1391	1	Pull back spring for clutch pedal	
C-6097	1	Bracket for pull back spring	
P-26-N	1	Spacer for between C-6119 Sub-lever and C-5433 bracket	
C-5307	1	Fulcrum for tractor clutch operating shaft	
	1	1/2" x 1-1/2" SAE Cap Screw for C-5307 Fulcrum	
	1	1/2" SAE Hex Nut	
	1	1/2" Lock Washer	
69390-DM	1	Reach Rod -- connects clutch sub-lever with fulcrum (Furnished by International Harvester Co.)	
P-24-B	2	1/2" SAE Yoke End and Pin for 69390-DM Reach Rod	
	2	1/2" SAE Hex Nut	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>PLATFORM AND TRACTOR CONTROLS (Continued)</u>			
C-6116	1	Shaft for Hand Brakes	
P-57-A	1	1/4" x 2" Cotter Pin for above shaft	
C-5584	1	Bracket for C-6116 Shaft (L.H.) (Welds to Frame)	
C-5588	1	Bracket for C-6116 Shaft (R.H.) (Welds to Frame)	
P-51-B	2	Zerk Grease Fitting - Straight -- for brackets	
C-5346	1	Outer Hand Brake Lever	
P-20-D	1	#D Woodruff Key for C-5346 Lever	
C-5484	1	Inner Hand Brake Lever	
P-51-B	1	Zerk Grease fitting -- straight -- for C-5484 lever	
X-14-6	2	Ratchet for Hand Brake Levers	
	2	3/8" x 4-1/4" SAE Cap Screw	
	2	3/8" SAE Hex Nut	
	2	3/8" Lock Washer	
P-26-Q	2	Spacer for Ratchet	
P-26-R	2	Spacer for Ratchet	
P-15-B	1	Sub-lever for outer brake lever on C-6116 shaft	
P-20-D	1	#D Woodruff Key for P-15-B	
C-5302-A	1	Bell Crank for hand brakes -- Left Hand	
C-5302-B	1	Bell Crank for Hand Brakes -- Right Hand	
C-5301	2	Bracket for Bell Crank (Welds to Frame)	
P-57-A	2	1/4" x 2" Cotter Pin	
C-5599	2	Reach Rod -- connects brake levers to bell crank	
P-24-B	4	1/2" SAE Yoke End and Pin	
	4	1/2" SAE Hex Nut	
C-5577-B	1	Choke Lever	
	1	3/8" x 1" SAE Cap Screw	
	1	3/8" SAE Hex Nut	
	1	3/8" Lock Washer	
69383-DM	1	Reach Rod -- connects C-5577-B Choke Lever to carburetor (Furnished by International Harvester Co.)	
C-5577-C	1	Operating Lever for Front Power Take-Off	
	1	3/8" x 1" SAE Cap Screw	
	1	3/8" SAE Hex Nut	
	1	3/8" Lock Washer	
C-5592	1	Intermediate Shaft for Front Power Take-Off	
P-57-A	1	1/4" x 2" Cotter Pin	
P-15-J	2	Sub-lever on C-5592 Shaft	
P-20-A	2	#A Woodruff Key for sub-levers	
C-6083	1	Reach Rod to connect C-5577-C Lever and P-15-J Sub-lever	
P-24-A	1	3/8" SAE Yoke End and Pin for Reach Rod	
	1	3/8" SAE Hex Nut	
P-57-D	2	1/8" x 1" Cotter Pin for Reach Rod	

THE HUGHES-KEENAN COMPANY

Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts.

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>PLATFORM AND TRACTOR CONTROLS. (Continued)</u>			
C-5577-C	1	Operating Lever for Side Power Take-Off	
	1	3/8" x 1" SAE Cap Screw	
	1	3/8" SAE Hex Nut	
	1	3/8" Lock Washer	
C-6121	1	Reach Rod -- Connects C-5577-C lever to Side Power Take-Off	
P-57-D	2	1/8" x 1" Cotter Pin	
C-5482	1	Bracket for Foot Throttle	
69384-DM	1	Idler Shaft for Foot Throttle (Furnished by International Harvester Co.)	
C-5328	1	Reach Rod to Connect Foot Throttle and Idler Shaft	
C-6327	1	Bracket for Foot Throttle Bell Crank	
(Note: --all other parts for foot throttle furnished by International Harvester Company)			
C-5481	1	Hand Throttle Control Lever (IHC Part #69391-DM, Modified)	
C-5487	1	Tractor Gear Shift Lever (IHC Part #69379-DM, Modified)	
	2	3/8" x 1" SAE Cap Screw for bolting Oil Gauge to Platform	
	2	3/8" SAE Hex Nut	
	2	3/8" Lock Washer	
<u>AUTOMATIC BOOM STOP</u>			
C-6126	1	Plunger	
P-13-N	1	Spring for C-6126	
C-6127	1	Bracket for C-6126	
C-6128	1	Contact Insulator	
C-6124	2	Hold-down clip for C-6128	
	2	7/16" SAE Hex Nut for C-6126	
P-57-D	1	1/8" x 1" Cotter Pin for C-6126	
<u>FRONT AUTOMATIC COUPLER</u>			
C-6762	2	Drawbar Sidemember (Replaces International Harvester Co.'s Part #59924-DX)	
C-6763	2	Drawbar Brace (Replaces International Harvester Co.'s. Part #59925-D)	
(Note:--all other parts for Front Automatic Coupler furnished by International Harvester Co. Consult Tractor Parts Book for parts.)			

THE HUGHES-KEENAN COMPANY

Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts

PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>EXTENDED REAR AXLE, BOLSTER, TIE ROD,</u>			
<u>STEERING ARMS, ETC. - For Pneumatic Tired Wheels</u>			
C-6564	1	Rear Axle (For small wheels)	
C-5779	1	Bolster for C-6564 axle	
C-8003	1	Tie Rod	
C-5385-G	1	Steering Arm with Ball, L.H.	
C-5385-H	1	Steering Arm, R.H.	
C-8007	1	Drag Link	
C-8819	1	Bracket for Ross Steering Gear	
	4	1/2" x 1-1/2" SAE Cap Screw for C-5926	
	4	1/2" SAE Hex Nut	
	4	1/2" Lock Washer	
C-6123	1	Steering Column Brace	
<u>REAR WHEELS (STEERING), RIMS, RIM CLAMPS, ETC.</u>			
<u>(For Pneumatic Tires)</u>			
C-8499-A	2	Rear Wheel (Steering)	
446-B	2	Rim for C-8499-A	
445-R	2	Lock Ring for Rims	
33	10	Clamp for Rims	for Cranes Serial No. 4379 and lower
83	10	1/2" Bolt for clamps	
35	10	1/2" Nut	
C-8499-B	2	Rear Wheel (Steering)	
165-R	2	Rim for C-8499-B	
SR-165-R	2	Lock Ring for Rims	for Cranes Serial No. 4380 and up
CP-45	10	Clamp for Rims	
BT-45	10	5/8" Bolt for clamps	
NT-16	10	5/8" Nut	
<u>EXTENDED REAR AXLE, BOLSTER, TIE ROD,</u>			
<u>STEERING ARMS, ETC. - For Solid Tired Wheels</u>			
C-5943	1	Rear Axle (For small wheels)	
C-5779	1	Bolster for C-5943 Axle	
HM-2044	1	Tie Rod	
69385-DM	1	Steering Arm with Ball, L.H.	
4508-DA	1	Steering Arm, R.H.	
69387-DM	1	Drag Link	
C-8819	1	Bracket for Ross Steering Gear	
	4	1/2" x 1-1/2" SAE Cap Screw for C-5926	
	4	1/2" SAE Hex Nut	
	4	1/2" Lock Washer	
C-6123	1	Steering Column Brace	

THE HUGHES-KEENAN COMPANY

Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts

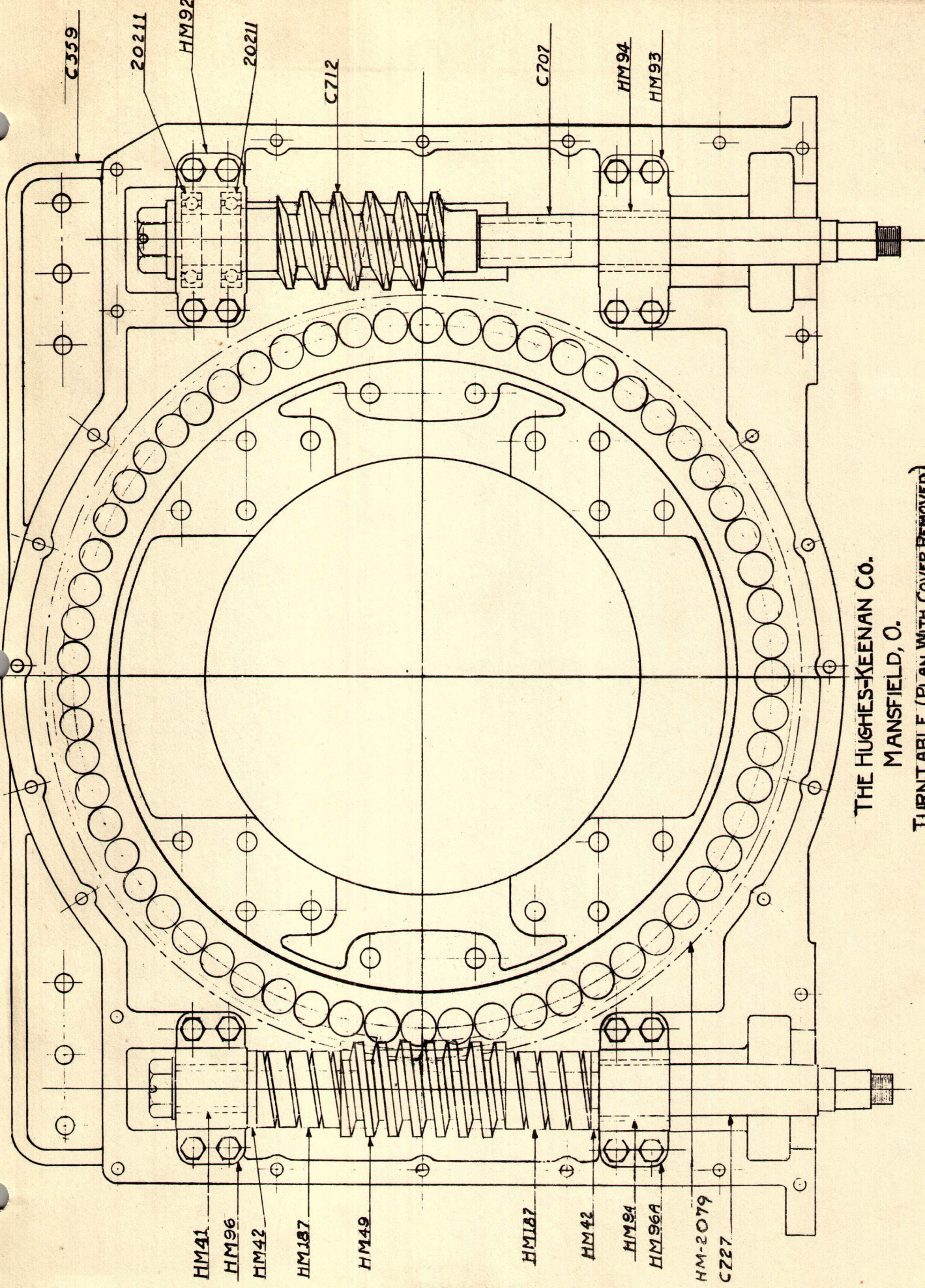
PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<u>ROSS STEERING GEAR -- LEFT HAND DRIVE</u>			
<u>SERIES NO. TA66 -- IDENTIFICATION NO. TA67108</u>			
505095	1	Housing Assembly complete with bushings and end cover	
068006	2	Bushing	
8645-13	1	End Cover Assembly	
504005	1	Oil Seal Unit	
8923-47½	1	Cam and Wheel Tube Assembly w-Bearings	
8922-47½	1	Cam and Wheel Tube Assembly	
C-20	1	Wheel Nut	
400020	2	Ball Cup	
400005	2	Retaining Ring	
400014	28	Balls, 3/8" dia.	
8734-36-13/16	1	Jacket Tube Assembly with Upper Cover	
7789-36-5/16	1	Jacket Tube Assembly	
065996	1	Bearing Unit Complete	
401105	1	Spring for bearing unit	
028104	1	Spring Seat	
TA666000	1	Upper Cover	
033042	Var.	Upper Cover Shim .002"	
033036	Var.	Upper Cover Shim .003"	
033037	Var.	Upper Cover Shim .010"	
020142	4	3/8" x 1" SAE Cap Screw - for housing upper cover	
	4	3/8" Lock Washer	
504263	1	Housing Side Cover Assembly	
TA665000	1	Housing Side Cover	
021065	1	Adjusting Screw	
025031	1	Lock Nut	
020139	6	3/8" x 1-1/2" SAE Cap Screw - for side cover	
	6	3/8" Lock Washer	
TA669000	1	Side Cover Gasket	
8733-7	1	Levershaft Assembly complete with bearings	
8732-7	1	Levershaft with Nut and Lockwasher	
E-61-P	1	Levershaft Nut	
	1	1" Lockwasher	
503981	1	Set of Stud-Roller Bearing Units (Consists of 2 - #044981 matched units)	
025009	2	Nut for stud-roller bearing unit	
028015	2	Pronged Washer	
404620	1	Steering Wheel	
434113	1	Steering Arm	
C-8819	1	Mounting Bracket for steering gear	

THE HUGHES-KEENAN COMPANY
Mansfield, Ohio

PARTS LIST FOR MODEL MC-4 ROUSTABOUT CRANE MOUNTED ON MODEL I-9 INTERNATIONAL TRACTOR

Always give Crane Serial Number when ordering parts.

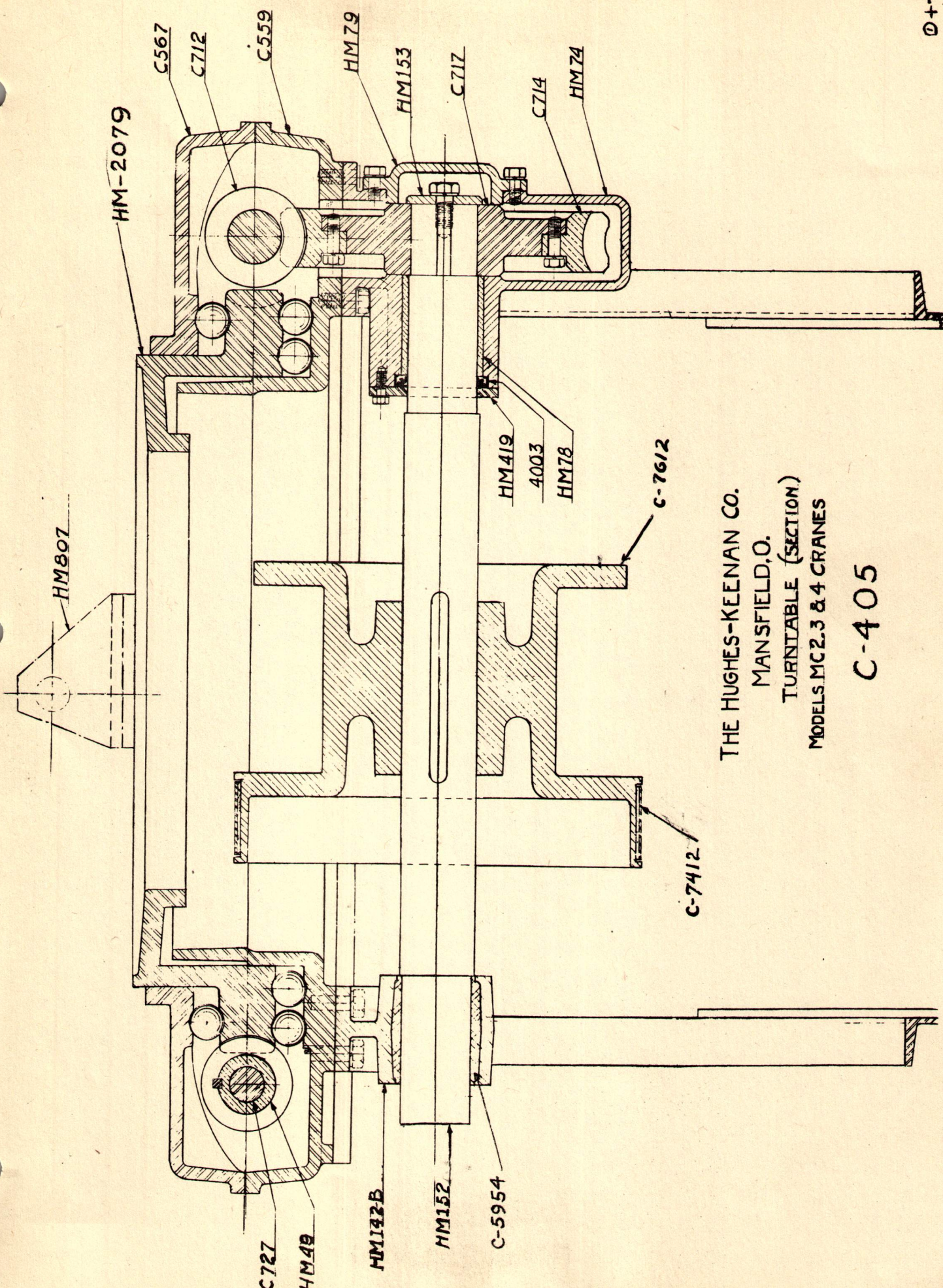
PART NUMBER	NO. FOR EACH CRANE	DESCRIPTION	LIST PRICE EACH
<i>HORN BUTTON UNIT (No Horn Furnished)</i>			
450029	1	Horn Button	
450031	1	Horn Button Emblem	
033078	1	Horn Button Shim	
029032	1	Contact Washer	
401082	1	Contact Spring	
051036	1	Insulating Ferrule	
029031	1	Contact Cap	
401081	1	Horn Button Spring	
029037	1	Contact Cup	
022020	3	#10 x 5/8 R.H. Wood Screw	
454895	1	Base Plate and Retaining Segments	
8034-96	1	Horn Cable and Upper Terminal	
<u>MISCELLANEOUS PARTS</u>			
C-5799	1	Rear Drawbar Pin	
C-5326	1	Radiator Tie Rod Bracket	
C-5145	1	Grab Rail welded assembly	
	8	3/8" x 3/4" SAE Cap Screw for C-5145	
	8	3/8" SAE Hex Nut	
	2	3/8" x 3/4" USS Cap Screw	
	10	3/8" Lock Washer	
C-5322-A	1	Muffler Bracket	
C-5322-B	1	Muffler U Bolt	
	1	3/8" x 1" SAE Cap Screw for C-5322-A	
	1	3/8" x 1-1/2" SAE Cap Screw for C-5322-A	
	4	3/8" SAE Hex Nut for C-5322-A and B	
	4	3/8" Lock Washer	
C-6639	1	Tool Box Assembly	



THE HUGHES-KEENAN CO.
 MANSFIELD, O.

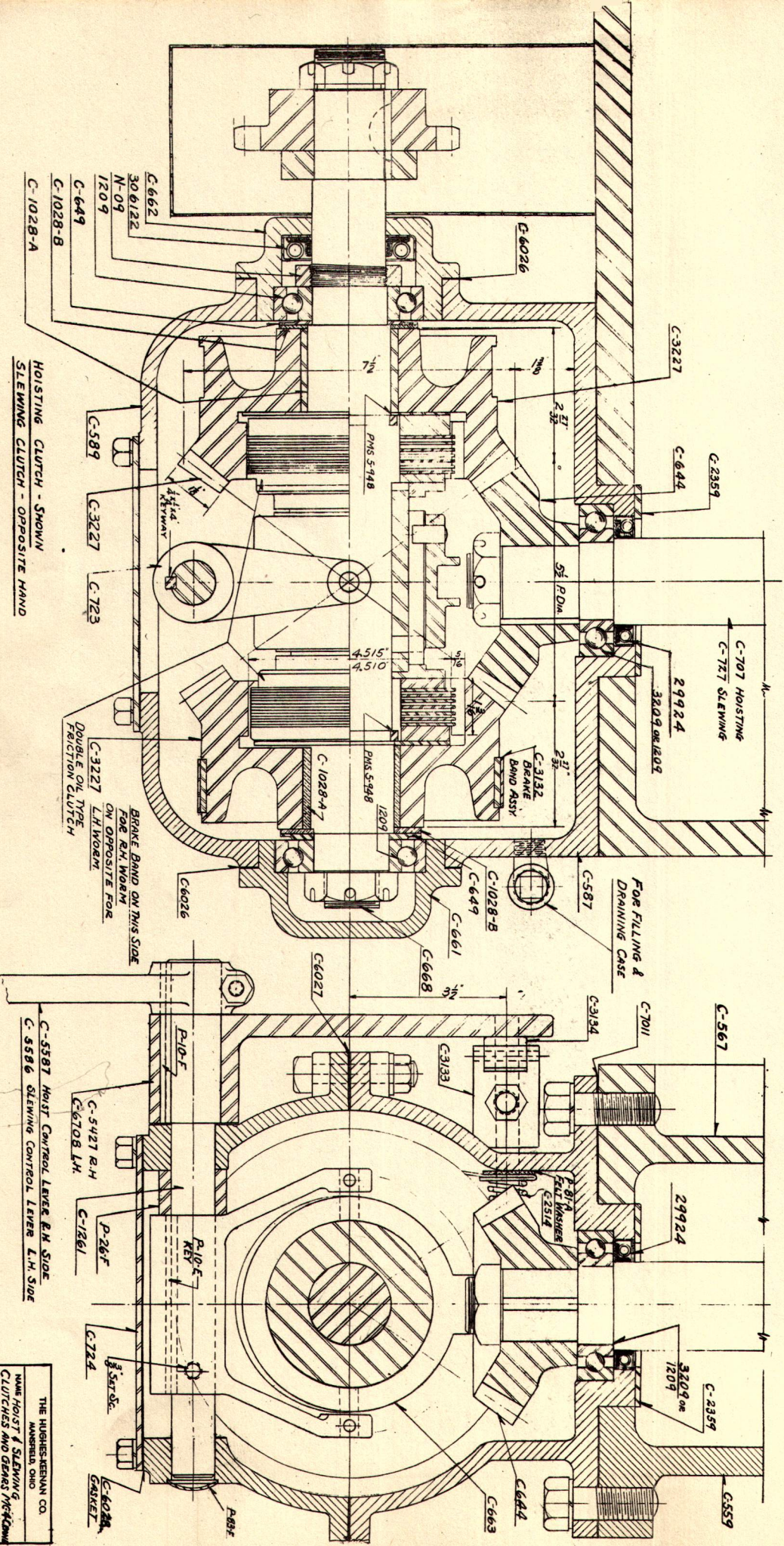
TURN TABLE (PLAN WITH COVER REMOVED)
 MODELS MC2, 3 & 4 CRANES

C415



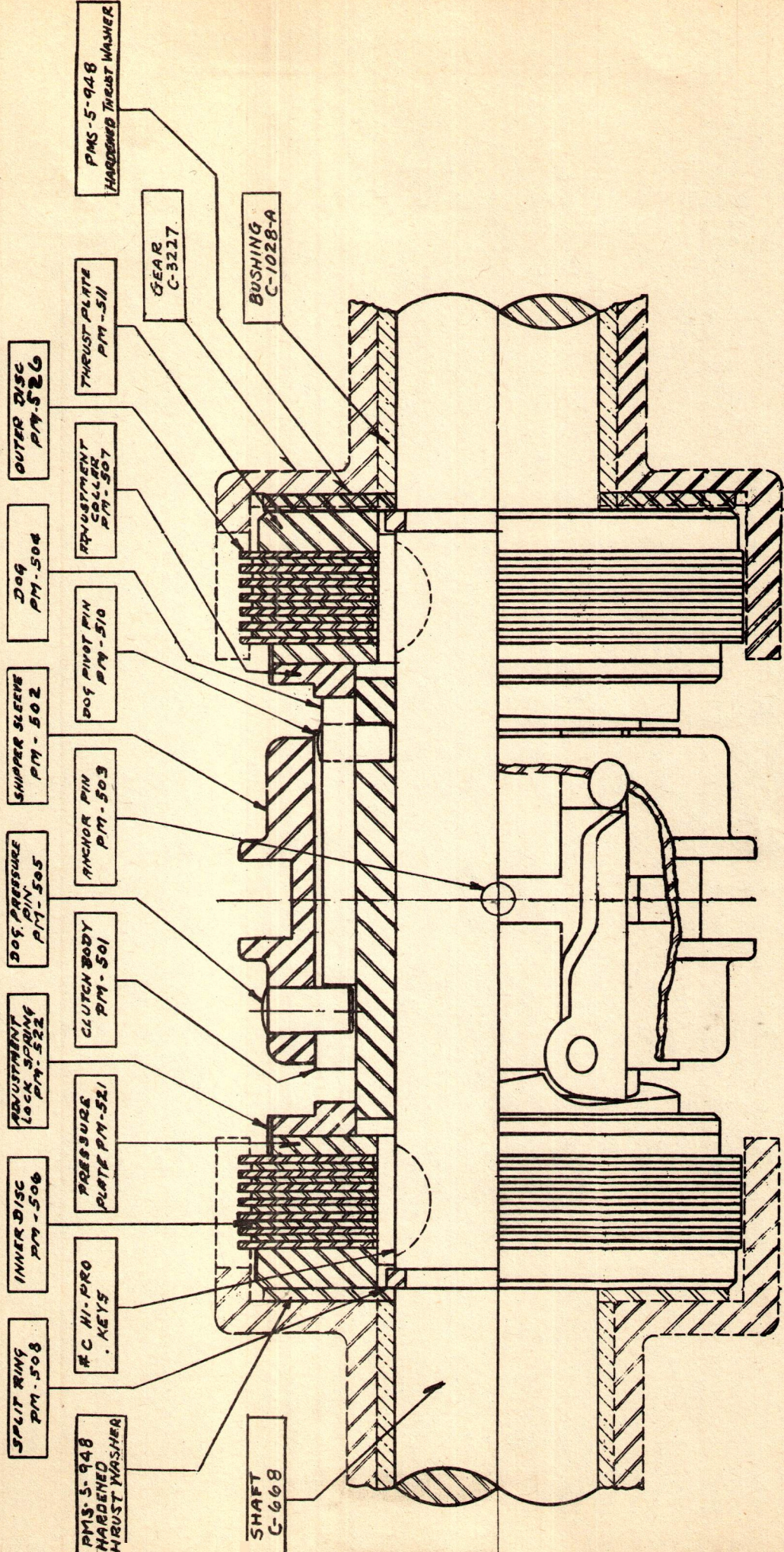
THE HUGHES-KEENAN CO.
 MANSFIELD, O.
 TURNTABLE (SECTION)
 MODELS MC2.3 & 4 CRANES

C-405



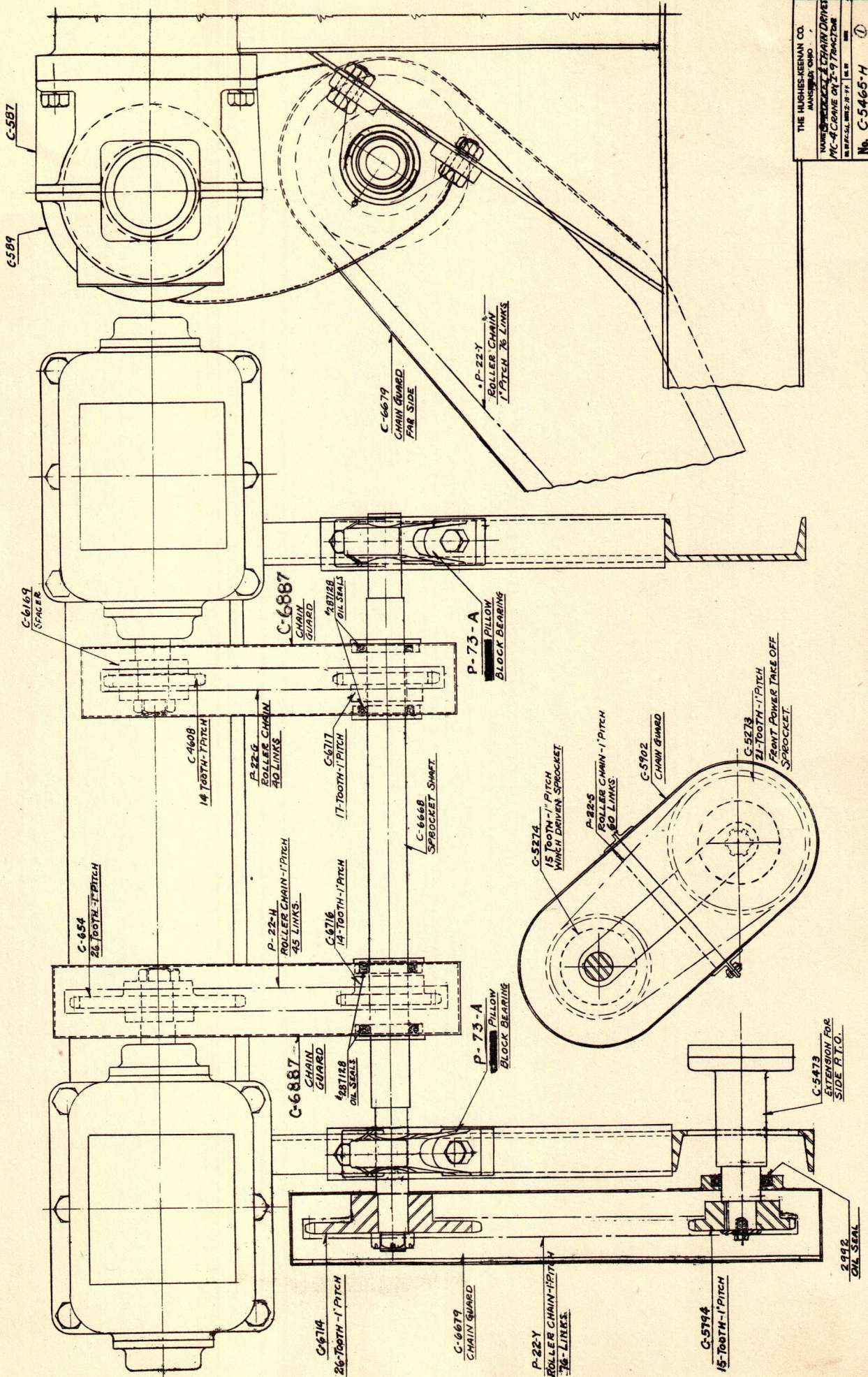
HOISTING CLUTCH - SHOWN
SLEWING CLUTCH - OPPOSITE HAND

THE HUGHES-KEENE CO.
 MAVERICK, OHIO
 NAME HOIST & SLEWING
 CLUTCHES AND GEARING MFG. CO.
 No. C-5475-H

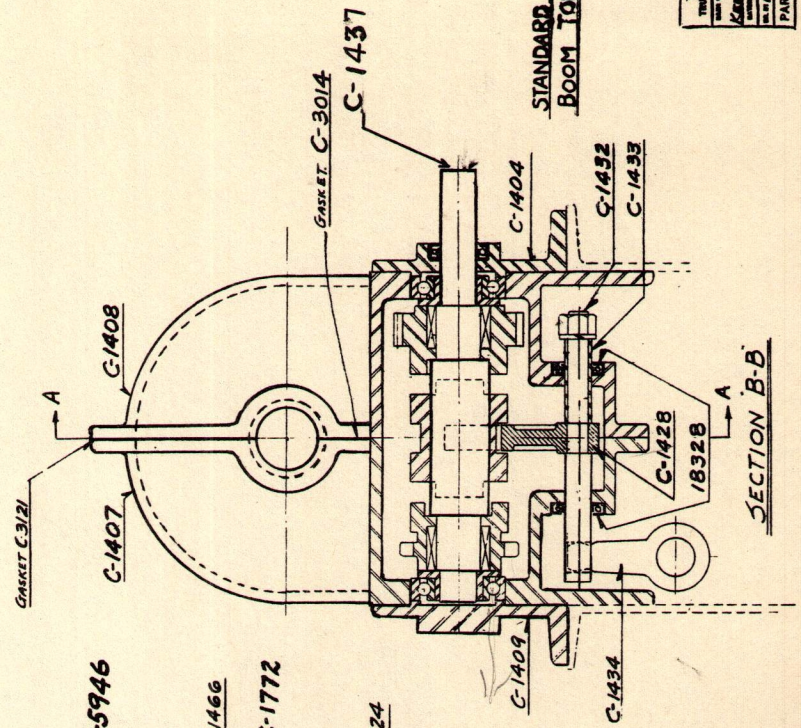
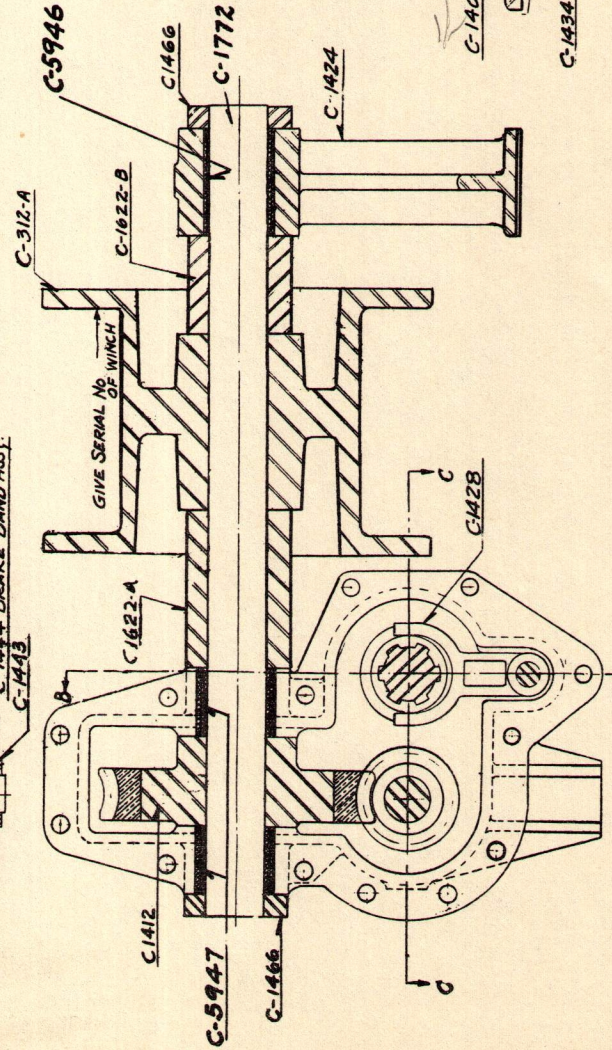
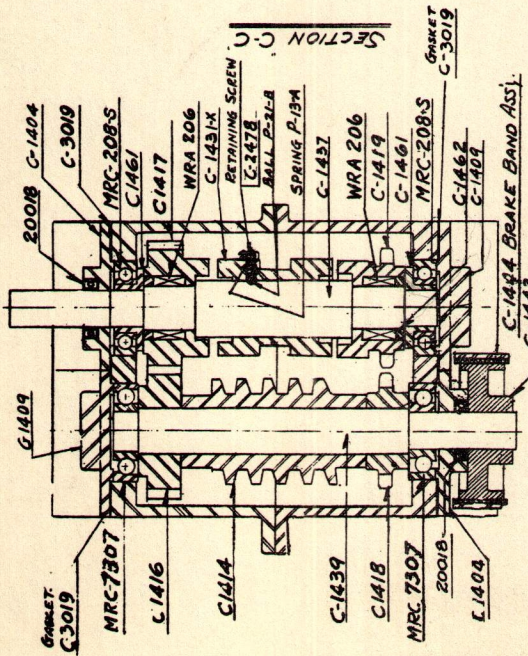


THE HUGHES - KEENAN CO.
 Mansfield, Ohio

NO. 5 PULLMORE CLUTCH



THE HUGHES-KEENAN CO.
 MANSFIELD, OHIO
 MANUFACTURERS OF CHAIN DRIVERS
 MC-4 CRANE ON T-9 TRACTOR
 IN 1942, 1943, 1944, 1945
 No. C-5465-H



STANDARD WINCH FOR
BOOM TOPPING

THE HUGHES-KEENAN CO.
MANSFIELD O.
STANDARD WINCH

THE HUGHES-KEENAN COMPANY
TRUCK BODY DEPT
MANSFIELD, OHIO
PART OF THE ASSEMBLY OF PARTS
KEENAN STANDARD WINCH
PART No. C-3065-H