

MODEL 1201 CARGO HOOK

Maintenance & Overhaul Manual

REV. A, 10/8/2013

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LIST OF REVISIONS

<u>DATE</u>	<u>DESCRIPTION</u>	<u>REV.</u>
10/8/2013	Changed address, added overhaul interval	A

PRE-OPERATING PROCEDURES

A pre-flight visual check shall be performed prior to conducting sling operations, on at least a daily basis. Unless the cargo hook passes the following minimum inspection, it should not be used.

1. Check hook for secure attachment to suspending line.
2. Check hook electrical connectors and wiring for frayed wire or loose connections.
3. Functionally check electrical release.
4. Functionally check manual release.
5. Check load beam for binding.
6. Visually check the load beam and hook frame for cracks, unusual wear and latch engagement.
7. Inspect keeper on hook. If damaged beyond repair, replace.
8. Check return springs and arms for serviceability.
9. Check hook body for loose or missing hardware. Tighten or replace as necessary before use.
10. Check hook load beam bumper for serviceable condition. Replace if necessary before lift operations – VERY IMPORTANT!!!

- DISCLAIMER -



WARNING

Helicopter external cargo load operations are in the best of conditions dangerous work. Mechanical Specialties, LLC cannot be in any way held responsible for injury or death due to accidents resulting directly or indirectly from this type of work.

The user of this hook understands and accepts this liability.

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TABLE I.
PARTICULARS

CAPACITY	12,000 LBS.
GUARD DIAMETER	16 INCHES
HEIGHT	15 INCHES
WEIGHT	51 LBS.
VOLTAGE	24 - 28 VDC
CURRENT (MAX.)	14 AMPS
ELECTRICAL CONNECTOR	USER SUPPLIED
MINIMUM OPENING WEIGHT	15 Lbs.

1.0 SCOPE

- 1.1 This manual contains the overhaul instructions and test procedures for CARGO HOOK ASSEMBLY. Model No. 1201, manufactured by MECHANICAL SPECIALTIES, LLC, OLYMPIA, WA 98501 USA.

2.0 PURPOSE OF EQUIPMENT

- 2.1 The cargo hook is designed for use as a remote or long line hook attached to the helicopter by means of a certified belly hook. The 1201 hook is never to be attached to the helicopter unless it is attached to a certified belly hook. The 1201 hook is not certified for any aircraft, and is never to be used as a primary or belly hook. The hook is designed to provide a way to engage, lift, transport, and unload external loads from a long line suspended below the helicopter. Cargo release can be accomplished manually or electrically. In the event of hook failure or emergency, the 1201 hook along with the suspending cable can be released with the helicopters belly hook.
- 2.2 CAUTION: The 1201 hook should not be released (except in emergency) when the hook has a load on it. The proper procedure is to set the load completely down before releasing the hook. Severe damage to the hook can occur if the hook is released with a load on it.

3.0 DATA SHEETS

- 3.1 Section I of this manual contains overhaul and test instructions for the 1201 hook. Section II is a parts breakdown and catalog.

SECTION I

OVERHAUL INSTRUCTIONS

OVERHAUL INTERVAL -

Operator may determine overhaul interval based on total usage and operating environment. **The overhaul interval (TBO) shall not exceed 5 years.**

4.0 TOOLS AND SPECIAL EQUIPMENT

4.1 No special tools are required to overhaul the cargo hook. The following special test equipment is required:

- A. 28 VDC 14 Amp Power Supply
- B. Box with switch and connectors
- C. Pull test machine

5.0 DISASSEMBLY

5.1 Remove the three bolts, nuts and washers (part #38 and #39) from the guard. Pull hook out of guard. Remove the four screws (#45) and remove the solenoid cover (#46). Remove the set screw from the manual release knob (#16) and remove knob. Remove all the remaining bolts, nuts and screws (#39, 40, 41, 42, 43, 44) Place the hook on a bench with the solenoid facing down. The front cover may now be lifted off to service the internal parts. If the load beam (#30) is to be removed, remove three of the bolts (#36) then firmly holding the spring housing from turning, remove the fourth bolt (#36). The spring housing can now be pulled off the trunnion (#29).

6.0 CLEANING

6.1 Clean all parts in cleaning solvent and dry with compressed air not to exceed 35 PSI.

7.0 INSPECTION

7.1 Inspect the cargo hook in accordance with the following chart:

<u>ITEM</u>	<u>METHOD OF INSPECTION</u>	<u>REMARKS</u>
All Threaded Surfaces (#13, 17, 36, 37, 38 39, 40, 41, 42, 44)	Visual	Check for cross, deformed or broken threads
Springs (#25, 31, 34)	Visual	Check for broken coils deformed ends permanent sets
Bearings (#9, 12, 14, 18, 29)	Visual	Check for freedom of rotation, binding, excessive wear
Load Beam (#30)	Visual	Check for wear, twisting, bending. Check for brinelling where the
Latch & Roller (#20, 22)	Visual	Check excessive wear and for brinelling where latch contacts bearing (#29) and where load beam contacts roller (#20)
Lever (#8)	Visual	Check for wear or bending
Shaft & Arm Assembly (#4)	Visual	Check for wear or bending
Pins (#6, 7, 11, 21, 23, 26, 27, 32)	Visual	Check for wear or bending
Link (#5)	Visual	Check for wear in holes

8.0 REASSEMBLY

- 8.1 Reassemble the hook in the reverse order of disassembly, noting the following procedures:
- A. Use Loctite RC/609 to secure the following parts:
#9, 10, 12, 14, 21, 27.
 - B. Apply MOBIL 28 Grease (or equivalent) to the following parts before assembly: #5, 9, 12, 14, 15, 18, 20, 21, and 29.
 - C. If bearing #9 is to be replaced, press out. Press in new bearing using Loctite RC/609 and press on the outer race only. It must be staked using new locations for staking.
 - D. If trunnion #29 is to be replaced, press out. Coat new trunnion with anti seize compound and press on the non-slotted end.
 - E. Check that the head of screw #40 is flush or slightly below the side plate (#1).
 - F. After assembly fill the holes in the side plates (#1,3), where pin (#32) is installed with RTV or PROSEAL. (Applies only to S/N's: 193, 192, and 191.)

9.0 OVERHAUL TEST PROCEDURE

9.1 This procedure details the overhaul test requirements for the Model 1201 Cargo Hook.

10.0 ELECTRICAL CHECK

10.1 Place the leads of an ohmmeter across the solenoid leads and verify that electrical continuity exists.

10.2 Place one lead of an ohmmeter on one of the solenoid wire and the other ohmmeter lead on the hook side plate (#1) and verify that electrical continuity DOES NOT EXIST. (Make sure the other solenoid wire is not touching the hook)

11.0 OVERHAUL LOAD TESTING

11.1 Place the hook in a pull test machine. Gradually apply load until a load of 24,000# is being applied to the load beam of the hook.

DO NOT RELEASE THE HOOK AT THIS LOAD

Hold this load for one minute and then gradually reduce the load.

11.2 Conduct the following releases:

<u>NO. OF CYCLES</u>	<u>LOAD</u>	<u>RELEASE METHOD</u>	<u>REMARKS</u>
1	10#	22 VDC	***
1	10#	Manual Knob	***
1	2,500#	22 VDC	Hold 2 Min.
1	5,000#	22 VDC	Hold 2 Min.
1	7,500#	22 VDC	Hold 2 Min.
1	12,000#	28 VDC	Hold 2 Min.
1	12,000#	Manual Knob	Hold 2 Min.

SECTION II

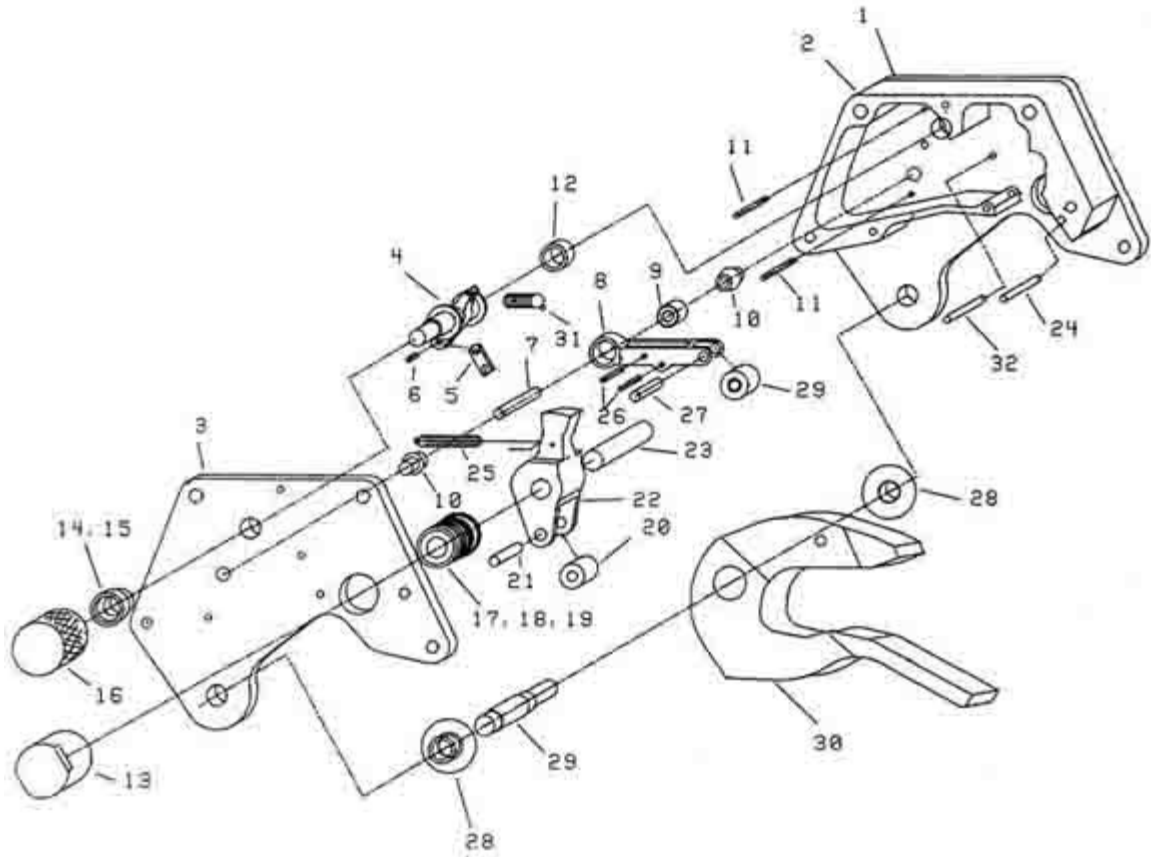
PARTS BREAKDOWN

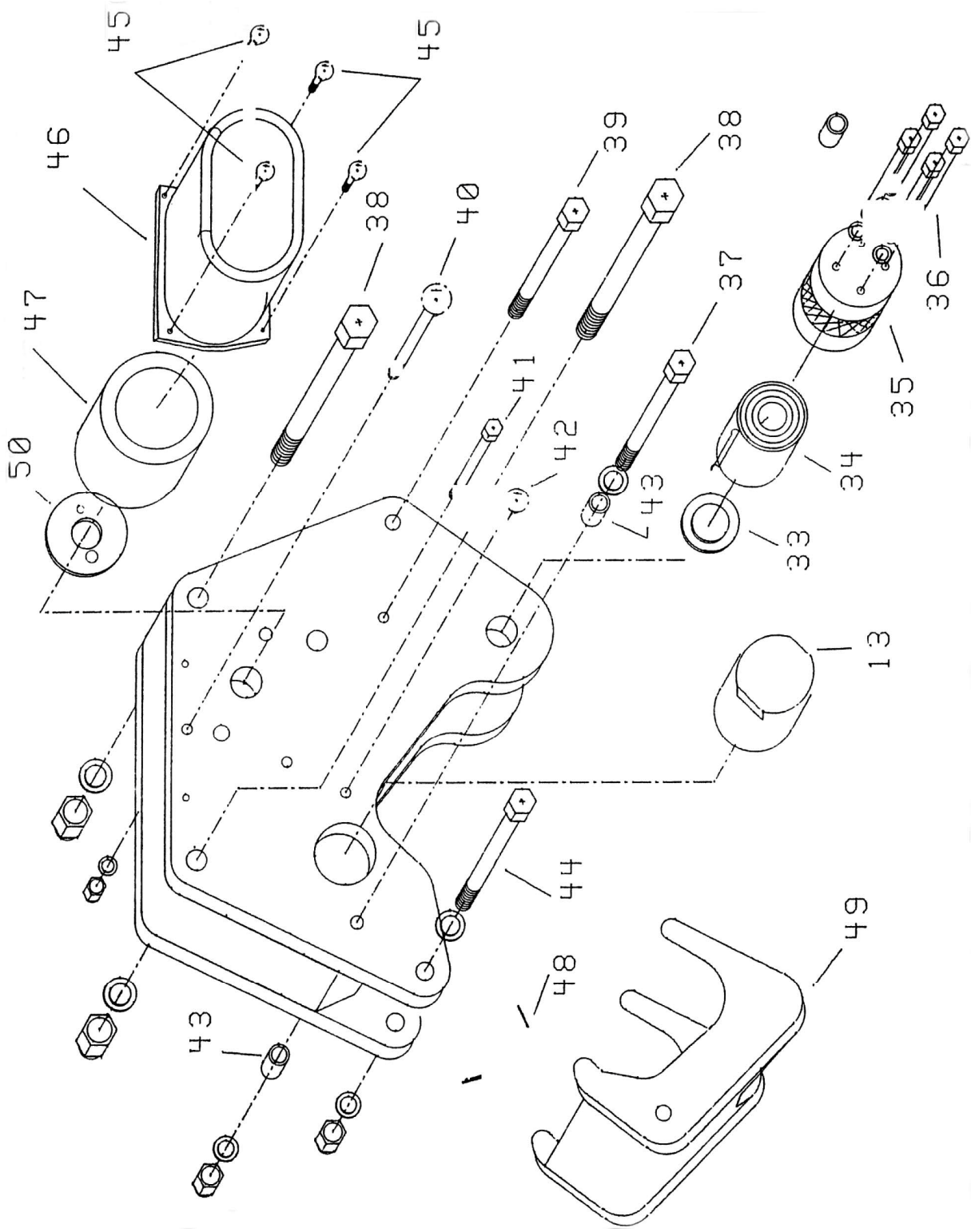
<u>DRAWING #</u>	<u>DESCRIPTION</u>
1	Side Plate (solenoid side)
2	Spacer
3	Side Plate (non-solenoid side)
4	Arm and Shaft Assembly
5	Link
6	Pin
7	Lever Shaft
8	Lever
9	Bearing
10	Boss
11	Spring Retaining Pin
12	Bushing
13	Bearing Cap
14	Bushing/Seal Housing
15	Seal
16	Manual Release Knob
17	Bearing Housing
18	Bearing
19	Retaining Ring
20	Roller
21	Roller Pin
22	Latch
23	Latch Trunnion
24	Bumper
25	Latch Spring
26	Pin
27	Shaft
28	Shim
29	Load Beam Trunnion
30	Load Beam
31	Spring
32	Pin (lever stop)
33	Retaining Ring
34	Spring
35	Spring Housing
36	AN3-14A, AN960-10 (3), AN960-10L(1)
37	AN6-31A, AN960-616 (2), AN365-624
38	AN8-31A, AN960-816 (2), AN365-820

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PARTS BREAKDOWN CONTINUED

<u>DRAWING #</u>	<u>DESCRIPTION</u>
39	AN6-31A, AN960-616, AN365-624
40	AN509-416R35, AN960-416, AN365-428
41	AN4-21A, AN960-416L, AN365-428
42	AN509-416R10
43	Stop
44	AN6-28, AN960-616, AN310-6
45	AN502-10-8
46	Solenoid Cover
47	Solenoid
48	Keeper Spring
49	Keeper
50	Spacer
84	Bumper, Load Beam (Not Shown)
87	Guard, 12,000 LB. (Not Shown)





LIMITED WARRANTY

MECHANICAL SPECIALTIES, LLC MAKES EVERY EFFORT TO ASSURE THAT ITS PRODUCTS MEET HIGH QUALITY AND DURABILITY STANDARDS AND WARRANTS TO THE PURCHASER OF OUR PRODUCTS THAT EACH PRODUCT BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR 12 MONTHS FROM DATE OF PURCHASE TO ORIGINAL PURCHASER ONLY.

WARRANTY DOES NOT APPLY TO DEFECTS DUE TO MISUSE, ABUSE, FAULTY ELECTRICAL SYSTEMS, NEGLIGENCE, ACCIDENTS, PRODUCTS BROKEN OR WORN IN THE COURSE OR NORMAL HOOK OPERATIONS, REPAIRS OR ALTERATIONS OUTSIDE OUR FACILITY OR TO A LACK OF MAINTENANCE. THIS WARRANTY DOES NOT COVER CONSEQUENTIAL DAMAGE OR INJURY.

TO TAKE ADVANTAGE OF THIS WARRANTY, THE PRODUCT OR PART MUST BE RETURNED TO THE FACTORY FOR EXAMINATION, AT WHICH TIME AN EVALUATION WILL BE MADE AS TO WHETHER OR NOT A WARRANTY REPLACEMENT IS JUSTIFIED.

MECHANICAL SPECIALTIES, LLC RESERVES THE RIGHT TO DECIDE WHAT A WARRANTY REPAIR OR REPLACEMENT IS.

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