SERVICE MANUAL

SINGER^{*} **Sewing Machine** 121D 200A

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LUBRICATION

Moving parts have either permanently sealed pre-lubricated ball or needle bearings or oil impregnated bushings which require no manual lubrication. The following exceptions are:

HOOK

An oil reservoir supplies oil to the sewing hook race and is filled through the oil cup as shown, until the word "FULL" is seen in the indicator window.

Check oil level at indicator window daily before starting machine. As oil level decreases, red arrow will appear (Fig. A).



TO TEST HOOK LUBRICATION

Thread machine and sew 3 yards of scrap material. Pay no attention to stitch quality or amount of oil at this time. Remove material and bed slide. Run machine approximately one minute to establish a uniform oil flow. Without stopping machine, hold a piece of paper in place under hook for 10 seconds. Remove paper and compare oil pattern with Fig. B for proper oil flow.



If there is no trace of oil or an excess, adjustment should be made with the oil metering screw. In order to gain access to oil metering screw, the hook should be in position as shown in Fig. C. Turn oil metering screw clockwise for more oil and counterclockwise for less (Fig. D). Normal setting is made by turning metering screw to maximum in position and backing out 2-1/2 turns. Less than 2-1/2 turns may be required for long continuous runs.



If oil flow is not satisfactory, remove hook assembly and oil filter. Check filter. Oil wick should be replaced whenever it has become clogged with lint or dirt. An excess of oil sometimes indicates that the filter wick has become detached from the screw or the screw is not securely tightened. Inspect all oil passages to see they have not become clogged.



MACHINE THREADING

- 1. Move needle to highest point
- 2. Lead thread from thread stand through thread post atop machine arm
- 3. Through 3 eyelets of thread guard
- 4. Units with U.T.T., through pretensioner
- 5. Down through thread retainer
- 6. Into and around tension assembly
- 7. Over check spring and under slack thread regulator
- 8. Up to and through thread retainer and take-up eyelet
- 9. Down through thread retainers (2)
- 10. Through needle bar thread guide
- 11. Through needle eye from left to right



STITCH LENGTH

The stitch length can be regulated while the machine is. in operation. To obtain the desired stitch length in forward feed, turn regulating thumb screw on oil pan "in" (counterclockwise) for more stitches per inch, and "out" (clockwise) for less (Fig. B).

To adjust the stitch length for reverse feed, it is necessary that the reverse stopping block be properly positioned. This is done by loosening the lock screw in the stopping block and sliding the slide block up or down to the desired stitch length. The locking screw must then be retightened (Fig. A).



PRESSER FOOT PRESSURE

The pressure on the material should be as light as possible while still sufficient to ensure correct feeding. There are two regulating screws that control the presser foot pressure. One atop the arm and one at the rear of the machine. The one atop the arm is the major control, normally adjusted prior to long production runs or new applications. For day-by-day casual adjustments, the regulating screw at the rear is used, screwing in for less pressure and unscrewing for more pressure. When this rear screw is unscrewed all the way out, it disengages; only then can the top screw be applied, and it serves as the sole control until the rear screw is again turned inward (Fig. C).



HOOK TIMING

Proper clearance between needle and hook point, requires that the point of the hook should pass the needle as closely as possible without striking or deflecting it. There should be .003 - .005 clearance between the two (Fig. A).

To adjust clearance, loosen bushing set screw (Fig. B). With screwdriver placed as shown move entire hook and bushing (Fig. C). Tighten bushing set screw.





Insure that the needle guard prevents the needle from contacting the hook point at any time. If large needles are to be used it may be necessary to string the needle guard back to allow hook point closer to needle (Fig. D).



HOOK TIMING CONT'D

Reset position finger so there is .018 - .022 thread clearance between finger and basket (Fig. E).



Loosen hook set screws. Turn hand wheel in direction of rotation until needle bar is on the rise stroke, and the lower mark is aligned with the needle bar height indicator. Set hook point to the center line of the needle (Fig. F). Tighten hook set screws.



TIMING FEED LIFTING SHAFT TO ARM SHAFT

Manually rotate arm shaft until timing mark on counterbalance aligns with timing mark on take-up stud connecting link (Fig. A).



Loosen bed shaft timing belt pulley set screws (Fig. B). Hold pulley stationary and rotate bed shaft until timing mark at feed bar end of shaft aligns with timing mark on casting (Fig. C). Timing marks alignment in Fig. A and Fig. C must occur simultaneously. Tighten pulley set screws.



FEED DOG SETTING

Centrally locate feed dog in throat plate slots. Feed dog must not make contact with throat plate, as noted. Align by loosening feed dog screws. Then retighten screws Fig. A.



LATERAL SETTING: Loosen pinch screw in feed bar crank (Fig. B). Shift feed bar as required. Ensure that feed bar does not contact position finger. Tighten pinch screw and check axial play at pendant link. Adjust feed lifting shaft to minimize play.



LENGTHWISE SETTING: Adjust stitch length to longest stitch and loosen feed bar crank pinch screw. Position so that feed dog does not contact either end of slots in throat plate.

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HEIGHT SETTING: With feed dog at its highest point the full depth of the teeth should protrude .040" - .043" above the throat plate.

To adjust, loosen eccentric locking nut and turn eccentric until feed dog is at correct height. Tighten locking nut.

LEVELING SETTING: Loosen set screws in feed bar crank. Turn eccentric until feed dog is level at the top of its feed path. Tighten set screws.

NOTE: It may be necessary to set feed dog height and level in conjunction with each other.

CHECK SPRING SETTING

HEIGHT - With machine threaded, turn handwheel in direction of machine rotation. As take-up lever begins to rise, the check spring should dip slightly, then return to its original position (Fig. A). When the thread take-up lever approaches the top of its stroke the check spring should be drawn all the way down (Fig. B). As take-up descends the check spring should return to its original position.

To adjust height, loosen locking set screw. Rotate entire tension assembly as required, and retighten set screw.



TENSION

Tension on the check spring should be sufficient to ensure action at top speed, but still light enough to allow spring to be drawn all the way down before any thread is drawn through the tension assembly.

To adjust, securely tighten set screw (Fig. A). Hold thumb nut stationary (Fig. C). Using screwdriver, turn tension stud clockwise to increase tension and counterclockwise to decrease.



TENSION RELEASE

The tension releasing mechanism should be adjusted so that when the presser foot is raised, using the knee lifter, the tension assembly opens as the presser foot approaches maximum lift.

To adjust, loosen allen cap screw. Move cap screw and block toward **front** of machine to open tension sooner, and towards **rear** of machine to open later. After desired adjustment, retighten allen screw.



NEEDLE BAR SETTING

Manually rotate arm shaft until needle bar is positioned at bottom dead center. Remove face plate and loosen needle bar clamping screw. Adjust needle bar so that its upper timing mark aligns with the needle bar height indicator. Retighten clamping screw (Fig. A).



PRESSER BAR AND FOOT SETTING

With feed dog positioned below the throat plate surface, the presser foot must rest firmly on the throat plate and must be located so the needle is centralized between its toes. To adjust, loosen guide bracket clamping screw and raise or lower bracket as required. Turn presser bar to centralize needle. Tighten clamping screw.



BOBBIN WINDER

TO ADJUST BOBBIN WINDER DRIVE WHEEL

- 1. Remove rear arm cover plate.
- 2. Move bobbin winder engaging lever to the engaged position.
- 3. Loosen set screws in drive wheel. Move drive wheel on arm shaft until it compresses driven wheel .020" .030". Tighten set screws.



TO ADJUST BOBBIN WINDER

- 1. Loosen set screw at top end of engaging lever. With screw driver in slot hold shaft stationary and move lever as required to obtain desired amount of thread on bobbin. Move to right for more thread and left for less. Retighten set screw.
- 2. Loosen set screw in collar of thread guide. Move guide in or out to obtain even wind on bobbin. Retighten set screw.
- 3. Adjust tension as required: in (clockwise) for more and out (counterclockwise) for less.



To thread bobbin winder, lead thread from thread stand through thread retainer, tension mechanism, thread guide, around thread stud, to bobbin. Wrap bobbin clockwise (Fig. A).





PRESSER BAR

- 1. Remove face plate mounting screws.
- 2. Remove face plate and thread take-up lever guard complete.
- 3, 4, 5, 6 & 7. Unscrew and remove regulating screw, steel ball, spring, washer and rod complete.
- 8, & 9. Unscrew and remove pressure lever mounting screw and lever complete.
- 10 & 11. Remove lower spring and guide complete.
- 12. Remove presser foot screw.
- 13. Remove presser foot.
- 14 & 15. Loosen bracket clamping screw and remove bracket.
- 16. Remove delrin spacer.
- 17. Rotate hand wheel until take-up mechanism is out of presser bar removal path. Lift presser bar up and out.



NEEDLE BAR FRAME AND TAKE-UP MECHANISM

- 1. Remove needle, rear arm cover plate and gasket.
- 2. Remove oil wick from take-up hinge stud and tab felt pad of the needle bar frame.
- 3. Remove sucker wick from needle bar frame.



NEEDLE BAR FRAME AND TAKE-UP MECHANISM (Cont'd)

- 4. Loosen thread guide and set screws.
- 5. Loosen needle bar crank set screw and clamping screw.
- 6. Loosen needle bar frame mounting screw.
- 7. Loosen needle bar frame set screw.
- 8. Remove take-up hinge stud.
- 9. Remove needle bar frame and take-up mechanism as a complete assembly.
- 10. Remove needle bar crank spacing washer.



TENSION RELEASE MECHANISM

- 1. Remove lifting link screw and link.
- 2. Remove tension releasing lever mounting screw, lever and spring.
- 3. Remove hand lifting lever mounting screw and lever.
- 4. Remove tension releasing pin.



ARM SHAFT

- 1. Loosen set screws (2 ea.) in each of the components named in the illustration below. The handwheel should then be removed, exposing the right end of the shaft.
- 2. With a soft-faced mallet, lightly tap arm shaft from right to left until front arm shaft bearing is free of casting. Pull arm shaft from machine, right to left.



FEED LIFTING SHAFT

- 1. Remove bed cover plate, drain oil from reservoir, and remove oil reservoir cover.
- 2. Remove height eccentric locking nut.
- 3. Loosen feed bar rock shaft crank pinch screw.
- 4. Slide crank assembly left to clear feed bar from height eccentric stud. This will give access to feed lifting link screw.
- 5. Loosen set screws (2 each) in the following components: drive pulley, timing belt pulley, feed eccentric, collar and gear as shown in illustration.
- 6. Remove drive pulley.
- 7. Unhook oil pump spring.
- 8. Remove feed lifting link screw (Left hand thread).
- 9. Remove shaft from left to right.



FEED ROCK SHAFT

- 1. Loosen set screws (2 ea.) in collars.
- 2. Loosen clamping screw in feed reversing crank.
- 3. Loosen clamping screw in feed bar rock crank.
- 4. Remove shaft from right to left.



FEED REVERSING MECHANISM

- 1. Remove screw from vertical link
- 2. Loosen set screws in drive assembly
- 3. Loosen set screws in collar (2 ea.)
- 4. Loosen set screws in dynamic damper (2 ea.)
- 5. Slip short shaft from left to right and long shaft from right to left, remove drive assembly. Remove shafts, collar and dynamic damper.



FEED REVERSING LEVER MECHANISM

- 1. Remove stitch indicator cover plate unit and light box.
- 2. Loosen reversing lever shaft set screw (in arm casting).
- 3. Loosen set screws in collars (2 each).
- 4. Slip shaft out from right to left (as viewed from rear of machine).
- 5. Remove collars and spring.
- 6. Remove reversing lever and vertical link as one assembly.



KNEE LIFT MECHANISM

- 1. Remove knee lift extension bar assembly.
- 2. Remove screw, washer and spring clip from bed casting.
- 3. Remove hex nut, washer and eccentric cam stud from bed casting.
- 4. Remove hex nut and washer.
- 5. Remove screw.
- 6. Pull stud out.
- 7. Loosen sleeve set screw from bed casting.
- 8. Remove "E" ring and link from bell crank, unscrew link from pivot pin and remove with oil seal.
- 9. Loosen set screws in stop arm, collar and crank.
- 10. Remove shaft from rear to front, collar, sleeve, stop arm with spring and drum assembly.
- 11. Remove "E" ring and vertical link from bell crank.
- 12. Remove screws and bell crank assembly with bracket.
- 13. Loosen set screws in collar and crank.
- 14. Remove shaft, collar and crank.



HOOK SHAFT & BUSHING

- 1. Remove throat plate, feed dog, position finger and hook assembly.
- 2. Remove bed cover pan.
- 3. Remove feed rock shaft (as per prior instructions).
- 4. Move feed bar to allow clearance for bushing removal.
- 5. Drain oil and remove oil reservoir cover.
- 6. Remove oil line & fitting from bushing.
- 7. Loosen hook shaft bushing set screw.
- 8. Remove hook shaft & bushing as a complete assembly.



FEED REVERSING LEVER MECHANISM

- 1. Position feed reversing lever and vertical link as one assembly, inside arm standard as shown.
- 2. Insert shaft through arm standard with two collars, spring and reverse lever mounted to it as shown.
- 3. Assemble stitch indicator cover plate, light box, reverse lever stopping block and the stitch indicator cover plate unit.
- 4. Centralize shaft in arm standard axially with left collar up against casting wall. Tighten set screws.
- 5. Insert left end of spring into collar (hole provided).
- 6. Hook right end of spring under reversing lever.
- 7. Centralize reversing lever in slot of stitch indicator cover plate. Set right collar up against hub of reversing lever and tighten set screws.



FEED REVERSE DRIVE ASSEMBLY

- 1. From left to right, insert long shaft through casting, collar and dynamic damper assembly.
- 2. Insert feed reversing drive assembly onto long shaft end, fitting the flattened surface. Align groove of shaft with side face of drive assembly.
- 3. From right to left insert short shaft through casting into drive assembly, until groove aligns with side face.
- 4. Tighten set screws in drive assembly.
- 5. Tighten set screws of dynamic damper onto flats of shaft.
- 6. Move entire assembly to left until touching casting. Move collar to right until touching casting. Eliminating any end play, tighten set screws in collar.
- 7. Install crank and attach vertical link to crank.
- 8. Rotate feed reversing lever shaft until sufficient spring pressure is attained to hold reversing lever in upward position. Tighten shaft locking set screw (Fig. A, page 27).



FEED ROCK SHAFT

- 1. Insert shaft from left to right through feed bar, collar, drive crank, and collar. Set shaft flush with left bearing face. Move left collar to left until touching bearing face. Tighten set screws. Move right collar to right eliminating end play (max. .001"). Tighten set screws.
- 2. Set feed reversing lever and drive assembly at neutral position (no feed). Tighten drive assembly crank pinch screw.



FEED LIFTING SHAFT

- 1. Insert shaft from right to left through loop in wicking, drive eccentric, thrust washer, collar, gear, thrust washer oil pump and into feed bar lifting crank. Replace screw.
- 2. Rotate shaft to expose flats. Tighten first set screw in direction of machine rotation onto flats of shaft in the gear, drive eccentric, and drive pulley.
- 3. Move collar to right eliminating end play (max. .001"). Tighten set screws. Tighten balance of set screws.



HOOK SHAFT AND HOOK SHAFT BUSHING

- 1. Insert hook shaft through bushing with collar A inside bushing until collar B touches bearing face C. Tighten collar A set screws.
- 2. Replace gear, eliminate end play and tighten set screws onto flats.
- 3. Replace complete assembly into machine ensuring set screws aligns with flat on bushing. Replace plastic tube.



KNEE LIFT MECHANISM

- 1. Position horizontal shaft, collar and vertical link connecting arm inside arm casting as shown. Locate collar and connecting arm against inside walls of arm casting to retain shaft axially except for .005" .015" end play.
- 2. Assemble vertical link to connecting arm with "E" ring. Note the letter "T" at one end of the link. This is the end to be connected.
- 3. Locate arm and pivot pin inside bed casting.
- 4. Insert horizontal link through two clearance holes in bed casting (with rubber seal) and screw into pivot pin. Insert rubber seal into first clearance hole.
- 5. Mount bell crank and bracket assembly to bed casting with two screws. Connect both horizontal and vertical links to bell crank assembly with to "E" rings.
- 6. Mount knee lifter stop arm, spring and drum assembly to bed casting with threaded stud, long point set screw, washer and hex nut.
- 7. Insert knee lifter rock shaft (having two oil seals) into bed casting with horizontal link connecting arm, collar, sleeve and stop arm mounted to it as shown. Slide sleeve toward front end of rock shaft and lock in place with collar.
- 8. Mount spring clip to bed casting with washer and screw. Position spring clip in groove of extension bar. Rock shaft is adjustable axially to do this.
- 9. Insert knee lift extension bar assembly into rock shaft.
- 10. Lock rock shaft in place with set screw located in bed casting. Position stop arm and horizontal link connecting arm properly and lock in place.
- 11. Assemble eccentric cam stud to bed casting and fasten with washer and hex nut.



ARM SHAFT

- 1. Insert arm shaft from left to right into arm casting with counterweight, intermediate bearing assembly, bobbin winder drive wheel and timing belt pulley mounted to it as shown.
- 2. With soft-faced mallet, lightly tap arm shaft from left to right until front arm shaft bearing is properly seated in casting.
- 3. Centralize intermediate bearing assembly in its housing and lock in place.
- 4. Rotate shaft to expose flats. Position counterweight and timing belt pulley over flats. Tighten first set screw in direction of machine rotation onto flats of shaft to lock in place.
- 5. Position bobbin winder drive wheel and tighten set screws.
- 6. Assemble timing belt and hand wheel. Tighten all remaining set screws.



TENSION RELEASE MECHANISM

- 1. Insert tension releasing pin.
- 2. Replace spring and tension releasing lever. Insert and tighten mounting screw.



NEEDLE BAR FRAME AND THREAD TAKE-UP MECHANISM

- 1. Mount and fasten throat plate to bed casting.
- 2. Take complete unit, as shown in Fig. B, and insert into arm casting with studs No. 1, 2 and 3 entering simultaneously. Make certain that the slotted portion of the needle bar crank spacer, on stud No. 3, aligns with pin in counterbalance. Flats on all studs must be positioned relative to its locking set screws.
- 3. Locate frame and take-up unit so as to have the sewing needle positioned dead center into the throat plate needle hole. Lock studs No. 1 and 2 in place with set screws provided.
- 4. Insert thread take-up stud, with flats facing upward, through take-up mechanism into arm casting and lock in place with both set screws.
- 5. Snug needle bar crank set screw on flat and snug needle bar crank pinch screw. Loosen set screw. Tighten pinch screw and set screw in that order.
- 6. Insert oiling wick through hole in casting, through felt pad, back through hole in casting into take-up stud.
- 7. Wrap sucker wick around presser bar bushing, behind needle bar frame, around frame and under felt pad retaining springs at bottom, behind presser bar bushing.



PRESSER BAR ASSEMBLY

- 1. Assemble hand lift lever with screw.
- 2. Rotate hand wheel until take-up mechanism is out of presser bar removal path. Insert presser bar into presser bar bushing.
- 3. Assemble presser foot with screw shown.
- 4. Mount presser bar lifting bracket with screw.
- 5. Slide delrin spacer over presser bar.
- 6. Mount guide bracket and screw.

