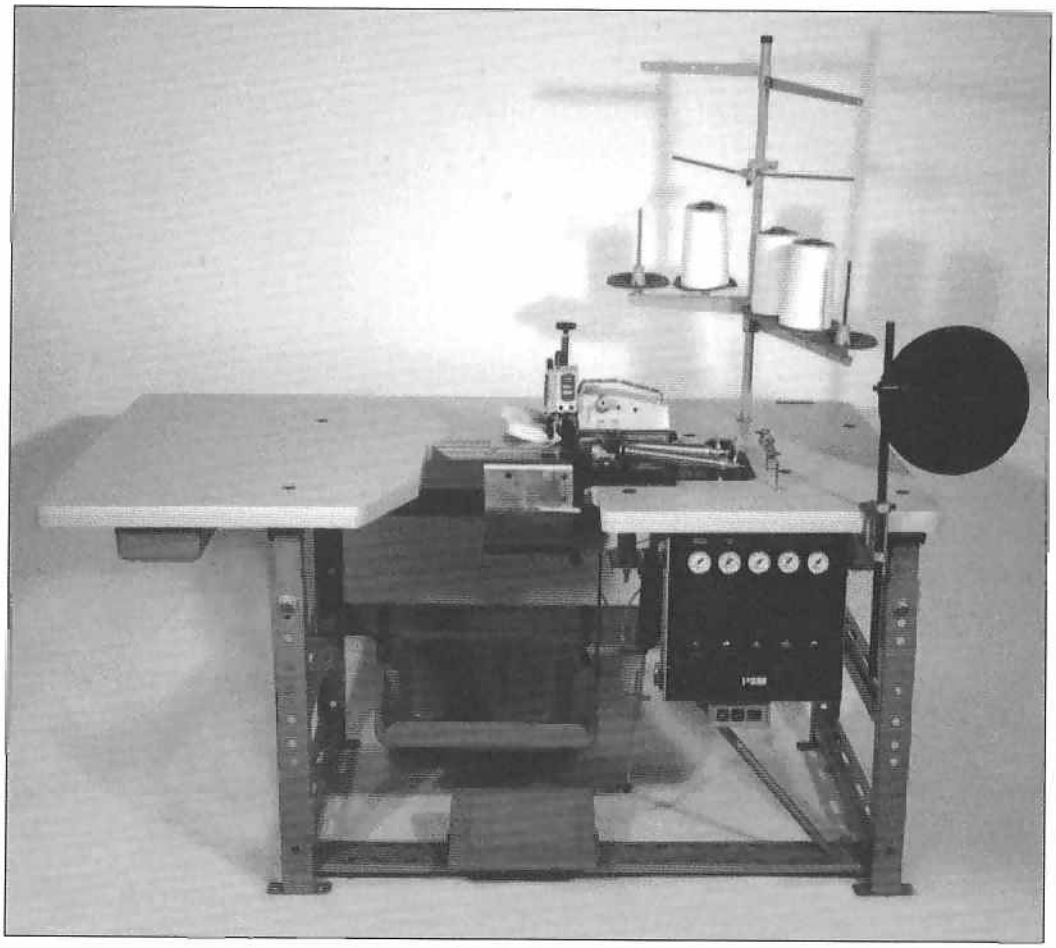
Porter®
INTERNATIONAL

Catalog #BS 401 9/96
#9520

BS 401 Mattress & Box Spring Machines



INSTRUCTIONS & PARTS MANUAL

For BS 401-100, BS 401-300, BS 401-500, BS 401-600 & CB 100

Porter International • 97 Rantoul Street • Beverly, MA 01915 • 508-922-2611 • 800-343-8138 • FAX 617-599-7081

CONTENTS

INSTRUCTIONS

Recommended speeds 4
Needles 4
Daily maintenance 4
Belt Guard Assembly 4
Lubrication 5
Threading 6
Stitch Length Regulation 6
Feed Height Adjustment 7
Feed Tilt Adjustment 7
Needle Bar Height Adjustment 7
Looper Adjustment 8
Looper Thread Control Adjustment 8
Needle Guards Adjustments 8
Thread Stand Setup 9
Walking Foot Adjustments 9

OPERATION 10-16

PARTS DIAGRAMS 17

Top Feed Mechanism (BS 401-100, BS 401-300 & CB-100) 18
Walking Foot Mechanism (BS 401-500) 20
Walking Foot Mechanism (BS 401-600) 22
Overfeed Mechanism (CB-100 & BS 401-600) 24
(1) Miscellaneous Covers 25
(2) Miscellaneous Covers 26
Machine Bed Frame 28
Crankshaft Mechanism 29
(1) Looper Mechanism 30
(2) Looper Mechanism 31
Needle Bar Mechanism (BS 401-100, 300 & 500) 32
Needle Plate & Tensions 33
Needle Bar Mechanism (BS 401-600) 34
Drive Mechanism 36
(1) Feed Mechanism 38
(2) Feed Mechanism (BS 401-100, BS 401-300 & CB-100) 40
Main & Differential Feed Mechanism (CB-100 & BS 401-600) 42
Presser Foot Lift Mechanism 44
Top Feed Lift Assembly & Needle Guards 45
Tape Tension Assembly 46
Tape Feed Mechanism 47
Lubricating Mechanism 48
Control Box (BS 401-300 & 500) 50
Accessories 52
Thread Stand 53

ORDERING INFORMATION ..... *Inside back cover*

INSTRUCTIONS

RECOMMENDED SPEEDS

BS 401-100, 300 & CB-100 *NOT TO EXCEED 4200 SPM.*
BS 401-500 *NOT TO EXCEED 3400 SPM.*
BS 401-600 *NOT TO EXCEED 2100 SPM.*

NEEDLES

The **BS 401-100, 300 & CB-100** are designed to use needle type PSM 130.
The **BS 401-500** is designed to use needle type PSM 160.
The **BS 401-600** is designed to use needle type PSM 1160(23).
Generally, the size of the needle should be determined by the size of thread or weight of material to be sewn.

DAILY MAINTENANCE

Before morning start

- Make sure oil level is correctly maintained in oil sight gauge.
- Make sure needle is correctly set and not damaged.
- Make sure threading is correct.
- Make sure chaining thread approximately 10 mm long remains behind presser foot.

Chaining Thread

It is necessary to have a chaining thread approximately 10 mm long behind the presser foot when starting to sew. This will avoid "skip-stitches."
After replacing needles or thread, check that a continuous, smooth neat chaining thread comes out from under the presser foot.

At close of work

- Remove dust and lint deposited in the machine around needle plate and looper.
- If any trouble or irregularity is found, report it to the plant mechanic for adjustment or repair.
- Keep record of needle and thread breakage.
- Dust cover, furnished with machine, should be placed on the machine.

Cleaning the Machine

Cleaning the machine is a simple but important operation. It is not necessary to remove any parts. Merely release the foot and swing it out to the left. Swing out the covers and remove all the collected lint from around the loopers, feed slots, and under the needle plate. Blow out any loose lint or use a lint brush. Replace covers and return foot to the sewing position.

BELT GUARD ASSEMBLY

Assemble belt guard on machine in sequence as follows:
1. Put machine on table.
2. Replace screws ❶ for oil cooler cover with fixing screws ❷ provided.
3. Put V-belt in machine pulley.
4. Fix belt guard ❹ on fixing screws ❷ with screws ❸.
5. Rest machine in position in work table.
6. Engage V-belt in machine motor pulley.

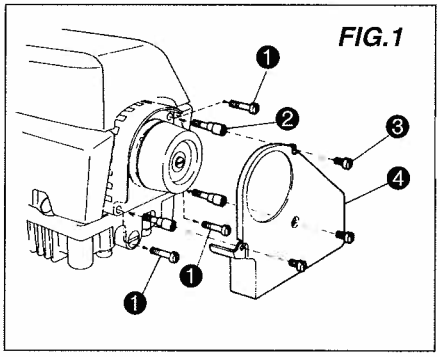


FIG.1

LUBRICATION

Lubrication is important in operating precision machines like the **BS 401**. The life of the machine depends on the use of quality oil. Use only oil recommended for these machines as shown at right.

1. At the end of 4 weeks, the original oil should be drained and replaced.
2. Oil level should always be kept between two lines on the oil sight gauge (as shown in ***Fig.3*** below).

		Brand "A"	Brand "B"
Kinematic Viscosity (centistokes)	100°F	19.01	14.57
	210°F	4.04	3.57
Viscosity Index	VI (A)	130.0	147.5
	VI (B)	123.5	142.5
Pour Point (°F)		−59.0	−63.5
Load Carrying Capacity (kg/cm²)		more than 12 (170 psi.)	more than 12 (170 psi.)

To Fill Oil:

1. Remove oil sight window ❶ and pour fresh oil into reservoir (700 c.c. capacity) until oil reaches upper line of oil sight gauge ❷.
2. Replace window ❶.

Caution: **Keep oil level between the two lines on gauge ❷.**

FIG.2

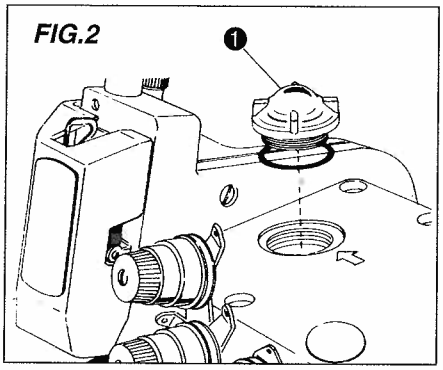
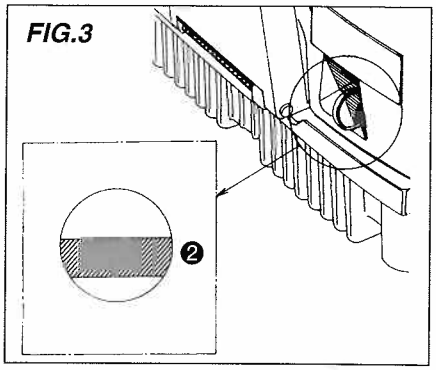


FIG.3



To Drain Oil:

1. Remove the machine from its stand and set it on a table.
2. Screw out drain plug ❸ and drain oil.
3. Replace drain plug ❸.

Change oil entirely every 6 months.

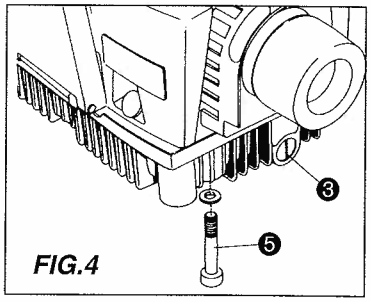


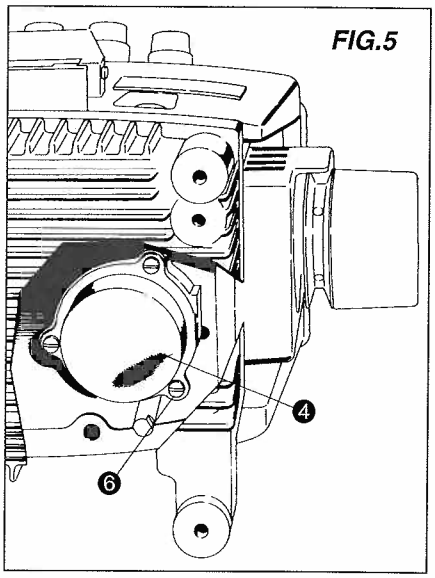
FIG.4

Oil Filter

Filter ❹ should be kept clean. Lubrication oil is filtered and delivered to all frictional surfaces. Clogging of this filter may cause lack of lubrication and accidental seizure of parts. Check and clean filter every three months, or if necessary, replace with new filter when: Oil jet in oil sight window ❶ is restricted or weak, or oil contains foam or debris.

1. Drain oil from machine.
2. Remove bolts ❺ and oil pan from machine.
3. Remove screws ❻ and take out filter ❹.
4. Clean filter ❹ with new petrol and blow with low pressure air.
5. Replace filter ❹ and tighten screws ❻.
6. Replace oil pan and tighten bolts ❺.
7. Fill reservoir level with upper line of oil sight gauge ❷.

FIG.5



THREADING

When a machine is received, note that it has been threaded correctly. The simplest way to rethread it is to tie the new threads to those already in the machine and pull the new threads through, making sure that the knots will go through the looper eyes. In case the machine requires a complete rethreading, refer to threading diagrams ***Fig.9*** & ***Fig.10*** .
The amount of thread tension required varies with type of material, size, and type of thread, etc. To increase thread tension, turn each thread tension nut clockwise, and to decrease, counter clockwise.

FIG.9

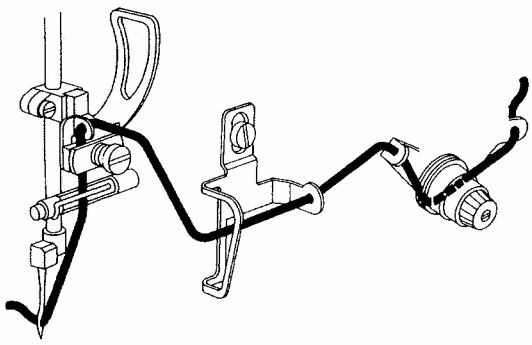
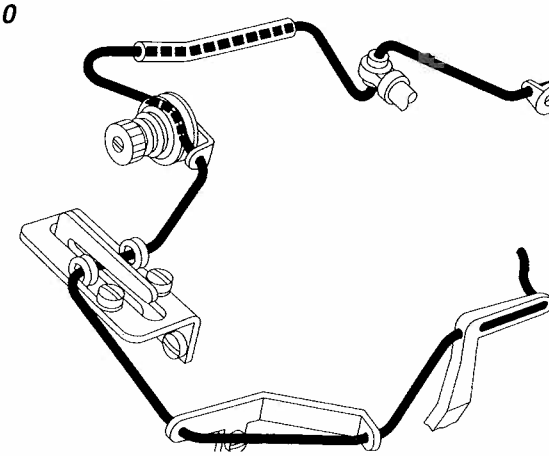


FIG.10



STITCH LENGTH REGULATION

1. Swing out cloth plate to the left.
2. Press in rod ❶.
3. While pressing in on rod ❶, turn handwheel in the sewing direction until rod 1 drops into the hole in eccentric. Read the number shown on handwheel, opposite to the mark on indication plate. This number indicates the length of one stitch of your machine in millimeters.
4. While keeping rod ❶ dropped in eccentric, turn handwheel toward the desired stitch length for a longer or a shorter stitch.
Longer stitch - Turn handwheel clockwise.
Shorter stitch - Turn handwheel counter clockwise.
5. When desired stitch length is set, release rod ❶.
6. Return cloth plate to the sewing position.
The stitch length made may vary more or less depending on the material.

FIG.11

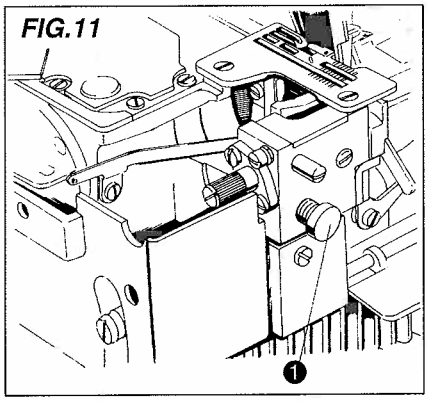
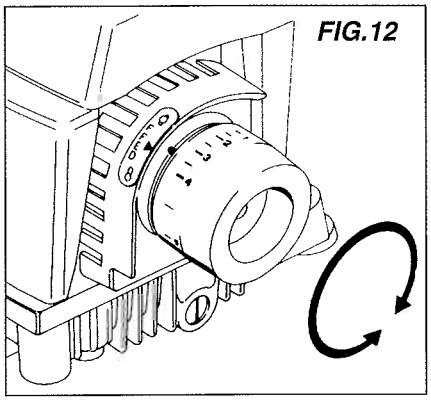


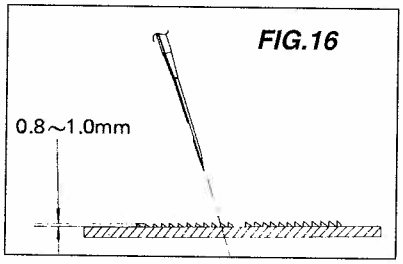
FIG.12

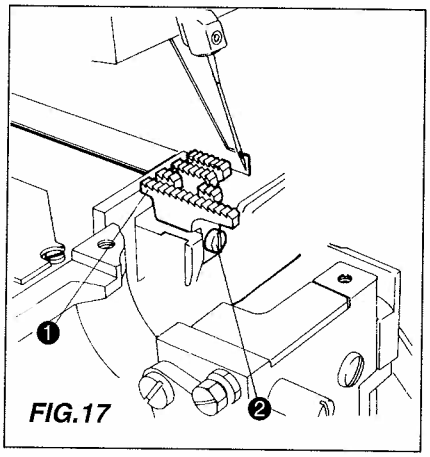


FEED HEIGHT ADJUSTMENT

Standard height of main feed is 0.8 - 1.0 mm above the surface of needle plate at its back tooth when feeds are at their highest position. A straight edge can be placed across the top of main feeds.

1. Loosen screw ❷.
2. Adjust feed ❶ by raising or lowering until proper height is obtained.
3. Tighten screw ❷ .



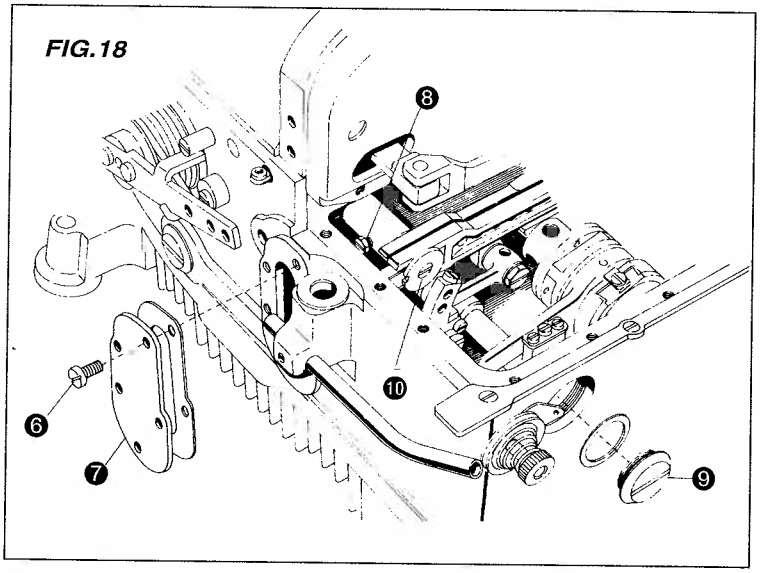


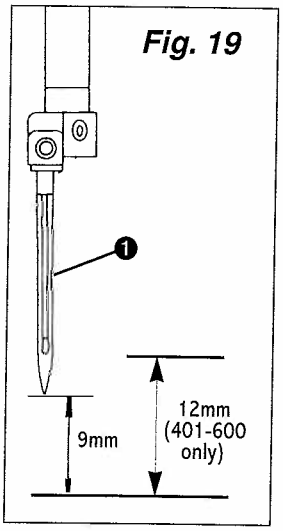
FEED TILT ADJUSTMENT

Feed dogs have generally been preset at the factory.

In general, set feeds level as follows:

1. Turn handwheel until feeds are at their highest position.
2. Remove screws ❻ and cover plate ❼.
3. Loosen screw ❽.
4. Remove screw ❾ and turn screw ❿ with a screwdriver until proper tilt is obtained.
5. Tighten screw ❽ while pressing screw ❿ to eliminate play in feed bars. Replace cover plate ❼ and screws ❻.
7. Replace screw ❾.

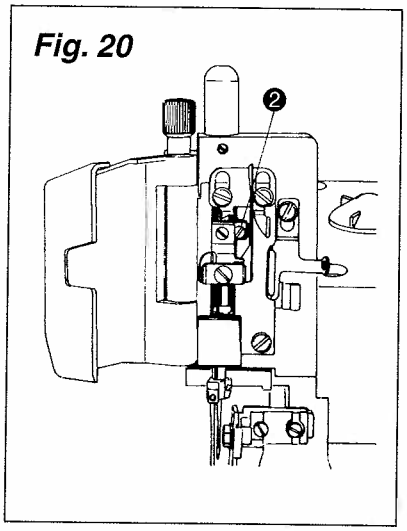




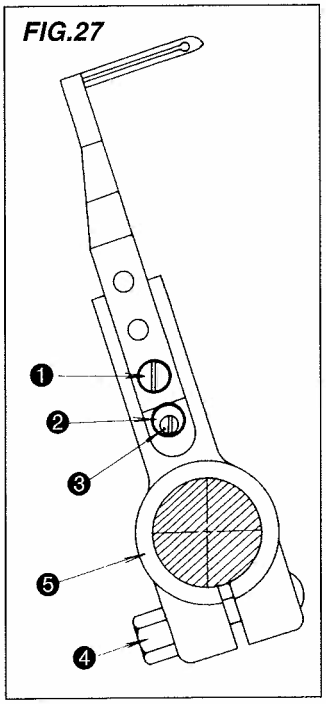
NEEDLE BAR HEIGHT ADJUSTMENT

Turn handwheel until needle is at its highest position. Check that the clearance between the point of needle ❶ and the top of needle plate is correct as listed below. If this setting is incorrect, reset as follows.

1. Slightly loosen screw ❷.
2. Reset needle bar to correct clearance at its highest position.
3. Turn handwheel and observe that needle descends in the center of the needle hole in needle plate.
4. Tighten screw ❷ securely.

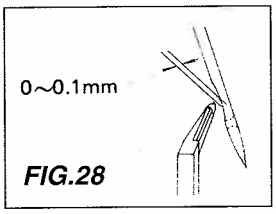


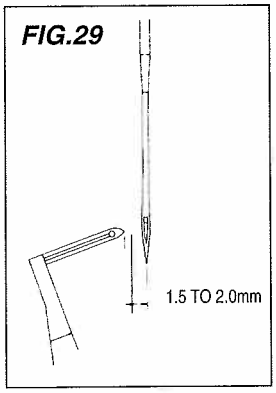
LOOPER ADJUSTMENT

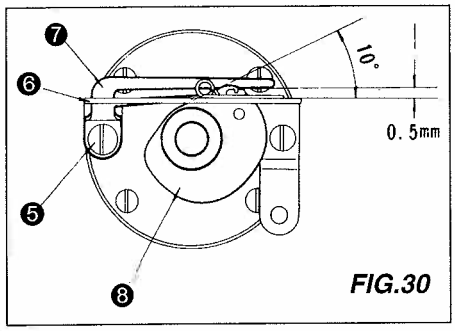


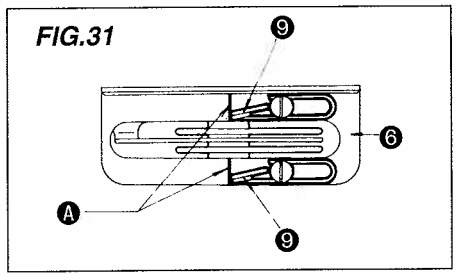
When looper is at its extreme left position, the distance 2.1 mm should be obtained from the center line of the needle to the point of looper. The clearance 0 - 0.1 mm should also be obtained when the looper point is in the scarf of the needle.

1. Slide looper into lever ❺, making sure it reaches regulator ❷.
2. If necessary, adjust this by turning regulator ❷.
3. Turn handwheel by hand until needle bar ascends 3. 0 mm from the lowest position.
5. Move lever ❺ so that looper point comes to the scarf of needle and just touches needle (the clearance 0 - 0.1 mm).
6. Turn handwheel until looper is at its extreme left position.
7. Adjust the distance from the centerline of needle to point of looper to 1.5 to 2 mm.
8. Tighten screw ❹ securely.









LOOPER THREAD CONTROL ADJUSTMENT

1. Lightly loosen screw ❺.
2 .Set bracket ❻ horizontal and set guide ❼ as 0.5 mm above from the top of bracket ❻.
3. Tighten screw ❺.
4 Loosen two screws for takeup ❽ and turn handwheel until looper is at extreme right position.
5. Set takeup ❽ so that its flat portion is at a 10 degrees angle to guide ❼.
6. Tighten the two screws loosened.
7. Loosen screws holding eyelets ❾ and move eyelets ❾ until the coiled ends line up with engraved line Ⓐ on bracket, then tighten screws.

NEEDLE GUARDS.

1. Turn handwheel until needles are at their lowest position.
2. Loosen screws ❶. Adjust guard ❷ back and forth until it just touches needle. Tighten screws ❶.
3. Loosen screw ❸. Turn handwheel until needles are at their lowest position.
4. Adjust guard ❹ so there is a space of 0.1- 0.2 mm between needle and guard ❹. Tighten screw ❸.