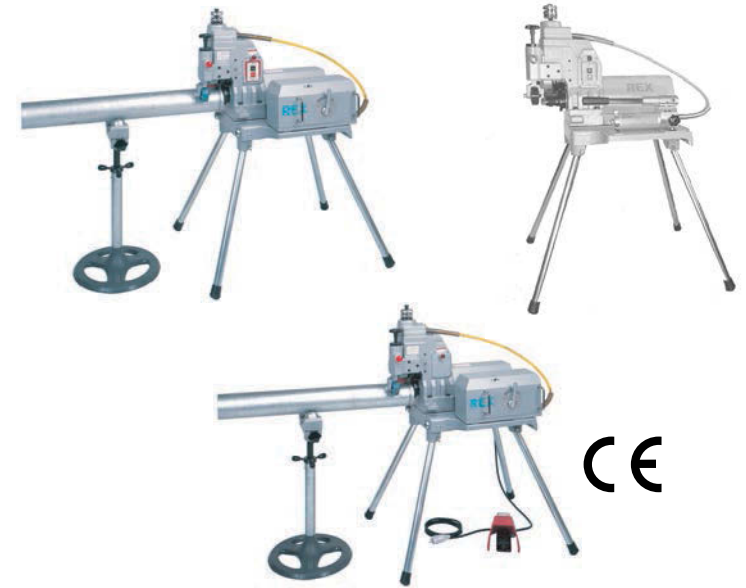


REX

LIGHT GROOVE 150DX

RG-150 / RG-150A

OPERATION MANUAL



REX
www.rexind.co.jp

REX INDUSTRIES CO., LTD.

Overseas Sales Dept. & Factory :

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URL <http://www.rexind.co.jp>



Be sure to read this
Operation Manual before
using the machine.

- Note -

- Be sure to hand this operation manual to the user.
- To ensure safe and efficient use, read the manual thoroughly before using the machine.
- Be sure to keep the manual where the operator can refer to it whenever necessary.

Date of purchase: Year Month

Distributor:

7A080 - CE3
RG150/RG150A
0908R 0000

●Specifications, colour, etc. may be changed without prior notification.

●For environmental considerations, this operation manual has been printed using soy ink and recycled paper.

Requesting Repairs

This machine is produced with great precision; therefore, should the machine fail to operate normally, do not repair it by yourself; contact your distributor or REX INDUSTRIES CO., LTD. If parts are required or if you have any questions, please contact us at your earliest convenience.

Availability of Replacement Parts	Replacement parts are maintained for a period of 7 years after production of this model has been terminated. Electrical parts, however, will remain available for a period of 5 years.
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- To prevent fire and electric shock or other injury, be sure to observe the Safety Considerations on pages 1 - 2.
- Before use, read all Safety Considerations carefully and follow the instructions given.
- Do not use the machine for purposes other than those noted in this Operation Manual.

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Definitions of **⚠ WARNING** and **⚠ CAUTION**

In this operation manual, warnings are divided into **⚠ WARNING** and **⚠ CAUTION**.
⚠ WARNING : indicates actions which could possibly result in death or severe injury to the user if the machine is used incorrectly.

⚠ CAUTION : indicates actions which could possibly result in injury to the user, or physical damage, if the machine is used incorrectly.

Even items marked **⚠ CAUTION** could have serious results under certain conditions.

Be sure to observe these warnings carefully as they greatly affect safety.

- If this manual is lost or damaged, promptly order a replacement from your distributor or our sales department.
- Parts and specifications are subject to change without prior notice, due to improvements in quality, performance or safety standards. In such cases, the contents, photographs, illustrations, etc. in this manual may be different to the product you have purchased.

1. Safety Considerations

▲ WARNING

1) Ensure you use the correct voltage.

-Be sure to use the voltage indicated on the nameplate on the main unit or in this manual. If the voltage is different from the voltage indicated, overheating, smoke or fire may occur.

2) Check the switch is OFF before inserting the plug into the power supply socket.

-If the plug is inserted into the power supply when the switch is ON, the machine may start operating abruptly and is liable to cause accidents. Be sure to check the switch is OFF.

3) Avoid electric shock.

-Be sure to ground the machine to avoid electric shock. Never touch the plug with wet hands.
-Do not use the machine in rain or in places where moisture can easily get into the machine.

4) Be aware of the environment you are working in.

-Do not use the machine in the rain, in humid or damp places, or places where moisture can easily get into the machine. Humidity will lower insulation of the motor and cause electric shock.
-Do not use close to flammable fluids or gases, such as gasoline and thinner. Doing so might result in fire or explosion.

5) Use designated accessories and attachments.

-Do not use accessories and attachments other than those designated in this manual or our catalogues. Accident or injury might result if you do.

6) In the following cases, turn the unit OFF and pull the plug out of the socket:

-when the machine is not in use or parts are changed, repaired, cleaned or inspected,
-when accessories are changed,
-when hazards are expected (including a power failure),
-when the plug is inserted (the machine may start up unexpectedly, which could cause an accident).

7) If any abnormality is noticed, stop the machine immediately.

-If the machine does not operate smoothly, or abnormalities such as unusual odors, vibration or noise are detected, stop operating the machine immediately.
-Check symptoms against the items listed under "Troubleshooting" at the end of this manual and follow the corresponding instructions. Continuing to use the machine may result in overheating, smoke or fire, and may cause accident or injury.
-If the unit overheats or produces smoke, do not attempt to overhaul it yourself but ask for an inspection and repair.

8) Keep the worksite clean.

-Ensure you keep worktables and the worksite in good order and well lit.
-Cluttered worksites and worktables are liable to cause accidents.

9) Do not let unauthorised personnel near the machine.

-Do not let anyone other than authorised personnel touch the machine or the power cord, or operate the machine.
-Do not let anyone other than authorised personnel enter the worksite, especially children. They could get seriously injured.

10) Do not use the machine with excessive force.

-To ensure safe and efficient operation, use within the capacity of the main unit. Applying force may not only cause damage to the product but could also result in accident or injury.
-Do not use the machine in any way that could cause the motor to lock, or cause smoke or fire.

11) Use the machine only for its designated purpose.

-Do not use the machine on pipes not specified in this manual. Using the machine for any purpose other than grooving pipes, such as fastening the pipe to a joint etc., will not only damage the machine and/or motor but could also lead to accident or injury.

7. Daily Inspection, Maintenance

▲ WARNING

Before inspecting the machine or carrying out maintenance, pull the plug out of the socket. If the machine were to suddenly start operating, it could result in accident or injury.

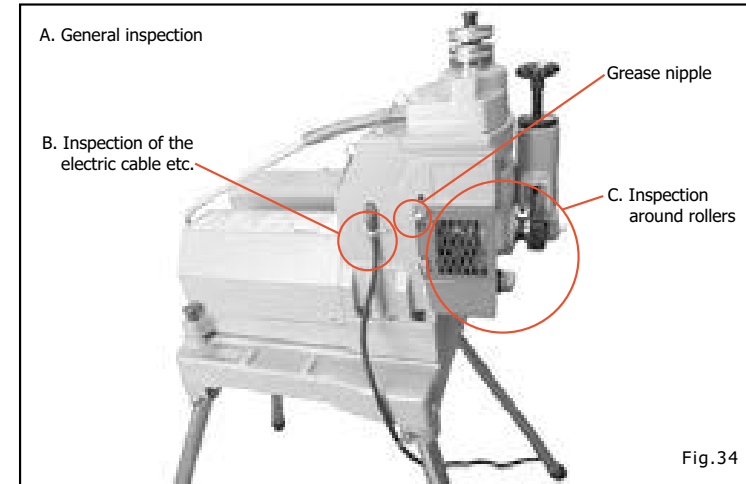


Fig.34

1) Inspect all screws and nuts (A)

Check all screws and nuts, and retighten if loose. In particular, check the screws on the upper roller and the nuts on the lower roller. If any of these are loose, the roller may be damaged. Check the screws on the legs are tight.

2) Inspect the electric cable, etc. (B)

Check for damage to the plug and the power cord. Replace them if necessary. To prevent electric leakage or shock, ensure the machine is earthed.

3) Inspection around rollers (C)

Check that the rollers match the type of pipe being used. Normal grooving will not be possible if you use the wrong rollers. Check the rollers for chips and cracks. If the rollers are damaged, precision grooving will not be possible and the machine will be damaged. Replace with new or undamaged rollers.

4) Periodic lubrication (C)

Be sure to lubricate regularly to prevent burning and galling. When replacing rollers, apply grease to the entire shaft of the upper roller and the inside of the lower roller. Once every 2 weeks, remove the upper roller and grease the bearings, and replenish the grease nipple on the side of the machine.

5) Clean after use (A)

To prolong the life of the machine, be sure to clean the machine and rollers each time after use. Remember to clean the areas around the upper and lower rollers.

2. Precautions When Using The LIGHT GROOVE 150DX

⚠ WARNING

- 1) Use rollers that match the pipe being processed. (Refer to Fig. 5)
The standard set of rollers can be used only for 50A - 150A (2" - 6") steel pipe (Schedule 10 - 40). They cannot be used for thin wall stainless steel pipes or pipes of a different size. The applicable sizes are marked on the rollers; replace rollers according to the size of pipe.
- 2) Never touch rotating parts.
To prevent hands and fingers from getting caught, never touch rotating rollers and pipes with your hands.
- 3) When replacing or inspecting the rollers, turn the switch OFF and pull the cord out of the socket.
To prevent unforeseen accidents, be sure to turn the switch OFF and pull the plug out when replacing or checking the rollers.
- 4) Insert the pipe correctly. (Refer to Pg. 6: Setting up the pipe.)
Use a spirit level to check the pipe is horizontal. Set up the pipe in the right direction and at about 3° to the machine.
Note: If set in the reverse direction, the pipe will be pulled out and grooving cannot be performed.
- 5) Use the lock pins correctly. (Refer to Figs. 14 and 15)
When grooving, pull the head lock pin to set the head free. Operate the roller lock pin according to the type of pipe.
- 6) Use the pump correctly. (Refer to Pg. 8: Operating the Pump)
Operating the pump too quickly may result in deformed grooves and damage to the machine. Make sure you use it correctly.
- 7) Stop using the pump if the warning lamp lights up.
Stop using the pump if the RED lamp above the switch comes on. Continuing to operate the pump when the warning lamp is on will make the groove deeper and may damage the machine.
- 8) Check the dimensions of the groove with gauge.
After processing the pipe, be sure to check the dimensions of the groove with calipers, etc. (Refer to P. 11: Roll groove size table)
- 9) Place the machine on a flat surface.
Place the machine on a stable, flat area and fix the legs securely with thumbscrews.
Using the machine in an unstable position may cause the machine to overturn.
Never operate the unit in this manner.

5. Operation Guide

3. Carrying the machine

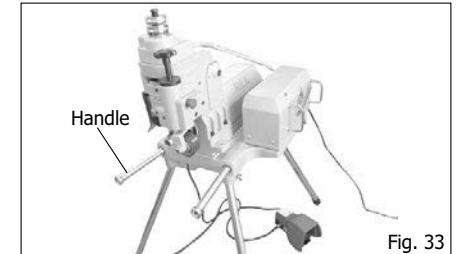
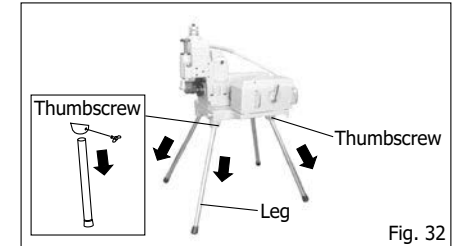
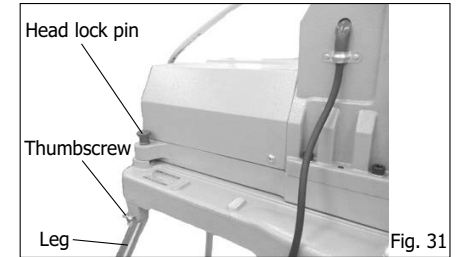
- 1) Locking the head (Fig. 31)
Push the head lock pin down, and check the head is locked.
- 2) Removing the legs (Fig. 32)
Loosen the thumbscrews and remove the legs to carry the machine.

⚠ CAUTION

If the machine is moved without removing the legs, the legs might come off due to the screws becoming loose etc., which could lead to unexpected accidents and injuries.

3) Carrying (Fig. 33)

To carry the machine, pull out the handles in the base.



4. Getting Ready

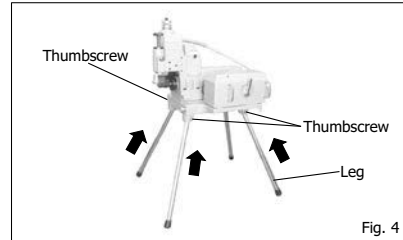
1. Setting up

1) Attaching the legs

1. Insert each of the 4 legs into the sockets in the base of the machine, and tighten the thumbscrews on the outside of the sockets to fix the legs in position. (Fig. 4)

⚠ CAUTION

Be sure to put the machine on a flat surface. Tighten the thumbscrews firmly and check that the legs do not come out.

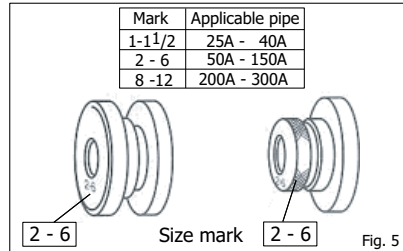


2) Changing the rollers

Make sure you use rollers that match the pipe size. When delivered, the machine is fitted with rollers for 2" - 6" steel pipe. When processing other types of pipe, change the rollers according to the instructions below. (Fig. 5)

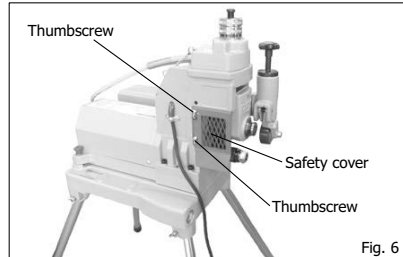
⚠ WARNING

When changing the rollers, be sure to pull out the power cord so as to prevent the machine from starting abruptly, which could cause accident and injury.



■ Removing the rollers

1. Loosen the thumbscrews and remove the safety cover. (Fig.6)
2. Remove the upper roller by loosening its fitting screws and pulling out the roller shaft. (Fig. 7)
3. Pull the lower roller forward by loosening the hexagon nut on the main shaft and removing the washer. (Fig. 8)

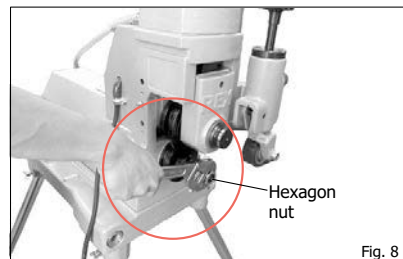
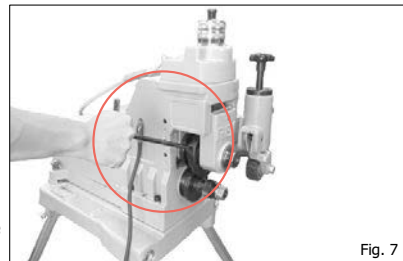


■ Reinstalling the rollers (Reverse the procedure above)

1. Align the key on the upper roller with its corresponding slot on the roller shaft and lock securely with the fitting screw.
2. Place the lower roller onto the main shaft, and tighten the hexagon nut firmly.
3. Replace the safety cover.

Notes:

1. Before reinstalling the rollers, use a rag to wipe away any waste from the inside of the roller and the shaft. Apply grease over the entire surface of the upper roller shaft and to the inside of the lower roller.
2. Change the upper and lower rollers as a matching set.



5. Operation Guide

2. Grooving

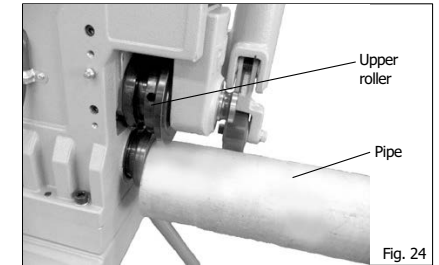
- 1) Preparing to process the pipe (Fig. 24)

☞ Manual Pump (RG-150)

Tighten the hydraulic valve, start pumping, lightly grip the pipe with the upper roller and press again.

☞ Auto pump (RG-150A)

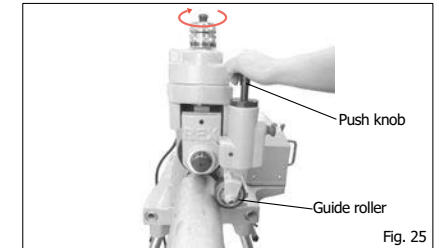
Lower the lever into the DOWN position, lightly press the pipe with the upper roller and return the lever to the STOP position.



- 2) Adjusting the guide roller (Fig. 25)

☞☞ Procedures in common

Rotate the push knob on the guide roller to lightly bring the guide roller into contact with the pipe. Now, tighten the knob a further half turn to press the guide roller into the pipe.

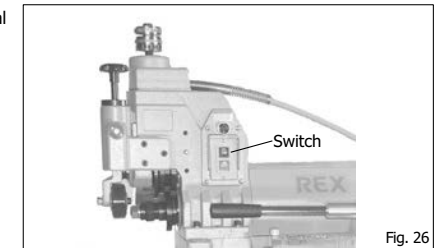


- 3) Adjusting the head (Fig. 26)

☞☞ Procedures in common

Turn the machine switch ON, and allow the pipe to rotate several times.

As the pipe rotates, the machine head simultaneously starts moving and aligns automatically. As it does, check the pipe cannot come out.



Note:

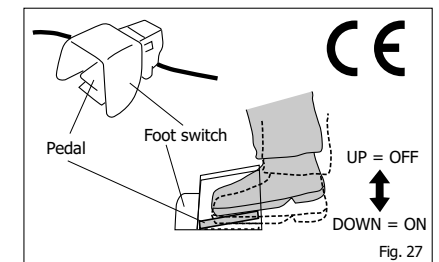
If the pipe comes out, loosen the hydraulic valve immediately and turn the machine OFF. (Push the lever on the auto pump over to the UP position.) Tighten the guide roller push knob a little more, and check again.

Using the Foot switch (Fig.27)

To comply with EU regulations the unit incorporates a foot switch. The foot switch has a mechanism by which pressing down on the pedal turns the current on and releasing the pedal turns it off and stops the machine.

Warning

- 1) Place the foot switch in a position where it is easy to use, close to where you are working.
- 2) Be sure to switch OFF if there is a sudden power cut. If you leave the machine on, then once the power comes back on the machine will suddenly start up, which could lead to accident or injury.
- 3) The machine will not start rotating unless both the ON button and the foot switch have been engaged. However, once turned on, it is not necessary to keep pressing the ON button each time.



4. Getting Ready

3) Head lock pin (Fig. 14)

1. Unlocking the head

Pull the red knob on the head lock pin up to release the head.

⚠ CAUTION

If force is applied to the head when releasing it, the head may move abruptly, which is liable to cause an accident or injury such as getting your fingers pinched.

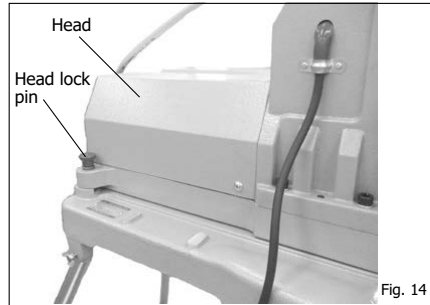


Fig. 14

2. Roller lock pin (Fig. 15)

Operate the roller lock pin according to the pipe to be processed. (Table 2)

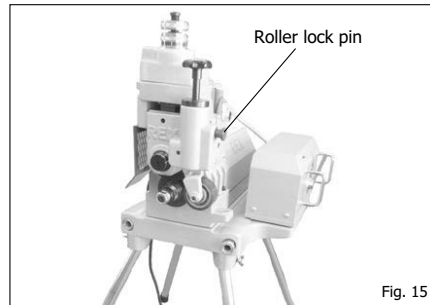


Fig. 15

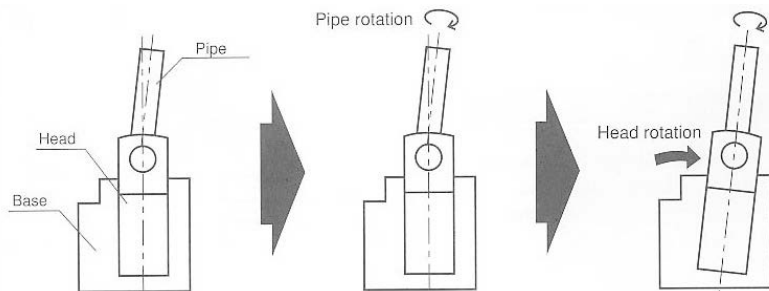
■ Operating the roller lock pin according to the type of pipe

Pipe to be processed	Operation of roller lock pin	Action /Effect
<ul style="list-style-type: none"> • Schedule 10 • Thin wall stainless steel pipe 	Pull	A cushioning function is applied to the guide roller, reducing flare at the end of the pipe. Used for comparatively soft pipes.
<ul style="list-style-type: none"> • Schedule 40 	Push	A locking function is applied to the guide roller, preventing the pipe from falling out. Used for comparatively hard pipes.

Table 2

Automatic Alignment

The machine is provided with a function that automatically aligns the pipe and the centre of the main unit. This corrects any misalignment of the pipe and the main unit by moving the head freely in a horizontal direction (max. swing about 8°). By rotating the pipe, the head moves automatically to align the pipe and the main unit. Flares at the end of a pipe can be minimized since misalignment of the pipe and the head is corrected.



1) Position when the pipe is set

2) Pipe rotation

3) Centre is aligned automatically.

4. Getting Ready

3) Operating the Pump

The pumps on the manual (RG-150) and the automatic (RG-150A) are operated differently.

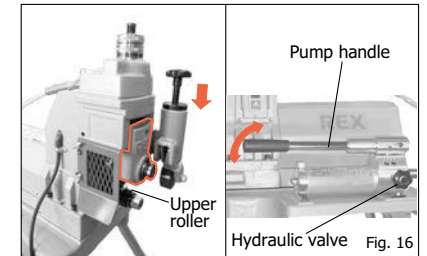
Carefully read the operation instructions for the model you purchased, and use in the correct way.



Manual pump (RG-150)

1 After checking the hydraulic valve is closed, move the pump handle up and down to lower the upper roller (Fig. 16).

2 When raising the roller, loosen the hydraulic valve on the hydraulic pump and release the pressure. (Fig. 17)



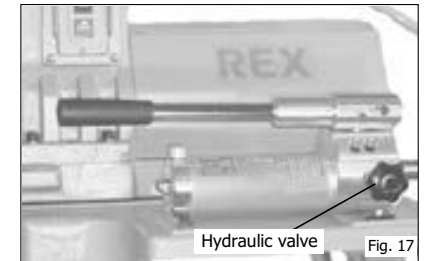
Pump handle

Hydraulic valve Fig. 16



Automatic pump (RG -150A)

The roller is raised or lowered using the lever on the left hand side of the unit. (Fig. 18)



Hydraulic valve Fig. 17

■ Operating the Automatic pump

Lever position	Movement of pump and upper roller
Down	When the hydraulic pump is operated, hydraulic pressure is applied to the cylinder and the upper roller is lowered. At this time, a green lamp lights up. This is the same as in the manual pump model when you close the valve and lift the pump handle up and down. Pull the lever out gently to release the lock and then push into the Down position.
Stop	The hydraulic pump stops and the upper roller stops where it is. At this time, hydraulic pressure is applied to the cylinder. (This corresponds to closing the valve in the manual model.)
Up	Hydraulic pressure is released and the upper roller is raised. This corresponds to loosening the valve and releasing the hydraulic pressure in the manual model. When grooving, hydraulic pressure is increased. By pushing down the lever fairly strongly, hydraulic pressure is released. Once the pressure is released, the upper roller is raised.

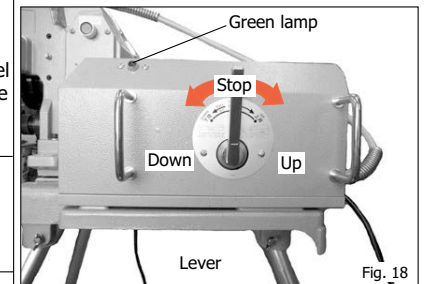


Fig. 18

Table 3

*From Stop to Down, the lever is locked for safety. Pull the lever slightly forward to unlock and then push into the Down position.

If you force the lever while the lock is still engaged the lever will be broken.

*The automatic pump has two specifications - 220/230V-50Hz and 110V-50Hz. Always use the correct voltage and frequency.

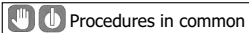
⚠ WARNING

The pump generates high pressure. When operating the machine stay alert and take care not to get your fingers caught in the rollers etc.

5. Operation Guide

1. Adjusting groove depth

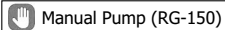
1) Loosen the lock nut. (Fig. 19)



Procedures in common

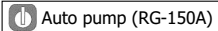
Loosen the lock nut as far as the top of the screw, and similarly loosen the adjusting nut.

2) Adjusting the position of the upper roller (Fig. 20)



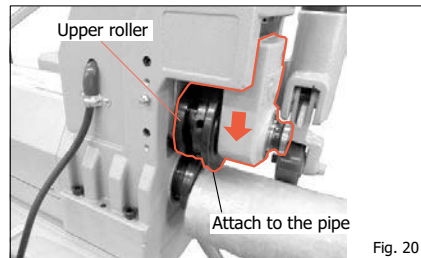
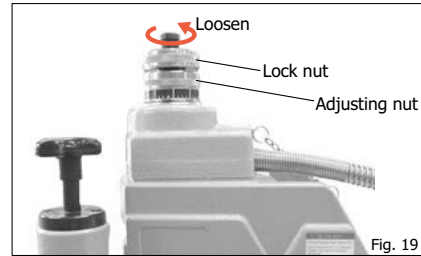
Manual Pump (RG-150)

Loosen the hydraulic pump valve and lift the pump handle up and down several times to gently engage the roller with the pipe.

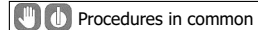


Auto pump (RG-150A)

While pulling the lever gently towards you, push the pump lever down to the left so that the pump lowers the upper roller. Once the roller contacts the pipe, immediately return the lever to the centre (STOP) position. (See Fig. 18) (When the roller touches the pipe, the pump makes a scraping sound.)



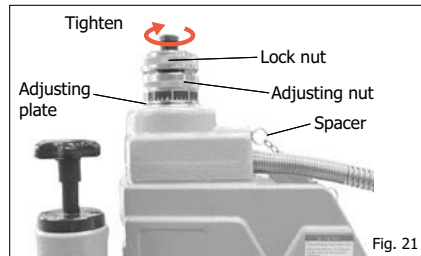
3) Adjusting the groove depth (Fig. 21)



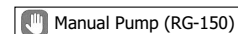
Procedures in common

Put the spacer on the adjusting plate, and lightly tighten with the adjusting nut. Then, tighten the lock nut a little more to lock the adjusting nut.

- * Hold the spacer where the thickness matches the size of the pipe to be processed. (Fig. 23)
- * The spacer is used as a reference for adjusting groove depth. After trial processing, adjust the adjusting nut more finely to the appropriate groove depth.
- * If the groove is too shallow, turn the adjusting nut anticlockwise to make the groove deeper. If the groove is too deep, turn the adjusting nut clockwise to make the groove shallower. The depth is adjusted by approx. 0.3mm for each large division of the adjusting nut. (Fig. 22)

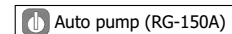


4) Finishing up the adjustment of groove depth



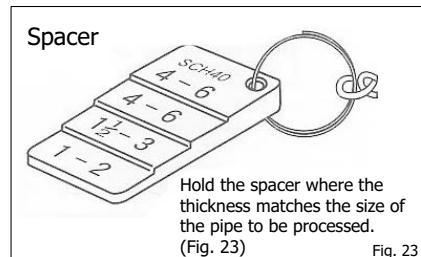
Manual Pump (RG-150)

Loosen the hydraulic valve, and remove the spacer from the adjusting plate.



Auto pump (RG-150A)

Pull the lever to the right (upwards) to release the hydraulic pressure and raise the upper roller. Once the roller is raised, return the lever to the STOP position, and remove the spacer from the adjusting plate.



4. Getting Ready

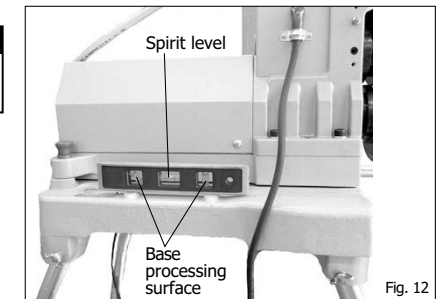
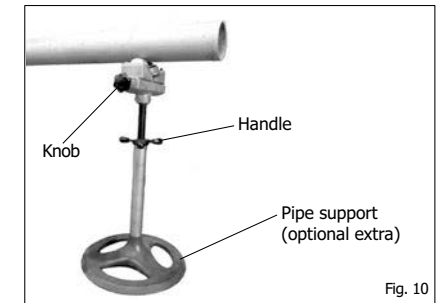
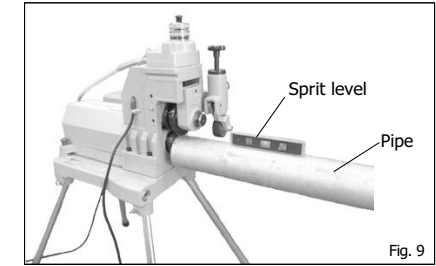
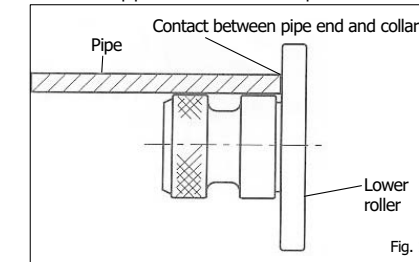
2 Setting the pipe

1) Adjusting the height of the pipe

1. Place the pipe to be processed on the lower roller, and use a pipe support (s) to support the other end. (Fig. 9)
2. When using a REX pipe support (optional) Rotating the knob on the pipe support changes the distance from the bearings. Rotate the knob so that the bearings form at an angle of about 120° to the centre of the pipe. (Fig. 10)
3. Turn the handle to adjust the height of the pipe support so that the pipe and the machine are level.

Note: Check the machine is horizontal using the spirit level on the base processing surface. (Fig. 12, 13)
- Position the pipe so that the end contacts the collar of the lower roller. If the pipe end detaches from the collar, the groove will not be right. (Fig. 11)

4. Check the pipe is horizontal with a spirit level.

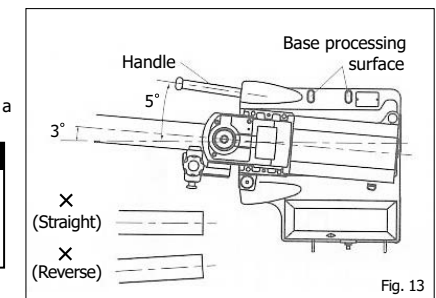


CAUTION
To avoid accidents, injury and/or damage, take special care to prevent the pipe from dropping while you are working.

2) Adjusting the pipe swing (Fig. 13)

1. Set the pipe in position by swinging it by about 3° in the direction shown in Fig.13. Adjust the swing of the pipe by positioning the pipe support. *The handle is at an angle of 5° from the main shaft. Use this as a point of reference.

CAUTION
If the pipe is set straight or in the reverse position, the pipe may be drawn out and drop off the rollers, resulting in accident or injury. Be sure to position the pipe in the direction shown in Fig. 13.



5. OPERATION GUIDE

4) Grooving (Fig. 28, 29)

Manual Pump (RG-150)

Operate the hydraulic pump to start processing the groove. Refer to the table below.

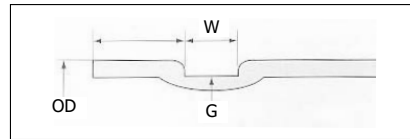
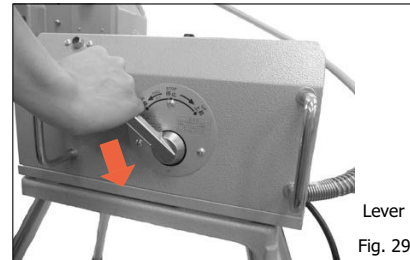
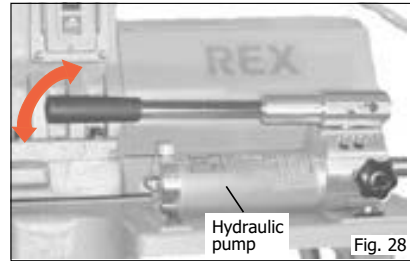
Schedule 10 25A - 150A (1" - 6")	Push the handle once for each rotation of the pipe.
Schedule 40 200A - 300A (8" - 12")	Push the handle once for every two rotations of the pipe.

Table 4

If you operate the handle too quickly, the pipe may be deformed or the machine may be damaged. Be sure to operate it correctly.

Auto pump (RG-150A)

Turn the lever into the Down position, and start processing the groove.



5) Finishing up (Fig. 30)

When the adjusting nut touches the adjusting plate, the red lamp lights up.

Manual Pump (RG-150)

When the lamp lights up, stop pumping, allow the pipe to rotate once and turn the switch to OFF.

Auto pump (RG-150A)

When the lamp lights up, turn the lever to STOP, allow the pipe to rotate once, and turn the switch to OFF.

6) Check the size of each part with calipers, etc.

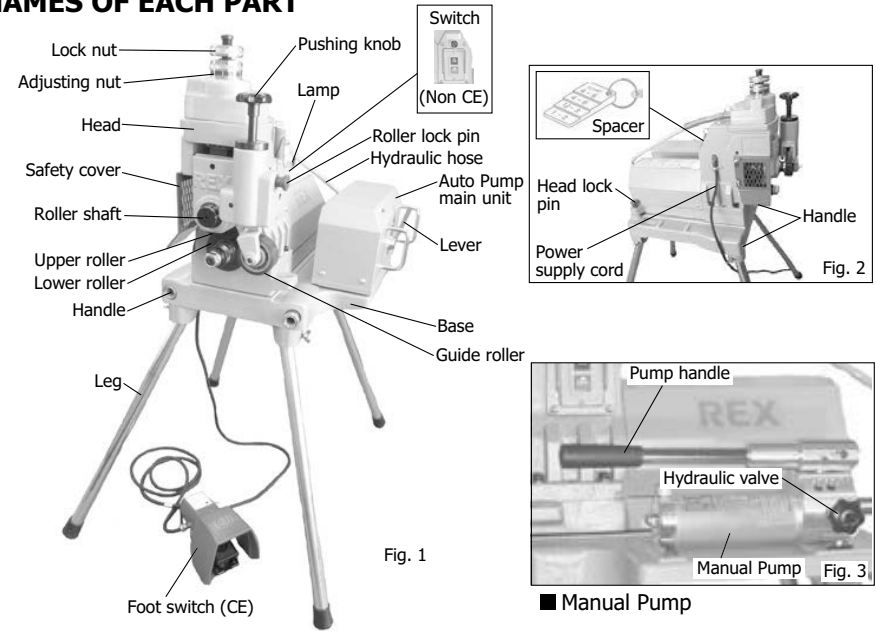
Roll groove size table 25A - 300A (1" - 12")

Roll groove size table

Nominal		Pipe outer diameter (OD)	Seal surface width (L)		Groove width (W)		Groove diameter (G)	
A	B							
25	1	34.0	16.0	+0.4 -0.9	7.1	± 0.8	30.4	0 -0.1
32	1 1/4	42.7	16.0	+0.4 -0.9	7.1	± 0.8	39.1	0 -0.1
40	1 1/2	48.6	16.0	+0.4 -0.9	7.1	± 0.8	45.0	0 -0.1
50	2	60.5	16.0	+0.4 -0.9	8.7	± 0.8	56.9	0 -0.1
65	2 1/2	76.3	16.0	+0.4 -0.9	8.7	± 0.8	72.2	0 -0.1
80	3	89.1	16.0	+0.4 -0.9	8.7	± 0.8	84.9	0 -0.1
100	4	114.3	16.0	+0.4 -0.9	8.7	± 0.8	110.1	0 -0.1
125	5	139.8	16.0	+0.4 -0.9	8.7	± 0.8	135.5	0 -0.1
150	6	165.2	16.0	+0.4 -0.9	8.7	± 0.8	160.8	0 -0.1
200	8	216.3	19.0	± 0.8	11.9	± 0.8	211.6	0 -0.1
250	10	267.4	19.0	± 0.8	11.9	± 0.8	262.6	0 -0.1
300	12	318.5	19.0	± 0.8	11.9	± 0.8	312.9	0 -0.1

3. NAMES OF EACH PART, STANDARD SPECIFICATIONS, ACCESSORIES

■ NAMES OF EACH PART



■ STANDARD SPECIFICATIONS, ACCESSORIES

Item	Model	RG-150 (Manual Pump)	RG-150A (Auto Pump)
Processing capacity		50A - 150A	
Applicable pipe		Steel pipe (Schedule 10 - 40)	
Motor		700W Single-phase series motor	
Power supply		230V / 220V / 110V	
Rotation speed		49 r.p.m.	
Dimensions (main unit)		685 X 490 X 625 mm	
Weight (main unit)		75 Kg	85 Kg
Standard accessories		Tool box, Level, Spanner, T wrench, Grease	
Special accessories (optional)		Pipe support (1 - 6", 8 - 12") Roller set (1 - 1 1/2", 8 - 12") Roller set for thin wall stainless steel (30 - 50SU, 60 - 150SU) Groove gauge (1", 1 1/4", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 8", 10", 12")	

6. Servicing and Repairs

Should any abnormality occur, check the following and inform .

⚠ WARNING

If the problem you have and the appropriate remedy are not shown in the table below, do not attempt to disassemble or repair the unit yourself.
If the problem and remedy are not shown in the table, or if the table indicates that you should have the unit repaired or serviced, consult your distributor or REX.
If this product is repaired by someone who does not have the proper knowledge or technical skill to do so, the product may not operate properly, or an accident or injury may occur. In the event of a problem, always check the table before contacting REX Industries or your dealer.

■ Troubleshooting

Problem	Cause	Remedy
- Width of the groove is too narrow or too wide.	- Size of the upper/lower rollers does not match the size of the pipe.	- Match the rollers and the size of pipe.
- The groove zigzags. - The groove is not parallel with the pipe end.	- The pipe has been cut at an angle. - Pressure of the guide roller (resin roller) is too weak.	- Cut the pipe at right angles. - Re-tighten the push knob, and attach the guide roller to the pipe a little more strongly.
- Diameter of the groove varies around the circumference of the pipe.	- The pipe is not perfectly round. - Speed of grooving is too fast.	- Use a circular pipe. - Operate the pump a little more slowly.
- The pipe end flare is too large.	- The head lock pin is locked. - Size of the upper/lower rollers does not match the size of the pipe. - The pipe support is too high. - Operation of the roller lock pin is incorrect. - Speed of grooving is too fast.	- Set the headlock pin free. - Match the rollers and the size of pipe. - Adjust height of the pipe support to make the pipe and the machine level. - Operate according to the pipe. - Operate the pump a little more slowly.
- The pipe is drawn out from the roller while grooving.	- Pressure of the guide roller (resin roller) is too weak. - The pipe is set without swinging it, or is in the reverse direction. - The pipe support is too low.	- Re-tighten the push knob, and attach the guide roller to the pipe a little more strongly. - Set the pipe by swinging it to the normal direction. - Adjust the height of the pipe support to make the pipe and the machine level.
- The pipe slips during processing and smooth rotation is not made.	- The lower roller knurling is clogged or worn. - Grooving speed is too fast.	- Remove clogging with wire brush, etc. or replace the lower roller. - Operate the pump a little more slowly.
- Pumping action does not deepen the groove.	- The adjusting nut is too tight. - Air has got into the hydraulic hose. - There is insufficient oil in the hydraulic pump. - The pump valve and/or sealing are damaged, and the pressure applied is insufficient.	- Loosen the adjusting nut, and process again. - Open the oil feed port on the hydraulic pump and apply/release pressure about 5 times. - Replenish with general hydraulic oil (ISO#32). - Ask for repairs.
- Oil leaks from the hydraulic system.	- Hose joint is loose. - The cylinder packing is damaged.	- Re-tighten the joint. - Ask for repairs.
- Lamp does not light up when finished.	- The lamp has gone, or is damaged. - The limit switch has slipped.	- Ask for repairs.
- The motor does not rotate.	- Voltage is too low. - The carbon brushes are worn out.	- Use correct power supply. - Replace the carbon brushes.

1. SAFETY CONSIDERATION

⚠ WARNING

12) Wear neat clothing.

- Do not wear neck ties, clothes with open sleeves, loose clothing, accessories such as necklaces, etc. Do up buttons and zippers which could get caught in the rotating parts and result in serious accident or injury.
- When working outdoors, it is recommended that you wear rubber gloves and non-slip shoes. Slippery gloves and shoes are liable to cause injuries.
- Do not wear scarves and cover long hair with caps or hair nets to prevent them getting caught in rotating parts.
- Wear safety caps, safety shoes, etc. according to the working environment.

13) Do not work in an unnatural posture.

- Keep a firm footing and balance to avoid falling over and injuring yourself.

14) Remove tools such as wrenches.

- Before turning the switch ON, check that tools used for inspection and adjustment have been removed. If you use the machine when tools are left inside it, accidents and injuries may occur.

15) Operate the unit with great care.

- Always work with great attention to how you handle and operate the machine and the surrounding conditions. Carelessness may result in accident or injury.
- Do not operate the machine when concentration is lowered such as when tired, after drinking alcohol, when sick, affected by medicines, etc.

16) Do not handle the power cord carelessly.

- Do not carry the machine by the cord, or pull the plug out of the socket with the cord.
- Do not place the cord near heated objects, fats & oils, cutters and objects with sharp edges.
- Take care not to tread on the cord, pull the cord or apply unnecessary force resulting in damage to the cord. Doing so may result in electric shock or short-circuit may occur, causing fire.

17) Perform careful maintenance daily.

- When changing accessories and parts, follow the operation manual. Periodically inspect the power supply cord and plug. If damaged, ask your distributor or our sales department for repairs.
- If an extension cord is used, inspect the cord periodically and, if damaged, replace it.
- If extension cords are used outdoors, use extension cords designed for outdoor use to prevent electric shock, short-circuit or fire.
- Keep parts used for gripping dry and clean, and free of oil and grease. If your hands slip, you may be injured.

18) Check for damaged parts.

- Before using the machine, carefully check for damage to the protective cover and other parts, and check both normal operation and specified functions.
- Check for any abnormalities such as in adjustment of movable parts, tightening, damage to and installation of parts and all parts affecting operation.
- Do not use machines with a damaged power cord or plug. Doing so may cause electric shock or a short, circuit leading to fire.
- Do not use machines if the Stop and Start switches do not work properly. When replacing or repairing a broken protective cover and other parts, follow the operation manual. If no instructions are specified in the operation manual, ask your distributor or our sales department for repairs.

19) Store carefully when the machine is not in use.

- Store in a dry place away from children and locked with a key.

20) For overhaul and repair of the machine, ask an appointed REX agent.

- Our products comply with corresponding safety standards. Do not remodel.
- Be sure to ask your distributor or our sales department for any repairs. If repairs are carried out by unskilled or unqualified personnel, the performance of the unit will be adversely affected and may result in accident or injury.