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1.General

The Hydro-Speed Regulator is an oil-operated feed speed control unit for air cylinder.

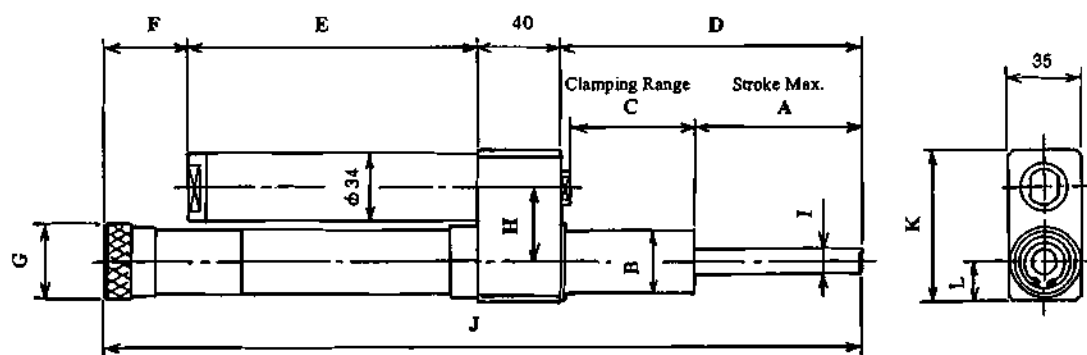
The speed can be adjusted from super slow to fast speed by using the speed adjusting knob.

Although it is small in size and lightweight, it has a big feature of speed control stability even the thrust load to the piston rod of the Regulator has been suddenly changed.

In the air return type Hydro-Speed Regulator, the position of the piston rod is maintained even if it is no longer loaded and the piston rod is returned to its original position by supplying external compressed air.

2.Specifications

2-1.Dimensions (mm)



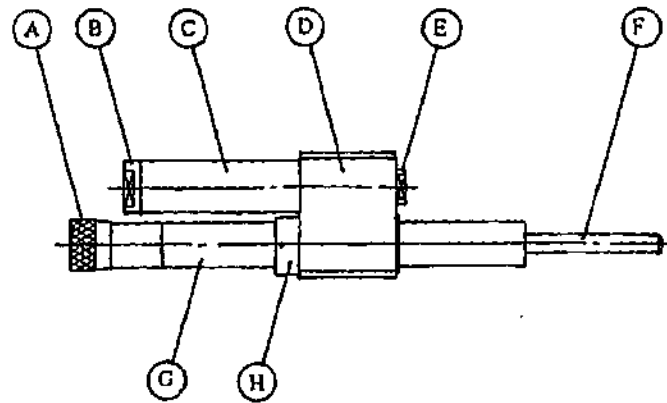
Model	A	B	C	D	E	F	G	H	I	J	K	L							
R-2442A	40	φ 24	46	89	87	24	φ 28	34	φ 9	240	66	14.5							
R-2462A	60			109						260									
R-2482A	80			129						140			333						
R-3182A	80	φ 31	61	144	140	39	φ 36	36	φ 12	363	73	19.5							
R-31132A	130			194	215	34				483									
R-31186A	185		93	281	285					640									
R-31202A	200			296						655									

2-2. Capacity

Model	Stroke Max. (mm)	Load range (kgf)	Range of speed control for each thrust (mm/sec)	Permissible impact load (kgf·m)	Weight (kgf)
R-2442A	40	20~150	F= 20kgf, 0.3~ 5	0.25	1.3
R-2462A	60		F=100kgf, 0.5~25		1.4
R-2482A	80		F=150kgf, 0.8~30		1.5
R-3182A	80	50~300	F=100kgf, 0.3~12	0.4	2.2
R-31132A	130		F=220kgf, 0.5~25		2.8
R-31186A	185		F=300kgf, 0.8~30		3.5
R-31202A	200				3.5

3.Principal parts name and their function

3-1.Parts name



A Speed adjusting knob

B Air inlet nut

C Oil reservoir

D Connector

E Oil refill plug

F Piston rod

G Body

H Connector clamp

3-2.Function

A Speed adjusting knob

The cutting speed is adjusted by using this knob.

Turn the knob towards "0" for slower speed. Turn the knob towards "30" for faster speed.

B Air inlet nut

For injecting air at a pressure of more than 4 kgf/cm²G and supply more than 3 seconds to cause the piston rod **F** return to full extension.

D Connector

Connect the body **G** and the Oil reservoir **C**.

E Oil refill plug

Refill oil from this plug only when reassembling the Hydro-Speed Regulator after completely disassembled. It is not necessary to remove this plug when just adding oil.

F Piston rod

By a load from the outside, the piston rod pushed into the Hydro-Speed Regulator body **G** at constant speed. To extend the piston rod to full length compressed air must be injected into the air inlet nut **B**.

Do not pull out the piston rod from the body by hand. If the piston rod is pulled out by hand or other means, air will be drawn into the oil chamber and will result in faulty operation of the Hydro-Speed Regulator. Do not get any bruise or scratch on the surface of piston rod.

H Connector clamp

The connector clamp fixes the body **G** and the oil reservoir **C**.

Unless disassembly and service of the Hydro-Speed Regulator, do not loosen this connector clamp.

4. Inspection of oil volume

The Hydro-Speed Regulator is correctly filled with oil before being despatched from the factory. However, after long use there will be some oil loss, but as the air return type Hydro-Speed Regulator has an oil reservoir the oil level is maintained over an extended period of time.

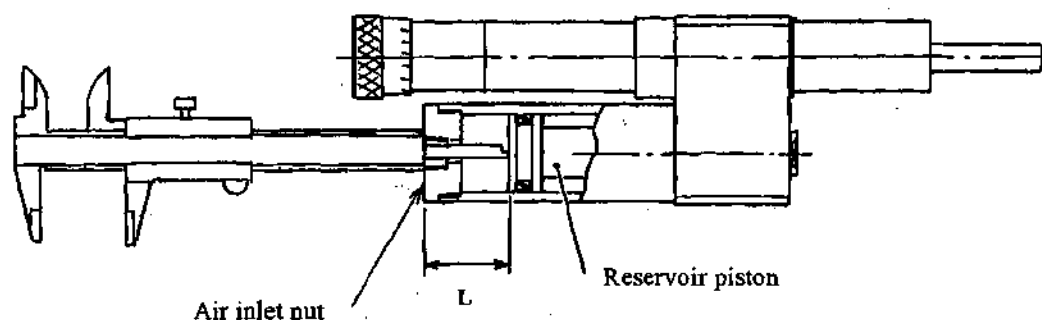
When the oil level has dropped below correct working level the piston rod F will not return to full extension. In order to avoid problems occurring from the oil level becoming too low it is recommended that the oil level be checked at every 300,000 to 400,000 operation cycles by the following manner.

⚠ DANGER

Start servicing the unit after having turned off the electric power and the air supply completely then remove the Hydro-Speed Regulator from the machine.

Otherwise, you may be injured by an unexpected movement.

- 1) The inspection of oil volume must be done at the piston rod fully extended.
- 2) Remove the air connector or a hose joint from the air inlet nut, then take measurement of distance "L" from the air inlet nut to the reservoir piston surface with a calipers as shown below.



- 3) If the distance "L" is the following length or more, it means the oil volume is scanty.

Model	L (mm)
R-2442A	40
R-2462A	
R-2482A	69
R-3182A	
R-31132A	104
R-31186A	139
R-31202A	

5.Procedure for adding oil

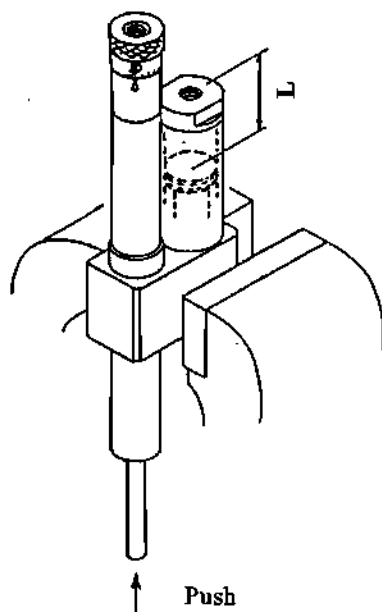
As for the adding oil, R1 oil must be used. A spare bottle of R1 oil is supplied with the Hydro-Speed Regulator.

Note: It is essential that only the correct R1 oil be used in the Hydro-Speed Regulator.
For further supplies please order from Sugino Machine Limited or from your Sugino distributor. The use of other oil will cause defective operation of the Hydro-Speed Regulator.

Tools:

- Calipers
- Vice
- 4 mm Allen wrench

- 1) Hold the Hydro-Speed Regulator in a vice with the speed adjusting knob end facing upwards.
- 2) Turn the speed adjusting knob to 30 mark of the gradation mark.



- 3) Apply pressure to the end of the piston rod and push it into the body so that the distance "L" will change accordingly.

- 4) Stop pushing the piston rod at the correct oil volume distance “L” as shown table below.

Correct oil volume distance “L”.

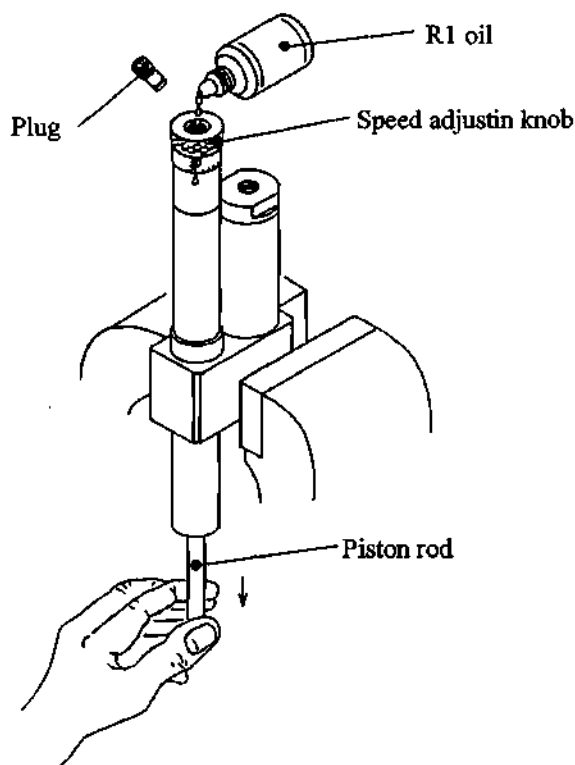
Model	L (mm)
R-2442A	26 ± 2
R-2462A	30 ± 2
R-2482A	45 ± 2
R-3182A	48 ± 3
R-31132A	67 ± 3
R-31186A	87 ± 3
R-31202A	

- 5) Hold the speed adjusting knob and turn the plug fully counterclockwise and remove it from the knob, using a 4 mm Allen wrench.

- 6) Pull the piston rod slowly down by hand so that the oil level in the speed adjusting knob will move down.

At this time oil level should not drop more than 30 mm from the end surface of speed adjusting knob.

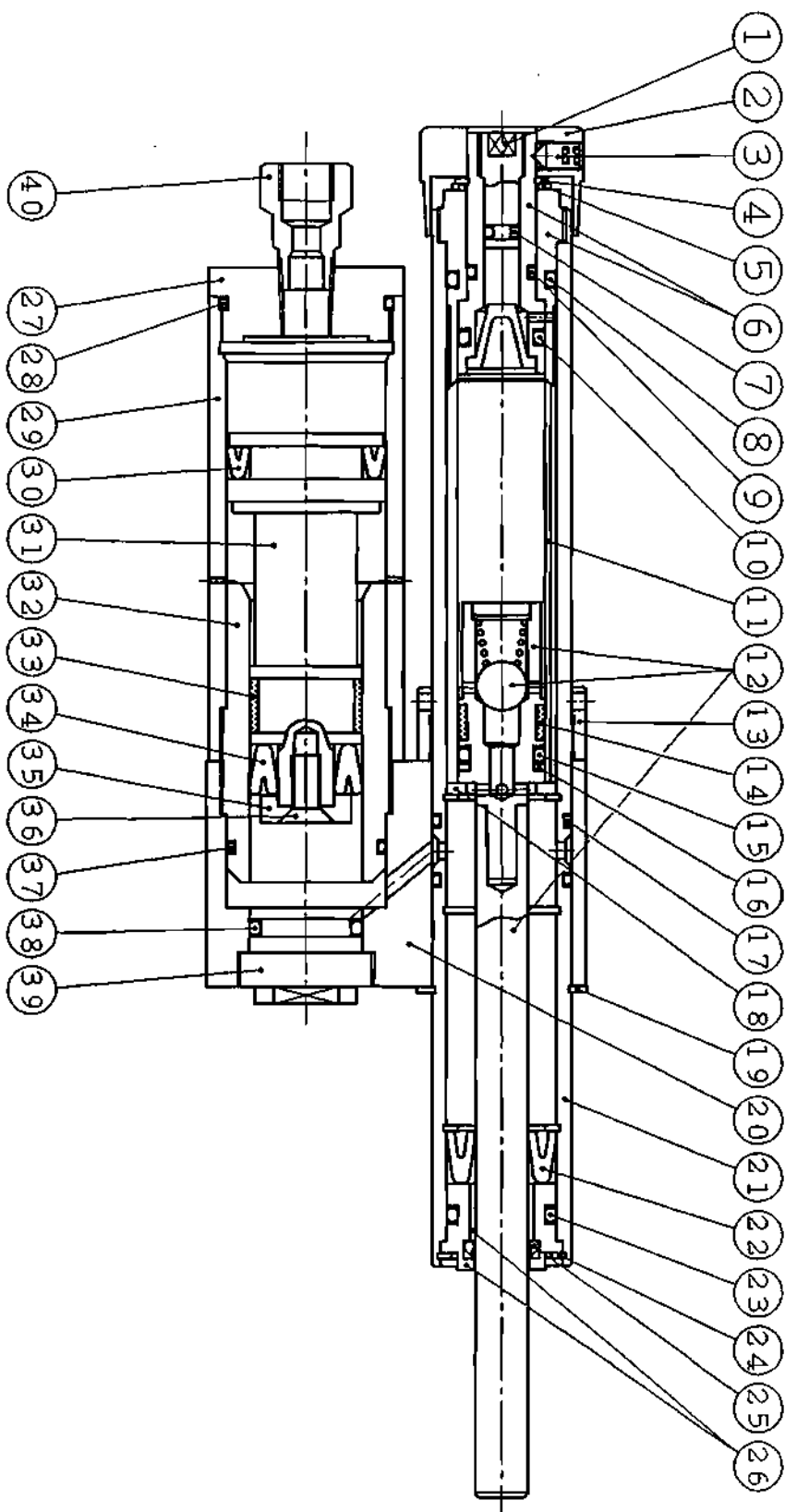
Fill R1 oil into the hole of speed adjusting knob.



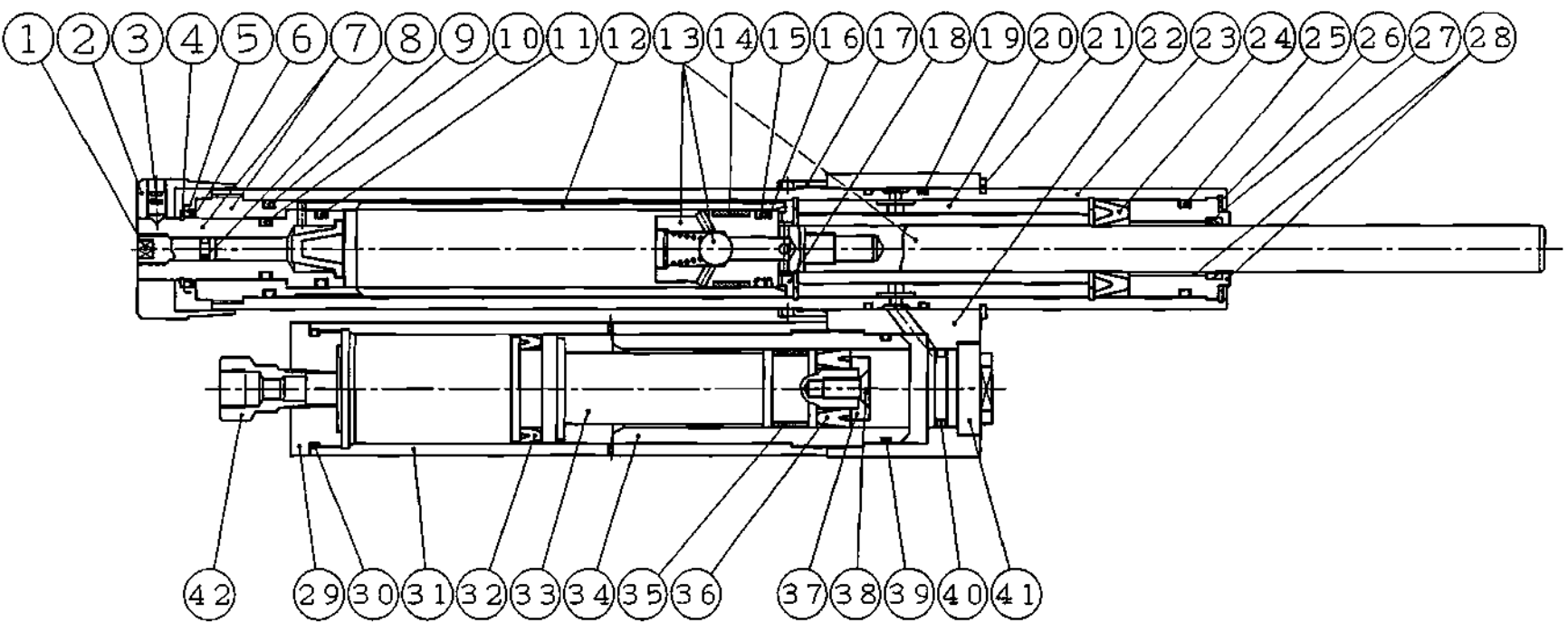
- 7) Repeat the manner of 6) until the piston rod fully extended.
- 8) After refilling R1 oil fully, adjust the oil level to approximately 10 mm below from the end surface of speed adjusting knob then replace the plug and turn fully clockwise.

6. Sectional drawing and Parts list

6-1.R-2442A, R-2462A, R-2482A



Key No.	Parts Name	Q'ty	Parts No.		
			R-2442A	R-2462A	R-2482A
1	Plug	1	035 0102		
2	Speed adjusting knob	1	035 0013		
3	Set screw	1	980 3670		
4	Snap ring	1	942 5066		
5	Wave washer	1	963 0056		
6	Adjust valve parts	1	031 8200		
7	"O" ring	1	920 0002		
8	"O" ring	1	920 0143		
9	"O" ring	1	920 0060		
10	"O" ring	1	920 0090		
11	Cylinder	1	031 2113	031 2120	031 2136
12	Piston parts	1	031 8245		031 8251
13	Connector clamp	1	031 2024		
14	Wear ring	1	030 2327		
15	"O" ring	1	920 0090		
16	Back-up ring	1	030 2333		
17	"O" ring	2	922 0186		
18	Distance ring	1	030 0110		
19	Snap ring	1	942 5178		
20	Connector	1	031 2030		
21	Body Parts	1	031 8357	031 8363	031 8370
22	Packing	1	912 0036		
23	"O" ring	1	920 0143		
24	Snap ring	1	942 0117		
25	Scraper	1	035 0473		
26	Top cap parts	1	031 8386		
27	Air inlet nut	1	031 2053		
28	"O" ring	1	922 0223		
29	Cylinder A	1	031 2082	031 2159	031 2159
30	Packing	1	910 0022		
31	Reservoir piston	1	031 2107		031 2142
32	Cylinder B	1	031 2099		031 2165
33	Wear ring	1	034 0300		
34	Packing	1	912 0042		
35	Piston washer	1	031 2060		
36	Set screw	1	981 2231		
37	"O" ring	1	922 0217		
38	"O" ring	1	920 0150		
39	Oil refill plug	1	031 2047		
40	Air connector R1/8 (ISO R228)	1	000 0856		



Key No.	Parts Name	Q'ty	Parts No.			
			R-3182A	R-31132A	R-31186A	R-31202A
1	Plug	1	035 0102			
2	Speed adjusting knob	1	036 0000			
3	Set screw	1	980 3670			
4	Snap ring	1	941 0107			
5	Wave washer	2	963 0079			
6	Thrust washer	2	034 0196			
7	Adjust valve parts	1	034 8571			
8	"O" ring	1	920 0002			
9	"O" ring	1	920 0189			
10	"O" ring	1	920 0114			
11	"O" ring	1	920 0150			
12	Cylinder	1	034 0055	034 6023	034 7324	034 7459
13	Piston parts	1	034 8513	034 8520	034 8588	
14	Wear ring	1	034 0300			
15	"O" ring	1	920 0150			
16	Back-up ring	1	034 0316			
17	Connector clamp	1	034 8022			
18	Distance ring	1	034 0115			
19	"O" ring	2	922 0223			
20	Spacer	1	---		034 8246	034 8252
21	Snap ring	1	942 5221			
22	Connector	1	034 8039			
23	Body Parts	1	034 8648	034 8654	034 8594	034 7471
24	Packing	1	912 0065			
25	"O" ring	1	920 0189			
26	Snap ring	1	942 0152			
27	Scraper	1	036 0448			
28	Top cap parts	1	034 8631			
29	Air inlet nut	1	031 2053			
30	"O" ring	1	922 0223			
31	Cylinder A	1	031 2159	034 8128	034 8223	
32	Packing	1	910 0022			
33	Reservoir piston	1	031 2142	034 8111	034 8217	
34	Cylinder B	1	031 2165	034 8134	034 8230	
35	Wear ring	1	034 0300			
36	Packing	1	912 0042			
37	Piston washer	1	031 2060			
38	Set screw	1	981 2231			
39	"O" ring	1	922 0217			
40	"O" ring	1	920 0150			
41	Oil refill plug	1	031 2047			
42	Air connector R1/8 (ISO R228)	1	000 0856			