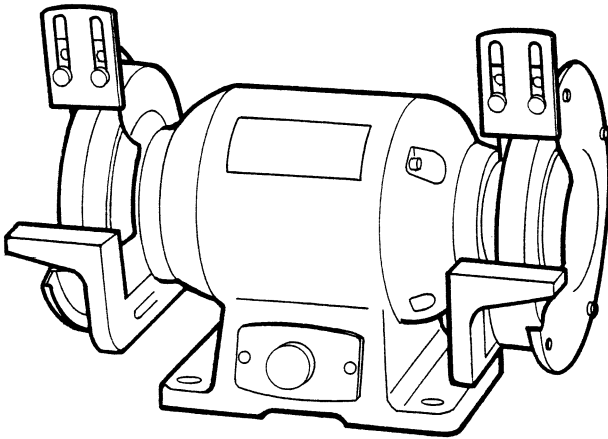


HIKOKI

BENCH GRINDER MODEL GT 15SH · GT 21SH GT 26SH · GT 31SH

HANDLING INSTRUCTIONS



Note:

Before using this Bench Grinder, carefully read through these HANDLING INSTRUCTIONS to ensure efficient, safe operation. It is recommended that these INSTRUCTIONS be kept readily available as an important reference when using this Grinder.

We sincerely thank you for selecting a HiKOKI BENCH GRINDER. To operate this electric power tool safely and efficiently please read these HANDLING INSTRUCTIONS carefully to get a good understanding of the precautions in operation, the capacity of the electric power tool, uses and the like.

GENERAL OPERATIONAL PRECAUTIONS

1. Humidity is a taboo that could lead to accidents.
2. Specified voltage should be used.
3. Prevention against electric shock.
4. The right parts in the right places.
5. Excessive work could cause accidents.
6. Confirm the safety of the workshop.
7. Do not touch the switch unintentionally.
8. Proper posture is a prerequisite for safe operation.
9. Proper clothes should be worn.
10. Protective glasses to protect your eyes.
11. Handle the cord with care.
12. The opening of the motor for ventilation should be kept fully open.
13. Inspect the power tool before operation.
14. Stop operation if abnormalities are noticed.
15. Never touch blades and cutters while operating.
16. Ensure that power supply is disconnected after operation.
17. Order is the first step to safety.
18. Keep the power tool in proper custody.
19. Inspection at regular intervals is essential for safety.
20. Take good care for long life.
21. Ask an authorised HiKOKI Service Agent to do repairs.
22. Operate the power tool safely for correct uses.
23. Always keep the blades and cutters sharp.
24. Handle the power tool with care.
25. Do not let children use the power tool.

PRECAUTIONS ON USING BENCH GRINDER

1. Start grinding only after motor revolution reaches full speed.
2. Promptly cut OFF the switch when an abnormality is observed.
3. The grinding wheel must always be sharp-edged.

4. Always apply a trial run.
5. Handle the grinding wheel with care.
6. Use a specified grinding wheel on a specified application plane.
7. Guard against grinding sparks.
8. A revolving grinding wheel should never be touched.
9. Properly replace the grinding wheel.
10. Handle grinding wheel clamping parts with care.
11. Do not operate the machine without its protective cover.
12. Pay attention to grinding wheel preservation.
13. Wear goggles to protect the eyes.
14. Maintain balance of the grinding wheel.

NAME OF PARTS

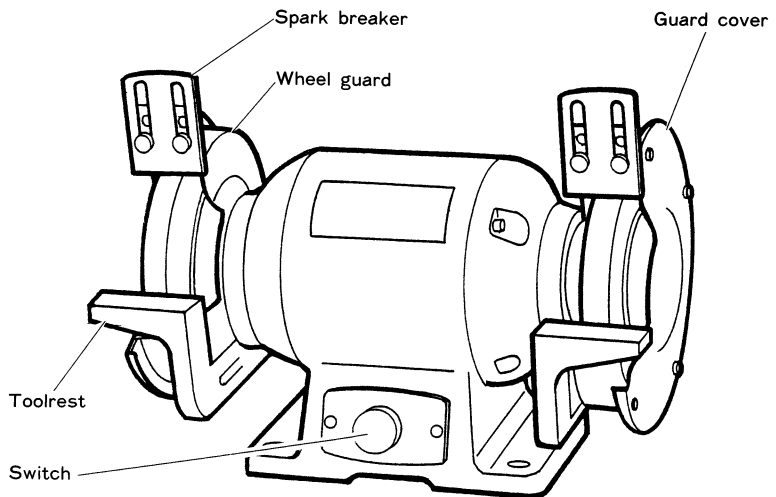


Fig. 1

SPECIFICATIONS

Item		Unit	GT15SH (1P)	GT15SH (3P)	GT21SH (1P)	GT21SH (3P)	GT26SH	GT31SH
Output		W	200	200	400	400	750	1500
Power supply	Phase		1 ϕ	3 ϕ	1 ϕ	3 ϕ	3 ϕ	3 ϕ
	Frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60
	Voltage	V	} Tabl 1.					
Full-load current		A						
No-load speed	50Hz	rpm	2970	2970	2960	2970	1490	1470
	60Hz	rpm	3560	3560	3560	3560	1790	1770
Grinding wheel dimensions	Outer diameter	mm	150	150	205	205	255	305
	Thickness	mm	16	16	19	19	25	32
	Hole diameter	mm	12.7	12.7	15.88	15.88	19.05	25.4
Max. working peripheral speed of grinding wheel		m/min	2000	2000	2320	2320	2000	2000
Cord			2core-cord		2core-cord			
Weight		kg	16.0	14.5	27.0	24.0	41	65

Table 1.

	(V)	110	115	120	127	220	230	240
GT15SH (1P)	(A)	3.4/3.1	3.4/3.0	3.1/2.9		1.65/1.55	1.6/1.55	1.6/1.5
GT21SH (1P)	(A)	5.9	5.6	5.4		3.0	2.9	2.7

	(V)	220	230	240	380	415	440
GT15SH (3P)	(A)	1.0			0.6		0.5
GT21SH (3P)	(A)	1.7	1.65	1.6	1.0	0.92	0.86
GT26SH	(A)	3.0		2.7	1.7	1.5	1.5
GT31SH	(A)	5.5		5.0	3.2	2.9	2.7

OPTIONAL ACCESSORY

1. Eye Shield

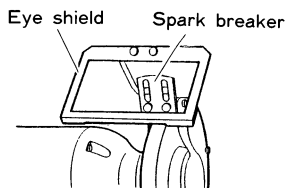


Fig. 2

The operator's eyes are protected by this shield. (When ordering, specify the Type Number of the applicable Electric Grinder.) (See Fig. 2)

2. Floor Stand

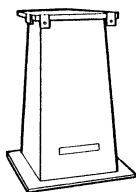


Fig. 3

The Bench Grinder Type GT21SH(1P), GT21SH (3P), GT26SH, GT31SH can be converted in to floor models by using this Floor Stand. (See Fig. 3)

3. Water Cup

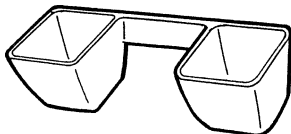


Fig. 4

Attached on the Floor Stand, for cooling works. (Not be used without the Floor Stand.) (See Fig. 4)

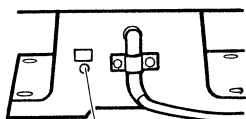
APPLICATIONS

- Grinding Steel materials.
- Removing Flashes from casting.

PREPARATION PRIOR TO OPERATION

Before using the Electric Bench Grinder complete the following preparations.

1. Confirming the leak circuit breaker



Grounding bolt

Fig. 5

Before using this Electric Bench Grinder confirm that an electric shock preventive leak circuit breaker (hereinafter called leak circuit breaker) is installed at the power supply to which the Electric Bench Grinder is connected.

If a leak circuit breaker is not installed at the

power supply, the Electric Bench Grinder must be grounded.

Use the grounding bolt provided on the rear of the machine main body for grounding. (See Fig. 5)

2. Installation

To ensure smooth operation, install the grinder in a horizontal position. Use four bolts to securely install grinder on the working table.

3. Mounting the spark breaker

Since the spark breaker is separated from the machine main body when packaged and shipped from the factory, mount it as shown in Fig. 1 and 6.

The spark breaker serves to prevent the scattering of sparks and ground dust, and to prevent possible hazards should the grinding wheel collapse.

CONFIRMATION BEFORE USE

1. Ascertain the working power supply

Always use the machine under the power supply specified on the instruction plate.

2. Ascertain that the switch is cut OFF.

Should the cord be carelessly or inadvertently plugged in a receptacle when the switch is ON, unexpected and serious trouble may occur.

3. Ascertain grinding wheel condition.

Ascertain that all grinding wheels are in perfect condition, and do not display scars and cracks.

4. Ascertain clamping of the grinding wheel.

Although they have been fully clamped at the factory prior to delivery, reclamp the clamping nuts securely for safety. (See the item on Replacing the Grinding Wheel).

5. Ascertain clamping of the protective cover (guard cover)

Possible accidents such as a cracked grinding wheel is prevented by this protective cover (guard cover).

Although it has been fully clamped at the factory prior to delivery, securely reclamp the mounting screws for safety.

6. Use grinding wheels whose peripheral speed ratings are over the maximum working peripheral speed.

When replacing grinding wheels, use those whose peripheral speed ratings exceed the maximum working peripheral speed specified the specifications plate.

7. Adjust clearance between the spark breaker or the tool rest and the grinding wheel.

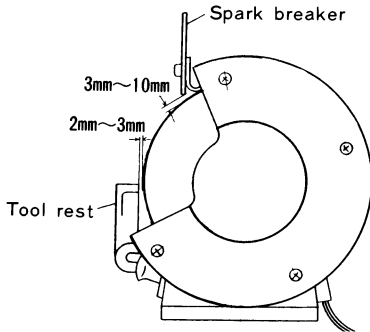


Fig. 6

Before starting a grinding job always adjust clearance between the spark breaker and the grinding wheel at 3~10mm, and that between the tool rest and the grinding wheel at 2~3mm.

(Adjust depending upon the extent of abrasion of the grinding wheel.)

8. Inspect the power supply receptacle.

When backlash or loose engagement is observed when the cord plug is inserted in a receptacle, repair is necessary.

Contact the nearest reputable electric service shop for repair. When the machine is used without repairing the plug conditions, the Grinder will overheat and cause trouble.

Then plug the cord into a receptacle and ascertain the following:

1. Applying a trial run.

Continued grinding without noticing a cracked or split grinding wheel may prove to be very hazardous.

Before starting operation, temporarily step away from the front position and make a trial run to confirm that no abnormalities are involved.

Trial run periods:

When replacing a grinding wheel ----- Over 3 minutes.

When starting routine work ----- Over 1 minute.

2. Inspect facial deflection of the grinding wheel.

Rotate the grinding wheel to inspect any facial deflection. A heavy deflection will cause the grinding wheel to damage.

3. Check the Rotative Direction.

The rotating direction can be determined by referring to the arrow direction on the wheel guard.

When rotating in reversal, (in case of 3-phase machine) temporarily cut OFF the power supply and change connections of two of the three core wires of the cord.

GRINDING PROCEDURES

1. Continue grinding while placing the workpiece on a tool rest.
Holding the processing object with one hand or without observing the grinding wheel is dangerous.
2. Do NOT use a loaded or glazed grinding wheel; this will lead to deterioration of the processing plane and grinding efficiency. Frequently dress the grinding wheel so that its peripheral shape conforms to a true circle.
3. Employ an ordinary brick stone as the dresser.

REPLACING A GRINDING WHEEL

1. When mounting or demounting a grinding wheel, insert a rod through the shaft revolution stop hole in the wheel washer (as shown in Fig. 7) to stop shaft revolution, and turn the grinding wheel clamping nut.

When viewed from the switch side, the screw on the right is a right-hand screw, and the screw on the left is a left-hand screw.

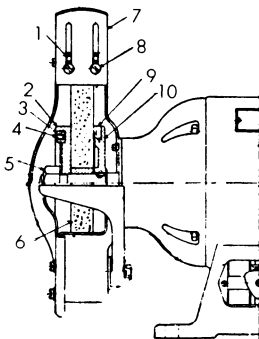


Fig. 7

- | | |
|--------------------------------|-------------------------------|
| 1. Eye shield mounting hole | 6. Grinding wheel |
| 2. Balancing washer | 7. Spark breaker |
| 3. Balance weight | 8. Flat-head machine screw |
| 4. Cap screw | 9. Shaft revolution stop hole |
| 5. Grinding wheel clamping nut | 10. Wheel washer |

2. An excessively clamped grinding wheel clamping nut will cause the grinding wheel to crack. Always pay attention to this possibility. Since the nut is designed to be tightened upon revolution, loosening during revolution is impossible.

3. Do NOT use a grinding wheel whose dimensions exceed the rated values.
This will cause the peripheral speed to exceed the safety limits and damage the Grinder.
4. Since self-balancing by the grinding wheel itself may not be attained completely, especially in case of the larger sized wheels, balancing is effected by such means as balance weight.

When replacing a grinding wheel, always adjust balancing in accordance with the balance adjusting procedures prescribed below, so that the machine vibration can be minimized.

HOW TO BALANCE THE GRINDING WHEELS

Adjustment is made by shifting the balance weight located on the balance washer (See to Fig. 7). By loosening a cap screw, the balance weight can be shifted and adjusted through the following procedures;

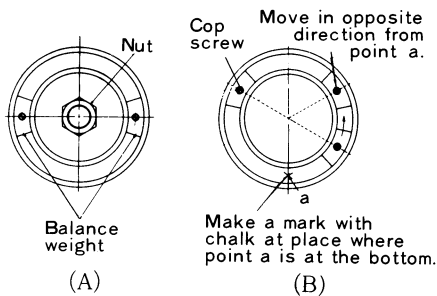


Fig. 8

1. Adjustment cannot be performed for both grinding wheels at the same time. Perform one at a time.
2. At first, as shown in Fig. 8 (A), place the balance weight in a symmetrical position and tighten it. By slowly rotating the grinding wheel manually and releasing the hand, the grinding wheel will soon come to a full stop.

Now mark on the washer where the grinding wheel stops, directly under the outer edge. Repeat this procedure several times to check heavy portions.

When a heavy portion has been ascertained, the balance weight on the opposite side should be installed.

3. Accordingly, shift the balance weight position and tighten it as shown in Fig. 8 (B). Again, rotate the grinding wheel manually.

When those portions which stop at the lowermost part of the circumference become irregular, the grinding wheel balanced.

4. After driving the motor, when vibration is large, perform fine adjustment by slightly shifting the balance weight.

KINDS OF GRINDING WHEELS AND THEIR APPLICATIONS

- One of the most important criteria in performing sufficient grinding work is to select the proper type of grinding wheel corresponding to the material of the work to be ground. The HiKOKI Electric Grinders are equipped with grinding wheels such as shown in the following table.

These grinding wheels are suitable for grinding ordinary types of steel.

Specifications of Attached Grinding Wheels:

Type of Grinder	Kind of Abrasive	Grain Size	Grade	Bond	Material of Work to be Ground
GT15SH	A	36	N	V	Soft steel, cast steel, hard steel, hardened steel, Also suitable for hard bronze.
GT21SH					
GT26SH					
GT31SH	A	60	N	V	

- Various types of grinding wheels are available on the market for use on cast iron and non—ferrous metals. In these cases, select a grinding wheel in accordance with the standards in the following table.

Material Ground	Kind of Abrasive	Grain Size	Grade	Bond	Remarks
Aluminum, brass, bronze	C	24	P	B	Fin removal
Cast iron	C	16	P	B	Fin removal
Superhard alloys	GC	60	I	V	Rough machining

MAINTENANCE AND INSPECTION

1. When continually using a grinding wheel which has already become dull, an unnecessary load is imparted to the motor.

Consequently, redress or replace a dull grinding wheel to ensure grinding efficiency.

2. Periodically inspect every part of this Electric Grinder as to whether or not loosening has occurred. Retighten any loosened parts.

When using the Grinder without retightening loosened parts, a hazard may result.

3. Always keep the Grinder and its surrounding locations clean and remove grinding dust from the Grinder. Dust is apt to infiltrate the Grinder interior, shortening its life.
4. Since the motor is the "heart" of the Grinder, protect it from contamination by water or oil during cleaning, inspecting, and repair procedures.

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