

**INSTALLATION MANUAL** 

#### 1. **BEFORE INSTALLATION**

### 1-1. THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY

Be sure to read "THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY" before installing the air conditioner.

may leak

rent, etc

could cause an explosion.

to one AC outlet.

the installation work.

Be sure to observe the warnings and cautions specified here as they include important items related to safety. After reading this manual, be sure to keep it together with the OPERATING INSTRUCTIONS for future reference

ENGLISH

- Do not install the unit by yourself (user). Incomplete installation could cause fire or electric shock, ry due to the unit falling, or leakage of water. Consult dealer from whom you purchased the unit or a qualified installer.
- Perform the installation securely referring to the instal-lation manual.
- Incomplete installation could cause fire, electric shock, or injury due to the unit falling, or leakage of water. When installing the unit, use appropriate protective equipment and tools for safety. Failure to do so could cause injury.
- Install the unit securely in a place which can bear the weight of the unit. If the installation location cannot bear the weight of the unit,
- the unit could fall causing injury. Electrical work should be performed by a qualified, experience delectrician, according to the installation manual. Be sure to use an exclusive circuit. Do not con-nect other electrical appliances to the circuit. If the capacity of the power circuit is insufficient or there is incomplete electrical work, it could result in a fire or an elec-
- tric shock.
- Earth the unit correctly. Do not connect the earth to a gas pipe, water pipe, lightning rod or telephone earth. Defective earthing could cause elecric shock
- Do not damage the wires by applying excessive pres-
- Sure with parts or screws. Damaged wires could cause fire or electric shock. Be sure to cut off the main power in case of setting up the indoor P.C. board or wiring works. Failure to do so could cause electric shock.
- Use the specified wires to connect the indoor and outdoor units securely and attach the wires firmly to the terminal block connecting sections so the stress of the wires is not applied to the sections. Do not extend the wires, or use intermediate connection.
- Install an earth leakage breaker depending on the installation place. If an earth leakage breaker is not installed, it could cause
- electric shock Perform the drainage/piping work securely according to
- the installation manual

## **1-2. SELECTING THE INSTALLATION LOCATION**

#### INDOOR UNIT

- Where airflow is not blocked Where cool air spreads over the entire room.
- Rigid wall without vibration. Where it is not exposed to direct sunshine. Do not expose to direct sunshine also during the period following unpacking to before use
- Where easily drained
- At a distance 1 m or more away from your TV and radio. Operation of the air conditioner may interfere with radio or TV reception. An amplifier may be required for the affected device
- In a place as far away as possible from fluorescent and incandescent lights (so the infrared remote control can operate the air conditioner normally).
- Where the air filter can be removed and replaced easily REMOTE CONTROLLER

#### Where it is easy to operate and easily visible

Where children cannot touch it. Select a position about 1.2 m above the floor and check that signals from the remote controller are surely received by the indoor unit from that position ('beep' or 'beep beep' receiving tone sounds). After that, attach remote controller holder to a pillar or wall and install wireless remote controller

#### Note:

In rooms where inverter type fluorescent lamps are used, the signal from the wireless remote controller may not be received.

### OUTDOOR UNIT

- Where it is not exposed to strong wind
- Where airflow is good and dustless. Where rain or direct sunlight can be avoided as much as pos-
- sible. Where neighbours are not annoyed by operation sound or
- hot air. Where rigid wall or support is available to prevent the increase of operation sound or vibration. Where there is no risk of combustible gas leakage.
- When installing the unit at a high level, be sure to secure the
- unit legs. Where it is at least 3 m away from the antenna of TV set or radio. Operation of the air conditioner may interfere with radio or TV reception in areas where reception is weak. An ampli-fier may be required for the affected device.
- Install the unit horizontally. Please install it in an area not affected by snowfall or blowing snow. In areas with heavy snow, please install a canopy, a pedestal and/or some baffle boards

#### **Required Tools for Installation**

Phillips screwdriver Level Scale Utility knife or scissors 75 mm hole saw Torque wrench Wrench (or spanner)

**WARNING** (Could lead to death, serious injury, etc.)

4 mm hexagonal wrench Flare tool for R410A Gauge manifold for R410A Vacuum pump for R410A Charge hose for R410A Pipe cutter with reamer

- If refrigerant comes in contact with a fire, harmful gas could be generated. Check that the refrigerant gas does not leak after instal-
- lation has been completed. If refrigerant gas leaks indoors, and comes into contact with the flame of a fan heater, space heater, stove, etc., harmful substances will be generated.
- Use appropriate tools and piping materials for installation.

The pressure of R410A is 1.6 times more than R22. Not using appropriate tools or materials and incomplete installation could cause the pipes to burst or injury.

- When pumping down the refrigerant, stop the compres-sor before disconnecting the refrigerant pipes. If the refrigerant pipes are disconnected while the compressor is running and the stop valve is open, air could be drawn in and the pressure in the refrigeration cycle could become abnormally high. This could cause the pipes to burst or in-
- When installing the unit, securely connect the refriger-

ant pipes before starting the compressor. If the compressor is started before the refrigerant pipes are connected and when the stop valve is open, air could be drawn in and the pressure in the refrigeration cycle could become abnormally high. This could cause the pipes to burst or injury.

Fasten a flare nut with a torque wrench as specified in this manual.

If fastened too tight, a flare nut may break after a long period and cause refrigerant leakage. The unit shall be installed in accordance with national

wiring regulations.

## **CAUTION** (Could lead to serious injury in particular environments when operated incorrectly.)

Do not install the outdoor unit where small animals may live.

If small animals enter and touch the electric parts inside the unit, it could cause a malfunction, smoke emission, or fire. Also, advise user to keep the area around the unit clean.

It is advisable to make a piping loop near outdoor unit so as to reduce vibration transmitted from there.

#### Note:

- When operating the air conditioner in low outside temperature be sure to follow the instructions described below
- Never install the outdoor unit in a place where its air inlet outlet side may be exposed directly to wind.
- To prevent exposure to wind, install the outdoor unit with its air inlet side facing the wall. To prevent exposure to wind, it is recommended to install a

baffle board on the air outlet side of the outdoor unit. void the following places for installation where air conditioner trouble is liable to occur.

- Where flammable gas could leak. Where there is much machine oil.
- Where oil is splashed or where the area is filled with oily smoke (such as cooking areas and factories, in which the properties of plastic could be changed and damaged).

Salty places such as the seaside. Where sulfide gas is generated such as a hot spring. Where there is high-frequency or wireless equipment. Where there is emission of high levels of VOCs, includ-ing phthalate compounds, formaldehyde, etc., which may cause chemical cracking.

## **1-3. SPECIFICATIONS**

Model		Power supply *1		Wire specifications *2		Pipe size	(GE60/GE71,80)		
						(thickness *3, *4)	Pipe length and height difference		
Indoor unit	Outdoor unit	Rated Voltage	Frequency	Breaker	Power supply	Indoor/outdoor	Gas / Liquid	Max. pipe length	30 m
		vollage		capacity	,	connecting wire		Max. height difference	15 m
MSZ-GE60VAD	MUZ-GE60VAD		50 Hz	20 A	3-core 2.5 mm <sup>2</sup>	4-core 1.0 mm <sup>2</sup>	ø15.88 / 6.35 mm (1.0 / 0.8 mm) ø15.88 / 9.52 mm (1.0 / 0.8 mm)	Max. number of bends *5, *6	10
		230 V						Refrigerant adjustment A *7	20/55 g/m
MSZ-GE71VAD MSZ-GE80VAD	MUZ-GE71VAD MUZ-GE80VAD							Insulation thickness *8, *9	8 mm

\*1 Connect to the power switch which has a gap of 3 mm or more when open to interrupt the source power phase. (When the power switch is shut off, it must interrupt all phases.)

\*2 Use wires in conformity with design 60245 IEC 57. \*3 Never use pipes with thickness less than specified. The pressure resistance will be insufficient.

\*4 Use a copper pipe or a copper-alloy seamless pipe.
\*5 Be careful not to crush or bend the pipe during pipe bending.
\*6 Refrigerant pipe bending radius must be 100 mm or more.
\*7 If pipe length exceeds 10 m, additional refrigerant (R410A) charge is required. (No additional charge is required for pipe length less than 10 m.)

Additional refrigerant = A × (pipe length (m) -10) \*8 Insulation material : Heat resisting foam plastic 0.045 specific gravity

\*9 Be sure to use the insulation of specified thickness. Excessive thickness may cause incorrect installation of the indoor unit and insufficient thickness may cause dew drippage.

Note:

sure that no substance other than the specified refriger-ant (R410A) enters the refrigerant circuit. Any presence of foreign substance such as air can cause abnormal pressure rise and may result in explosion or injury. The use of any refrigerant other than that specified for the system will cause mechanical failure, system malfunction, or system will cause mechanical railitie, system manufacturitie, or unit breakdown. In the worst case, this could lead to a seri-ous impediment to securing product safety.
 Do not discharge the refrigerant into the atmosphere. If refrigerant leaks during installation, ventilate the room.

Do not touch the air inlet or the aluminum fins of the

# outdoor unit. This could cause injury.

JG79B249H01

Model names are indicated in 1-3.

When installing multi units, refer to the

installation manual of the multi unit for

Incomplete connecting and securing could cause fire.

Do not install the unit in a place where inflammable gas

Do not use intermediate connection of the power cord

or the extension cord and do not connect many devices

It could cause a fire or an electric shock due to defective

contact, defective insulation, exceeding the permissible cur-

Be sure to use the parts provided or specified parts for

The use of defective parts could cause an injury or leakage of water due to a fire, an electric shock, the unit falling, etc.

parts in both the outlet and the plug. Make sure that the power supply plug is pushed completely into the outlet. If there is dust, clogging, or loose parts on the power sup-ply plug or the outlet, it could cause electric shock or fire. If loose parts are found on the power supply plug, replace it. Attach the electrical cover to the indoor unit and the

service panel to the outdoor unit securely. If the electrical cover of the indoor unit and/or the service panel of the outdoor unit are not attached securely, it could

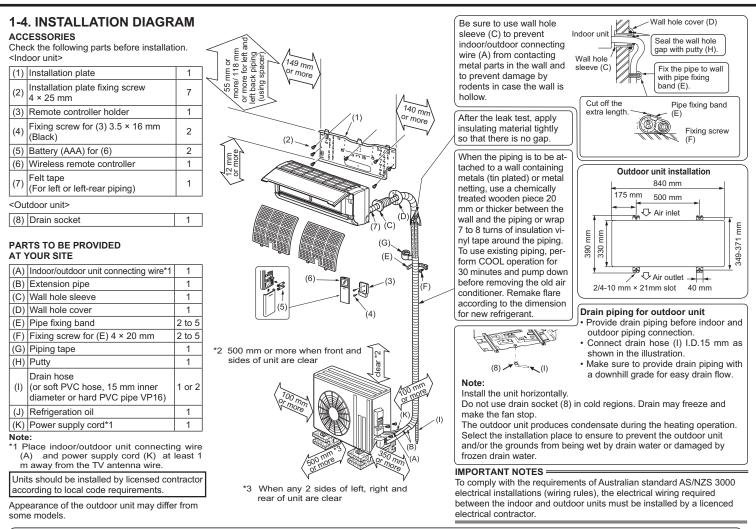
result in a fire or an electric shock due to dust, water, etc. When installing, relocating, or servicing the unit, make

When plugging the power supply plug into the outlet, make sure that there is no dust, clogging, or loose

If gas leaks and accumulates in the area around the unit, it

outdoor unit installation

If there is defect in the drainage/piping work, water could drop from the unit, soaking and damaging household goods.



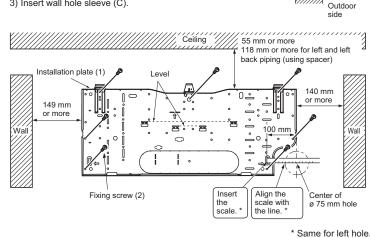
## 2. INDOOR UNIT INSTALLATION

#### 2-1. FIXING OF INSTALLATION PLATE

- Find a structural material (such as a stud) in the wall and fix installation plate (1) horizontally by tightening the fixing screws (2) firmly.
- To prevent installation plate (1) from vibrating, be sure to install the fixing screws in the holes indicated in the illustration. For added support, fixing screws may also be installed in other holes.
- When the knockout is removed, apply vinyl tape to the knockout edges to prevent damaging the wires.
- When bolts recessed in the concrete wall are to be utilized, secure installation plate (1) using 11 × 20 · 11 × 26 oval hole (450 mm pitch).
- If the recessed bolt is too long, change it for a shorter one available in the market.
   Wall

## 2-2. WALL HOLE DRILLING

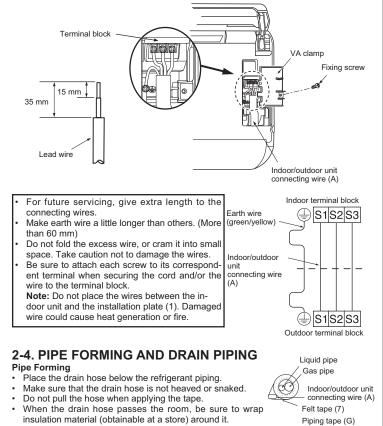
Determine the wall hole position.
 Drill a Ø 75 mm hole. The outdoor side should be Ø 75 mm 5 to 7 mm lower than the indoor side.
 Insert wall hole sleeve (C).

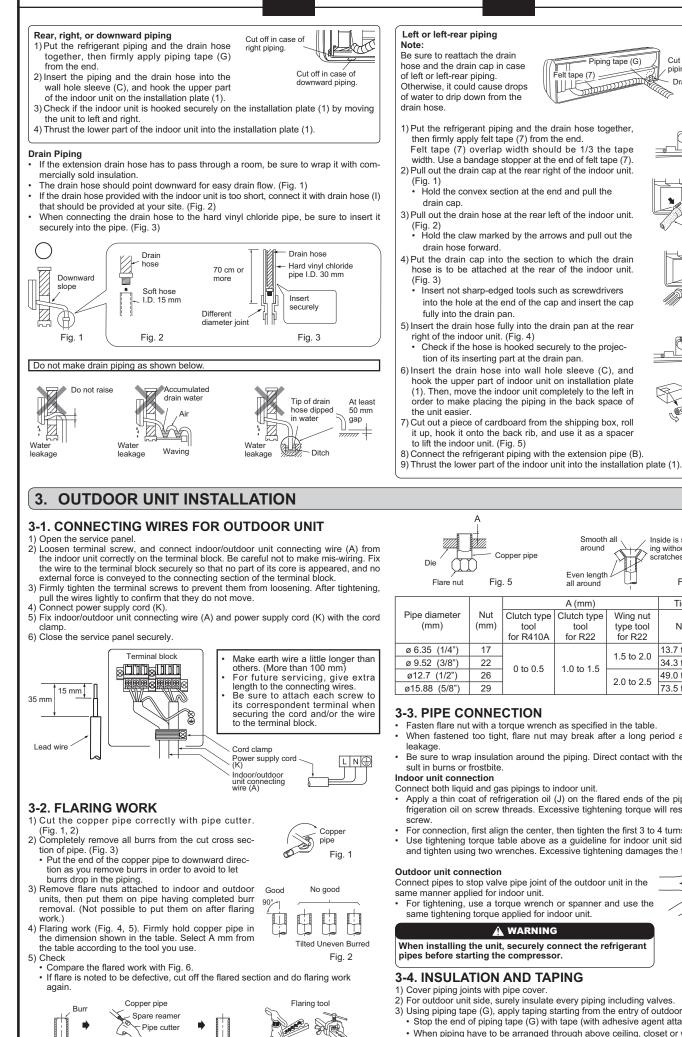


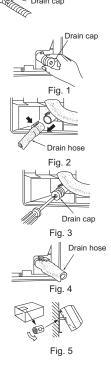
## 2-3. CONNECTING WIRES FOR INDOOR UNIT

- You can connect indoor/outdoor lead wire without removing the front panel.
- 1) Open the front panel
- 2) Remove VA clamp.
- 3) Pass indoor/outdoor unit connecting wire (A) from the back of the indoor unit and process the end of the wire.

- 4) Loosen terminal screw, and connect first the earth wire, then indoor/outdoor unit connecting wire (A) to the terminal block. Be careful not to make mis-wiring. Fix the wire to the terminal block securely so that no part of its core is appeared, and no external force is conveyed to the connecting section of the terminal block.
- 5) Firmly tighten the terminal screws to prevent them from loosening. After tightening, pull the wires lightly to confirm that they do not move.
- 6) Secure indoor/outdoor unit connecting wire (A) and the earth wire with the VA clamp. Never fail to hook the left claw of the VA clamp. Attach the VA clamp securely.







Cut off in case of left

piping.

Drain cap

Smooth all Inside is shining without any scratches Fig. 6

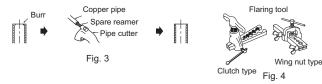
	Nut (mm)		A (mm)	Tightening torque		
Pipe diameter (mm)		Clutch type tool for R410A	Clutch type tool for R22	Wing nut type tool for R22	N•m	kgf•cm
ø 6.35 (1/4")	17		1.0 to 1.5	1.5 to 2.0	13.7 to 17.7	140 to 180
ø 9.52 (3/8")	22	0 to 0.5		1.5 10 2.0	34.3 to 41.2	350 to 420
ø12.7 (1/2")	26	0 10 0.5		20 to 25	49.0 to 56.4	500 to 575
ø15.88 (5/8")	29	]			73.5 to 78.4	750 to 800

- Fasten flare nut with a torque wrench as specified in the table.
- When fastened too tight, flare nut may break after a long period and cause refrigerant
- Be sure to wrap insulation around the piping. Direct contact with the bare piping may re-
- Apply a thin coat of refrigeration oil (J) on the flared ends of the pipes. Do not apply re-
- frigeration oil on screw threads. Excessive tightening torgue will result in damage on the
- For connection, first align the center, then tighten the first 3 to 4 turns of flare nut.
  - Use tightening torque table above as a guideline for indoor unit side union joint section, and tighten using two wrenches. Excessive tightening damages the flare section.

Connect pipes to stop valve pipe joint of the outdoor unit in the

When installing the unit, securely connect the refrigerant

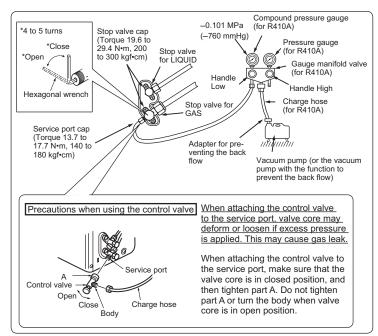
- 2) For outdoor unit side, surely insulate every piping including valves.
- 3) Using piping tape (G), apply taping starting from the entry of outdoor unit. • Stop the end of piping tape (G) with tape (with adhesive agent attached)
  - · When piping have to be arranged through above ceiling, closet or where the temperature and humidity are high, wind additional commercially sold insulation to prevent condensation.



## 4. PURGING PROCEDURES, LEAK TEST, AND TEST RUN

### 4-1. PURGING PROCEDURES AND LEAK TEST

- 1) Remove service port cap of stop valve on the side of the outdoor unit gas pipe. (The stop valves are fully closed and covered in caps in initial state.)
- 2) Connect gauge manifold valve and vacuum pump to service port of stop valve on the gas pipe side of the outdoor unit.



- 3) Run the vacuum pump. (Vacuumize for more than 15 minutes.)
- 4) Check the vacuum with gauge manifold valve, then close gauge manifold valve, and stop the vacuum pump.
- 5) Leave as it is for one or two minutes. Make sure pointer gauge manifold valve remains in the same position. Confirm that pressure gauge shows -0.101 MPa [Gauge] (-760 mmHa).
- 6) Remove gauge manifold valve quickly from service port of stop valve.
- After refrigerant pipes are connected and evacuated, fully open all stop valves on both sides of gas pipe and liquid pipe. Operating without fully opening lowers the performance and this causes trouble.
- 8) Refer to 1-3., and charge the prescribed amount of refrigerant if needed. Be sure to charge slowly with liquid refrigerant. Otherwise, composition of the refrigerant in the system may be changed and affect performance of the air conditioner.
- 9) Tighten cap of service port to obtain the initial status.

10) Leak test

## 5. RELOCATION AND MAINTENANCE

## 5-1. REMOVING AND INSTALLING THE PANEL ASSEMBLY

#### Removal procedure

- 1) Remove the 3 screws which fix the panel assembly
- 2) Remove the panel assembly. Be sure to remove its bottom end first.

#### Installation procedure

- 1) Install the panel assembly following the removal procedure in reverse.
- 2) Be sure to press the positions as indicated by the arrows in order to attach the assembly completely to the unit.

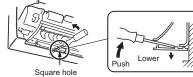
## 5-2. REMOVING THE INDOOR UNIT

Remove the bottom of the indoor unit from the installation plate.

. When releasing the corner part, release both left and right bottom corner part of indoor unit and pull it downward and forward as shown in the figure on the right.

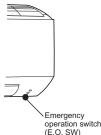
## If the above method cannot be used

Remove the panel. Then, insert hexagonal wrenches into the square holes on the left and right sides of the unit and push them up as shown in the following figure. The bottom of the indoor unit lowers and releases the hooks.



## **4-2. TEST RUN**

- 1) Insert power supply plug into the power outlet and/or turn on the breaker. Check that all LED lamps are not lit. If they are blinking, check that the horizontal vane is in-
- stalled correctly. Refer to operating instructions for details. 2) Press the E.O. SW once for COOL, and twice for HEAT operation. Test run will be performed for 30 minutes. If the upper lamp of the operation indicator blinks every 0.5 seconds, inspect the indoor/outdoor unit connecting wire (A) for mis-wiring. After the test run, emergency mode (set temperature 24°C) will start.



3) To stop operation, press the E.O. SW several times until all LED lamps turn off. Refer to operating instructions for details.

#### Checking the remote (infrared) signal reception

Press the ON/OFF button on the remote controller (6) and check that an electronic sound is heard from the indoor unit. Press the ON/OFF button again to turn the air conditioner off

Once the compressor stops, the restart preventive device operates so the compressor will not operate for 3 minutes to protect the air conditioner.

### **4-3. AUTO RESTART FUNCTION**

This product is equipped with an auto restart function. When the power supply is stopped during operation, such as during blackouts, the function automatically starts operation in the previous setting once the power supply is resumed. (Refer to the operating instructions for details.)

#### Caution:

- After test run or remote signal reception check, turn off the unit with the E.O. SW or the remote controller before turning off the power supply. Not doing so will cause the unit to start operation automatically when power supply is resumed To the user
- After installing the unit, make sure to explain the user about auto restart function. If auto restart function is unnecessary, it can be deactivated. Consult the service
- representative to deactivate the function. Refer to the service manual for details.

#### **4-4. EXPLANATION TO THE USER**

- Using the OPERATING INSTRUCTIONS, explain to the user how to use the air conditioner (how to use the remote controller, how to remove the air filters, how to remove or put the remote controller in the remote controller holder, how to clean, precautions for operation, etc.)
- Recommend the user to read the OPERATING INSTRUCTIONS carefully.

## **5-3. PUMPING DOWN**

When relocating or disposing of the air conditioner, pump down the system following the procedure below so that no refrigerant is released into the atmosphere

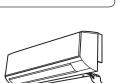
- 1) Connect the gauge manifold valve to the service port of the stop valve on the gas pipe side of the outdoor unit.
- 2) Fully close the stop valve on the liquid pipe side of the outdoor unit.
- 3) Close the stop valve on the gas pipe side of the outdoor unit almost completely so that it can be easily closed fully when the pressure gauge shows 0 MPa [Gauge] (0 kgf/ cm<sup>2</sup>)
- 4) Start the emergency COOL operation. To start the emergency operation in COOL mode, disconnect the power supply plug and/or turn off the breaker. After 15 seconds, connect the power supply plug and/or turn on the breaker, and then press the E.O. SW once. (The emergency COOL operation can be performed continuously for up to 30 minutes.)
- 5) Fully close the stop valve on the gas pipe side of the outdoor unit when the pressure gauge shows 0.05 to 0 MPa [Gauge] (approx. 0.5 to 0 kgf/cm<sup>2</sup>) 6)
- Stop the emergency COOL operation. Press the E.O. SW several times until all LED lamps turn off. Refer to operating instructions for details

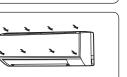
## WARNING

When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes. The compressor may burst if air etc. get into it.

# MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN





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