User Instruction

For industrial use only

This product is designed for industrial use only. Make sure that this product is used by personnel who:
- Have sufficient knowledge on occupational health and safety and respiratory protective equipment;
- Work under the close supervision of personnel with sufficient knowledge.

Chemical cartridge respirator (Chemical cartridge, Half-facepiece)
Model G-7

Scope of applications
Model G-7 is a chemical cartridge respirator designed to protect the wearer from breathing toxic gas and vapor, etc. Never use it in atmospheres described as "DANGER" in the column on the right. Type and performance of chemical cartridges vary depending on the gas and vapor existing in the working environment. Upon usage, read user instruction of the chemical cartridge carefully and use the chemical cartridge that is suitable for the environment.

Part names and structure

- Plastic molded cradle harness
- Exhalation valve (type T-7K) (Inside the bonnet enclosure)
- Filter checker
- Buckle
- Chemical cartridge (option) (KGC-10 series can be installed)
- Cartridge holder
- Silicone Facepiece
- Exhalation valve (type T-7K) (Inside the bonnet enclosure)

Silicone Facepiece

Caution

Chemical cartridge (option) (KGC-10 series can be installed)

For safe and proper use

- There are several limitations associated with the use of a chemical cartridge respirator.
- Unless following the limitations, there is a possibility of resulting in death or serious injury.
- Throughout this User Instruction, special messages of "DANGER", "WARNING", and "CAUTION" are shown in front of sentences that are important for safety. Please make sure to read the definitions of the special messages and understand the contents.
- Indicates an inherently hazardous situation. Unless following the instructions, there is a high possibility of resulting in death or serious injury.
- Indicates a potentially hazardous situation. Unless following the instructions, there is a possibility of resulting in death or serious injury.
- Indicates a potentially hazardous situation. Unless following the instructions, there is a possibility of resulting in light injury or property damage accident.

DANGER

Do NOT use the chemical cartridge respirator when:
- Concentration level of oxygen is unknown or less than 18%.
- Use of the respirator is very dangerous and may result in death due to lack of oxygen. Use pressure-demand SCBA or pressure-demand airline mask with overcharge alarm for emergency air supply in the oxygen-deficient environment.
- Type of toxic gas, etc. is unknown.

When toxic gas existing in the environment is unknown, chemical cartridge respirator cannot be used as appropriate chemical cartridge cannot be selected. Use supplied air respirator appropriate for the working environment.
- Concentration level of toxic gas, etc. is unknown.
- Pressure-demand SCBA or pressure-demand airline mask with overcharge alarm for emergency air supply in the oxygen-deficient environment.
- There is no chemical cartridge that can remove toxic gas, etc. existing in the environment.

Chemical cartridge cannot remove the gas other than the gas that the chemical cartridge is designed to remove. Use supplied air respirator appropriate for the working environment.

WARNING

Make sure to use the chemical cartridge respirator when all of the following conditions are satisfied (scope of applications):
- Concentration level of oxygen in the working environment is more than 18%.
- Working environment is under normal temperature, normal humidity and normal atmospheric pressure.
- In the working environment with high temperature or high heat, there is a possibility that respirator body or parts may be deformed. Tissue removing performance of the chemical cartridge decreases.
- Type of toxic gas, etc. in the environment is known and there exist chemical cartridges listed in the table of "Selection of chemical cartridges."
- Performance of chemical cartridge respirator varies depending on the type of chemical cartridges. Make sure to read the user instruction of the chemical cartridge prior to each use.
- When direct-connection type, compact chemical cartridges are used, the concentration level in the working environment is below 0.1%.
- When half-facepiece chemical cartridge respirator is used, the average concentration level of the toxic gas is below 10 times of the exposure limit. (It is below 30 times of the exposure limit if the duration of work per day is less than 30 minutes). (Standard of Japan Respirator Manufacturers Association), *(Removable concentration levels recommended by the Japan Society for Occupational Health are applied to the scope limit. For toxic gases without the predefined permissible concentration levels, TLV-TWA levels recommended by ACGIH are applied.)*

CAUTION

Do NOT use the respirator in the environment with high temperature where the temperature on respirator body becomes high or with low temperature where water droplets contained in exhaled air freeze. Distortion of parts or freezing may make the exhalation valve etc. malfunction, resulting in leakage of toxic substances into the respirator.
- Make sure that facepiece is well fit on face. Check fitness according to "Performing fit test" (Page 3).
- Do NOT use the respirator in the following cases as sufficient fitness cannot be obtained and toxic substance may leak into the inside of facepiece.
  - Using the respirator while the wearer has beard, sideburns, and/or forehead that come inside the facepiece.
  - Using the respirator while the wearer has mustache or chin beard that interfere the operation of exhalation valve.
- Do NOT use the respirator if the wearer has a disorder in respiratory or circulatory system, or is claimed inappropriate by doctor.
- Use full-facepiece respirator in the environment with eye-stimulating gas.
- To provide protection against particulates that exist with gas, use chemical cartridge with a particulate pre-filter categorized under appropriate classification.
- When working in a confined space, be careful not to hit the respirator against wall. There is a possibility that the respirator is displaced and toxic substance leaks inside.

Selection of chemical cartridges

Use the following chemical cartridges (option). Do NOT use the chemical cartridge respirator if any of the following conditions are satisfied:

- Concentration level of oxygen is unknown or less than 18%.
- Working environment is under normal temperature, normal humidity and normal atmospheric pressure.
- In the working environment with high temperature or high heat, there is a possibility that respirator body or parts may be deformed. Tissue removing performance of the chemical cartridge decreases.
- Type of toxic gas, etc. in the environment is unknown and there exist chemical cartridges listed in the table of "Selection of chemical cartridges."
- Performance of chemical cartridge respirator varies depending on the type of chemical cartridges. Make sure to read the user instruction of the chemical cartridge prior to each use.
- When direct-connection type, compact chemical cartridges are used, the concentration level in the working environment is below 0.1%.
- When half-facepiece chemical cartridge respirator is used, the average concentration level of the toxic gas is below 10 times of the exposure limit. (It is below 30 times of the exposure limit if the duration of work per day is less than 30 minutes). (Standard of Japan Respirator Manufacturers Association), *(Removable concentration levels recommended by the Japan Society for Occupational Health are applied to the scope limit. For toxic gases without the predefined permissible concentration levels, TLV-TWA levels recommended by ACGIH are applied.)*

Transliterated in November, 2011. Content is described in this User Instruction may differ from the requirements/specifications exercised outside Japan. In such case, make sure to follow local laws and regulations.
Service life of chemical cartridges  

When using a chemical cartridge with pre-installed particulate pre-filter, replace the chemical cartridge with a new one when either toxic-removing performance or particulate capturing performance reaches predetermined replacement schedule.

- Estimation of service life by breakthrough time curve
  Chemical cartridge cannot remove toxic gas at all if used beyond service life. It is important to understand service life of the chemical cartridge. Service life of chemical cartridge varies depending on the gas concentration level in the environment. Breakthrough time curve, shown in the user instruction of chemical cartridge, represents the relationship between the gas concentration level in the environment and estimated service life. Replace the chemical cartridge with a new one before total time spent reaches the estimated service life. If the chemical cartridge is repeatedly used, and used for a short period of time in each occasion and the gas concentration level in the environment remains constant, record the time spent in the "Record of used time" column on the user instruction of the chemical cartridge and replace the chemical cartridge with a new one before the total time spent reaches to the estimated service life.

- When using a chemical cartridge with particulate pre-filter installed
  Replace the particulate pre-filter with a new one when inhalation resistance increases (i.e. when wearer feels difficulty in breathing), even if the total used time of the chemical cartridge is within estimated service life. When using a chemical cartridge with a built-in particulate pre-filter, replace the chemical cartridge with a new one.

*Refer to user instruction of chemical cartridge for its estimated service life.

⚠️ DANGER ⚠️

- Chemical cartridge cannot be used in working environment which is substantially away from normal temperature, normal humidity or normal atmospheric pressure, as its expected performance may decrease significantly. Call Koken or local distributor when identifying service life of a chemical cartridge that is to be used under special conditions or special toxic gas environment, etc.

(Service life of organic vapor cartridge shortens if used in working environment with high temperature or high humidity.)

⚠️ WARNING ⚠️

- For replacement schedule and applications of chemical cartridges, read user instruction attached to the chemical cartridge.
- Estimation of service life by using the breakthrough time curve is for reference purpose only. Service life also varies depending on the volume of air breathed, humidity and temperature, etc. Replace chemical cartridge with a new one well in advance for safety. (Call Koken or local distributor if estimation of service life is unknown).
- Breakthrough time curve shown on user instruction of chemical cartridge has been made based on test gases specified by Japanese national assay standard and JIS. Even with the same chemical cartridge, estimated service life varies, depending on the type of gas. (Chemical cartridge, used against such gas with estimated service life remarkably shorter than that of the test gas as methanol and carbon bifluoride, cannot be re-used.)
- Chemical cartridge loses all toxic-removing performance if used beyond estimated service life. Do NOT use chemical cartridge beyond predetermined replacement schedule.
- Even if it is within estimated service life, if the wearer notices gas smell, gas stimulation and/or gas taste, immediately escape to safe area with clean air and replace the chemical cartridge with a new one.
- Smell cannot be used as a test for replacement of chemical cartridge as it can get paralyzed.
- If the wearer feels physical abnormality while using chemical cartridge respirator, immediately escape to safe area with clean air and see doctor.
- Prior to installing a chemical cartridge onto a chemical cartridge respirator, check if there is no distortion on the chemical cartridge or particulate pre-filter. Damage such as scar or deterioration on rubber gasket or threads inside cartridge holder.
- When re-using a chemical cartridge, store it in dry environment without toxic substances. Prior to use, make sure that there is sufficient residual service life and there is no damage such as distortion or scar.
- Residual service life of organic vapor cartridge, if used more than half of its estimated service life and stored for 6 days or more, may become remarkably short. Replace the chemical cartridge well in advance under this condition.

How to use

Inspect chemical cartridge respirator before each use following "Inspection procedure" (Page 4).
Make sure to use genuine parts supplied by Koken. (Refer to Page 4)
Perform installation and removal of chemical cartridge in safe place.

1. Installation of chemical cartridge

➊ Check if rubber gasket is installed all the way inside cartridge holder without misalignment and/or twist.
➋ Open bag and take out chemical cartridge and user instruction. (Read the user instruction carefully and understand the contents).
➌ Align the chemical cartridge with the cartridge holder. Turn the chemical cartridge clockwise, along with the groove of the cartridge holder, and tighten it firmly.
➍ If the threads on the chemical cartridge is caught in the groove of the cartridge holder or the chemical cartridge is not stable, remove the chemical cartridge and re-install it.

⚠️ DANGER ⚠️

- Shelf life of chemical cartridge is 2 years from the date of manufacturing. Do NOT use the chemical cartridge stored for more than 2 years from the date of manufacturing.

⚠️ CAUTION ⚠️

- Do NOT open bag until just before use if chemical cartridge is new. If opened, toxic-removing performance may decrease as chemical cartridge absorbs humidity, etc.
- Before installing a chemical cartridge onto respirator, check if there is no distortion on chemical cartridge or particulate pre-filter or damages, such as scar or deterioration, on rubber gasket or thread inside cartridge holder.

2. Fitting instructions

Wear or remove respirator in safe place without toxic substances, etc.

- Place the plastic exhalation hose on the crown of head so that it stabilizes on head.
- Hold buckles (hook and D-ring) and pull them evenly so that respirator approaches to face to cover mouth and nose.
- Fasten buckle located behind neck by fitting hook in D-ring.
- Following <Adjustment of headband length>, adjust length of headband. Place facepiece over bridge of nose first, check if it completely fits on face and place it over chin.
- Adjust the respirator position on face for stable position by aligning it left and right, up and down.

![Diagram of respirator fitting](image)

- Perform fit test after wearer finishes wearing the respirator.
- To remove the respirator, loosen the buckle.

**WARNING**

- Do NOT wear respirator on towel applied over face.
  Toxic substances may leak into facepiece.
- If length of headband is not fit to the head, make adjustment following <Adjustment of headband length>.
- When wearing respirator, make sure that length of headband on the right and left is even.
  If the headband is over-extended, or the length of one side of the headband is much longer than the other, it may get caught into machines, etc.
- wearer with allergic tendency and/or fragile skin may suffer from rough skin surface, eczema, etc. by using respirator. And the similar symptom may occur on the face/care prints, such as sweat or particulates, attached on the surface of the facepiece. In such cases, stop using the respirator and consult with doctor.
- In case respirator cannot be worn correctly, such as dislocation of the respirator while working, move to safe place and wear the respirator properly again.
- Do NOT apply vibration or excessive force onto chemical cartridge.
  It may result in decrease in toxic-removing performance and/or damage on chemical cartridge.

Adjustment of headband length

- Adjust the length of headband so that there is no opening created between facepiece and face when respirator is worn. Make sure that there is no excessive oppression on face.

- Make sure that the headband is evenly tightened.
  1. To tighten, pull the ends of the headband on both the hook side and D-ring side.
  2. To loosen, release the tension of the headband by lifting one of two tabs and pull the ends of the headband to the directions of the arrows as shown on the illustration on the right.

**WARNING**

- Make sure that the headband is well elastic and not over-extended.
- If the headband is over-tightened, feeling of fitness may worsen, and the wearer may experience a feeling of discomfort after working for a long time.
- Perform fit test after adjustment of headband length is completed.

3. Performing fit test

Perform fit test in safe place without toxic substances, etc.

- Wear respirator, completely fit the fit checker up and inhale.
- Good fit is obtained if there is no leakage of air and the facepiece is pressed against wearer's face.
- If the wearer feels leakage of air, inspect wearing conditions and/or installation conditions of various parts, and repeat ① to ② until good fit is obtained.
- If good fit is obtained, make sure to press down the fit checker before entering into workplace.

**DANGER**

- Make sure to perform fit test prior to each use.
- If wearer feels leakage of air when performing fit test, do NOT use the respirator.
  If respirator is not worn correctly, there is a possibility that toxic substance may leak through the opening created between facepiece and face and be inhaled.
- Do NOT handle fit checker forcibly.
  Fit test may not be performed correctly due to damage on fit checker.

Replacement of inhalation valve / exhalation valve

Replace inhalation/exhalation valve in safe place without toxic substances, etc.
Make sure to use genuine parts supplied by Koken.

**Replacement schedule**

Replace when crack, distortion, damage such as scar, dust, and/or sticky surface due to deterioration of rubber is observed.

**Replacement of inhalation valve**

1. Remove worn inhalation valve from retainer pin of the valve seat located inside of the respirator.
2. Place a new valve in its position. Widen hole of the valve with fingers and install it on retainer pin firmly.

**Replacement of exhalation valve**

1. Pull out the hook rail of the bonnet enclosure (plastic facepiece) from the facepiece. Hold the bonnet enclosure and fold the facepiece to the outside.
2. Take out the exhalation valve from exhalation valve seat with finger.
3. To install a new exhalation valve, insert the valve stem into the center hole of the exhalation valve seat. When the top of the stem comes out from the inner side of the valve seat, grasp the projected point of the valve stem and pull it up until the stem flanges appears outside of the center hole of the exhalation valve seat.
4. Make sure that the exhalation valve is installed correctly without eversion, etc.
5. Install back the facepiece to the original position, and insert the hook rail of the bonnet enclosure into the hole positioned at the upper portion of the facepiece.

**WARNING**

- Make sure not to make a scar on exhalation valve seat.
  There is a possibility that toxic gas, etc. may leak into facepiece.

Replacement of headband

Replace headband with a new one when:
1. No cracks, no distortions, no damages such as holes, no sticky surface due to deterioration of rubber and no removable dirt are found.
2. Headband is not fully elastic and cannot be repositioned.
3. Headband is not securely tightened or they cannot be removed easily.

Replacement procedure

1. Remove the headband strap through the strap slit of headband holders located on the right and left sides of the respirator.
2. To install a new headband, insert the straps of the new headband through the slit of the headband holder from the facepiece skin toward the cartilage holder.

Inspection procedure

Performs inspection in test place without toxic substances, etc.

<table>
<thead>
<tr>
<th>Check points</th>
<th>Criteria</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facepiece</td>
<td>No cracks, no distortions, no damages such as holes, no sticky surface due to deterioration of rubber and no removable dirt are found.</td>
<td>Replace the respirator with a new one. Check the respirator if removable dirt and foreign objects are found.</td>
</tr>
<tr>
<td>Headband</td>
<td>No cracks, no distortions, no damages such as holes, no sticky surface due to deterioration of rubber are found.</td>
<td>Replace the headband with a new one. Install missing parts.</td>
</tr>
<tr>
<td>Chemical cartridges (carbon)</td>
<td>No cracks, no distortions and no missing parts are found. Plastic side valve is securely tightened and can be removed easily.</td>
<td>Replace the chemical cartridges with a new one.</td>
</tr>
</tbody>
</table>

Maintenance and storage

Make sure to perform maintenance after each use and keep the respirator clean.

1. Cleaning after use.

Perform cleaning in safe place without toxic substances, etc.

- Do NOT use other than genuine parts supplied by Koken when replacing.

Respirator

- Make sure to perform cleaning after removing a chemical cartridge from respirator.

- Gently wipe dust and sweat with a dry or slightly wet cloth. Be sure that no scratches is made on the respirator.
- Wash chemical cartridge with water. Be careful not to scratch the respirator, especially the exhalation valve seat and exhalation valve. Remove detergent by rinsing completely.
- Wipe residue after water cleaning and dry it out of direct sunlight.
- Disinfectate facial contact area and inside of the facepiece by wiping it with 70% ethanol solution.

- Chemical cartridge (option)

Wipe surface of the chemical cartridge with a dry cloth.

2. Storage

- Store for place for storage

After cleaning, store respirator in dry place. Avoid an environment with high level of particulate contamination or place with heavy temperature fluctuations and/or high humidity for storage. Do NOT put the cleaned respirators, as the facepiece, headband, etc. could be cracked and/or distorted. Avoid direct sunlight for storage. Prepare exclusive storage place so that storage condition can be checked at ease.

**WARNING**

- Do NOT remove the respirator. Do NOT disassemble the parts that are not replaceable.

- Do NOT use parts other than genuine parts supplied by Koken when replacing.

- **CAUTION**

- Do NOT keep unnecessary force onto the chemical cartridge, such as tapping it hard to remove particulates captured on filtering material.
- Blow away particulates attached on surface with compressed air generated with the use of compressor or sucking them with vacuum cleaner, etc., if chemical cartridge with pre-installed particulate pre-filter is used.

**CAUTION**

- Always keep the face-contacting area of the facepiece cushion clean. Presence of dirt on the facepiece cushion could cause with roughness or skin irritation.
- If alcohol is used for disinfection, dry it completely, or rinse it with running water and completely wipe the water out.
- Do NOT use organic solvents such as thinner when cleaning.

**CAUTION**

- Chemical cartridge (option)

- **WARNING**

- Do NOT conduct the following, as they could cause distortion and/or damage on chemical cartridge, and decrease in toxic-removing performance, etc.
  - Cleaning chemical cartridge with a wet cloth, or washing it with water.
  - Applying unnecessary force onto the chemical cartridge, such as tapping it hard to remove particulates captured on filtering material.
  - Blowing particulates attached on surface with compressed air generated with the use of compressor or sucking them with vacuum cleaner, etc., if chemical cartridge with pre-installed particulate pre-filter is used.

- **CAUTION**

<table>
<thead>
<tr>
<th><strong>Specifications</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
<tr>
<td>- In case the bag is empty</td>
</tr>
<tr>
<td>- In case of re-loading</td>
</tr>
<tr>
<td><strong>Chemical cartridges (carbon)</strong></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
</tr>
</tbody>
</table>

The values above represent the performance level without chemical cartridge, optional parts, etc.

Replacement parts

- Call Koken or local distributor for the following replacement parts.
  - Inflation valve Inflation valve (Oval shape, type-O) (10pcs per bag)
  - Exhalation valve Exhalation valves type-7K (6pcs per bag)
  - Rubber gasket Rubber gasket type 111-1 (10pcs per bag)

Optional parts (sold separately)

- Chipper for spray painting
  - Far KGC-10 (excluding MC and L) - Paint spray chipper type P (30pcs per bag)
- Pre-filter to be installed on the cartridge
  - Far KGC-10 - Mighty micron pre-filter type KGC-10 (1pc per bag)
  - Far KGC-10L - Mighty micron pre-filter type KGC-10L (1pc per bag)
  - Far KGC-10K - Mighty micron pre-filter type KGC-10K (1pc per bag)

- Pre-filter / chipper reamer for KGC-10 (1pc per bag)
- Water-absorbing sponge to absorb water build up inside the facepiece.
- Sponge type A (10pcs per bag)
- Sponge type C (50pcs per bag)
- Cover to prevent water drop from falling
- Visor meshboard (replace 1pc of Sponge type C) (20pcs per bag)
- Sponge type C (100pcs per bag)

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