



**GLOBE** AIRMOTORS B.V.

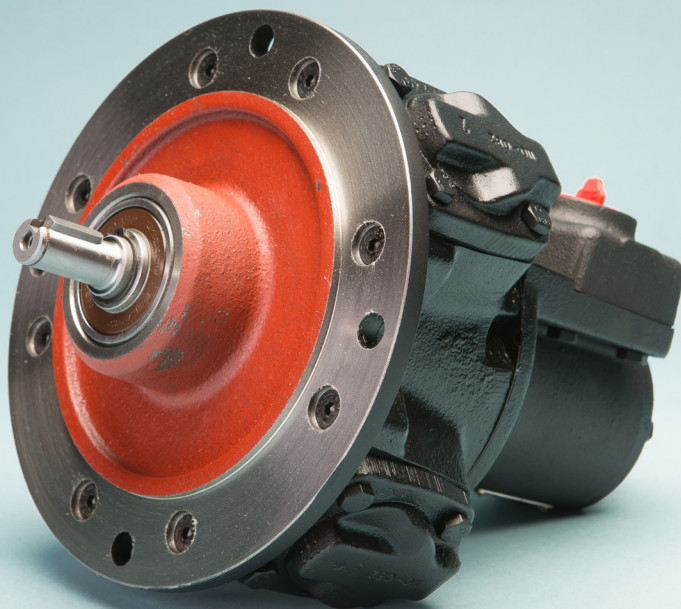
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Manual


## **GLOBE RM210 Piston Air Motor**

**With optional auxiliaries**

ATEX certified



CE UK CA  II 2G Ex h IIC T5 Gb  
II 2D Ex h IIIC T100°C Db

CE UK CA  II 2G Ex h IIC T4 Gb X  
II 2D Ex h IIIC T135°C Db X



**globe-airmotors.com**

# APPROVALS




## ATEX CERTIFICATION

The GLOBE piston air motors and pneumatic brakes are ATEX certified according to the following (harmonized) standards:

EN-ISO80079-36:2016

EN-ISO80079-37:2016

The motors are marked with the following EX marking:

   **II 2G Ex h IIC T5 Gb**  
**II 2D Ex h IIIC T100°C Db**  
 $-20^{\circ} \leq T_a \leq +60^{\circ}C$

The pneumatic brakes are marked with the following EX marking:

   **II 2G Ex h IIC T4 Gb X**  
**II 2D Ex h IIIC T135°C Db X**  
 $-10^{\circ} \leq T_a \leq +60^{\circ}C$

In which:

II	Equipment group II for use above ground
2G	Category 2G for use in Zone 1 or 2
2D	Category 2D for use in Zone 21 or 22
Ex h	Protection by constructional safety "c" Gas
IIC	group IIC
IIIC	Dust group IIIC
T4	Temperature class T4
T5	Temperature class T5
T100°C	Maximum surface temperature 100°C
T135°C	Maximum surface temperature 135°C
Gb	Equipment protection level Gb
Db	Equipment protection level Db
Ta	Ambient temperature range

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## Congratulations with your GLOBE air motor!

This product is made with quality materials to meet the highest standards. This manual contains safety instructions for the use of your GLOBE air motor. Please read and follow all recommended instructions for a trouble-free use.

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### Warranty

The GLOBE Piston Air Motor and the GLOBE Pneumatic Brakes are designed to operate without any problems. This is only guaranteed if the regulations with regards to installation, operation, maintenance and repair are observed. Problems occurring during the guarantee period are corrected in accordance to GLOBE Airmotors BV guarantee conditions. All results of unauthorised opening and repairs carried out during the guarantee period may invalidate the warranty.

You can order your service kit at [orders@globe-benelux.nl](mailto:orders@globe-benelux.nl). Please ensure that maintenance is carried out by certified staff.

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### Safety first

Safety is important for you and other people. For the protection of you and others, we have several warnings in this manual and on the product. Please always read carefully and follow the instructions.



#### **Hazard**

Possible consequences: dead or severe injuries



**Wear hearing protection**



#### **Hazard Situation**

Possible consequences: slight or mild injuries



**Wear eye protection**



#### **Dangerous situation**

Possible consequence: damage to the drive of the environment



**Important instructions on protection against explosion**

## Checklist to comply to ATEX | Motor & Valve

- » Read the air motor label to verify that the air motor is designed for use in hazardous applications:
  - Hazardous zone
  - Hazardous category
  - Equipment group
  - Temperature class
  - Maximum surface temperatures
- » Check the air motor before installation and operation to see if it's not damaged.
- » Any products that are driven by the air motor must meet appropriate ATEX approval as well to be used in a hazardous area.
- » The air motor should be connected to the earth with a maximum earth resistance of 1 Mohm. The motor can be earthed by connecting the motor to a base plate/gearbox etc.
- » The ambient temperature range of the motor (-20°C to +60°C) should be observed at all times.
- » When mounting the motor on a construction or when something is mounted on the shaft of the air motor, make sure that the alignment is straight to prevent too much force on the shaft.
- » An air filter should be placed in the air line with at least 64 micron near the air motor.
- » Clean surface of air motor unit thoroughly of all dustproofing products, contaminants and other impurities. Do this outside the hazardous area or clean only with a damp cloth.
- » A lubricator must be placed inside the main air line near the motor. The lubricator unit should have a bowl with enough oil for operation and should allow the user to control the amount of oil drop per minute going to the motor.
- » Check air line oil every time before starting. Air motor should be supplied with oil of a viscosity of 32. This type of oil is flammable at a temperature of 218°C.
- » Air supply to the motor should always be taken from non-hazardous area.
- » In case the motor is exposed to high vibrations during operation and when not in operation, please contact GLOBE. High vibrations might lead to increased inspection interval of the bearings.
- » It's important that no dust or debris can accumulate at the output shaft. This may damage the shaft seal. The GLOBE Piston Motor is only allowed in horizontal position or shaft pointing vertical downwards. It is not allowed for the shaft to point in any angle upwards.



### WARNING: POTENTIAL ELECTROSTATIC CHARGING HAZARD

Before use clean only with damp cloth. Avoid electrostatic charging mechanisms stronger than manual rubbing. Do not subject the equipment to external conditions that could cause build-up of electrostatic charges.

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## Checklist to comply to ATEX | Brake

- » Check the brake before installation and operation to see if it's not damaged.
- » The brake must be mounted to a GLOBE Piston Airmotor of equivalent size (for instance: RM110 Brake on RM110 Motor) including the correct piping and control valves supplied by GLOBE.
- » Any products that are driven by the brake must meet appropriate ATEX approval as well to be used in a hazardous area.
- » The brake should be connected to the earth with a maximum earth resistance of 1 Mohm. The brake can be earthed by connecting the motor to a base plate/gearbox etc.
- » The ambient temperature range of the brake (-10°C to +60°C) should be observed at all times.
- » When mounting the brake on a construction or when something is mounted on the shaft of the brake. Make sure that the alignment is straight to prevent too much force on the shaft.
- » Air supply to the brake should always be taken from non-hazardous area.
- » In case the brake is exposed to high vibrations during operation and when not in operation, please contact GLOBE. High vibrations might lead to increased inspection interval of the bearings.
- » It's important that no dust or debris can accumulate at the output shaft. This may damage the shaft seal.
- » It is not allowed to use the brake in an explosive environment when the input side of the brake can get in contact with the explosive environment.
- » **Specific Condition of Use:** For ATEX it is important that there is no possibility for the brake to drag while the motor is running. The pilot pressure which releases the brake is pre-set in the factory and **MUST ALWAYS** be equal or higher than the motor inlet pressure. The desired working- and thus release pressure (**pressure threshold**) must be provided by the customer before delivery and is set in a special valve (GLOBE APPV3214), which is part of the pneumatic system controlling the brake.
- » Because of wear on the brake pads the holding torque can become lower. It is possible to adjust the holding torque to the required design torque with the brake adjusters. The procedure to reset the holding torque must be followed strictly. This procedure can be found in the chapter OPERATION in this manual
- » The brakes are designed to stop a load and are a service brake. To comply with ATEX the brake may not be used as a dynamic brake. It may only be used as a stopping and parking brake and it is not to be used to control the speed (dynamic braking).
- » The internal volume (except the volume in the brake piston) in the brake is vented by means of a non-return valve. Do not remove this non return valve. In the cross sectional drawings the location of this non-return valve can be found.



### WARNING: POTENTIAL ELECTROSTATIC CHARGING HAZARD

Before use clean only with damp cloth. Avoid electrostatic charging mechanisms stronger than manual rubbing. Do not subject the equipment to external conditions that could cause build-up of electrostatic charges.

# Installation

## Installation | Motor & Valve

In order to guarantee the maximum performance and service life of these motors it is essential that the following points are strictly observed and obeyed. All the information in this chapter is also valid in case a hand control valve (HCV) or remote control valve (RCV) is fitted to the motor or supplied loose.

### WARNING - Injury hazard



Ground the motor to the earth with a maximum earth resistance of 1 Mohm.



Install proper guard around the output shaft if needed.



Wear eye protection: Airflow from product may contain solid or liquid materials that can result in eye or skin damage.



Failure to follow these instructions can result in serious injury or property damage.

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**Correct installation is your responsibility!** Make sure you have the proper installation conditions.

**Note!** Damage by lack of lubrication will occur if motors are mounted shaft up or at an angle. Please consult GLOBE Airmotors BV for other mounting options.

**Note!** When first running the motor some light oil should be injected into the inlet connection to ensure adequate lubrication until the air line lubrication is established.



Do not use a hammer on the shaft or body of the motor.

## Mounting positions

The motor is normally mounted in a horizontal position with the filler / breather plug towards the top (Fig. 1). It may also be mounted with the shaft vertically downwards (Fig. 2). As supplied the motors have been run up and tested using protective oil and then drained for transit. It is vital that each motor is re-filled to the correct oil level as shown below. The RM 110 - 310 motors have a dipstick for vertical mounting (Fig. 2) and the lower mark on this dipstick provides the oil level. Oil levels are achieved on motors in the horizontal position by filling to the plugs marked 60 (RM 110-410 models) and plug 26 (fitted in housing 3 RM510-610 models). (numbers indicate parts on exploded view) The vertical oil level position for the RM410, RM510 and RM610 motors is a combined horizontal drain and vertical level plug (part number 26). To fill motors with oil remove the combined breather and oil filler plug part number 46. Ensure the breather plug is in the vertical position. It may be necessary to fit an elbow between the breather plug and the motor (see Fig. 2).

### Motor Mounting Positions

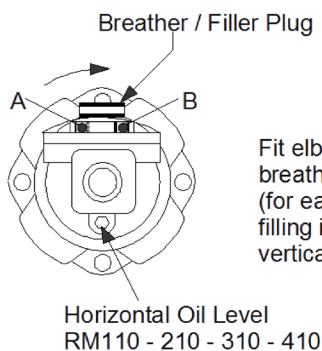


Fig. 1

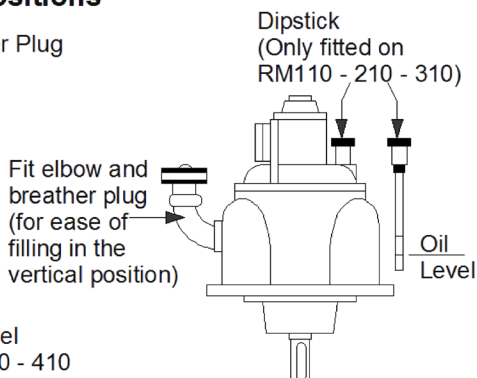


Fig. 2

## Fitting

Mount motor in operating position. Check oil level, (as seen on Fig. 1). Before connecting to the air supply blow out the air lines to remove any loose scale, swarf or abrasive dust which may be present. Remove the red plastic dust-caps and the 'O' ring seal (45). For unidirectional operation check the required direction of rotation and connect the air supply line to the appropriate port on the inlet / exhaust adaptor plate (72) leaving the other port open or pipe downwards if exposed to the atmosphere. The motor should not be allowed to race. Always operate within the catalogue speed curves.



It's important that no dust or debris can accumulate at the output shaft. This may damage the shaft seal. The GLOBE Piston Motor is only allowed in horizontal position or shaft pointing vertical downwards. It is not allowed for the shaft to point in any angle upwards.

## Mounting to construction

- » Mount the unit to the construction. Care should be taken, when fitting drive components to the shaft, that excessive force is not used. This will upset the shaft alignments which has been kept to a minimum in order to give high motor performance.
- » Use the proper sized fasteners.
- » Axial loads must be kept to a minimum.

*Maximum Working Pressure 8 bar - 120 psi*

The air supply must be clean and free from moisture. An air line filter and mist lubricator should be incorporated in the air supply line, located immediately before the motor. If the rated performance of the motor is to be obtained all valves and pipework must be of adequate size. Valves should be sited as close as possible to the motor. For short pipe runs e.g. up to 2 meters the supply line should be the same size as the motor ports and larger for longer runs.

## Air Inlet

The motor is normally supplied with inlet / exhaust adaptor plate (72). All motors are reversible.



Do not exceed the maximum radial and axial forces on the shaft.  
Use the proper size fasteners.  
Use a puller to remove pulleys, pinions and couplings.



Use a puller to remove pulleys, pinions and couplings. Check if the tension on the belt pulley matches the specifications of the manufacture. Do not exceed the maximum radial and axial forces on the shaft. If the motor shaft is connected to the part to be driven without a coupling, check that the radial offset and axial force effect will not cause problems.

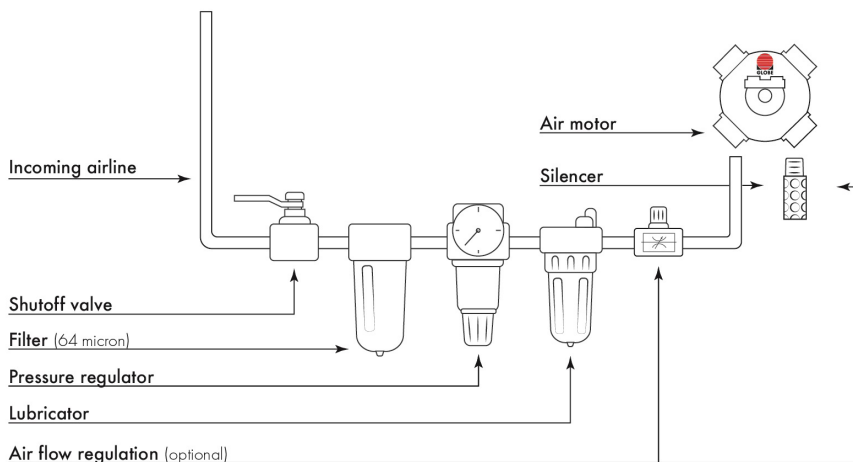


Use only belts with <100 electrical leakage resistance to prevent static electrical problems.



## Air supply

- » Air supply to the motor should always be taken from non-hazardous area.
- » Remove the plastic shipping plugs from the ports. Save the plugs for the future, during shutdown.
- » Please make sure that the temperature of the air used for air supply to the air motor don't exceed the following temperatures, -20°C to +40°C.
- » Install a filter (64 micron) to make sure the air is clean and dry and install an air pressure regulator to control motor torque and flow control for speed regulation.
- » A lubricator must be placed inside the main air line near the motor. The lubricator unit should have a bowl with enough oil for operation and should allow the user to control the amount of oil drop per minute going to the motor. Check air line oil every time before starting. Air motor should be supplied with oil of a viscosity of 32. This type of oil is flammable at a temperature of 218°C.
- » Air quality should meet ISO 8573-1:2010 class 4 for solid particles and ISO 8473-1:2010 class 3 for water.
- » For the most efficient power and control of speed, all valves and the airlines should be the same size as the air connections of the motor. If the valves, airlines and other connections have a longer distance than 2m (6 feet) of the motor we advise one size bigger.
- » Before final connection to the motor, clean the compressed air connection with low pressure air to remove any dirt inside the line before connecting to the ports of the air motor.
- » When silencers are installed, ensure that condensation cannot run back into the motor port. Mount the air motor with silencer pointed down or make extra piping on the silencer.
- » If the motor unit is not used for a longer period it is advisable to store the unit indoors remove the silencer and plug the exhaust port. See also shut down and long storage at maintenance.
- » Make sure that on all ports of the motor and/or valve an air line or silencer is mounted, appropriate to the situation.



### Air line filtration

- » Use a 64 micron air filter
- » The air line filter should be drained regularly and the element examined for signs of clogging.

### Air line lubrication

- » The air line lubricator should be replenished when needed and set to give the following required drop rate/min:

Drop rate/min		
Motor	Continuous Operation	Intermittent Operation
RM110	3-4	6-8
RM210	4-5	8-10
RM310	5-6	10-12
RM410	6-8	12-16
RM510	6-8	12-16
RM610	8-10	16-20

- » For normal ambient temperatures 0°C to 32°C. Use oil with viscosity VG32.
- » For extremes of ambient temperature consult the manufactures.

### Recommended Lubricants

For normal abient temperature (0-32 deg. C.)

Brand	Crankcase	Air line
Shell	TELLUS S2 VX100	TELLUS S2 A32
B.P.	ENERGOLHLP-HM100	ENERGOL HLP-HM32
Esso	NUTO H.100	-
Regent	REGAL PE.RO	-
Castrol	HYSPIN AWH-M100	HYSPIN AWS 32
Mobil	-	ALMO 524
Texaco	-	RANDO 32

For extremes of ambient temperatures consult GLOBE

## Installation | Brake

In order to guarantee the maximum performance and service life of these motors it is essential that the following points are strictly observed and obeyed.

### WARNING - Injury hazard



Ground the brake to the earth with a maximum earth resistance of 1 Mohm.



Install proper guard around the output shaft if needed.



Wear eye protection: Airflow from product may contain solid or liquid materials that can result in eye or skin damage.



Failure to follow these instructions can result in serious injury or property damage.



It's important that no dust or debris can accumulate at the output shaft. This may damage the shaft seal. The GLOBE Piston Motor is only allowed in horizontal position or shaft pointing vertical downwards. It is not allowed for the shaft to point in any angle upwards.

**Correct installation is your responsibility!** Make sure you have the proper installation conditions.

## Mounting to construction

- » Mount the brake to the construction. Care should be taken, when fitting drive components to the shaft, that excessive force is not used. This will upset the shaft alignments which has been kept to a minimum in order to give high motor performance.
- » The motor and brake assembly can be divided in different operational setups. These setups can be found in the chapter **OPERATION | Brake** in this manual.
- » The holding torque of the brake is pre-set by the factory by setting the springs to the correct pre-tension. The procedure to adjust the holding torque must be followed strictly. This procedure can be found in the chapter **OPERATION | Brake** in this manual
- » Make sure that the air is dry and filtered with an air filter of 64 micron or better.
- » The brake must be mounted to a GLOBE Piston Air Motor of equivalent size (for instance: RM 110 Brake on RM 110 Motor) including the correct piping and control valves supplied by GLOBE.



Do not use a hammer on the shaft or body of the brake.



Do not exceed the maximum radial and axial forces on the shaft.

Use the proper size fasteners.

Use a puller to remove pulleys, pinions and couplings.

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# Operation

## Operation | Motor & Valve

**Correct operation is your responsibility!** Make sure you have the proper operation conditions.

### WARNING - Injury hazard



Wear eye protection: Air stream from product may contain solid or liquid materials that can result in eye or skin damage.



Wear hearing protection: The noise level from the air motor may exceed 85 db (A)



Do not use combustible gases to drive this air motor



Failure to follow these instructions can result in serious injury or property damage.



#### WARNING: POTENTIAL ELECTROSTATIC CHARGING HAZARD

Before use clean only with damp cloth. Avoid electrostatic charging mechanisms stronger than manual rubbing. Do not subject the equipment to external conditions that could cause build-up of electrostatic charges.

- » Check all connections before starting the air motor. It is your responsibility to operate this product at recommended speeds, loads and ambient temperatures (-20°C to +60°C).
- » Check if the air line filtration and air line lubrication is OK. The air line filter should be drained and/or cleaned regularly and the filter element examined for signs of clogging.
- » The maximum working pressure is 8 bar (120 PSI). In case of a brake, see also chapter **OPERATION | Brake** in this manual.
- » Clean surface of air motor unit thoroughly of all dustproofing products, contaminants and other impurities. Clean only with damp cloth. Do not run the air motor at high speeds with no load. This will result in excessive internal heat that may cause motor damage.
- » The starting torque is less than the running torque. The starting torque will vary depending on the position of the pistons in relation to the air intake port when the motor is being started.
- » During operation be aware if unfamiliar sounds or vibrations occur. Stop the unit immediately and investigate the source.
- » In case that the motor is exposed to high vibrations, during operation and when not in operation, please contact GLOBE. High vibrations might lead to increased inspection interval of the bearings.
- » The motor may run continuously at speeds up to the rated running conditions shown in our performance data sheets. In these sheets the output power/torque is based on running conditions with the actual pressure measured at the motor port. Check the allowable speeds below.
- » Advisable is to use an air dryer with set point of 20 degrees Celsius below lowest ambient temperature.

Allowable speeds for motors (RPM)

	RM110	RM210	RM310	RM410	RM510	RM610
<b>Continuous</b>	1950	1200	1800	1350	900	1100
<b>Intermittent</b>	0-2400	0-2400	0-2400	0-2000	0-2000	0-2000



Do not run the air motor at high speeds with no load.  
This will result in excessive internal heat that may cause motor damage.

- » Axial loads must be kept to a minimum.
- » Max. radial load midway along shaft as shown in graph below:
- » Check intake filter and silencer after the first 100 hours of operation.
- » Clean filters and determine how frequently filters should be checked during future operation.

### Allowable Radial Loads

	RM110	RM210	RM310	RM410	RM510	RM610
<b>N</b>	<b>445</b>	<b>890</b>	<b>1330</b>	<b>1330</b>	<b>6500</b>	<b>6500</b>
<b>LBF</b>	<b>100</b>	<b>200</b>	<b>300</b>	<b>300</b>	<b>1461</b>	<b>1461</b>

### Air line filtration

- » Use a 64 micron air filter
- » The air line filter should be drained regularly and the element examined for signs of clogging.
- » Air quality should meet ISO 8573-1:2010 class 4 for solid particles and ISO 8473-1:2010 class 3 for water.

### Air line lubrication

- » The air line lubricator should be replenished when needed and set to give the following required drop rate/min:

### Drop rate/min

<b>Motor</b>	<b>Continuous Operation</b>	<b>Intermittent Operation</b>
<b>RM110</b>	3-4	6-8
<b>RM210</b>	4-5	8-10
<b>RM310</b>	5-6	10-12
<b>RM410</b>	6-8	12-16
<b>RM510</b>	6-8	12-16
<b>RM610</b>	8-10	16-20

- » For normal ambient temperatures 0°C to 32°C. Use oil with viscosity VG32.
- » For extremes of ambient temperature consult the manufactures.



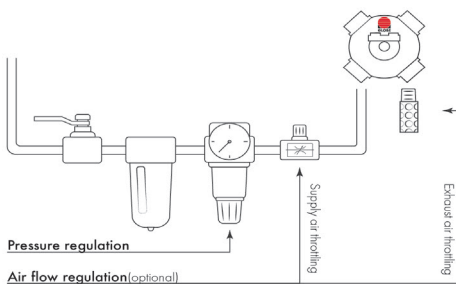
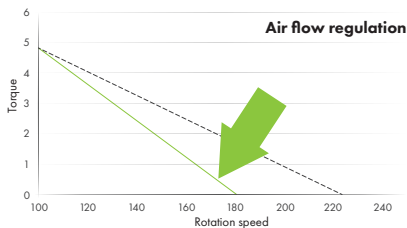
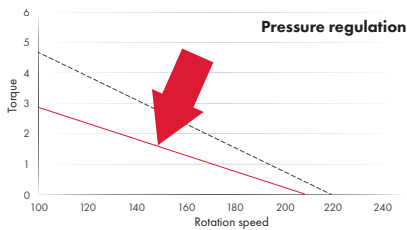
The oil level in the motor casing must be maintained. The frequency of replenishment will depend on the application and usage. The motor case should be drained and refilled after 25 hours of initial running and every 200 hours thereafter or sooner if found necessary e.g. (contamination of oil by water from the air line.)

# Performance regulation

With the regulation of the inlet pressure and the flow rate, the performance can be adapted to the individual application. This is done by pressure or air flow regulation or a combination of both. The compressibility of the air generates a dampening effect in all ranges. This allows that the motor also can be started, while it is loaded. With a load reduction, the motor reacts immediately with an increase in speed.

## 1. Pressure regulation

With pressure regulation the output power can be adjusted. When the supply pressure is decreased, the torque and power is reduced proportionally and the torque curve becomes flatter. The forces inside the motor are also reduced, which increases its durability.



## 2. Air flow regulation

Air flow regulation is the best way to reduce the output speed without the loss of torque. The air flow can be regulated with a throttling device. By throttling, the starting torque remains essentially the same but the torque curve is steeper. This means that under the same load fluctuation, the speed fluctuation is smaller in comparison with the pressure regulation. There is a distinction made between the following installation positions:

### Exhaust air throttling

The exhaust air throttling is the less optimal way of throttling relating to the durability and the air consumption. The advantage of this method is that the rotational speed can be regulated constantly in the lower rotation range. In the border area of the rotation range, a combination of supply- and exhaust air throttling should be used. The exhaust throttling should be used for controlling low speed of rotation.

### Supply air throttling

The supply air throttling generates better results in relation to the durability, the running smoothness and the air consumption.

**For optimal power and speed control, we advise to use the combination of pressure and air flow regulation.**



# Operational principle RM210 Hand Control Valve

This range of bolt on valves offers very sensitive speed and directional control. One frictional matched spool and sleeve assembly is offered with two alternative means of actuation.

## Configuration

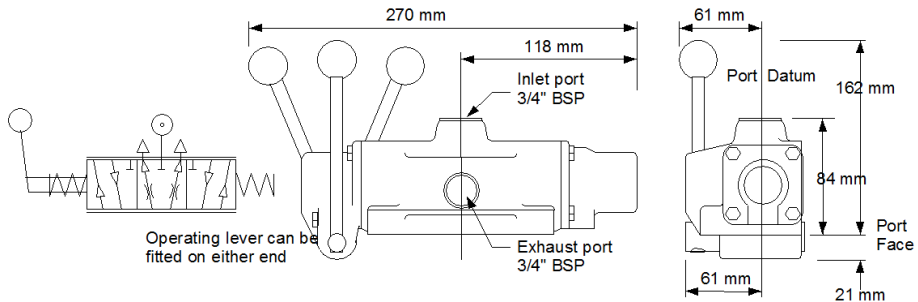
As standard these valves can be supplied with either **EQUAL POWER OR BIASED POWER** spools, the latter is suitable for hoisting applications (normal power for lifting - reduced power for lowering).

The direction of reduced power must be stated when ordering **CW** or **CCW**, when viewed on the output shaft of the motor.

**Hand Controlled (HCV)** - The control valve spool is operated directly by a lever mechanism. Speed increase is obtained as the lever is moved in either direction from the centre (neutral) position.

**Pressure Drop** - Minimal pressure drop will be experienced through the valves, having the effect of maintaining the output torque whilst reducing the motor output speed by approximately 10-15% at 6 bar (90 psi) at maximum power. The starting torque remains unaffected.

## HAND CONTROL VALVE



# Operational principle RM210 Remote Control Valve

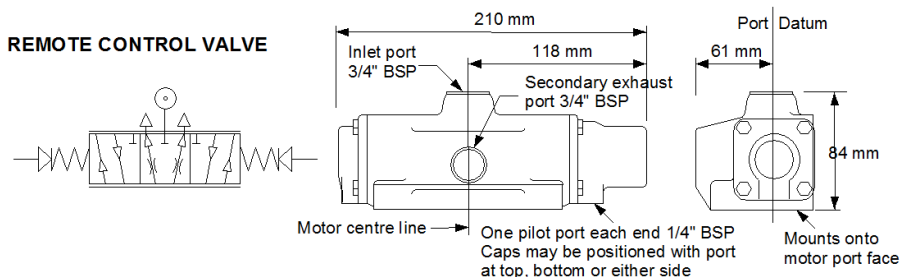
This range of bolt on valves offers very sensitive speed and directional control. One frictional matched spool and sleeve assembly is offered with two alternative means of actuation.

## Configuration

As standard these valves can be supplied with either **EQUAL POWER OR BIASED POWER** spools, the latter is suitable for hoisting applications (normal power for lifting - reduced power for lowering). The direction of reduced power must be stated when ordering **CW** or **CCW**, when viewed on the output shaft of the motor.

**Remotely Controlled (RCV)** - This option is usually controlled from a remote position by one of the PC series or LC2 remote controllers. A variable air pilot signal is applied to either end of the valve spool, depending on the required direction of motor rotation. The pilot pressure range is between 1.4 bar (20 psi) and 4.8 bar (70 psi), increased pilot pressure gives increased speed. The valve is spring centred to neutral.

**Pressure Drop** - Minimal pressure drop will be experienced through the valves, having the effect of maintaining the output torque whilst reducing the motor output speed by approximately 10-15% at 6 bar (90 psi) at maximum power. The starting torque remains unaffected.



## Operation | Brake

**Correct operation is your responsibility!** Make sure you have the proper operation conditions.

### WARNING - Injury hazard



Wear eye protection: Air stream from product may contain solid or liquid materials that can result in eye or skin damage.



Wear hearing protection: The noise level from the air motor may exceed 85 db (A)



Do not use combustible gases to drive this brake



Failure to follow these instructions can result in serious (eye) injury or property damage.



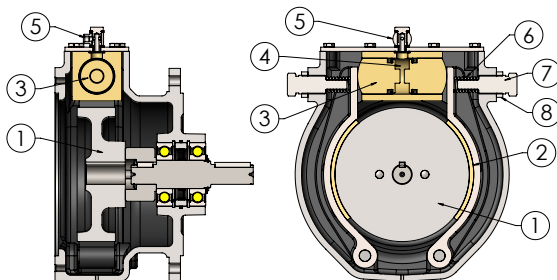
**Specific Condition of Use:** For ATEX it is important that there is no possibility for the brake to drag while the motor is running. This will cause friction which will heat up the brake. The pilot pressure which releases the brake is pre-set in the factory and **MUST ALWAYS** be equal or higher than the motor inlet pressure. This brake release pressure setting, thus the maximum motor inlet pressure, is equivalent to the brake holding torque for the corresponding piston motor. The desired working- and thus release pressure (**pressure threshold**) must be provided by the customer before delivery and is set in a special valve (GLOBE APPV3214), which is part of the pneumatic system controlling the brake. **It is very important that the given operating pressure by the customer/user is accurate!**

## Operating Principle Brake

The brake has a corresponding mounting interface, thus can be directly mounted on the motor. This brake consists of two spring applied brake shoes (2) pressed against a central hub (1), which is mounted on the output shaft of the motor. These shoes are released by applying air pressure to the cylinder / piston assembly (3/4). The brake torque can be varied by means of two spring adjusters (7), but when used in an ATEX application is pre-set by GLOBE to a maximum torque which belongs to the desired operating pressure of the motor. At this pressure the brake will be fully released. Any unauthorized adjustment will make ATEX invalid. Changing or adjusting the pneumatic system, including the valves, which controls the brake will also make ATEX invalid.

The brake must be mounted to a GLOBE Piston motor of equivalent size (for instance: RM 110 Brake on RM 110 Motor), including the correct piping and control valves which are supplied by GLOBE. The end-user has to inform GLOBE prior to the delivery about the (max.) operating pressure of the motor. To comply to ATEX this pressure is set by GLOBE to be required to release the brake. This is done by adjusting the GLOBE APPV3214 valve which is integrated in the pneumatic control system. Whenever this system's pressure drops to a lower amount than 20% below the set release pressure, the valve closes and the brake will be blocked. This system prevents dragging of the brake shoes while operating by (unnoticed) pressure drops or incorrect handling.

**Specific Condition of Use:** For ATEX it is important that there is no possibility for the brake to drag while the motor is running. This will cause friction which will heat up the brake. The pilot pressure which releases the brake is pre-set in the factory and **MUST ALWAYS** be equal or higher than the motor inlet pressure. This brake release pressure setting, thus the maximum motor inlet pressure, is equivalent to the required brake holding torque for the corresponding piston motor. The desired working- and thus release pressure (**pressure threshold**) must be provided by the customer before delivery and is set in a special valve (GLOBE APPV3214), which is part of the pneumatic system controlling the brake.



- |   |   |   |   |
|---|---|---|---|
| 1 | Brake wheel                                       | 5 | Pilot pressure connection                       |
| 2 | Brake shoe (2x)                                   | 6 | Brake shoe spring (2x);<br>brake force actuator |
| 3 | Brake release piston (2x);<br>brake force release | 7 | Brake force adjuster (2x)                       |
| 4 | Brake release cylinder; pressure chamber          | 8 | Brake force adjuster locknut (2x)               |

Operation

- » Before use always remove any sediments on the surface of the brake before starting-up.
- » During operation be aware if unfamiliar sounds or vibrations occur. Stop the unit immediately and investigate the source.
- » Air quality should meet ISO 8573-1:2010 class 4 for solid particles and ISO 8473-1:2010 class 3 for water.
- » Bear in mind the maximum allowable torque of the brake. Do not exceed as this may result slipping and damage of the brake.

Allowable Radial Loads

	RM110	RM210	RM310	RM410	RM510	RM610
N	445	890	1330	1330	6500	6500
LBF	100	200	300	300	1461	1461

Allowable speeds for brakes (RPM)

	RM110	RM210	RM310	RM410	RM510	RM610
Continious	1950	1200	1800	1350	900	1100
Intermittent	0-2400	0-2400	0-2400	0-2000	0-2000	0-2000



To avoid slipping of the brake, two control valves are fitted on the brake which may not be removed. Prior to the delivery the holding torque brake will be set by the manufacturer. The customer/end-user has to inform GLOBE prior to the delivery about the running pressure on which the motor will run. The brake will be set to its maximum holding torque which is possible at this operating pressure. The two control valves work in such way that the brake will always have the highest release pressure after the motor is under pressure.

## Connection Setups:

The motor and brake assembly can be divided in three different operational setups (1, 2 and 3), and each setup can be connected to the air line in two different ways (A and B). These setups are:

- » Setup 1A: A direct connection between the motor and the air line, while the brake control system being operated by the motor inlet pressure
- » Setup 1B: A direct connection between the motor and the air line, while the brake control system being operated by an external pressure source
- » Setup 2A: Motor operated by a Hand Control Valve (HCV), while the brake control system being operated by the motor inlet pressure
- » Setup 2B: Motor operated by a Hand Control Valve (HCV), while the brake control system being operated by an external pressure source
- » Setup 3A: Motor operated by a Remote Control Valve (RCV), while the brake control system being operated by the motor inlet pressure. The RCV can be controlled by another valve via pilot ports
- » Setup 3B: Motor operated by a Remote Control Valve (RCV), while the brake control system being operated by an external pressure source. The RCV can be controlled by another valve via pilot ports

When the brake control system is connected to the motor inlet (Setup ...A) the motor can only run at the pre-set pressure. This means that the output torque can not be regulated by means of changing air pressure.

When the brake control system is connected to an external pressure source (Setup ...B) the brake will be pre-set to the desired operation pressure (same as with Setup ...A), but the motor may be operated at a lower inlet pressure. This means that the output torque can be regulated by means of changing air pressure.

NOTE: When externally operating the brake control system (Setups ...B), the external connection should always be pressurized before the motor is started.



The brake is NOT equipped with a locking device. The braking force is based on friction and is caused by a friction material which is pushed against the braking wheel and brake housing. When the load is higher than the rated holding torque the brake will slip and the load can not be held.

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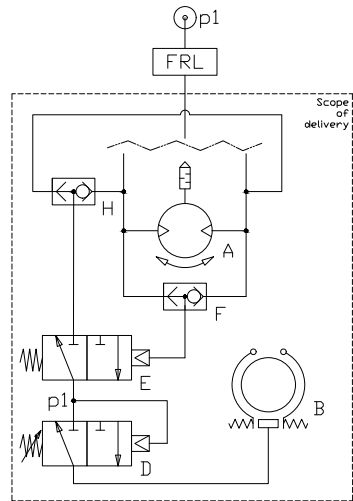
» Setup 1A:

The motor must be connected to a pressure source p1 with correct sized pipes or hoses. When the motor is pressurized the shuttle valve F, which is connected to both motor inlet ports, will let pressure p1 through to open 3/2 valve E. By opening valve E pressure p1 can now also flow via shuttle valve H through valve E to the adjustable 3/2 valve D (APPV3214).

**Valve D and the motor brake B are both pre-set to the desired operation pressure (pressure threshold) of the customer. This means that both of these components, thus the motor itself, can not be operated below this pressure threshold.**

When p1 is equal or higher than the pressure threshold valve D will open and allows pressure p1 to flow to the motor brake B, which will release.

The motor can now be operated.



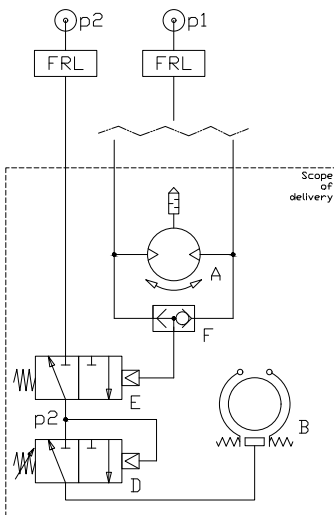
» Setup 1B:

The motor must be connected to a pressure source p1 with correct sized pipes or hoses. When the motor is pressurized the shuttle valve F, which is connected to the motor inlet port in use, will let pressure p1 through to open 3/2 valve E. By opening valve E pressure p2 from an external source can now flow through valve E to the adjustable 3/2 valve D (APPV3214).

**Valve D and the motor brake B are both pre-set to the desired operation pressure (pressure threshold) of the customer. This means that both of these components can not be operated below this pressure threshold. However, the motor may be operated at a lower pressure. (Note:  $p2 \geq p1$ ).**

When p2 is equal or higher than the pressure threshold valve D will open and allows pressure p2 to flow to the motor brake B, which will release.

The motor can now be operated.



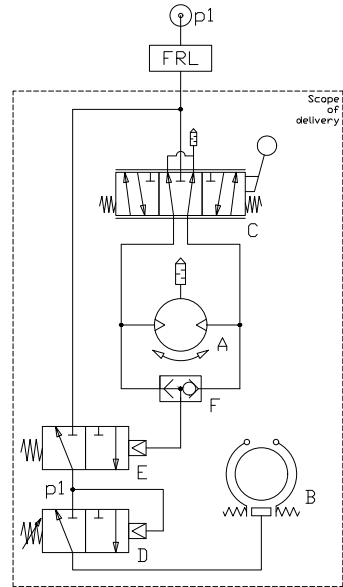
» Setup 2A:

The Hand Control Valve C (HCV), mounted on the motor, must be connected to a pressure source  $p_1$  with correct sized pipes or hoses. When the motor is pressurized by controlling the HCV the shuttle valve F, which is connected to both motor inlet ports, will let pressure  $p_1$  through to open 3/2 valve E. By opening valve E pressure  $p_1$  can now also flow through valve E to the adjustable 3/2 valve D (APPV3214).

**Valve D and the motor brake B are both pre-set to the desired operation pressure (pressure threshold) of the customer. This means that both of these components, thus the motor itself, can not be operated below this pressure threshold.**

When  $p_1$  is equal or higher than the pressure threshold valve D will open and allows pressure  $p_1$  to flow to the motor brake B, which will release.

The motor can now be operated.



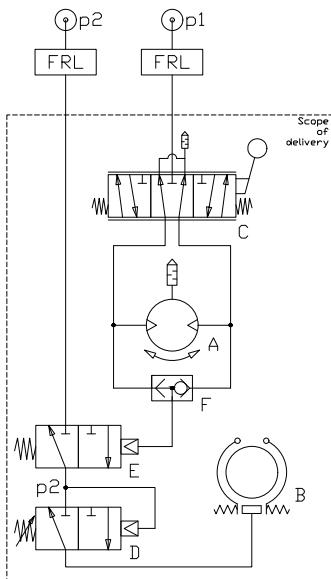
» Setup 2B:

The Hand Control Valve C (HCV), mounted on the motor, must be connected to a correct source  $p_1$  with sufficient sized pipes or hoses. When the motor is pressurized by controlling the HCV the shuttle valve F, which is connected to both motor inlet ports, will let pressure  $p_1$  through to open 3/2 valve E. By opening valve E pressure  $p_2$  from an external source can now flow through valve E to the adjustable 3/2 valve D (APPV3214).

**Valve D and the motor brake B are both pre-set to the desired operation pressure (pressure threshold) of the customer. This means that both of these components can not be operated below this pressure threshold. However, the motor may be operated at a lower pressure. (Note:  $p_2 \geq p_1$ ).**

When  $p_2$  is equal or higher than the pressure threshold valve D will open and allows pressure  $p_2$  to flow to the motor brake B, which will release.

The motor can now be operated.





» Setup 3A:

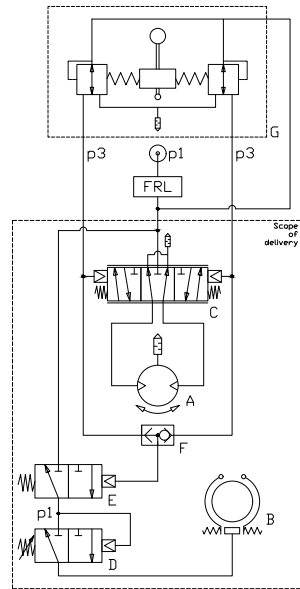
The Remote Control Valve C (RCV), mounted on the motor, must be connected to a pressure source p1 with correct sized pipes or hoses. The RCV can be actuated via pilot lines by another external valve G (in this example a 'LC2') with a minimum pilot pressure p3 of 2 bar (30 psi).

When the motor is pressurized by controlling the RCV the shuttle valve F, which is connected to both motor inlet ports, will let pressure p1 through to open 3/2 valve E. By opening valve E pressure p1 can now also flow through valve E to the adjustable 3/2 valve D (APPV3214).

**Valve D and the motor brake B are both pre-set to the desired operation pressure (pressure threshold) of the customer. This means that both of these components, thus the motor itself, can not be operated below this pressure threshold.**

When p1 is equal or higher than the pressure threshold valve D will open and allows pressure p1 to flow to the motor brake B, which will release.

The motor can now be operated.



» Setup 3B:

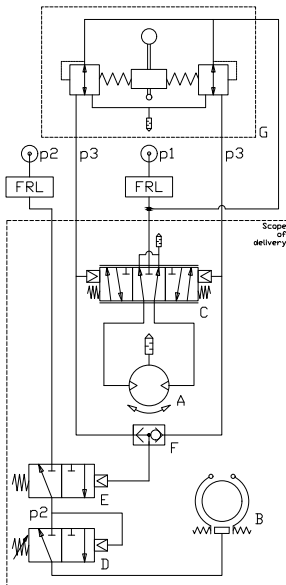
The Remote Control Valve C (RCV), mounted on the motor, must be connected to a pressure source p1 with correct sized pipes or hoses. The RCV can be actuated via pilot lines by another external valve G (in this example a 'LC2') with a minimum pilot pressure p3 of 2 bar (30 psi).

When the motor is pressurized by controlling the RCV the shuttle valve F, which is connected to both motor inlet ports, will let pressure p1 through to open 3/2 valve E. By opening valve E pressure p2 from an external source can now flow through valve E to the adjustable 3/2 valve D (APPV3214).

**Valve D and the motor brake B are both pre-set to the desired operation pressure (pressure threshold) of the customer. This means that both of these components can not be operated below this pressure threshold. However, the motor may be operated at a lower pressure. (Note: p2 ≥ p1).**

When p2 is equal or higher than the pressure threshold valve D will open and allows pressure p2 to flow to the motor brake B, which will release.

The motor can now be operated.



### Range brake Torque

Type	Running torque		Max. Brake Holding Torque	
	Nm	lbf/Ft.	Nm	lbf/Ft.
RM110 at 2000 rpm	4,5 Nm	3	5,4 Nm	4
RM210 at 2000 rpm	12 Nm	9	14,4 Nm	10,5
RM310 at 1800 rpm	28 Nm	20	33,6 Nm	25
RM410 at 1600 rpm	55 Nm	40	66 Nm	48,5
RM510 at 1100 rpm	125 Nm	92	150 Nm	110,5
RM610 at 1500 rpm	125 Nm	92	150 Nm	110,5

### Wear check

Check every 200 operating hours the thickness of the brake shoe liners. If the rivet heads which are holding the shoes on the brake shoe assembly – item 26 – are within 0.5 mm of the surface new brake shoe assemblies need to be fitted.



The temperature raise of the brakes are tested on frequent start-stop. The next start-stop frequencies are allowed:

#### Maximum start stop frequency brakes

	RM110	RM210	RM310	RM410	RM510	RM610
<b>Times per minute</b>	20	20	10	10	10	10

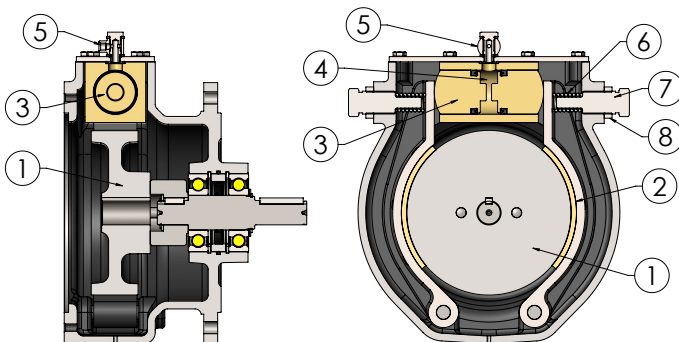
*During operation the brake shoe liner will wear which results in a reduction of the holding torque. To compensate this loss of holding torque the next procedure must be followed:*

## **Load adjustment**

Because of standard wear of the liner on the brake shoe there is a possibility to adjust the holding torque to its maximum. The next steps should be done to adjust the holding torque.

- » Loosen locknuts item 8.
- » With both locknuts – item 8 – loose, run the motor with no load and screw in one Adjuster – item 7 – until the motor starts to labour, indicating that the brake shoe is in contact with the brake wheel.
- » From this position, with the motor running, unscrew the Adjuster with 1/8 turn.
- » Repeat sequence for the opposite adjuster item 7.
- » Tighten lock nuts item 8.
- » The brake is now adjusted to it's maximum holding torque.

Remember each Adjuster must be altered the same amount to give equal operation to the brake shoes.



# Maintenance

## Maintenance | Motor & Valve

**Correct maintenance is your responsibility!** Make sure you have the proper maintenance conditions.

### WARNING - Injury hazard



Disconnect air supply and vent all air lines.



Wear eye protection: Air stream from product may contain solid or liquid materials that can result in eye or skin damage.



Flush this product in a well ventilated area.



Do not use kerosene or other combustible solvents to flush this product.



Failure to follow these instructions can result in serious injury or property damage.

**Note!** Lack of maintenance will shorten the life of the motor and could cause failure.



#### WARNING: POTENTIAL ELECTROSTATIC CHARGING HAZARD

Before use clean only with damp cloth. Avoid electrostatic charging mechanisms stronger than manual rubbing. Do not subject the equipment to external conditions that could cause build-up of electrostatic charges.

## Cleaning silencer

If the silencer becomes dirty this will effect the performance of the motor. To clean the silencer follow the next procedure:

- » Disconnect air line
- » Remove the silencer
- » Clean the silencer
- » Lubricate the motor with 3-4 drops of oil
- » Connect the air line
- » Listen for changes in the sound of the motor. If the motor runs fine, operation can continue
- » If it is not running fine, you should install a service kit.

## Shutdown and long storage

- » You need to take care of the following procedures for a proper shutdown.
- » Wear eye protection. Keep out of the air stream.
- » Turn off the air supply.
- » Disconnect all air supply and vent all airlines.
- » Disconnect airlines.
- » Disassemble the air motor from its connection.
- » Remove the silencer.
- » Make sure you use clean and dry air to remove condensation from the inlet port.
- » Use a small amount of oil to lubricate the motor.
- » Rotate the shaft by hand several times to distribute the oil.
- » Cap or plug each port of the air motor.
- » Coat output shaft with oil or grease.
- » Store the air motor in a dry environment.

## Inspection and replacement interval of critical components to comply to ATEX

Description	Quantity	Expected/Rare malfunction	Measures applied to prevent the source becoming effective
Cylinder pot	4/5	Overheating	Check air line oil before starting
Piston	4/5	No oil in engine case	Check oil in engine case every 50 hours*
Compression ring	4/5	Extra wear	Check every 2500 hours*
Oil control ring	4/5	Extra wear	Check every 2500 hours*
Queen rod	3/4	Overheating	Check oil in engine case every 50 hours*
Queen rod pivot	3/4	Overheating	Check oil in engine case every 50 hours*
Oil thrower	1	Bended	Check every 2500 hours*
All bearings	-	No grease	Replace every 4800 hours**
Valve	-	Leakage	Replace O-Rings every 5000 hours*

\* Operating/running hours

\*\* RM210: Replace every 3700 hours

- » Please ensure that maintenance is carried out by certified staff. You can order your service kit at [orders@globe-benelux.nl](mailto:orders@globe-benelux.nl).
- » Check intake filter and silencer after the first 100 hours of operation.
- » Clean filters and lubricators and determine how frequently filters and lubricators should be checked during future operation. This will help the motor performances and its' service life.
- » Do not open when explosive atmosphere is present. Sparks induced by tools may cause an explosion.
- » When performing maintenance on the air motor please use the rebuild instructions which are also enclosed in this manual. Please make sure the motor runs smooth after maintenance and check the clearances in the motor to prevent problems when operating the motor.



The oil level in the motor casing must be maintained. The frequency of replenishment will depend on the application and usage. The motor case should be drained and refilled after 25 hours of initial running and every 200 hours thereafter or sooner if found necessary e.g. (contamination of oil by water from the air line.)

# Servicing Motor

## A: Disassembly motor

**Note!** For the clarification of the part numbers please refer to the Spare Parts Lists in the appendix.

### Preparation for disassembly

Remove the motor from its operating position to a clean working surface ready for stripping, externally clean the motor ready for opening. Drain the oil from the motor casing by removing the drain plug (26). Stripping and re-assembly will be simplified if the crankshaft (20/A/B) or output shaft (67) RM510 and RM610 is vertically in a soft-jawed vice or supported on a suitable packing to raise the shaft clear of the working surface.

### Removal of Rotary Valve Housing

- » Remove inlet / exhaust adaptor plate (72) or control valve fitted).
- » Remove valve cover
- » Release bolts (38) and valve bush housing (3) can be eased upward.
- » On RM110 to 410 motors remove grub screw (49) together with the valve side balance weight (number 35).
- » All motors - carefully remove rotary valve (2) from housing (3). This can generally done from the inside outwards and inspect both the rotary valve and the housing for wear. The normal clearance at manufacture between these two components is 0.002 - 0.003" (0.05 - 0.075 mm). Excessive wear will cause air leakages and loss of efficiency of the unit.

### All Motors

Inspect the clearance of the pivot pins (29) in queen rod (30) and king rod(12). Inspect the gudgeon pin in both the piston and all rods. Check for wear on the main crankshaft (20A, 20B) and on the main big end bearing (no. 48). The wear in the cylinder bores can be checked by removing each compression ring (10) and pushing it into the cylinder bore (8). The ring gap should be in the region of 0.003 to 0.004" (0.075 - 0.010 mm). Bore wear cause loss of power and inject high pressure air into the case & oil could be ejected from the breather plug (part no. 46). All other parts should thoroughly cleaned and inspected for wear. Spare parts can be found from the spare listings. The motor number and its code should be incorporated in any spares order. This is always stamped on the main flange plate (24) located near the breather plug hole 46, i.e. 230 Hx. GLOBE provide a seal kit for each motor and it is strongly recommended that new oil seals, seals and gaskets are used throughout.

### **RM110 Motors**

Lift the spacing washers (31/34) out. Slightly rotate the shaft backwards and forwards and inspect the amount of wear which is present on the big end assembly. Remove the top retaining ring (part no. 74). All the connecting rods can then be lifted upwards and pushed outwards towards the cylinders. Remove cylinder bolts (37) and the entire piston assembly can be withdrawn from the motor unit.

### **RM210/310/410 Motors**

These units are of the king rod variety and again it is wise to slightly rotate the crankshaft (part no. 20 A/B) in direction to test any excessive wear on either the king rod bearing or the pivot pins (part no. 29). Having first removed the outer spacing washer (31/34) withdraw pivot pins (part no. 29). This procedure is usually done with a bent rod withdrawing the pins from the inside outwards. Remove all cylinder cap bolts (part 37) and by pushing the queen rods (part 30) outwards the entire piston and rod assembly can be removed from the motor. Turn the motor unit over to extract the crank bearing bearings (part no. 48). The main king rod (part no. 12) can then be lifted upwards and tilted over the top of the crankshaft. Remove the main king rod, piston and cylinder from the motor. Remove the output shaft circlip (14), spacer (15) and shims (16). Remove the counter sunk bolts (52) holding the output flange (24 /A B) on to the engine case (part no. 27). The engine case (27) can be Drift the crankshaft inwards from the flange plate (24A). To remove the outer shaft bearings (55 and 56) drift to their respective sides as they are located inwardly on the two circlips (part no. 18).

### **RM510 and 610 Motors**

Remove bolts (58) holding the output shaft assembly. Remove bolts (57) and the output flange (24 A/B). This will then expose the inside of the motor. Turn the crankshaft so that one rod is at T.D.C. Remove that cylinder, the circlip and gudgeon pin. Push out from the piston and the entire assembly can be removed. Repeat this procedure in turn until all the pistons have been removed. On this motor the balance weight and crank assembly is built as one item and this can now be removed. Remove locking nut (22) and the tapered pin (21). Both balance weights (part no. 20A and 20B) can now be disengaged. This will expose the king rod and queen rod assembly. To remove the queen rod remove the pivot pin (29).



## B: Assembly Procedure

**Warning:** When first running the motor, some light oil should be injected into the inlet connection to ensure adequate lubrication until the air line lubrication is established. All parts should be clean and liberally coated with oil.

**Note!** For the clarification of the part numbers please refer to the Spare Parts Lists in the appendix.

### RM110 Motor only

Fit crank spacer (13) bearing (48) and the inner retaining ring (74) (internal bevel uppermost). Assemble con rods on pistons. Assemble all pistons into their cylinder pots (8) using ring clamp. Fit all pistons / cylinder on to engine case. Carefully lift the connecting rods (53). Lift upwards and locate the shoe on the connecting rod between the bearing (48) and the retaining ring (74). Repeat for all cylinders. Locate the outer retaining ring (74) (internal bevel downwards) over all shoe on the connecting rods (53). Fit the packing spacer (31 / 34). Refer to motor spacing assembly. Paragraph No. 10.

### RM110 to 410 Motors

Output shaft assembly. Ensure both circlips and bearings are fully home. Oil seal (19) lip must face inwards and be lubricated. RM 410 motor has also a spacer fitted between bearings. Push crankshaft fully home and locate spacer washer (15) and circlip (14). Check gap, shim up (16) for minimum end float. Fit new seal (25) and output flange (24) to the engine case (27). Turn motor vertical (shaft downwards).

### RM410 Motor big end

Fit all connecting rods (30) & (12) on to gudgeon pins and pistons using ring clamp assemble into cylinders. Ensure gudgeon pin circlips are seated correctly. Rotate motor until crank is nearest to breather plug (46). Fit the crank spacer (13) push the piston to bottom dead centre within the cylinder (8). Insert the king rod into the engine case (27) lifting and rotating the king rod (12) over the top of the crankshaft (20 A / B). Bolt cylinder in position, fit the 2 crank bearings (48). Fit remaining cylinders / pistons and attach to king rod (12) with the pivot pin (29). Rotate 360 degrees to ensure parts are correctly fitted. Locate the spacing washer (31 - 34) and spacing as paragraph No. 10.

**After assembly, install the motor according to the Installation chapter in this manual**

## **RM510 to 610 Motors**

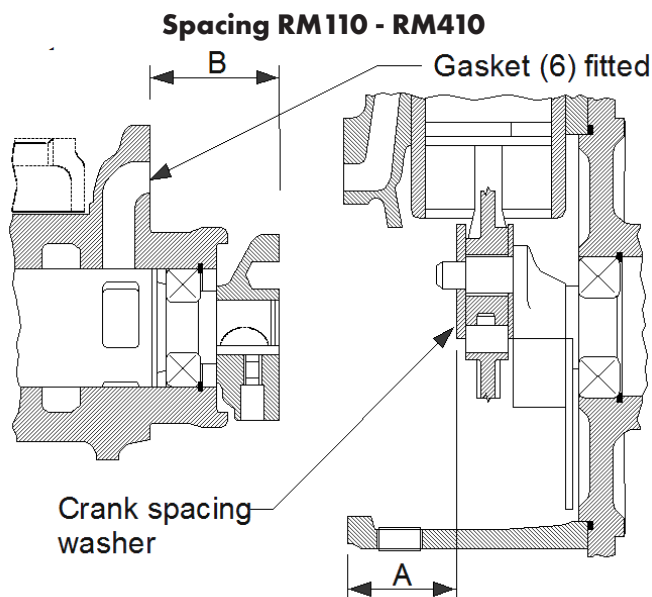
Assemble the spacing washer (13) on to the crankshaft outer section locating the dowel pin (23). Assemble bearing (48) and the king rod (12). Assemble all four queen rods (part no. 30) into the king rod (12) locating with pivot pins (no.29). Fit final location washer (13) to close the assembly. Ensure that the drive peg (23) is fitted on to the inner balance weight (20 A / B). Closed together and finally to 'ldcale correctly by passing a 12 mm dia. bar between the holes marked X and Y on the drawings. Once this assembly is located the locking dowel (21) and its nut can be assembled, remove the 12 mm bar and ensure that the mechanism is free. Locate assembly into open engine case. Ensure each rod projects into its correct cylinder. Rotate the unit so that the main king rod comes to top dead centre, fit the piston and gudgeon pin, ensure gudgeon pin circlip is correctly located. Fit gasket (7) to cylinder Fit pistons into cylinder bore using a piston ring clamp. Bolt cylinder (8) on to engine case (27). Rotate the crank to the next top dead centre position and repeat the procedure. Turn crank 360 degrees to check correct functioning .Fit gasket (28) and the output flange (24 A / B). Turn the 180 degrees to allow valve to be fitted. Lubricate valve (2) and Inside Bore of Housing (3). Rebuild the valve assembly in the reverse order. Check it rotates freely. Fit valve assembly on to the motor ensuring the different size drive dowels (61) and (62) are located in the crankshaft. The remaining build procedure is the reverse to initially dismantling

## **Crank assembly instructions for RM210 and RM310 motors**

Fit the 3 queen rods (30) on to piston assembly (9) and assemble into the cylinder pot (98) complete with gasket (7). Fit piston assembly (9) on to the king rod (10) ensuring gudgeon pin clips are correctly positioned. (RM 310 motor). Assemble a ring clamp (dimensions shown on sketch) on to the king rod piston. Fit the crank spacer (13) to the crankshaft (20 A / B). Rotate the crankshaft until the crank pin is in the vertical position (nearest the breather plug 46). Feed king rod (12) complete with its piston assembly through the aperture marked 'Z' on drawing. Twist and lift the rod over the end of the crank pin. Fit crank pin bearing or bearings. Feed the cylinder pot (8) complete with its gasket (7) on to the piston. The ring clamp is ejected inwards from the piston. Work clamp off sideways from the king rod. Bolt the cylinder pot into position and feed the remaining cylinders completely assembled through the various holes and locate the inner end of the connecting rods with the king rod fixing with pin (29). Rotate the motor 360 degrees to ensure correct fitting. Fit spacing washer (30 /34) and refer to paragraph 10 for spacing the motor unit.

## **Assembly of valve housing**

This is the reverse procedure to dismantling. Smear oil to external surface of valve (2) and to the bore of valve housing (3).



### Clearance Crank spacing Washers

RM110	RM210	RM310	RM410
1.85 mm / 0.073 "	2.64 mm / 0.104"	3.24 mm / 0.128"	2.50 mm / 0.099"
2.03 mm / 0.080"	3.25 mm / 0.128"	3.66 mm / 0.144"	3.00 mm / 0.120"
2.34 mm / 0.092"	3.66 mm / 0.144"	4.06 mm / 0.160"	4.00 mm / 0.157"
2.64 mm / 0.104"			

Measure dimension (A) from the crank washer face to the engine case and also dimension (B) from the rotary valve face to the inside of the gasket. Select the correct shim washer from the list (31 - 34) to obtain clearance. Rotate the crankshaft until the balance weight is at the bottom dead centre position, rotate the rotary valve until the balance weight is at the bottom position. Assemble the valve housing (3) on to the engine case (27). Rotate the output shaft in both directions and viewing the rotary valve (2) through the exhaust cover (51) ensure that the valve is correctly following the output shaft direction, this checks that both crank and valve slot are correctly engaged. Replace all drain plugs and refill with oil. Spray some light oil into the inlet and exhaust ports and connect the unit to a low pressure supply and allow the unit to run on the bench for a short period of time prior to refitting the unit into full service.

# Servicing Control Valve

## A: Disassembly Control Valve

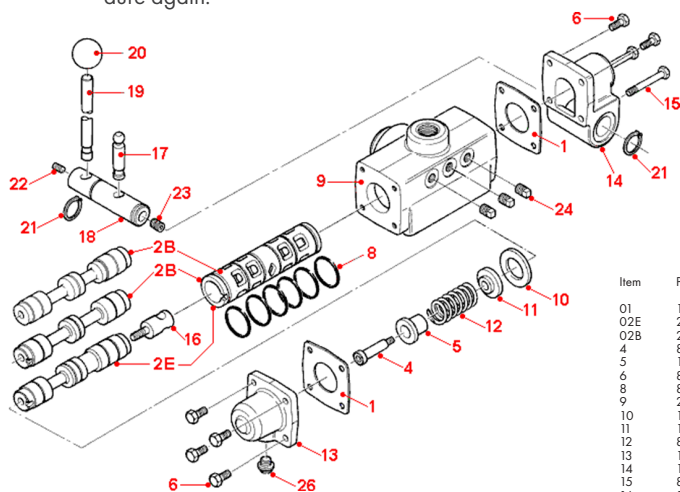
### Preparation for disassembly

Remove the valve from its operating position to a clean working surface ready for stripping, externally. Clean the valve ready for opening.

**Note!** The spool and sleeve are during fabrication matched to each other. It is not possible to replace only the spool or sleeve. They always have to be replaced as a set.

## Disassembly HCV

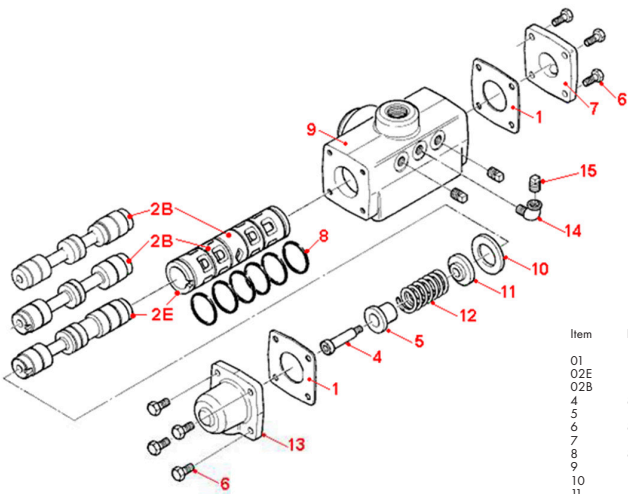
- » Dismount Lever Cap 7 by unscrewing bolts 6
- » Dismount End Cap Spring End 13 by unscrewing bolts 6
- » Pull out carefully spool 2 (remember or mark so that spool is mounted back in the sleeve in from the same side) You should not "mirror" the spool in the sleeve when reassembled.
- » Do not damage in any way the surface of the spool 2B
- » Push out sleeve 2
- » Inspect the O-rings 8 and replace if necessary.
- » Apply grease on the O-rings 8 and sleeve 2 and the internal surface in the valve body 9
- » Clean the sleeve 2
- » Gently push the sleeve 2 in the valve body 9. Make sure that the O-rings are not sheared of during assembly.
- » Make sure that the spool and valve are clean. Oil the surface of the spool 2. Replace with hand carefully spool 2 into the sleeve. When replacing hardly no force should be used. If the spool does not go in lightly then take out the spool and try again.
- » Replace End Cap 13
- » Add grease on Toggle pin 17 and replace Lever Cap 7
- » Test whether the O-rings 8 are not damaged during assembly by applying 1 bar air pressure on the inlet. Listen if there is air leaking from the bottom of the valve. If there is clearly a hissing sound it means that one or more of the O-rings are damaged during re-assembly. Start procedure again.



Item	Part No.	Description	Qty
01	111-066	End Cap Gasket	2
02E	221-913	Matched Spool and Sleeve	1
02B	221-914	Matched Spool and Sleeve	1
4	817-003	Shoulder Screw 8 mm	1
5	111-071	Centering Shaft Guide	1
6	802-016	Hex Head Screw M6 x 16	6
8	808-027	O Ring 27.5 x 30	6
9	221-060	Valve Body	1
10	111-068	Valve Sleeve Spacer	1
11	111-072	Washer, Spring Centering	1
12	814-016	Spring 323714	1
13	111-064	End Cap - Spring End	1
14	113-041	Lever Cap	1
15	802-024	Hex Head Bolt M6 x 50	2
16	113-024	Toggle Shaft	1
17	113-026	Toggle Pin	1
18	113-008	Hand Lever Pivot	1
19	113-002	Hand Lever	1
20	818-003	Black Plastic Knob 31 mm	1
21	804-013	Circlip 20mm External	2
22	815-010	Grub Screw M8 x 10	1
23	815-002	Grub Screw M8 x 16	1
24	816-063	Plug 1/8" BSPT Sq. Head	3
26	113-050	Venti Plug	1

Disassembly RCV

- » Dismount End Cap 7 by unscrewing bolts 6
- » Dismount End Cap Spring End 13 by unscrewing bolts 6
- » Pull out carefully spool 2 (remember or mark so that spool is mounted back in the sleeve in from the same side) You should not “mirror” the spool in the sleeve when reassembled.
- » Do not damage in any way the surface of the spool 2B
- » Push out sleeve 2
- » Inspect the O-rings 8 and replace if necessary.
- » Apply grease on the O-rings 8 and sleeve 2 and the internal surface in the valve body 9
- » Clean the sleeve 2
- » Gently push the sleeve 2 in the valve body 9. Make sure that the O-rings are not sheared of during assembly.
- » Make sure that the spool and valve are clean. Oil the surface of the spool 2. Replace with hand carefully spool 2 into the sleeve. When replacing hardly no force should be used. If the spool does not go in lightly then take out the spool and try again.
- » Replace End Cap 13
- » Replace End Lever Cap 7
- » Test whether the O-rings 8 are not damaged during assembly by applying 1 bar air pressure on the inlet. Listen if there is air leaking from the bottom of the valve. If there is clearly a hissing sound it means that one or more of the O-rings are damaged during re-assembly. Start procedure again.



Item	Part No.	Description	Qty
01	111-066	End Cap Gasket	2
02E	111-913	Matched Spool and Sleeve	1
02B	111-914	Matched Spool and Sleeve	1
4	817-003	Shoulder Screw 8 mm	1
5	111-071	Centering Shaft Guide	1
6	802-016	Hex Head Screw M6 x 16	8
7	111-065	End Cap - Plain End	1
8	808-027	O Ring 27,5 x 30	6
9	111-060	Valve Body	1
10	111-068	Valve Sleeve Spacer	1
11	111-072	Washer, Spring Centering	1
12	814-017	Spring D13040	1
13	111-064	End Cap - Spring End	1
14	816-049	Elbow M/F 1/8" BSPT	1
15	816-063	Plug 1/8" BSPT Sq. Head	3

## Maintenance | Brake

**Correct maintenance is your responsibility!** Make sure you have the proper maintenance conditions.

### WARNING - Injury hazard



Disconnect air supply and vent all air lines.



Wear eye protection: Air stream from product may contain solid or liquid materials that can result in eye or skin damage.



Flush this product in a well ventilated area.



Do not use kerosene or other combustible solvents to flush this product.



Failure to follow these instructions can result in serious injury or property damage.

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To comply according to ATEX please change the bearings after the operation hours according to the table below

Inspection and replacement interval of critical components

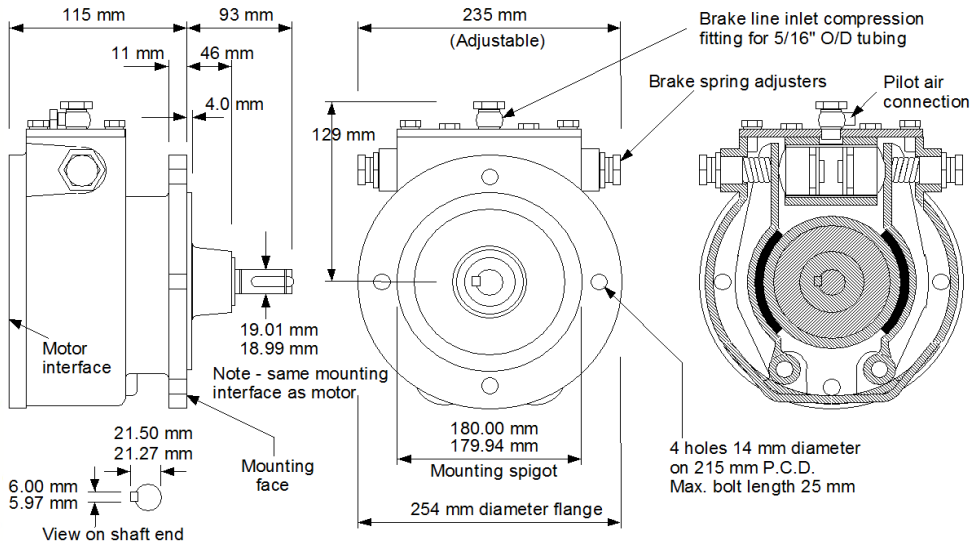
Description	Quantity	Expected/Rare malfunction	Measures applied to prevent the source becoming effective
Brake shoe assy	2	Wear of brake shoe	Check thickness brake liners every 200 hours *
Output shaft	1	No grease	Check every 2500 hours *
All bearings	-	Worn/No grease	Replace every 5000 hours **

\* Operating/running hours

\*\* RM610: Replace after 4000 hours

Maintenance brake

Check every 200 operating hours the thickness of the brake liner on the brake shoe (item 26). Disconnect the brake and inspect the thickness of the liner. If the rivet heads which are holding the shoes on the brake shoe assembly – item 26 – are within 0.5 mm of the surface new brake shoe assemblies need to be fitted. Always replace both brakes shoes even if only one is worn. After fitting the new brake shoe assemblies use the LOAD ADJUSTMENT procedure as mentioned in the chapter OPERATION.





# General information

## Summary of the hazards with protective means:

Hot surfaces - misalignment	Check for misalignment which can cause heat up of the bearings.
Hot surfaces - bearings	Bearings shall be inspected and replaced according to operation and replacement instructions as mentioned in this manual by authorised staff.
Hot surfaces - deposit	Prior to start up remove all deposit of the surface.
Electrostatic charging	The motor shall be bonded together to other metal parts and to earth with a earth resistance of maximum 1 MΩ.
Electrostatic charging	Before use clean only with damp cloth. Avoid electrostatic charging mechanisms stronger than manual rubbing. Do not subject the equipment to external conditions that could cause build-up of electrostatic charges.

# Trouble shooting

## Fault Finding

1. The RM series motors are designed to perform at their rated capacities for the long periods of time. Faults can develop for the following reasons:

(A) Lack of lubrication. This will result into rapid wear, internal seizure, loss of power or excessive air leakage.

(B) Faults in the air supply system:

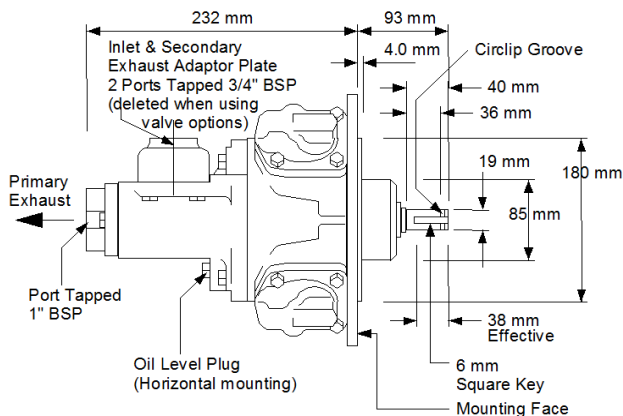
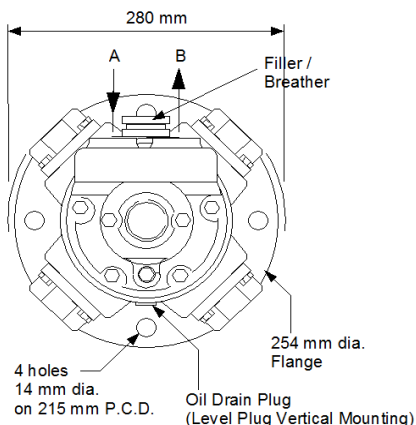
1. failure to remove the plastic protective dust caps
2. insufficient air pressure at the motor caused by (a) supply pipe line or valve too small (b) if the exhaust is piped away excessive back pressure due to small bore pipes (c) compressor of insufficient capacity (d) clogged air line filter (e) the air pressure should remain at the required pressure when the motor is operating at full potential. If the air pressure reduces considerably from the stationary to the rotating conditions then the supply line or the compressed air available is inadequate for the service operation of the motor.

The motor should always be supplied with clean moisture free and lubricated air. The better the quality of the air the less attention will be required to the motor unit. Air quality should meet ISO 8573-1:2010 class 4 for solid particles and ISO 8473- 1:2010 class 3 for water.

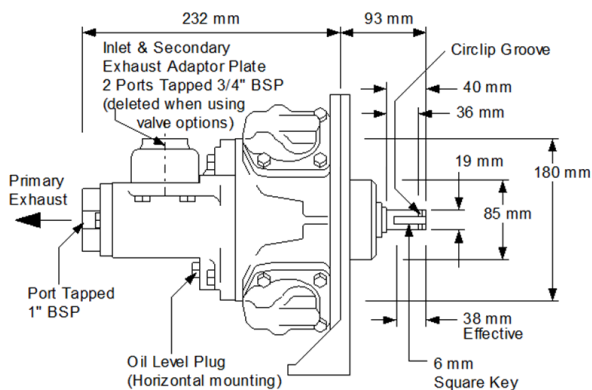
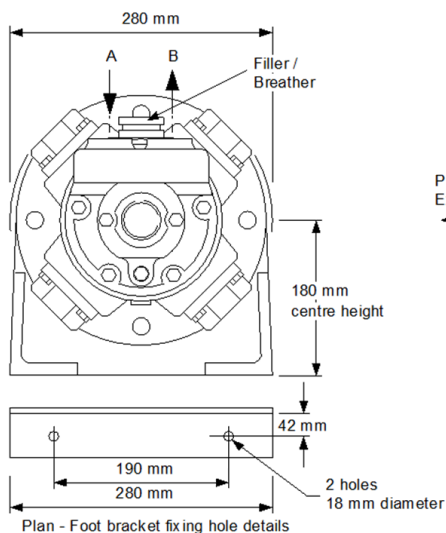
Problem				Conclusion
Low speed	Low Torque	Won't run	Runs well then slows down	
x	x	x		There may be dirt or foreign material in the motor. Inspect and flush the motor.
x	x	x		There may be internal rust in the motor. Inspect and flush the motor.
x	x			The air pressure may be too low. Increase the air pressure.
x	x			Incoming air line too narrow. Replace with a bigger one.
	x		x	Limited exhaust. Inspect and repair.
x	x	x	x	Motor is running hot. Perform a service maintenance.
	x		x	Inadequate air flow from air source. Inspect and repair.
	x		x	Air source is too far from the motor. Put the air source closer.

# Dimensions, Performances & Spare Parts

## Dimensions RM210 & RM210 + Foot Bracket



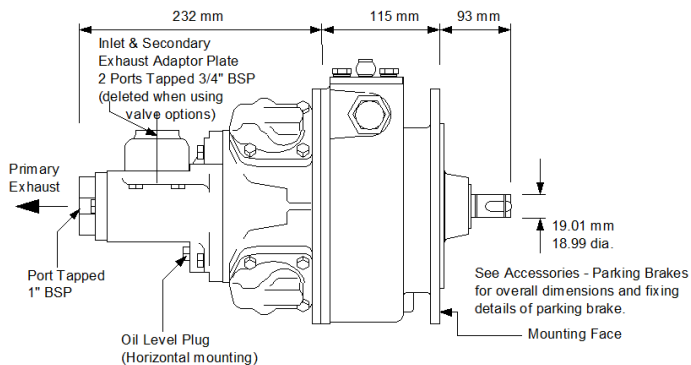
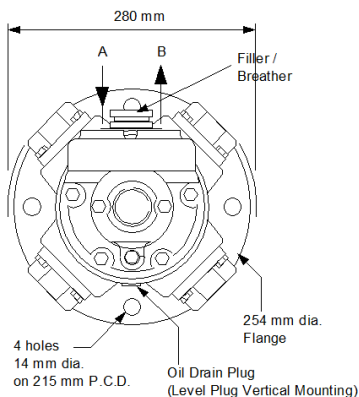
Arrows show direction of rotation with airflow direction as shown (Reverse port connections A & B for opposite rotation)



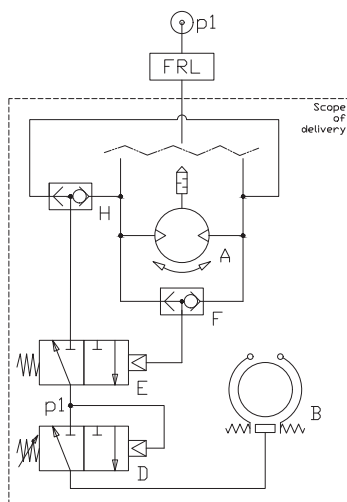
Arrows show direction of rotation with airflow direction as shown (Reverse port connections A & B for opposite rotation)



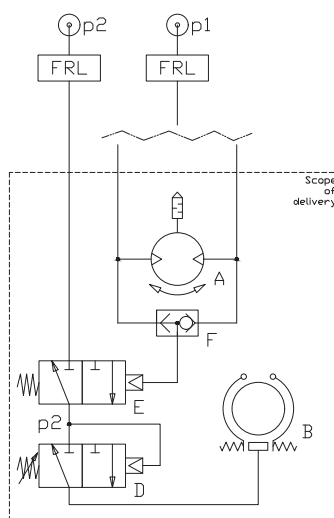
# Dimensions & Performance RM210 + Brake



Arrows show direction of rotation with airflow direction as shown (Reverse port connections A & B for opposite rotation)



Setup 1A



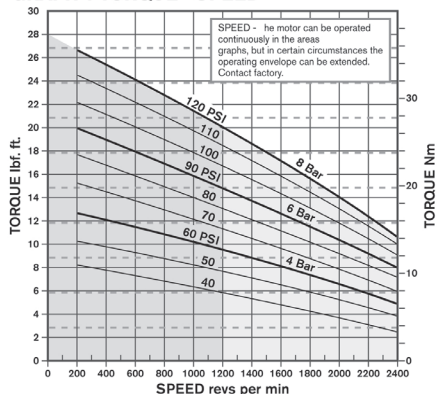
Setup 1B

## Gearbox ratio: None

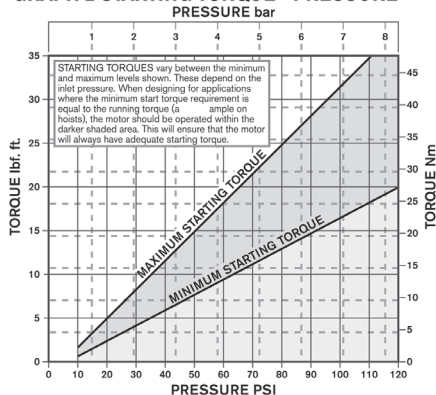
**Maximum speed: 2400 RPM**  
**No Control Valve fitted**

**Reading Graphs** - Scales have been adjusted to enable bar and psi to be read from a common curve. Therefore only read psi with the left hand axis and bar with the right hand axis.

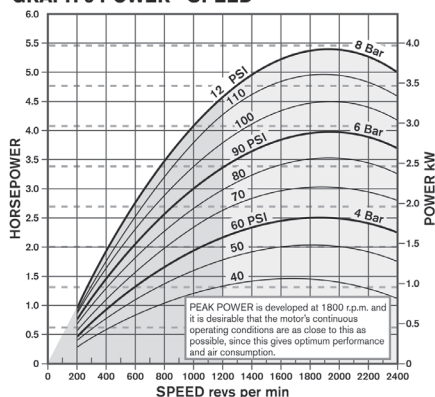
**GRAPH 1 TORQUE - SPEED**



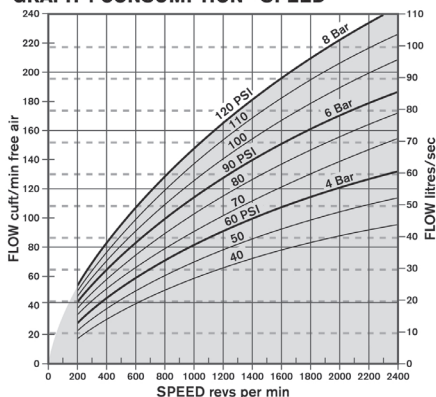
**GRAPH 2 STARTING TORQUE - PRESSURE**



**GRAPH 3 POWER - SPEED**



**GRAPH 4 CONSUMPTION - SPEED**



## LUBRICATING OIL CAPACITIES

Horizontal 330ml      Vertical 450ml

Use a good quality hydraulic oil with a viscosity of around 100cSt (460SSU) at 40°C (104°F)

## AIRLINE FILTRATION AND LUBRICATION

Use 64 micron filtration or better. Choose a lubricator suitable for the flow required. Prior to initial start-up, inject oil into the inlet port.

Lubricator drop rate 4-5 drops/minute continuous operation

Lubricator drop rate 8-10 drops/minute intermittent operation

## GENERAL DATA

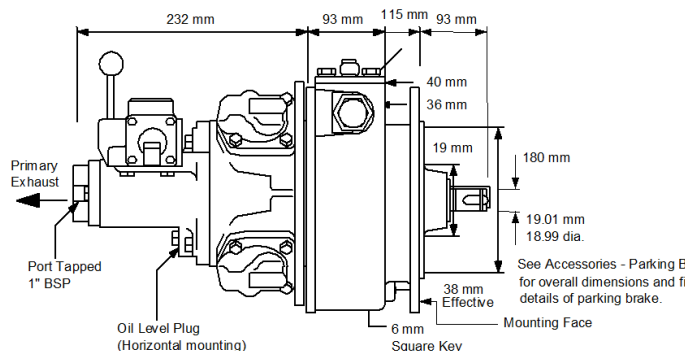
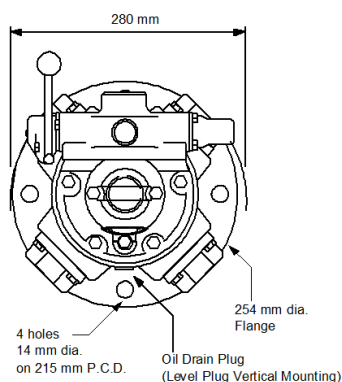
**MASS** (motor only) 26 kgs (57.3 lbs)

**MOMENT OF INERTIA** of rotating parts 0.56 gm<sup>2</sup> (motor only)

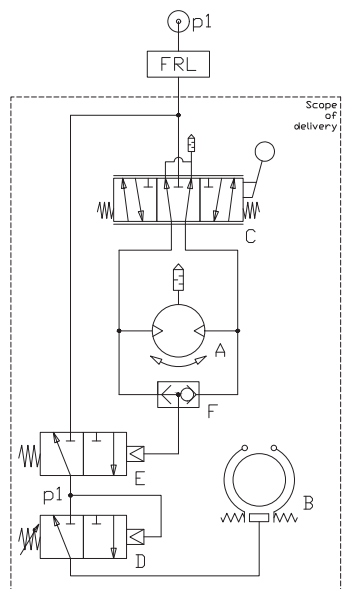
**MAX OVERHUNG FORCE** on motor shaft 890 N (200 lbf)

**TEMPERATURE RANGE** -20°C to +60°C (-4°F to +140°F) / -10°C to +60°C (-14°F to +140°F) with brake

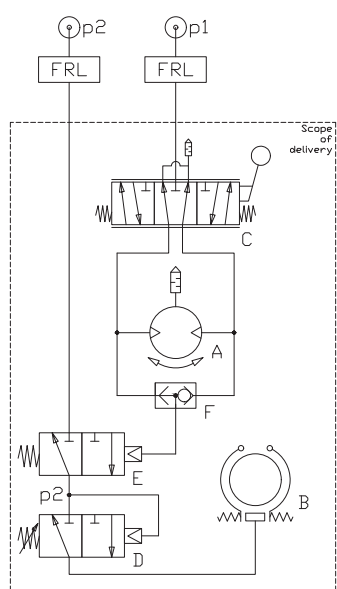
# Dimensions & Performance RM210 + Brake + HCV



Arrows show direction of rotation  
with airflow direction as shown  
(Reverse port connections A & B  
for opposite rotation)

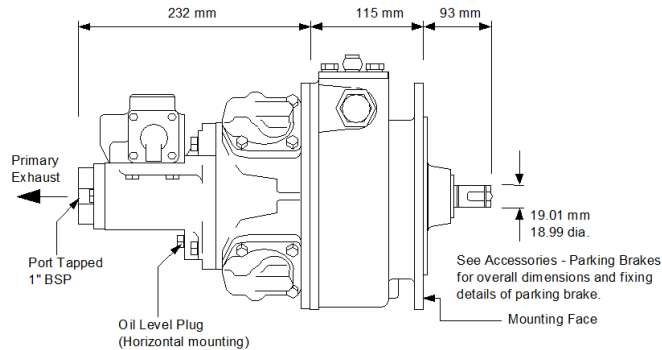
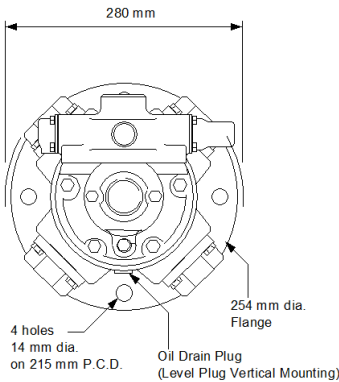


Setup 2A

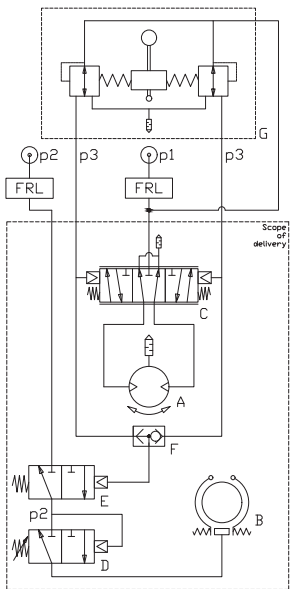
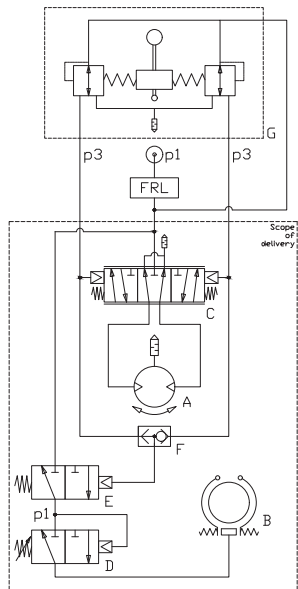


Setup 2B

# Dimensions & Performance RM210 + Brake + RCV

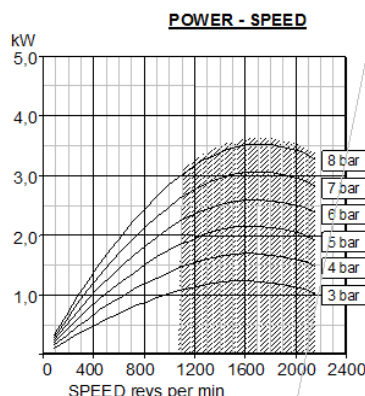
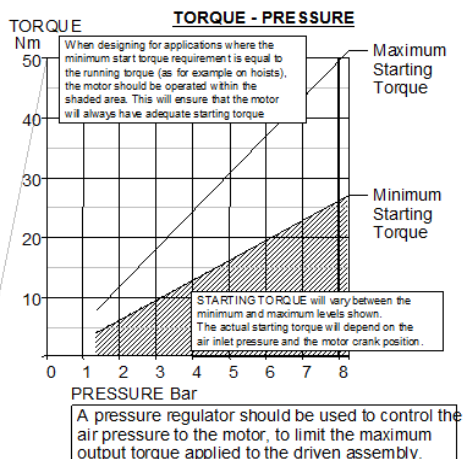
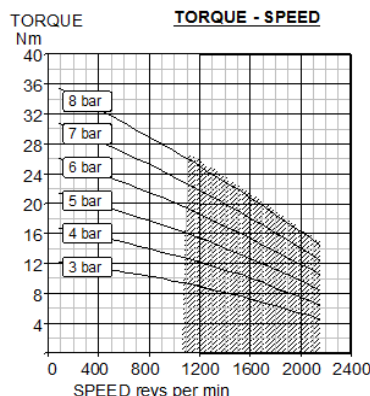


Arrows show direction of rotation  
with airflow direction as shown  
(Reverse port connections A & B  
for opposite rotation)

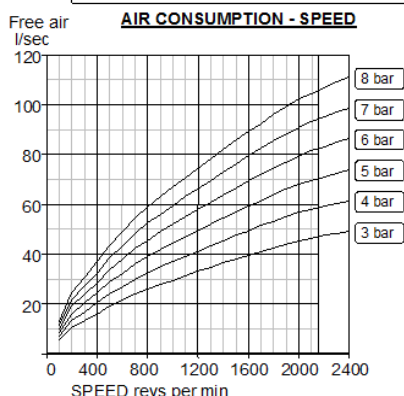


**Gearbox ratio: None**

**Maximum speed: 2160 RPM**  
**Control Valve Fitted**



It is desirable that the motor's continuous operating speed is close as possible to the speed at which PEAK POWER is since this gives optimum performance and air



### LUBRICATING OIL CAPACITIES

Horizontal 330ml      Vertical 450ml

Use a good quality hydraulic oil with a viscosity of around 100cSt (460SSU) at 40°C (104°F)

### AIRLINE FILTRATION AND LUBRICATION

Use 64 micron filtration or better. Choose a lubricator suitable for the flow required. Prior to initial start-up, inject oil into the inlet port.

Lubricator drop rate 4-5 drops/minute continuous operation

Lubricator drop rate 8-10 drops/minute intermittent operation

### GENERAL DATA

**MASS** (motor only) 26 kgs (57.3 lbs)

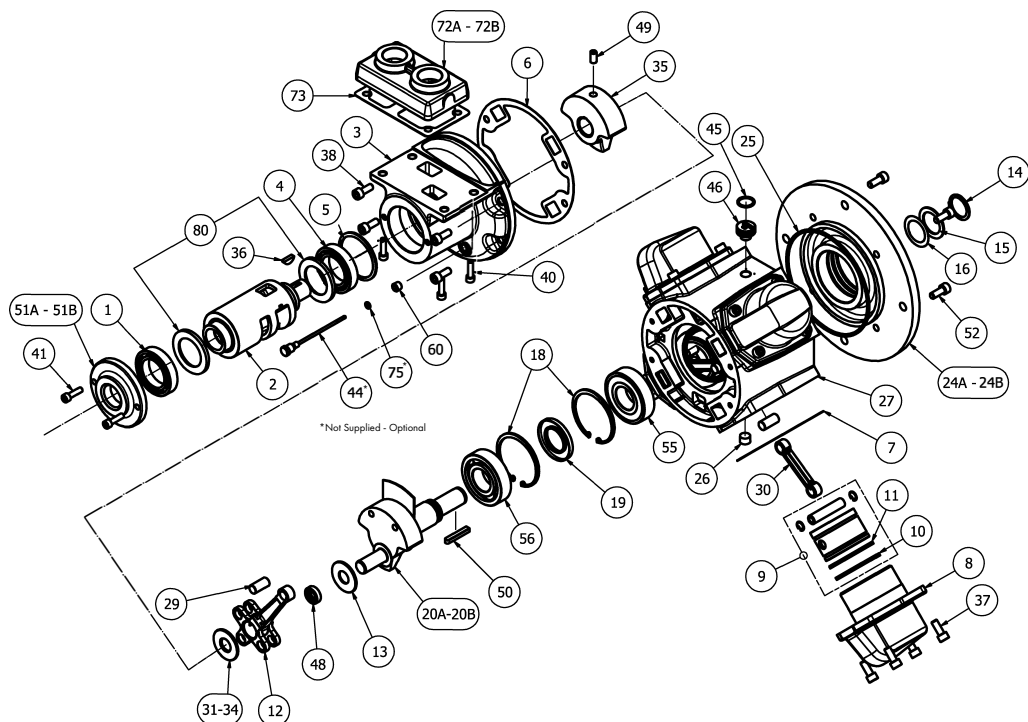
**MOMENT OF INERTIA** of rotating parts 0.56 gm<sup>2</sup> (motor only)

**MAX OVERHUNG FORCE** on motor shaft 890 N (200 lbf)

**TEMPERATURE RANGE** -20°C to +60°C (-4°F to +140°F) / -10°C to +60°C (-14°F to +140°F) with brake



# Spare Parts List RM210

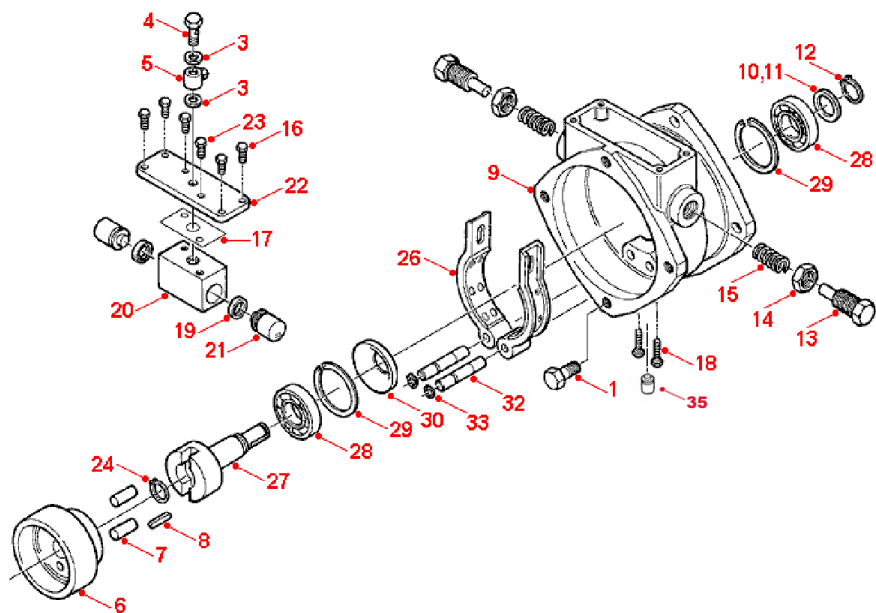


\*Not Supplied - Optional

Item	Part No.	Description	Qty	Kit No.	Item	Part No.	Description	Qty	Kit No.
01	807-020	Rotary Valve Bearing (Outer)	1		36	811-010	Woodruff Key	1	
02	230-059	Rotary Valve	1		37	802-032	Cylinder Bolts	16	
03	230-011	Rotary Valve Housing	1		38	802-033	Valve Housing Bolts	4	
04	807-021	Rotary Valve Bearing (Inner)	1		40	802-020	Adaptor Plate Bolt	4	
05	804-051	Rotary Valve Bearing Circlip	1		41	802-016	Exhaust Cover Bolts	2	
06	200-001	Rotary Valve Housing Gasket	1*	239-911	44	200-040	Dipstick (Vertical Mounting)	1	
07	210-030	Cylinder Gasket	4*	239-911	45	808-004	Seal (Transit Only)	1	
08	210-082	Cylinder	4		46	130-066	Breather Plug	1	
09	230-902A	Piston Assembly	4*		48	807-048	Needle Bearing	2	
10	200-024	Compression Ring	4*	239-911	49	815-001	Grub Screw	1	
11	200-022	Oil Control Ring	4*	239-911	50	811-001	Key	1	
12	230-077	King Rod	1		51A	230-005	Rotary Valve Exhaust Cover BSP	1	
13	230-013	Crankshaft Spacer	1		51B	230-105	Rotary Valve Exhaust Cover NPT	1	
14	804-009	Crankshaft Circlip	1		52	810-001	Flange Bolts	8	
15	300-035	Crankshaft Spacer	1		55	807-007	Output Shaft Brg. (Outer)	0	
16	300-049	Crankshaft Spacer Shim	5		56	807-008	Output Shaft Brg. (Inner)	2	
18	804-058	Crankshaft Bearing Circlip	2		60	816-063	Oil Level Plug	1	
19	808-044	Crankshaft Oilseal	1*	239-911	72A	230-003	Inlet Adaptor Plate BSP	1	
20	230-915	Std. Crankshaft Assembly	1		72B	230-103	Inlet Adaptor Plate NPT	1	
24	230-076	Std. Flange Plate	1		73	130-004	Inlet Adaptor Plate Gasket	1*	239-911
25	808-028	Flange Plate Seal	1*	239-911	75	808-008	Dipstick Seal	1*	239-911
26	816-071	Plug	1		79	239-911	RM210 Seal Kit	1	
27	230-012	Engine Case	1		80	230-060	Rotary Valve Spacer	2	
29	230-081	Queen Rod Pivot	3						
30	230-078	Queen Rod	3						
31	230-052	Crank Spacer SELECT	1						
33	230-054/055	Crank Spacer ASSEMBLY	1						
34	230-056	Crank Spacer	1						
35	230-010	Balance Weight	1						

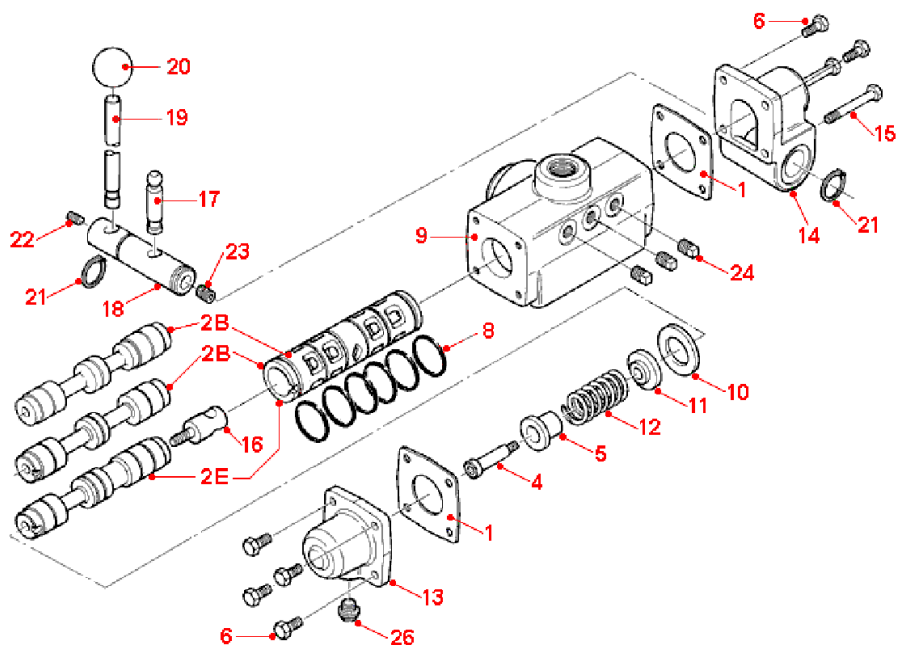
If unit is pre 1990 supplied, consult manufacturer to confirm design.

## Spare Parts List Parking Brake



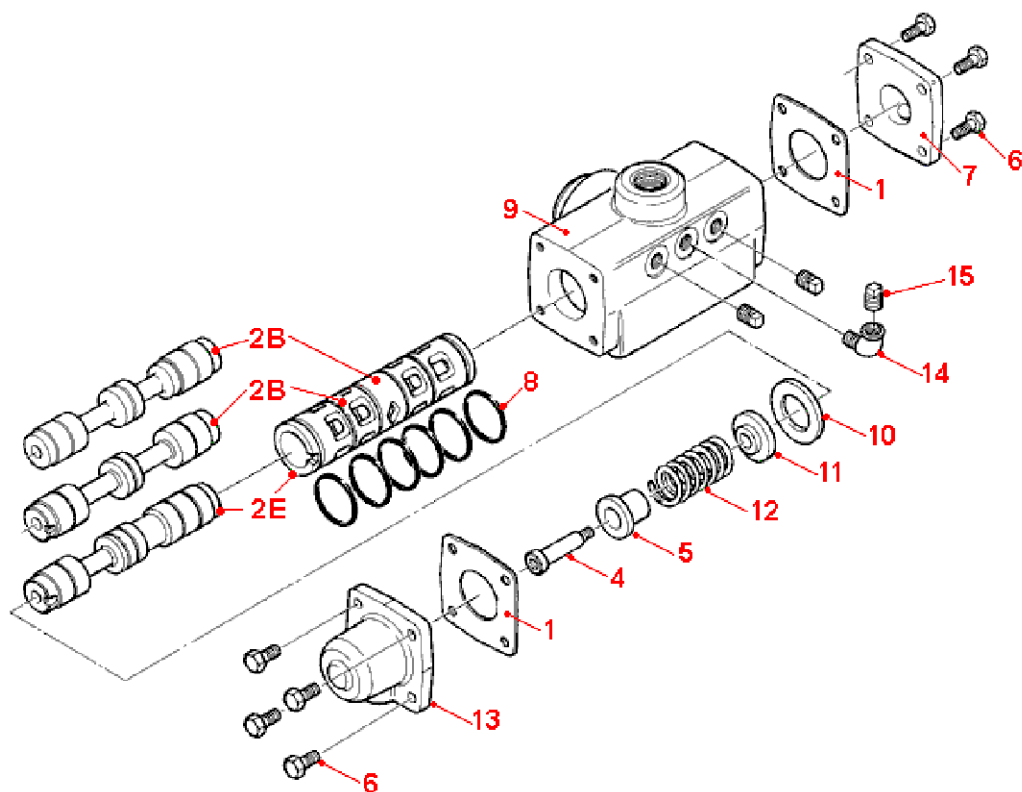
Item	Part No.	Description	Qty
01	802-072	Set Screw M10 x 20	4
03	808-090	Bonded Seal 1/4" BSP Dowty	2
04	816-004	Banjo Bolt Only 1/8 BSP	1
05	816-005	Banjo Bolt C/W/ Nut&Rin 5/16	1
06	212-001	Brake Wheel	1
07	806-001	Dowel Dia 10 x 30 Lg	2
08	811-001	Key 6 Sq.x30mm (K124)	1
09	222-008	Brake Housing	1
10	300-049	Shim - Output	5
11	300-035	Output Shaft Spacer	1
12	804-009	Circlip 27mm External	1
13	102-009	Brake Spring Adjuster	2
14	102-024	1/2" BSP Hex Nut	2
15	814-001	Spring 223712	2
16	802-016	Hex Head Screw M6 x 16	4
17	212-030	Piston Block Gasket	1
18	802-025	Hex Head Screw M6 x 25	2
19	808-075	U Packing U110	2
20	212-014	Piston Block	1
21	202-011	Brake Piston	2
22	212-013	Block Support Plate	1
23	802-012	Hex Head Screw M6 x 12	2
24	804-006	Circlip 19mm External	1
26	212-901	Brake Shoe Assembly	2
27	212-005	Output Shaft	1
28	807-008	Ball Bearing	2
29	804-058	Circlip 62mm Internal	2
30	808-044	Oilseal 30x62x10/R4	1
32	212-003	Brake Shoe Pivot	2
33	804-002	Circlip 11mm External	2
35	7008G18	Breather plug 1/8 BSPP	1

## Spare Parts List Hand Control Valve



Item	Part No.	Description	Qty
01	111-066	End Cap Gasket	2
02E	221-913	Matched Spool and Sleeve	1 (Equipower)
02B	221-914	Matched Spool and Sleeve	1 (Biased)
4	817-003	Shoulder Screw 8 mm	1
5	111-071	Centering Shaft Guide	1
6	802-016	Hex Head Screw M6 x 16	6
8	808-027	O Ring 27.5 x 30	6
9	221-060	Valve Body	1
10	111-068	Valve Sleeve Spacer	1
11	111-072	Washer, Spring Centering	1
12	814-016	Spring 323714	1
13	111-064	End Cap - Spring End	1
14	113-041	Lever Cap	1
15	802-024	Hex Head Bolt M6 x 50	2
16	113-024	Toggle Shaft	1
17	113-026	Toggle Pin	1
18	113-008	Hand Lever Pivot	1
19	113-002	Hand Lever	1
20	818-003	Black Plastic Knob 31mm	1
21	804-013	Circlip 20mm External	2
22	815-010	Grub Screw M8 x 10	1
23	815-002	Grub Screw M8 x 16	1
24	816-063	Plug 1/8" BSPT Sq. Head	3
26	113-050	Vent Plug	1

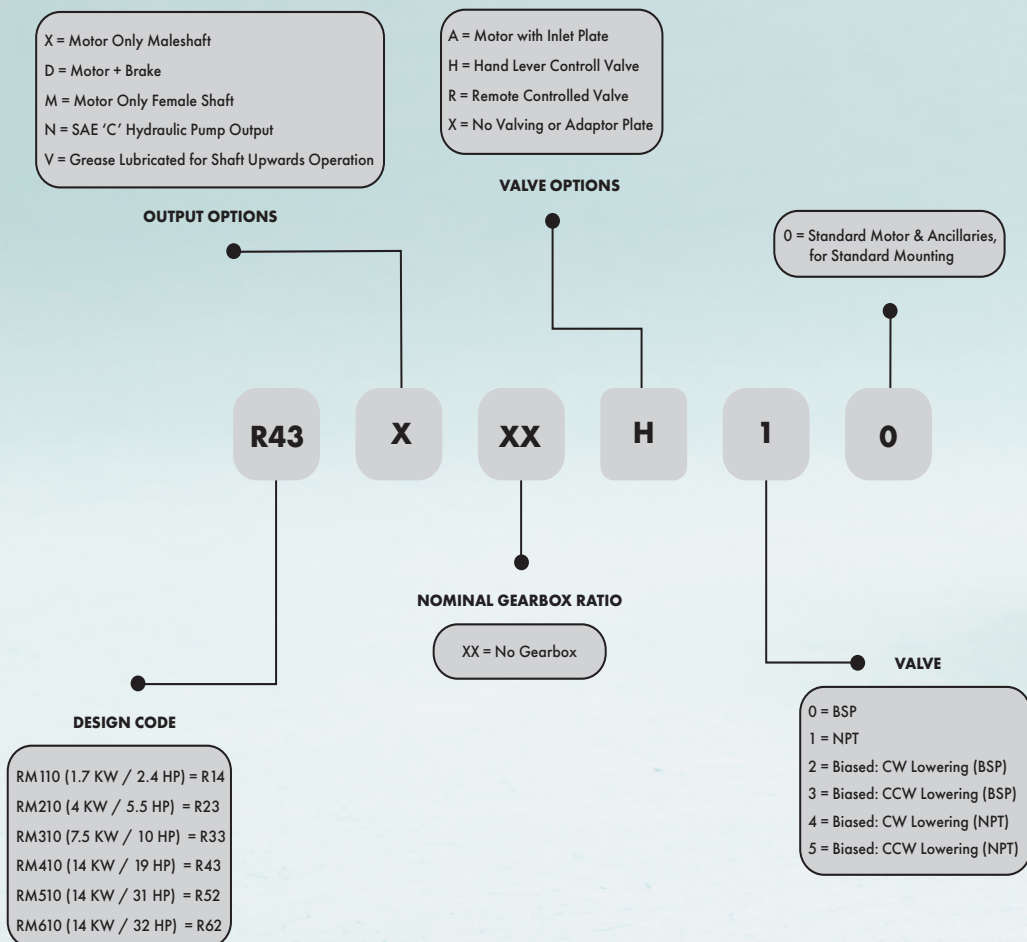
## Spare Parts List Remote Control Valve



Item	Part No.	Description	Qty
01	111-066	End Cap Gasket	2
02E	221-913	Matched Spool and Sleeve	1 (Equipower)
02B	221-914	Matched Spool and Sleeve	1 (Biased)
4	817-003	Shoulder Screw 8 mm	1
5	111-071	Centering Shaft Guide	1
6	802-016	Hex Head Screw M6 x 16	8
7	111-065	End Cap - Plain End	1
8	808-027	O Ring 27.5 x 30	6
9	221-060	Valve Body	1
10	111-068	Valve Sleeve Spacer	1
11	111-072	Washer, Spring Centering	1
12	814-017	Spring D13040	1
13	111-064	End Cap - Spring End	1
14	816-049	Elbow M/F 1/8" BSPT	1
15	816-063	Plug 1/8" BSPT Sq. Head	3

## Ordering code

Select easily with the ordering code your version and order it at our sales team. Do you have special wishes? For example ATEX Certified, different mountings, brakes etc. You name it and we make it possible. Contact us for your wishes and we will be happy to engineer a proposal to suit your requirements.



# EU ATEX Certification Piston Motors



**GLOBE** AIRMOTORS B.V.

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[www.globe-benelux.nl](http://www.globe-benelux.nl)

## EU-Declaration of Conformity

We, GLOBE Airmotors B.V.:

Hereby declare in our sole responsibility, that the following air driven "GLOBE Piston Motor" models:

**RM110, RM210, RM310, RM410, RM510, RM610**  
Incl. Ancillary Components, Valves RCV & HCV

are in accordance with the Directives:

**2014/34/EU, Equipment and Protective Systems in Potentially Explosive Atmospheres**  
**2006/42/EC, Machinery Directive**

The Equipment has been designed and manufactured to the relevant parts of the following harmonized standards:

**EN 1127-1:2019, EN-ISO 80079-36:2016, EN-ISO 80079-37:2016,**  
**EN 12100:2010, EN 82079-1:2012, EN 4414:2010**

The ATEX marking of the equipment is:

GLOBE Airmotors B.V.  
Boerhaaveweg 9-11, 2408 AD Alphen aan den Rijn



**II 2G Ex h IIC T5 Gb**  
**II 2D Ex h IIIC T100°C Db**  
**-20°C ≤ Ta ≤ +60°C**

A complete Technical File is held at the GLOBE Airmotors B.V office in Alphen aan den Rijn (NL). A copy of the Technical File is archived with file number EXVF-000015 at ExVeritas in the UK.

Alphen a/d Rijn  
19-02-2022

GLOBE AIRMOTORS B.V. GLOBE AIRMOTORS B.V.

Boerhaaveweg 9-11  
2408 AD Alphen a/d Rijn  
The Netherlands

J.G.G. Wannel  
Director

# UKCA ATEX Certification Piston Motors



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Incl. Ancillary Components, Valves RCV & HCV

are in accordance with the Directives:

**Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres  
Regulations 2016  
Supply of Machinery (Safety) Regulations 2008**


The Equipment has been designed and manufactured to the relevant parts of the following harmonized standards:

**EN 1127-1:2019, EN-ISO 80079-36:2016, EN-ISO 80079-37:2016,  
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J.G.G. Wanner  
Director

# EU ATEX Certification Brakes



**GLOBE** AIRMOTORS B.V.

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## EU-Declaration of Conformity

We, GLOBE Airmotors B.V.:

Hereby declare in our sole responsibility, that the following pneumatic brake models:

**112-900EX, 212-900EX, 312-900EX, 412-920EX, 512-900EX**

as well as the GLOBE Airmotors' "GLOBE Piston Motor" & Brake assemblies and "GLOBE Piston Motor" & Brake & Valve assemblies:

**RxxDxxxxxEX, RxxDxxHxxEX, RxxDxxRxxEX,  
RxxKxxxxxEX, RxxKxxHxxEX, RxxKxxRxxEX  
RxxLxxxxxEX, RxxLxxHxxEX, RxxLxxRxxEX**

are in accordance with the Directives:

**2014/34/EU, Equipment and Protective Systems in Potentially Explosive Atmospheres  
2006/42/EC, Machinery Directive**

The Equipment has been designed and manufactured to the relevant parts of the following harmonized standards:

**EN 1127-1:2019, EN-ISO 80079-36:2016, EN-ISO 80079-37:2016,  
EN 12100:2010, EN 82079-1:2012, EN 4414:2010**

The ATEX marking of the equipment is:

GLOBE Airmotors B.V.  
Boerhaaveweg 9-11, 2408 AD Alphen aan den Rijn



**II 2G Ex h IIC T4 Gb X  
II 2D Ex h IIC T135°C Db X  
-10°C ≤ Ta ≤ +60°C**

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Alphen a/d Rijn  
19-02-2022  
GLOBE AIRMOTORS B.V.

J.G.G. Wanner  
Director

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The Netherlands



# UKCA ATEX Certification Brakes



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We, GLOBE Airmotors B.V.:

Hereby declare in our sole responsibility, that the following pneumatic brake models:

**112-900EX, 212-900EX, 312-900EX, 412-920EX, 512-900EX**

as well as the GLOBE Airmotors' "GLOBE Piston Motor" & Brake assemblies and "GLOBE Piston Motor" & Brake & Valve assemblies:

**RxxDxxxxxEX, RxxDxxHxxEX, RxxDxxRxxEX,  
RxxKxxxxxEX, RxxKxxHxxEX, RxxKxxRxxEX  
RxxLxxxxxEX, RxxLxxHxxEX, RxxLxxRxxEX**

are in accordance with the Directives:

**Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres  
Regulations 2016  
Supply of Machinery (Safety) Regulations 2008**

The Equipment has been designed and manufactured to the relevant parts of the following harmonized standards:

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EN 12100:2010, EN 82079-1:2012, EN 4414:2010**

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II 2D Ex h IIIC T135°C Db X  
-10°C ≤ Ta ≤ +60°C**

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Alphen a/d Rijn  
19-02-2022

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# EU CE Certification



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## EC - DECLARATION OF CONFORMITY

According to annex II.1.A of the Machinery directive 2006/42/EC

Complies with the provisions of the following EG-directive\* and standards\*

**air driven GLOBE Piston Motor models:**

**RM110, RM210, RM310, RM410, RM510, RM610**

Incl. Ancillary Components (Brakes, Valves, Gearboxes)

Complies with the provisions of the following EG-directive\* and standards\*

- |   |                     |
|---|---------------------|
| • Machinery directive 2006/42/EC  |                     |
| ▪ Safety of machines – basic terminology  | EN-ISO 12100:2010   |
| ▪ Preparation for using the instructions – structure, content en presentation part 1: | EN-IEC 82079-1:2012 |
| General assumptions and detailed demands  |                     |
| ▪ Pneumatics – general rules and safety regulations for systems and parts             | EN-ISO 4414:2010    |

\* incl. possible changes in the directive and standards during the signing of this declaration.

The technical file is present inside the EER and can be drawn from name and the address of the manufacturer by the undersigned of this declaration.

Netherlands, Alphen aan den Rijn

Date: 19-02-2022

Signature assignee of  
GLOBE Airmotors B.V.

  
Boerhaaveweg 9-11  
2408 AD Alphen a/d Rijn  
The Netherlands

Name: J.G.G. Wannet

Director

# UKCA Certification



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## UKCA - DECLARATION OF CONFORMITY

According to Supply of Machinery (Safety) Regulations 2008

Complies with the provisions of the following EG-directive\* and standards\*

**air driven GLOBE Piston Motor models:**

**RM110, RM210, RM310, RM410, RM510, RM610**

Incl. Ancillary Components (Brakes, Valves, Gearboxes)

Complies with the provisions of the following EG-directive\* and standards\*

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Netherlands, Alphen aan den Rijn

Date: 19-02-2022

Signature assignee of  
GLOBE Airmotors **GLOBE AIRMOTORS B.V.**  
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Name: J.G.G. Wannet  
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**Compact Piston Air Motors**



**Pneumatic Brakes**



**Compact Vane Air Motors**



**Planetary Geared Vane Air Motor**



**Vane Air Motors**



**Specials: Costum Build**

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This document, as well as the CAD data of the vane air motors are available for download on [globe-airmotors.com](http://globe-airmotors.com).

**[globe-airmotors.com](http://globe-airmotors.com)**