



Models Applicable

SGB-576 & SGP-576

SGB-535 & SGP-535

SGB-540 & SGP-540

SGB-581 & SGP-581

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1. Introduction.

- This manual has been prepared for those persons who will operate and maintain the machine. It is important that all persons responsible for the care and operation of this product READ and UNDERSTAND the information that has been presented in this publication.
- The machine can be installed, used and maintained only in the ways and for the purposes described in the sales contract and completed in this manual.
- Secomak Limited denies any responsibility for accidents caused by incorrect installation (as described below) unless performed by the company's personnel. As a consequence performance, maintenance programmes, checks and verifications of the good condition of the machine are all described in detail in this manual.

Basic Concept

- Secomak Gas Boosters are designed to BS8487.
- Secomak Gas Boosters are based on centrifugal fan designs and give high performance from a small physical size. The Secomak layout occupies less space than direct drive boosters of conventional design and comparable performance.
- Package units come complete with all necessary controls. These include start/stop facilities from either, the booster or a separate management panel, overload protection and pressure switches for the inlet and outlet of the booster. The only work required for installation is to supply the appropriate electrical power and mechanical connections to the booster.
- An automatic changeover unit is available for installations where a duty and standby unit is installed. This will automatically switch on the second unit if the main booster fails and provides a visual warning that attention is required.
- Booster fan chambers are cast in either aluminium alloy or cast iron and manufactured to eliminate porosity. Impellers are also cast in aluminium and are dynamically balanced to cut down noise and vibration. Booster fan bearing housings are manufactured in steel for mechanical stability and each fan chamber assembly is sealed for gas tightness and individually tested for leaks with air at 250mbar.
- An automatic belt tensioning arrangement is used on all models in the range. This has the benefit of low maintenance and fast and simple belt replacement. All models are suitable for use in ambient temperatures up to 40°C and are continuously rated. Motors are T.E.F.C and are protected to IP54.

2. Technical Data.

MODEL	576 (1ph)	576 (3ph)	535	535/9	540	581
Maximum Flow Rate (Nm ³ /hr) (kW)	300 2900	300 2900	600 5800	500 4835	1250 12085	900 8700
Natural Gas (S.G. = 0.6, Net CV = 9.66 kWh/Nm ³)						
Maximum Inlet Pressure (mbar)	115	115	110	110	90	90
Maximum Pressure Lift (mbar)	32	32	60	70	80	46
Maximum Outlet Pressure (mbar)	150	150	150	150	150	150
Other Gases ***	Towns/Biogas	Towns/Biogas	Towns/Biogas	Towns/Biogas	Towns/Biogas	Towns/Biogas
Maximum Ambient Operating Temperature (°C)	40	40	40	40	40	40
Electrical Supply	240/1/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Control Voltage	230V/50Hz	230V/50Hz	230V/50Hz	230V/50Hz	230V/50Hz	230V/50Hz
Electric Motor	0.55	0.55	1.5	2.2	4.0	2.2
Starting Current (A)	8.0	3.0	7.0	10.0	14.0	10.0
Run Current (A)	3.5	1.0	3.5	4.7	7.2	4.7
Electrical Protection	IP54	IP54	IP54	IP54	IP54	IP54
Electrical Drawing Number	19154	19155	19155	19155	19155	19155
Weight (kg)	29	29	39	40	72	72
Noise Level* (dBA)	73	76	80	82	84	84
Order Code **	SGP-576120	SGP-576140	SGP-535240 SGP-535540	SGP-535940	SGP-540140 SGP-540240 SGP-540340	SGP-581140 SGP-581240
Applicable Directives	Machinery 98/37/EC EMC 89/336/EEC Low Voltage 73/23/EEC					

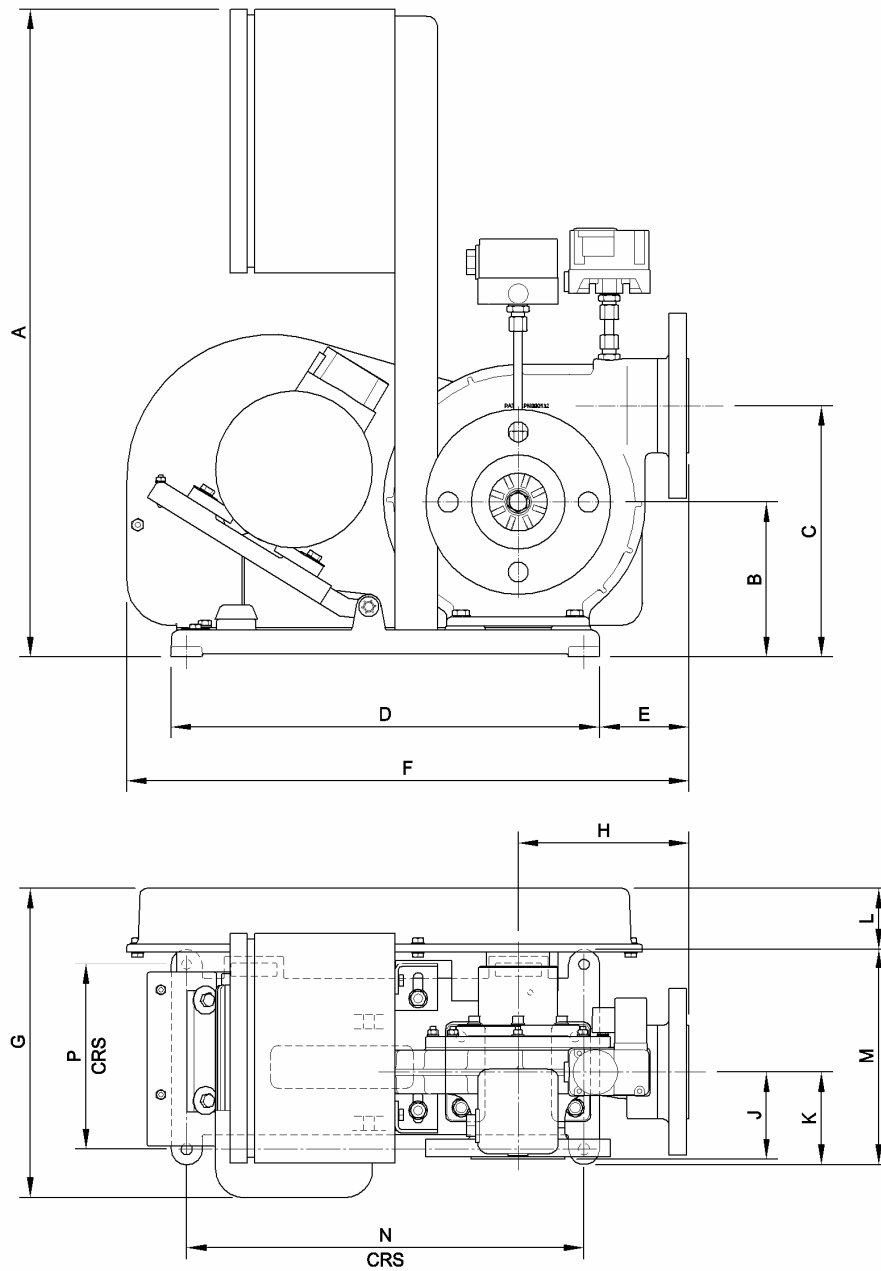
* Noise levels have been measured at a distance of 1m from the booster, which was fitted with a ducted inlet and outlet. Consideration to the risk factors for hearing must be undertaken. It is essential to observe all the regulations issued by national and local legislative bodies. (Refer to HSE L108 and INDG 362)

** See performance curves for variant of booster model.

*** Landfill gases and biogases may be wet, dirty and corrosive and therefore inappropriate for use with Secomak Gas Boosters as materials have to be specifically for the composition of the gases. Particular attention should be paid to any Hydrogen Sulphide (H₂S) content, which can be highly corrosive.

Secomak policy is one of continuous product improvement. The right is reserved to vary any design, dimension or performance without previous notice.

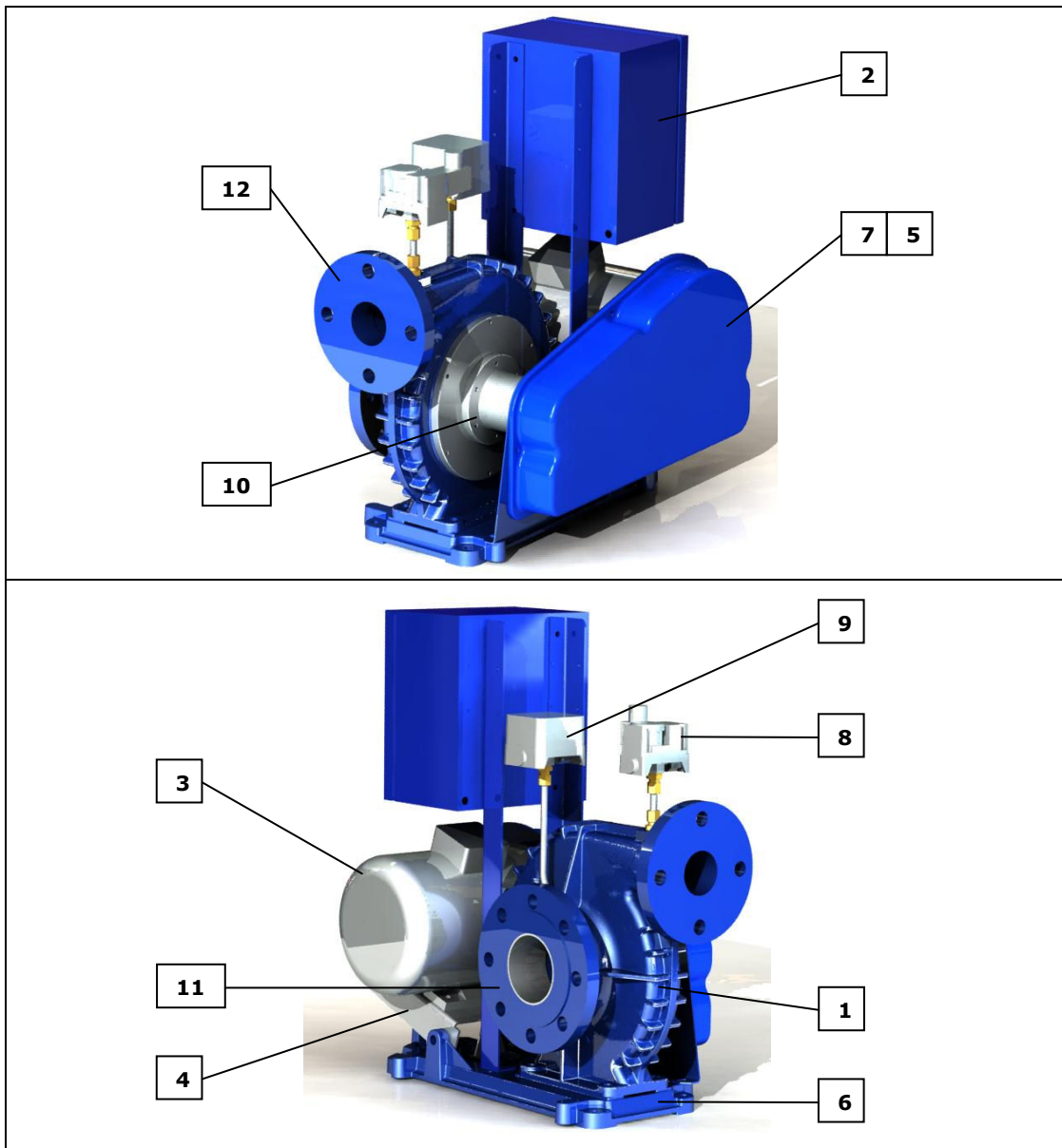
3. Dimensional Data (Package Booster shown)



MODEL	A	B	C	D	E	F	G	H
SGP-576	581	140	225	382	80	511	277	152
SGP-535	634	178	305	432	82	590	303	180
SGP-540	635	202	353	457	138	708	401	237
SGP-581	635	202	353	457	138	708	401	237

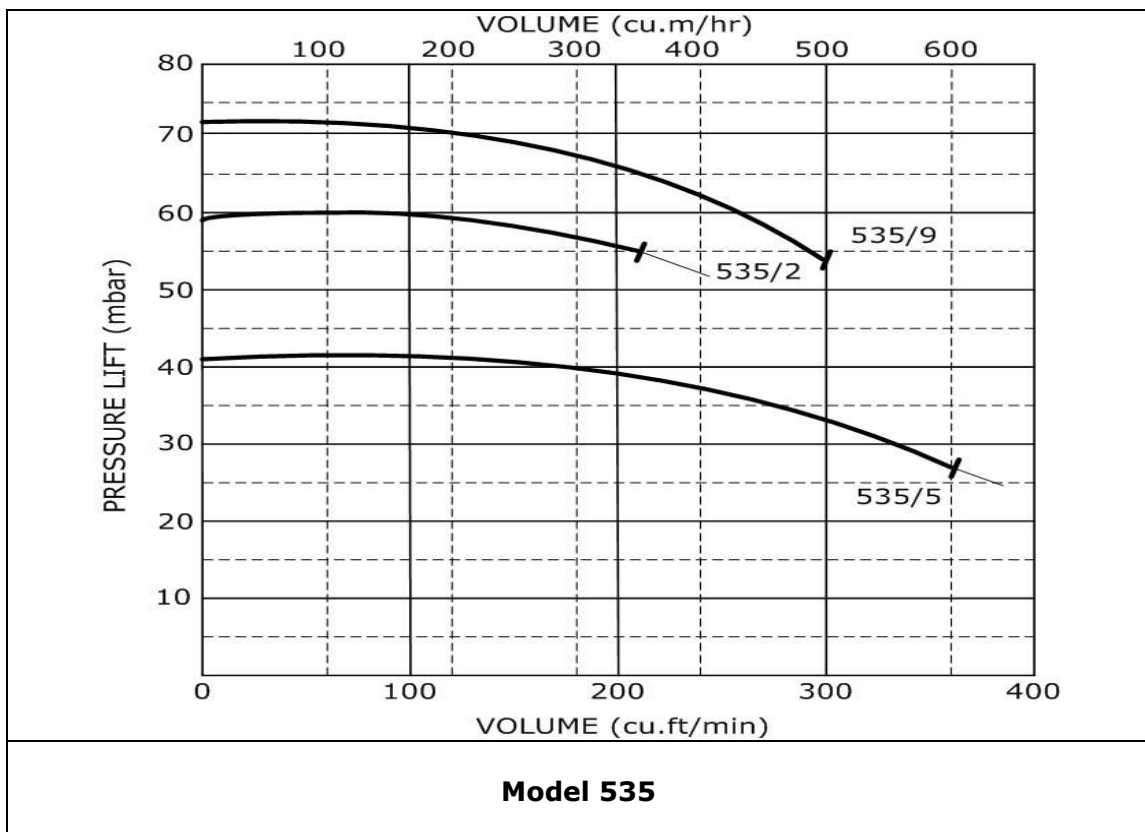
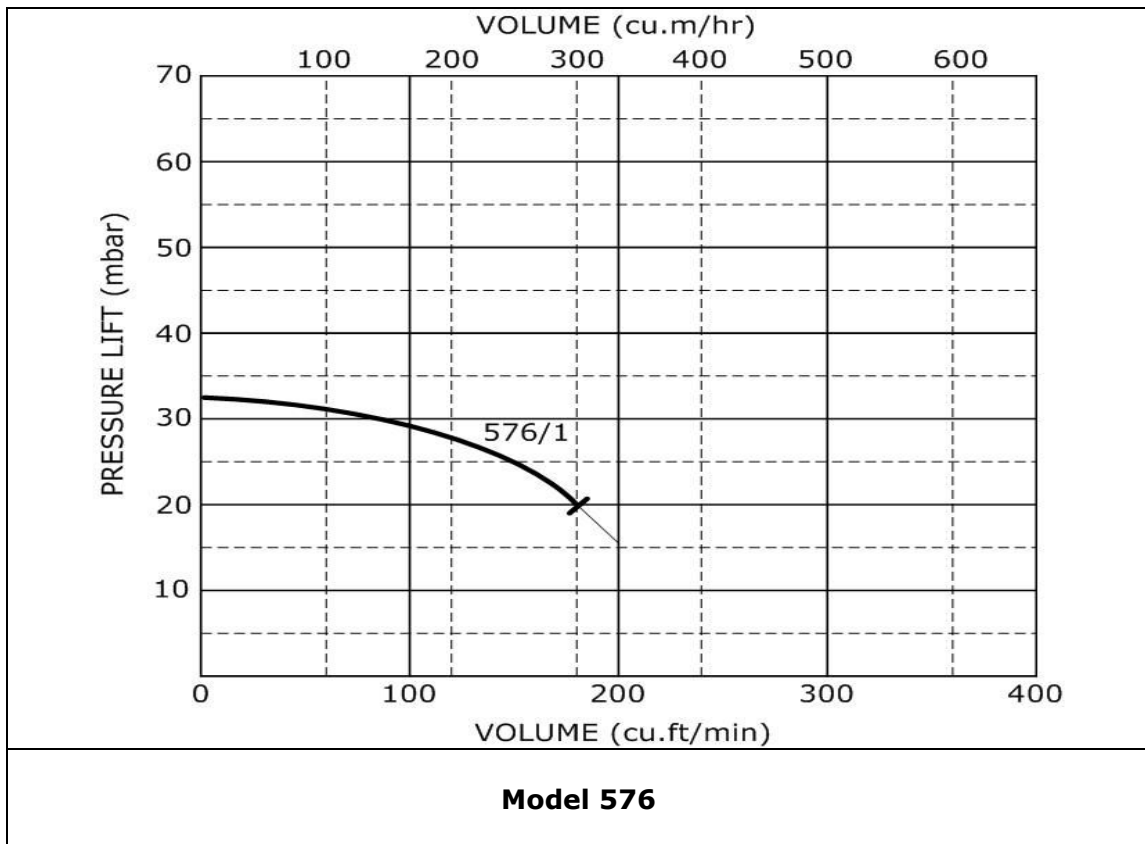
MODEL	J	K	L	M	N	P	Inlet Flange	Outlet Flange
SGP-576	78	79	55	190	355	162	DN50	DN50
SGP-535	101	107	62	213	378	143	DN80	DN50
SGP-540	115	128	52	282	419	184	DN100	DN80
SGP-581	115	128	52	282	419	184	DN100	DN80

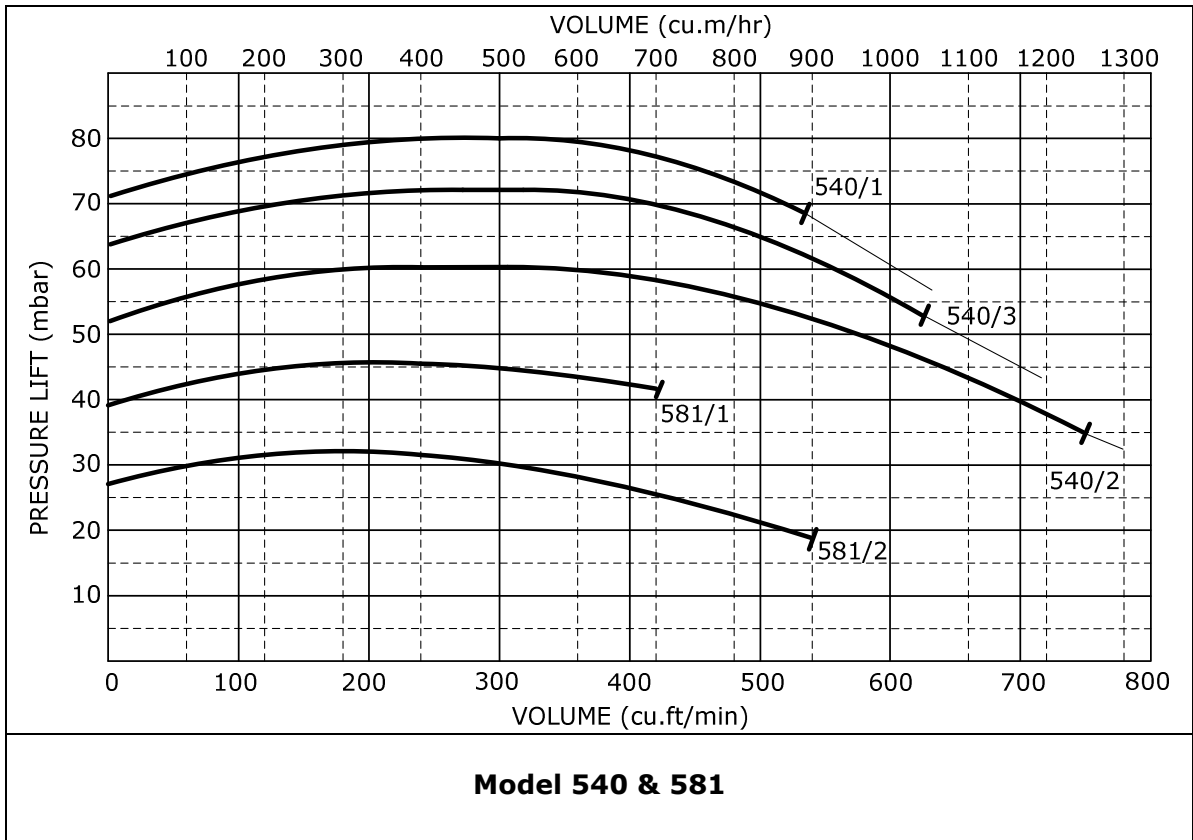
4. Component Diagram (Package Booster shown).



No.	Component
1	Booster Impeller Chamber
2	Control Panel
3	Drive Motor
4	Motor Platform
5	Drive Belt
6	Booster Base
7	Belt Guard
8	Outlet Pressure Switch (OP)
9	Inlet Pressure Switch (IP)
10	Booster Bearing Assembly
11	Inlet Flange
12	Outlet Flange

5. Performance Curves





- Natural gas performance curves based on gas density of 0.6 standard air. Thick line indicates continuous rating.
- Our Technical Support team will be able to assist with selections for other gases or mixtures and applications.

6. Safety Regulations.

Note: when the safety regulations cited in the text of this manual involve danger, this will be made clear through the use of the symbols:



General Safety Regulations

WARNING

In addition to the following list of regulations, the Machine supervisor must comply with the laws in force regarding health and safety at work.

WARNING

For the correct comprehension of this manual the following must be defined:

- a) Danger zone.
- b) Exposed person.
- c) Operator.

The "danger zone" is the area within the perimeter of the protection devices and the main frame.

An "exposed person" is he who enters the danger zone, who stops or passes near to the machine.

The "operator" is he who has been authorised by his superiors to perform the duties of installation, operational or adjustment operations on the machine, maintenance, cleaning, replacements of parts for replacement of damaged/worn parts, repair and machine transportation operations.'

In order that the operator can perform the above-described tasks safely and in the most profitable way possible, Secomak believes that:

Competent, trained personnel should perform the installation operations.

- For operations that lead to the use and regulation of the machine, the operator must proceed only after having been fully instructed with regard to the function, safety and indication devices, and the adjustment of the machine as described in this manual.
- For ordinary maintenance operations, the operator must adhere to the instructions contained in this manual with regard, for example, the frequency and method of checking the correct functioning of the various adjustment, indication and safety devices on the machine.
- For cleaning operations, the operator must be fully, aware of what is described in this manual to this regard.

Personnel with the qualification of specialised maintenance engineer mechanical or electrical must perform the replacement of damaged or worn parts and repairs, depending on the type of intervention required.

Furthermore, the operator must, be aware of the maintenance programme planned and described in this manual so as to be able to plan the timing of such

operations. Generally speaking, the operator must be a person who is physically and intellectually suitable, he must be able to read the displayed notices and distinguish between the visual signals emitted by the machine, and he must not work under the effects of medicines or drugs.

Always adhere to the safety standards and to the instructions contained within this manual.

Secomak Limited denies any responsibility for accidents caused by the incorrect use of the machine or relevant equipment. Furthermore, the company declines any responsibility for accidents caused by the total or partial failure to observe the instructions shown in this manual and/or via pictograms or writing on the machine.

THE TRANSPORTING, UNLOADING AND INSTALLATION of the machine must be carried out only by specialised authorised personnel.

NOTICE

When not in operation, the machine must be protected from accidental movements. Disconnect the current by turning of the power via the isolator.

USE SAFETY REGULATIONS

Before beginning work, check for the presence of any visible defects on the safety devices.

MAKE SURE:

- That there are no foreign bodies (tools, cloths, etc.) on the machine.
- That once the machine has been started, there is no strange noises. If such noises are heard, the machine must be stopped immediately and the cause found.

BEFORE STARTING

Do not, under any circumstances, start or adjust the control devices, unless authorised and qualified to do so.

Before starting work, the operator must check for any visible defects regarding the safety devices and the machine.



Do not allow unauthorised personnel to approach the machine.

The operator should inform his superior of any anomalies that he has noticed, especially those regarding safety.

If problems arise that compromise the safe functioning of the machine, it must be stopped.

Should it be necessary to intervene within the workings of the machine, turn off the main isolator switch and attach a notice to it indicating that it is forbidden to start the machine.

WARNING

Hang a notice on the main isolator switch on the electrical control panel warning that there is an operator working on the machine.

When changing the equipment or performing cleaning, maintenance, or repair operations, wear suitable protective overalls. Clothes should be tight and detergent-resistant.

WHEN CHANGING ANY WEAR PARTS:

It is necessary:

- To turn off the main isolator switch and make sure that nobody turns it on again i.e. padlock in off position.
- Make sure that the starting of the machine does not cause damage to persons or to the machine itself.
- Do not wear jewels, rings, necklaces, etc., which could become entangled, in the machine parts. Protect long hair with a hair net.

BEFORE STARTING AND DURING OPERATION:

Make sure that:

- All parts subject to replacement are installed and secured correctly.
- There are no loose Items (clothes, tools, keys, etc) lying on the machine.
- Before each start up, make sure that there is nobody in the machine danger zone.
- During the machines normal operation, never deactivate the protection or safety devices.
- While the machine is running, listen for any unusual noises. Find the cause and eliminate the problem,
- Do not handle tools, detergents, or the like near the working machine.
- Do not work on the machine while it is running, and keep at a safe distance from its moving parts.
- Do not operate the machine without supervision.

Maintenance Safety Regulations

DURING MAINTENANCE AND REPAIR OPERATIONS:



Do not use water or other fluids to clean electrical parts of the machine

Check for damage to the control components and, if necessary change these parts.

A supervisor must direct all repair operations.

During maintenance and repair operations, the main isolator must be locked in the off position.

WARNING

Specialised-trained personnel should carry out repair operations on the machine. The personnel must perform these tasks with care, so that damage to machine or persons is avoided.



Before working on the electrical system, the power must be disconnected.

See electrical procedures.

During maintenance and repair operations, unauthorised personnel must be kept at a safe distance from the machine.

If more than one person is working on the machine at a time, for repairs or other interventions, they must ensure everyone is clear and warned before starting the machine.

When the repair operations have been terminated, the machine can only be started with the supervisor's permission.

Standards Concerning Noise Exposure Risks

Consideration to the risk factors for hearing must be undertaken. It is essential to observe all the regulations issued by various national and local legislative bodies.

As regards the above, the head of department(s) is responsible for ensuring that:

- The personnel are supplied with adequate protection, if required.
- The personnel are informed of the safety standards and risks involved when all necessary precautions are not adopted.

7. Booster Installation Guidelines

- **A gas booster is an integral part of the gas supply system.**
- **Installation should only be carried out by a competent person.**
- **Reference should be made to the 'Institution of Gas Engineers Utilisation Procedures IGE/UP/2, Gas Installation Pipework, Boosters and Compressors on Industrial and Commercial Premises' and any subsequent additions and amendments.**
- **The installer of this booster must give 14 days notice, in writing, to the Gas Transporter of the intention to install this unit to operate with piped supplies of natural gas or LPG. (Gas Safety Installation and Use Regulations GSIUR [7 and 8]).**

Booster Location.

- Secomak boosters **should not** be installed in a governor or meter room.
- Secomak boosters **should not** be installed in a room specifically intended for an air compressor. If unavoidable, the air inlet of the compressor **must be ducted from outside the room.**
- The booster position must not compromise access for maintenance of both compressor and booster.
- The booster should be located in a well ventilated area that is clean and dry and accessible for maintenance.
- The ambient temperature should not exceed 40°C or fall below 5°C. The ambient humidity should not exceed 80%.
- The booster should be located as close as possible to the equipment being served by the booster. This is to minimise the length of pipework at higher operating pressures.
- The booster should be located to leave adequate access for maintenance of drive belts, bearing assemblies and electric motors.

Ventilation.

- Where a booster is installed in a special room or housing, ventilation openings shall be provide at high and low level to atmosphere.
- All high level ventilation shall be located as near to roof level as practical.
- The total ventilation area should be equally apportioned about the room or housing with all openings at least 3.0m from any external source of ignition.
- The total effective ventilation area shall not be less than 2% of the floor area of the room or housing.

- Mechanical ventilation will be fully interlocked with the booster operation.
- Any noise attenuation of the ventilators shall not reduce the effectiveness of the ventilators.

Booster Installation Pipework.

- The size of the pipework between the gas meter and the booster is the most critical item in the gas booster installation. To avoid adverse effects on equipment 'upstream' of the booster, the pressure drop between the meter governor and the booster should be minimised. A maximum pressure drop of 1mbar is recommended.
- Undersized pipework between the meter governor and the booster can result in reduced gas pressure to appliances 'upstream' of the booster which can cause possible equipment malfunction and maybe a safety hazard.

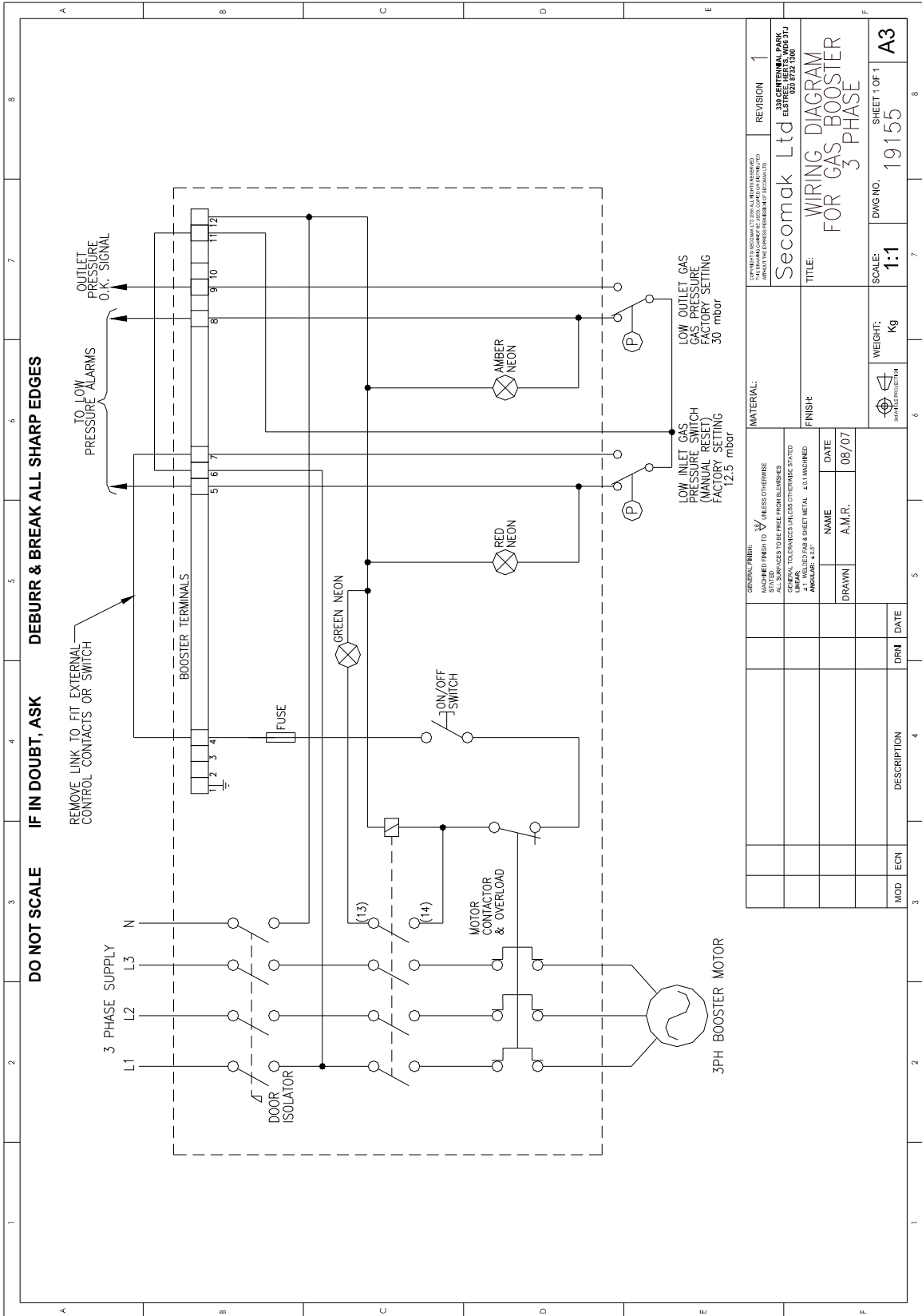
Pipe Connections.

- To minimise stress on the booster body, Secomak boosters **MUST** be fitted with anti-vibration mountings and flexible gas connectors. The flexible gas connectors to be fitted between the booster flanges and the inlet and outlet pipework.
- Flexible gas connections and anti-vibration mountings also assist in reducing any noise transmission in the gas pipework.
- Gas pipework connections to the inlet and outlet of the booster require flanged fittings to BS4504, PN16.
- Connecting pipework shall be supported adequately and correctly and independently of the booster.
- Any change in pipe size should be made as close to the booster inlet or outlet as possible. To prevent unnecessary turbulence, concentric reducers or tapers should be used.
- Model 540/581 boosters may show some degree of instability or surging at low gas flows. If this situation is anticipated a controlled by-pass should be fitted around the booster and adjusted under no-flow conditions to eliminate instability. Other Secomak booster models maintain steady rates of flow down to zero volume.
- A check or non-return valve should be fitted to the booster outlet when:
 - the outlet pipework volume is large and is considered necessary to minimise reverse pressure surges through the booster when it is turned off.
 - boosters are connected in parallel and it is necessary to minimise gas recirculation.
 - booster reverse rotation needs to be prevented.

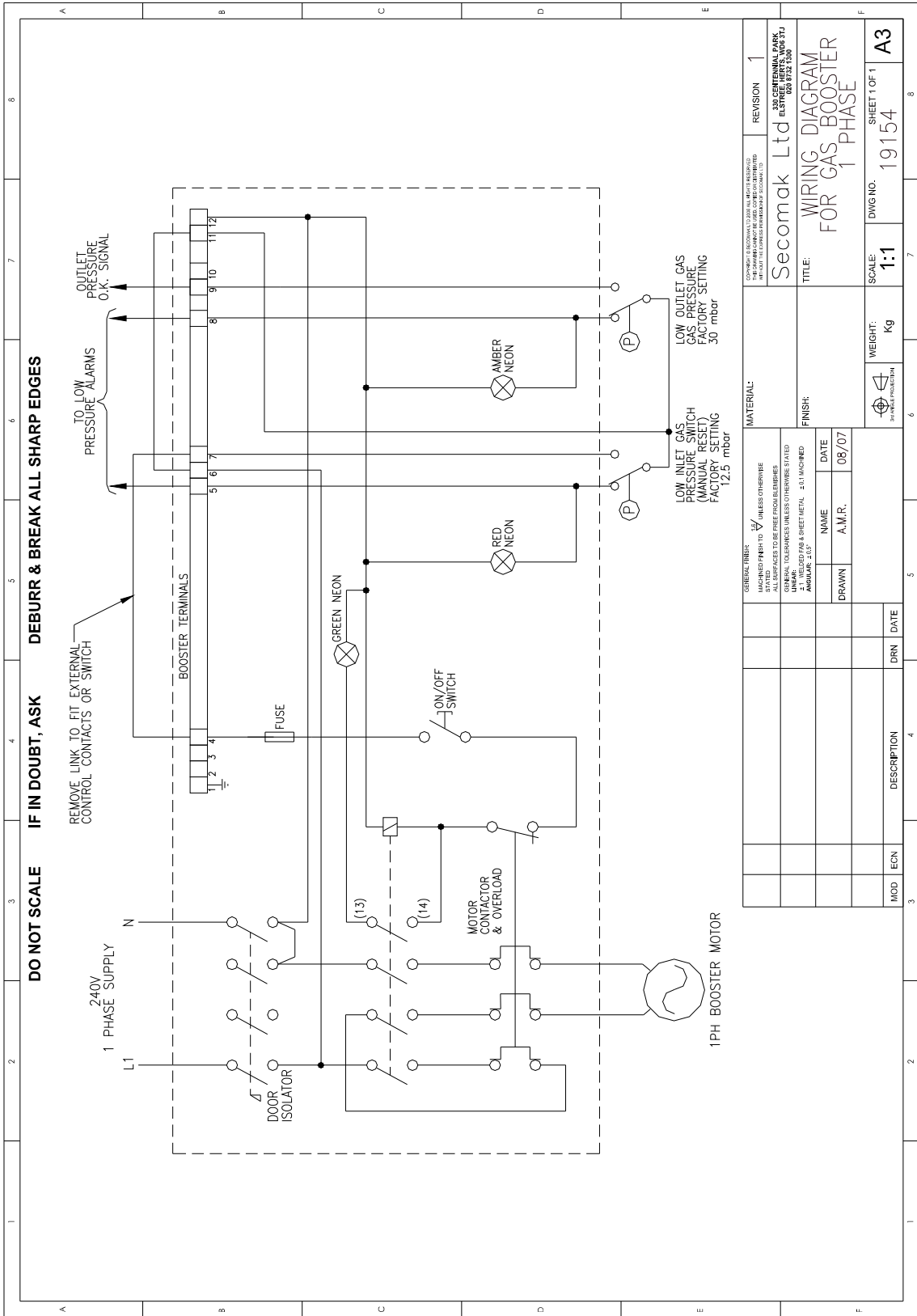
Electrical Installation.

- Electrical installation shall conform to BS 7671 and the Electricity at Work Act.
- All Secomak boosters are supplied ready for connection to a 400V, 3 phase 50Hz power supply. Model 576 boosters can be supplied with a 230V, single phase drive motor.
- It is recommended that Secomak boosters are connected to run continuously as long as the equipment served is on demand. Continuous running places less wear and tear on the booster motor and drive than continual start and stop if the booster is phased with a thermostatic burner control and reduces the risk of frequent pressure fluctuations in the gas supply. Zero volume take-off is permissible and will not cause a serious temperature rise in booster assemblies.
- The use of 'star-delta' or 'soft' starters will assist in preventing the negative pressure surge which may occur when starting.
- Ensure the nameplate markings on the motor are suitable for the electricity supply.
- Verify that the terminal connections are correct if a star-delta connected motor is to be used.
- Verify that the direction of the booster rotation is correct with the direction arrow on the booster chamber.
- Only run the booster with free inlet and outlet momentarily for test purposes. Extended running in this way may cause the motor to overload.
- Ensure that adequate fuse protection is provided.
- Electric cables to the booster motor terminal box should be terminated in a short length of flexible conduit. Verify free movement of motor platform when the supply has been connected.

Electrical Diagram (3 Phase Package Boosters)



Electrical Diagram (Single Phase Package Boosters)



<small>COMPANY: SECOMAK LTD. 330 CENTENNIAL PARK, ELECTRIC LANE, WIDNES, L37 5YU</small> Secomak Ltd		<small>REVISION</small> 1
<small>MATERIAL:</small> MACHINED FINISH TO ✓ UNLESS OTHERWISE STATED ALL DIMENSIONS TO BE FROM UNLESS OTHERWISE STATED GENERAL TOLERANCES UNLESS OTHERWISE STATED UNLESS OTHERWISE STATED FOR A SHEET METAL ±0.15 MACHINED ANGLE ±0.5°		<small>FINISH:</small> NAME: _____ DATE: 08/07 A.M.P.
<small>DRN</small> <small>DATE</small>		<small>WEIGHT:</small> Kg
<small>MOD</small> <small>ECN</small> <small>DESCRIPTION</small> <small>DRN</small> <small>DATE</small>		<small>SCALE:</small> 1:1
<small>TITLE:</small> WIRING DIAGRAM FOR GAS BOOSTER 1 PHASE		<small>SHEET 1 OF 1</small> A3
<small>DWG NO.</small> 19154		<small>8</small>

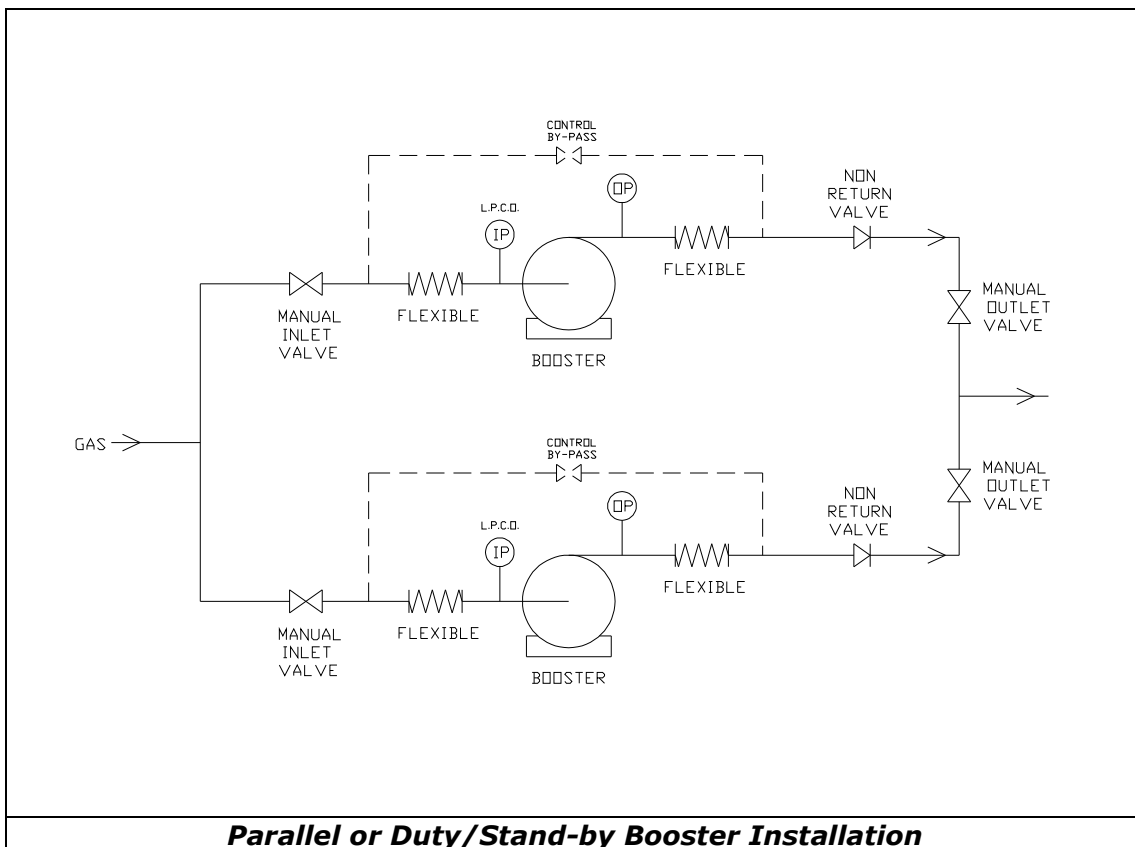
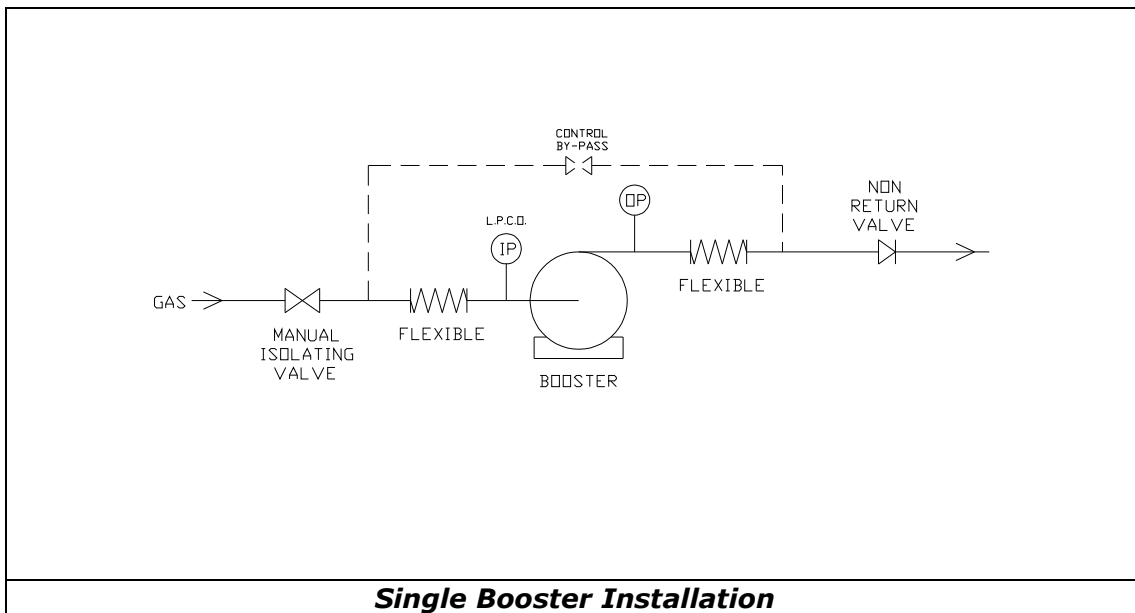
Protection Equipment.

- Secomak Package Gas Boosters are provided with an integral low pressure cut-off switch fitted at the inlet to the booster. The switch should be adjusted on site to cut off the booster at the minimum pressure advised by the local gas supply authority.
- Secomak Gas Boosters are not provided with an integral low pressure cut-off switch therefore the installer will have to provide this switch in accordance with IGE/UP/2, Section 17.2.1.1
- Low pressure cut-off switches are factory set to a low level that must be reset on site. It is recommended that the switch is set to 50% of the gas supply pressure at entry to the booster, with the appliance running at full load; with a minimum setting of 10mbar.
- To prevent the gas pressure falling below the settings of the pressure switch on start up, it may be necessary to incorporate a suitably sized reservoir or to damp the action of the pressure switch, ensuring that the response time does not exceed 3 seconds.
- Secomak Package Gas Boosters are provided with an integral low pressure switch fitted at the outlet of the booster. The switch should be adjusted on site to prove a minimum boosted pressure is available to the appliance when the booster is running.
- A non-return valve shall be fitted to a booster having a pressure lift in excess of 70mbar.

Warning Notices.

- Where a booster is installed the following notices must be permanently displayed:
 - A line diagram showing the location of the isolating valves.
 - Operating instructions and emergency procedures.
 - Notification that the meter valve needs to be fully open.
 - Notification at the meter that a booster is installed.

Booster Schematic Installation Diagrams.



- Install a stand-by if a vital function is being served.
- It is recommended to run the stand-by periodically.

8. Booster Commissioning.

- **Installation should only be carried out by a competent person.**
- **Reference should be made to the 'Institution of Gas Engineers Utilisation Procedures IGE/UP/4, Commissioning of Gas Fired Plant (I & C)' and any subsequent additions and amendments.**
- Secomak boosters are tested for gas tightness using air at pressures up to 1bar during manufacture. Do not test the booster fan chamber assembly by hydraulic pressure as this will damage the bearing seals on the booster bearing assembly.

Pre-Commissioning Checks.

- Check there is correct matching of the booster to the required pressure and flow rate demands.
- Check for mechanical damage.
- Check for correct installation in accordance with Secomak installation instructions.
- Check for gas tightness of the booster and complete assembly.
- Check that adequate ventilation is provided.
- Remove the belt guard and check the drive belt and pulleys to ensure they are free from any building dust, dirt and abrasive materials.
- Ensure the earth terminal in the booster control box is connected to the supply earth.
- Check that the direction of the booster rotation is correct with the direction arrow on the booster chamber.

Inlet Pressure Switch (IP) Operation.

- Adjust the IP to the required setting (normally 10mbar). See section 5.7.
- Shut down all but one appliance fed by the booster.
- Slowly close the booster inlet isolating valve reducing the pressure in 1mbar steps waiting 10 seconds at each step to allow for the response time.
- *If the appliance should shut down due to its own safety interlocks before the low pressure cut-off switch reaches its cut-off pressure, it will be necessary to establish a flow on the booster outlet by some other means before recommencing the test. For example:*

- *Fit a separate test appliance on the outlet, or*
- *Vent the gas to the open air at least 2.5m above ground at least 3m from any potential source of ignition. Care should be taken to ensure that the vent gas cannot drift into buildings or form pockets in ducts, pits, etc.*

The temporary line from the booster outlet to the test appliance or vent point may be reinforced flexible hose provided that it is firmly secured; unsecured push-on connections should not be used.

Where externally armoured hose is used it must be suitably earthed to avoid the danger of sparking.

- Note the setting at which the pressure switch shuts down the booster and the response time, i.e. from the time the pressure is reached to the time the switch cuts out.
- This should be less than 3 seconds. If shut down takes longer than 3 seconds then the setting of the IP should be raised until shutdown at 10mbar within 3 seconds is achieved.
- Shut down the one appliance to maintain safety.
- Observe that on restoration of pressure (opening inlet valve) the booster does not restart.
- Push the IP reset button to restart the booster.
- If there is a fault it should be corrected before the booster is operated again.
- If all is correct re-start the booster and the appliance(s) supplied by it.

9. Booster Maintenance.

It is essential that Secomak Gas Boosters are subject to regular inspection to ensure that no wear or damage has occurred to bearings, fans, seals and drive elements, and that where necessary these are replaced without delay.

Only parts supplied or authorised by Secomak Limited may be used when replacing parts.

Secomak denies any responsibility for accidents caused by the use of replacement parts which are not new and/or not specific for the model being used.

Before carrying out any maintenance on the Booster, all Electrics and gas pressure should be turned off.

Flexible Connectors

It is recommended that flexible connectors are replaced every five years.

Electric Motors.

- Secomak booster electric motors use sealed-for-life bearings and require no additional lubrication. The bearings are usually left in service until their replacement is required.
- The motor mounting arrangement incorporated in all models ensures correct belt tension at all times and requires no maintenance.
- Belt tension is achieved by the inherent weight of the electric motor. To ensure that correct tensioning is maintained any motor replacement must be carried out using a motor of identical weight and dimensions.

Drive Pulleys.

- If the running surface of any pulley becomes damaged it should be replaced immediately or belt life will be reduced.
- When replacing pulleys check their alignment before fitting the belt and securing fixing screws tightly on shafts.

Drive Belts.

It is recommended that drive belts are replaced annually.

- Replacement belts may be obtained by quoting the Secomak reference number affixed to the belt guard of every booster.
- **Only use recommended belts on Secomak gas boosters.**
- The belt replacement procedure is as follows:

- Isolate the electricity supply.
 - Remove the belt guard.
 - Remove the existing belt.
 - Clean the pulley running surfaces.
 - Lift the motor platform and position a new belt on both pulleys. The smooth side of the belt should be in contact with the pulley surfaces.
 - Ensure the belt will run centrally on the pulley faces.
 - Replace the belt guard.
- **Do not apply belt dressing.**

Booster Bearing Assemblies.

It is recommended that bearing assemblies are replaced after 5 years service irrespective of perceived bearing condition.

- Secomak booster bearing assemblies use sealed-for-life bearings and require no additional lubrication. The bearings are usually left in service until their replacement is required.
- A rise in noise level or vibration indicates that the bearings are in need of replacement. With the belt guard removed a further check can be made for radial or axial movement of the shaft within the bearing housing.
- In the event that the bearings fail the bearing assembly should be replaced with a Secomak bearing assembly comprising bearing housing, bearings, shaft and impeller. For part number refer to Section 8 of this document.
- The bearing assembly replacement procedure is as follows:
 - Isolate the electricity supply.
 - Remove the belt guard.
 - Remove the belt.
 - Remove the belt pulley and ETP Mini Bush
 - Separate the belt pulley from the ETP Mini Bush
 - Remove the nuts securing the bearing assembly to the booster housing.
 - Prise off the existing bearing assembly taking care not to damage the joint face.
 - Clean the mating faces and apply the sealing compound provided.
 - Fit the replacement bearing assembly.
 - Allow the compound to set according to the maker's recommendations. This treatment is essential to maintain gas-tightness.
 - Do not over-tighten the nuts securing the bearing assembly as this may cause damage to the booster housing.
 - Assemble the new belt pulley and ETP Mini Bush
 - Fit the belt pulley and ETP Mini Bush to the shaft.
 - Check the alignment of the pulleys.
 - Lift the motor platform and position the belt on both pulleys. The smooth side of the belt should be in contact with the pulley surfaces.
 - Ensure the belt will run centrally on the pulley faces.
 - Replace the belt guard.

10. Important Notes.

- Secomak Limited will deny any responsibility for any accidents caused by installation environment characteristics, which differ from those, described above.
- To obtain the maximum working life of the machine and to use it in the most economic way, we advise that the regulations contained in this publication are followed closely.
- Secomak will deny any responsibility for accidents caused by failure to perform the forecasted maintenance checks.
- Secomak will not be held responsible for any problems, accidents, etc, brought about by the ignorance (or non-application) of the indications contained in this manual, The same holds true for any modifications, variations, and/or installation of accessories carried out without previous authorisation.
- The user shall not make changes that affect the design, construction, installation, or handling requirements of the appliance without the written consent of the manufacturer, as some changes may create serious hazards.
- This installation and maintenance manual must be looked after very carefully. Specifications, data, and diagrams published in this manual are, and remain, the exclusive property of Secomak Limited.
- It is forbidden to reproduce or to divulge, even in part the contents of this manual, on pain of legal action.
- If the machine is sold, we would like you to tell us the name and address of the new owner to make it easier for us to pass on any additions to this manual.
- If the machine is decommissioned, it must be broken in accordance with the laws in force regarding the disposal of waste, especially as regards plastics and lubrication materials, etc. The user therefore has the responsibility for dismantling the machine into its constituent parts, so that the materials and chemical products can be eliminated in specific differentiated ways.

11. Spare Parts.

- Part numbers for available booster spare parts shown in table below.
- Always quote full nameplate details, including voltage, phases and periodicity of machine(s) for which spares are required.

MODEL	Drive Belts	Bearing & Impeller Assemblies Inc. Fan Pulley	Fan Pulley	Motor	Motor Pulley	Flexible Connector (2")	Flexible Connector (3")	Flexible Connector (4")
SGP576 (Single Phase)	11658	SGB-BR-5761	SPN000120	12963	10663/6	1025-0652	N/A	N/A
SGP576 (Three Phase)	11658	SGB-BR-5761	SPN000120	11471	10663/6	1025-0652	N/A	N/A
SGP535/2	9118	SGB-BR-5352	SPN000118	16491	9235/2	1025-0652	1025-0653	N/A
SGP535/5	9118	SGB-BR-5355	SPN000154	16491	9235/2	1025-0652	1025-0653	N/A
SGP535/9	1025-0690	SGB-BR-5359	SPN000154	16494	SPN000323	1025-0652	1025-0653	N/A
SGP540/1	9727	SGB-BR-5401	SPN000157	16493	9719	N/A	1025-0653	1025-0654
SGP540/2	9727	SGB-BR-5402	SPN000156	16493	9719	N/A	1025-0653	1025-0654
SGP540/3	9727	SGB-BR-5403	SPN000116	16493	9719	N/A	1025-0653	1025-0654
SGP581/1	14652	SGB-BR-5401	SPN000157	16494	9235/2	N/A	1025-0653	1025-0654
SGP581/2	14652	SGB-BR-5812	SPN000368	16494	9235/2	N/A	1025-0653	1025-0654

12. Guarantee.

- SECOMAK gas boosters are individually checked and tested for gas-tightness before despatch from our Works. They should present no hazard if they are received in good working order and are properly installed in accordance with our printed instructions.
- Upon delivery always check machines for any signs of damage in transit and again examine for damage before installing.
- All SECOMAK gas boosters are guaranteed for twelve months from date of invoicing against any inherent defect occasioned by defective materials or by faulty workmanship.
- The makers undertake to repair or replace at their discretion, any such defects providing the machine or motor or bearing assembly is returned to Works without being further dismantled.
- If commissioning tests indicate any degree of gas leakage from a booster recommended procedure is to contact the maker or supplier immediately. Any such machines must not be dismantled if claim under guarantee is to be entertained.

13. Factory Testing (to BS8487)

- All SECOMAK Bearing Assemblies are tested at 250 mBar for ZERO leakage.
- All Impellers are balanced to G6.3 in accordance with BS 8487.
- All SECOMAK Bearing Assemblies are tested to run below 1g total vibration acceleration levels at operating speed.
- All SECOMAK Gas Boosters are tested at 250 mBar & monitored for pressure decay in accordance with BS 8487.
- All Electrics are tested to BS EN 60204.

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14. EC Declaration of Incorporation.

EC Declaration of Incorporation

We hereby declare that the following equipment is intended to be incorporated into other machinery, and should not be put into service until the relevant machinery into which it is to be incorporated has been declared in conformity with the essential requirements of the Machinery Directive 98/37/EC and its amendments.

Machine Description: ...
Model: ...
Serial No: ...

Designed to:

BS8487:2007 The Design & Construction of Gas Boosters used in association with combustion equipment

The following transposed harmonised European Standards have been used:

- | | |
|----------------|--|
| BSEN 61000-6-4 | Electromagnetic Compatibility – generic emissions standard |
| BSEN 61000-6-2 | Electromagnetic Compatibility – generic immunity standard |
| BSEN 12100 | Safety of Machines – basic concepts and general principles of design |
| BSEN 60204 | Safety of Machines – electrical equipment of industrial machines |

Signed Date.....

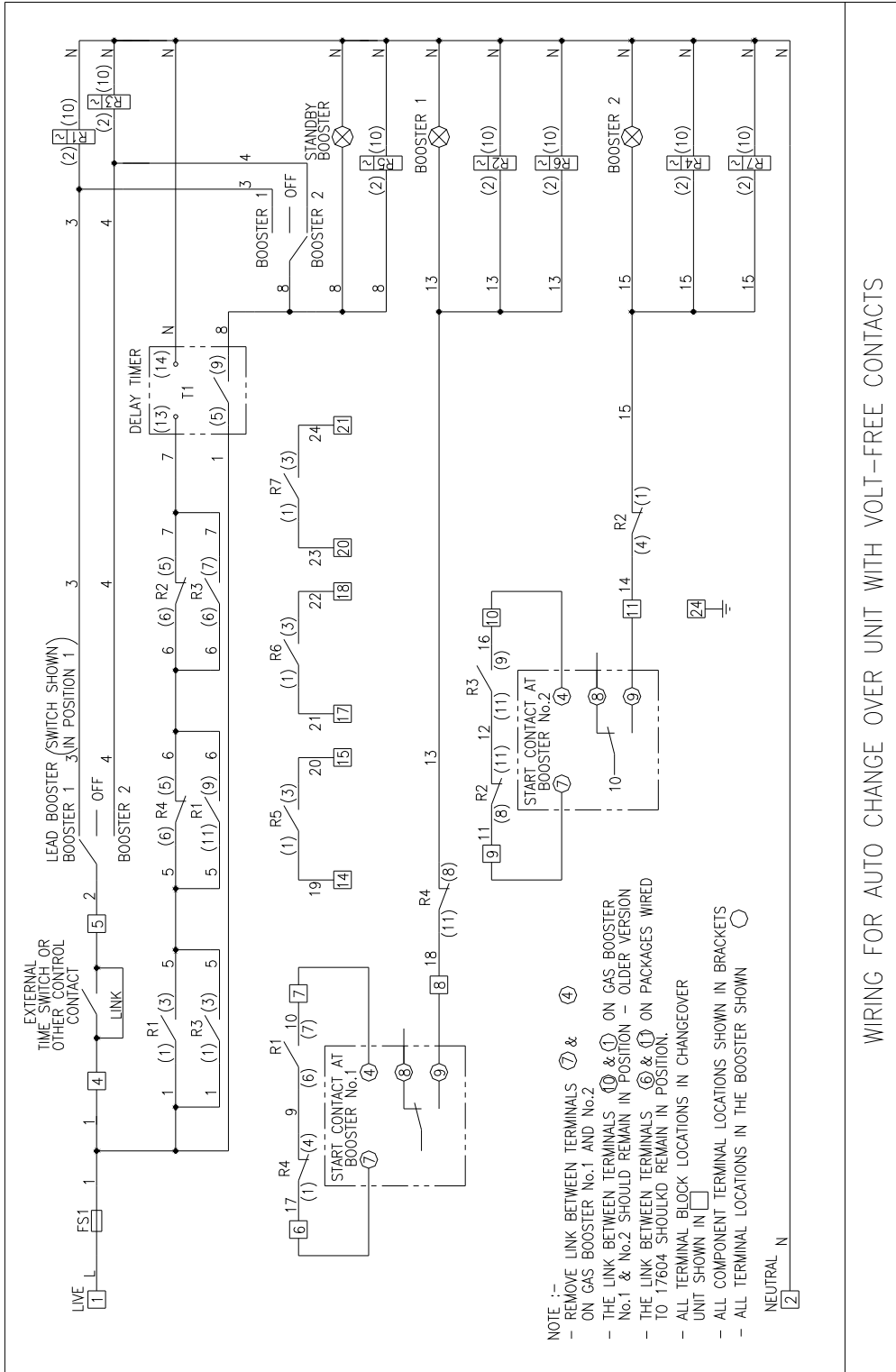
Name..... Position

Signing on behalf of Secomak Ltd (responsible person).

Secomak Ltd

15. Appendices

Gas Booster Changeover Package with Volt Free Contacts GPACO2240



WIRING FOR AUTO CHANGE OVER UNIT WITH VOLT-FREE CONTACTS

The Changeover unit is fitted with extra volt-free contacts for signalling three fault conditions:

1. Terminals 14 & 15 – N.O. indicating Standby booster operating.
2. Terminals 17 & 18 – N.O. indicating Booster 1 operating.
3. Terminals 20 & 21 – N.O. indicating Booster 2 operating.

Refer to Wiring Diagram on previous page.

To install Changeover Booster Controls.

- Install Gas booster packages as described in the Manual
 - Remove links between terminals 7 & 4 on both gas boosters 1 and 2.
 - Connect Live single phase supply (240V 50Hz) to terminal 1 on the changeover package.
 - Connect Neutral terminal 2 on the changeover package.
 - If an external clock or control contact is to be used to control the boosters then remove the link between terminals 4 and 5 on the changeover panel and connect the control contacts here.
 - Connect terminal 7 on booster 1 to terminal 6 on the changeover package.
 - Connect terminal 4 on booster 1 to terminal 7 on the changeover package.
 - Connect terminal 9 on booster 1 to terminal 8 on the changeover package.
 - Connect terminal 7 on booster 2 to terminal 9 on the changeover package.
 - Connect terminal 4 on booster 2 to terminal 10 on the changeover package.
 - Connect terminal 9 on booster 2 to terminal 11 on the changeover package.
 - Connect the three volt free contacts to the Building Management Services controls. (See above for description of the indications available).

Refer to Wiring Diagram on previous page.

16. Service Record

Date	Description of work	Work done by

NOTES

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