

VACUUM PUMPS

CPS Vacuum Pumps – Direct Drive

Airefrig Part Number	Description	Litres Per Minute	Micron	H.P.	List Price Ex GST
VP2DA	Vacuum Pump - 2 stage	45	10	1/4	\$528.00
VP2DE	Vacuum Pump - 2 stage	48	10	1/4	\$528.00
VP3DA	Vacuum Pump - 2 stage	75	10	-	\$742.50
VP4DE	Vacuum Pump - 2 stage	96	10	1/2	\$742.50
VP6DE	Vacuum Pump - 2 stage	144	10	1/2	\$973.50
VP8D	Vacuum Pump - 2 stage	192	10	2/3	\$1,305.00
VP10DA	Vacuum Pump - 2 stage	236	10	3/4	\$1,961.85
VP10D	Vacuum Pump - 2 stage	240	10	3/4	\$1,961.85
VP12D	Vacuum Pump - 2 stage	288	10	1.0	\$2,198.64

Airefrig Part Number	Description	List Price Ex GST
L340	Vacuum Pump Oil (945 mls)	\$21.32
L341	Vacuum Pump Oil (3.78 Litre)	\$42.77
CAB001	CPS A/C Power Cord for Vacuum pumps & Recovery units	P.O.A.
VG200	CPS Vacuum Gauge with Digital Display	\$640.92
AVT45	Tee 1/4M/F x 1/4 Female Flare Knurl x 1/4 M/F (suit VG200)	\$39.51
VPASU	Vac Pump Anti-Siphon Valve Kit (c/w 1/4,3/8,1/2MF Adaptors)	\$108.24



VG200 – Vacuum Gauge

- Advanced 5 digit LCD display
- Reads microns, Torr, in/hg or mBar at a touch of a button.
- Withstand 400PSI pressure.
- Carry case & hook included.



AVT45

Vacuum Pump Maintenance and Service Information

The vacuum pump consists of two cascaded stages driven by a common shaft. The first stage (or roughing stage) takes air/vapour via the inlet port, compresses it and exhausts through an exhaust port. The second stage takes from the inside of this exhaust port and also compresses the vapour and then exhausts this vapour out through a second exhaust port.

The purpose of a gas ballast valve (where fitted) is to bleed dry air into the second chamber at 0 PSIG or very close to it. This way the second stage draws in vapour, it's pressure is reduced and vapour is removed from the oil/vapour as the saturated vapour pressure is lowered. The second stage typically is also fed oil from the pump reservoir and when the pump is under ballast this oil is also exposed to the reduced pressure and this assists removal of moisture from the oil.

As the pump is working slightly harder when under ballast, more heat is also generated so allowing the oil which is being circulated through the second chamber to warm up and return to the reservoir so raising the temperature of the reservoir faster. This enables the pump to reach operating temperature faster. Remember, if the oil is cold the moisture pulled back can blend with the cold oil, overload the oil with moisture and in short order can wreck the pump. The idea is to get the pump **HOT**, this way moisture hits hot oil and is pushed straight out of the pump. A hot pump works better and will last longer than a pump which is never allowed to reach operating temperature.

To start and use the pump, ensure the ballast and inlet ports are both closed, turn the pump on. Once the pump is started open the ballast valve and leave to run like this for approximately ½ hour. When ready to use, close the ballast and connect to the system to be evacuated, open the suction port and evacuate the system. After the vacuum is complete, it is good practice to run the pump for a further 10 – 15 minutes under ballast again to remove impurities from the oil. An even better practice is to actually drain the oil from the pump, allow the pump to cool before adding fresh oil.

To drain the oil from the pump ensure it is on a level surface (preferable with the oil warm) and remove the drain plug from the pump. You may need to unscrew the exhaust chimney or oil inlet in order to allow air into the pump to allow oil flow. Inspect the oil for cloudiness, impurities and foreign lumps. When refilling, ensure pump is cool and refill to the correct level. **DO NOT overfill !!** If water is noticed in the pump you may need to refill, run under ballast for a short time, drain and refill in order to ensure the moisture is removed.

Not all pumps are identical in operation, always, as a first step, read the instructions that come with the pump.



VACUUM PUMP PERFORMANCE CHECK

Vacuum Pump Quick Performance Check

This document describes a simple and quick method to conduct a basic operational and performance check on a vacuum pump.

** Please ensure that your vacuum pump is in sound electrical and mechanical condition prior to applying electrical power and operating.*

1. Check the oil level in the sight glass is between the minimum and maximum level indicators, oil should look clean and clear if the pump has been recently serviced. Oil colour can vary from water clear to honey colour depending on the brand, but it should look translucent and not be dark or opaque which could indicate the presence of contaminants.

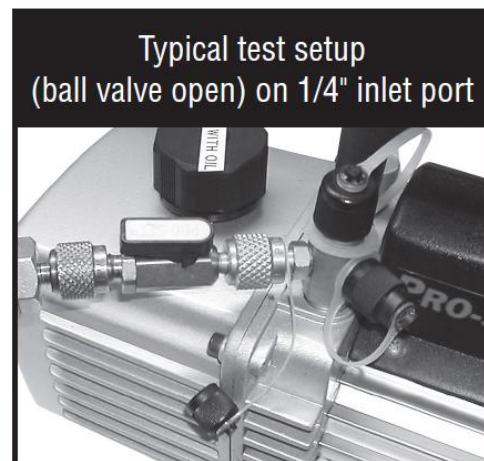
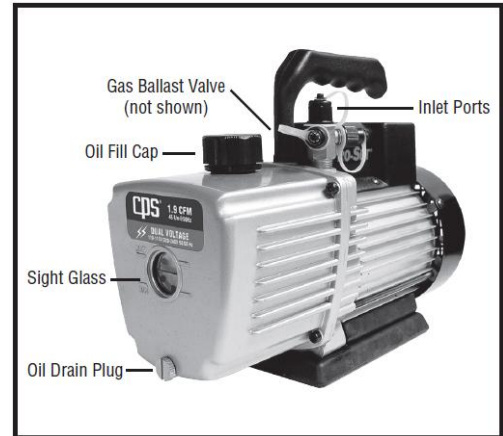
2. Ensure the pumps flare inlet port connection that you will be using is clean and dry, give it a wipe with a clean dry cloth to remove any debris.

3. Attach your ball valve (ensure the tap is closed) with the vacuum gauge directly to the inlet port. In some cases you may require the 3/8" female to 1/4" male adaptor depending on the individual vacuum pumps inlet configuration. In some case you may also need to use the supplied 1/4" ' T ' adaptor and cap the unused ' T ' adaptor 1/4" male port.

4. Start the pump and allow it to run for a few minutes before opening the ball valve. Allow the pump to evacuate the ball valve and vacuum gauge assembly for a couple of minutes prior to checking the vacuum reading. Older model vacuum pumps may require a longer warm up period due to their internal construction, be guided by the pumps owner who should know his equipment.

5. The best practice is to always close the ball valve prior to stopping the pump to reduce the chance of oil migrating into the vacuum gauges sensitive sensor assembly.

6. If the reading is above 400 microns the pump could be internally worn, in need of an oil change, repairs, have an air leak or perhaps faulty port caps on unused inlets.



VG200 VACUUM GAUGE SERVICING

VG200 Vacuum Gauge Servicing

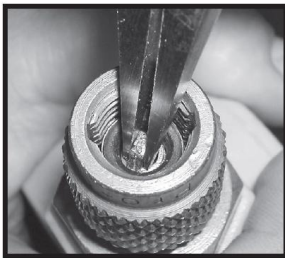
The **VG200** are simple to use precision digital readout vacuum gauges able to read in Hg", microns, Torr and mbarr selectable by pressing the units button.

In order to maintain peak performance some simple periodic maintenance is required to ensure the units internal vacuum sensor assembly remains as clean as possible. We recommend a quick visual inspection of the sensor assembly gasket daily and cleaning whenever you notice any oil on the gasket. This brochure outlines this simple cleaning procedure. Ensure you have access to a vacuum pump prior to cleaning, you will need to connect your VG200 to a vacuum pump for at least 15 minutes to evacuate moisture from the sensor immediately after cleaning.

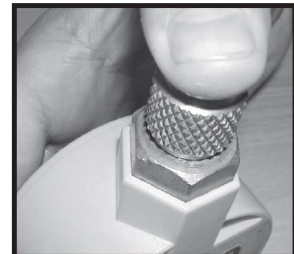
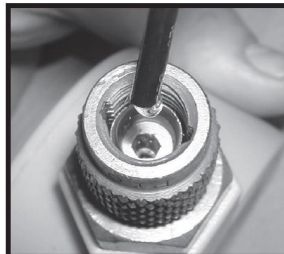


Routine cleaning and service:

1. Remove the valve core depressor (if fitted) and the black **HXG** gasket with needle nose pliers.



2. Inject methylated spirits into the sensor to fill the gasket cup, a standard medical syringe is perfect for this task.




3. Hold the unit in one hand and place your thumb over the gasket cup area.
4. Using your hand to create a swirling motion will encourage the methylated spirits to enter the sensor chamber.
5. Repeat from **Step 2** until the sensor is full and will not take anymore liquid.
6. Use a continuous swirl motion with the unit to create swirling effect of the solution in the housing for 15 seconds.
7. Invert and flick the unit (sensor out) to eliminate the bulk of the solution from the sensor assembly.
8. Insert a new HXG gasket (flat surface down 45° chamfer out) and re-fit the HXD valve core depressor if required. Place your **VG200** on a vacuum pump for at least 15 minutes to evacuate any remaining moisture.
9. When not in use store your vacuum gauge in it's padded protective bag. As with any electronic device if it is going to be stored for an extended period of time consider the removal of the batteries.

Precautions with the VG200:

- There are no user serviceable parts inside the case.
- Keep away from dust, dirt and water.
- Clean the plastic case with a soft moist cloth. **DO NOT USE SOLVENT BASED CLEANERS.**
- Regularly inspect the HXG gasket seal for signs of oil, if oil is evident perform the above cleaning procedure.

RECOVERY UNITS - CPS

CPS - TR21E Recovery Unit

Airefrig Part Number	Description	List Price Ex GST
TR21E	 Oil-Less Refrigerant Recovery Machine Flow Rate for Direct Vapour : Up to 56 kg/hr Flow Rate for Direct Liquid : Up to 271 kg/hr Flow Rate for Push Pull Liquid : Up to 768 kg/hr	\$2,678.40

Features

- Maintenance free oil-less compressor design
- Aesthetically unique industrial type styling
- Precision machined from aluminum and steel components
- Permanently lubricated and sealed main bearings
- Improved piston seal design for less leakage and deeper vacuums
- 550 psig / 37.9 Bar high pressure cutoff switch with LED indicator
- Cleanable 100 mesh inlet filter
- Weighs less than 11.3 kg
- Fastest recovery rates in its class



Specifications

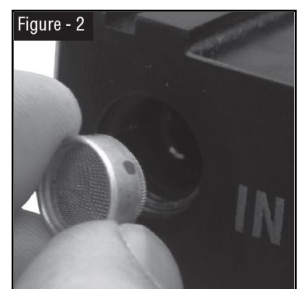
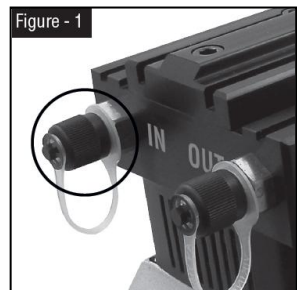
Compressor Type:	2 Cylinder Oil-less Reciprocating Compressor
Dimensions:	15cm Wide x 30cm Long x 23cm High
Weight:	11.3 kg / 25 lbs.
Operating Temperature Range:	0°C to 49°C
Power Source:	220-240V 50/60Hz
Power Consumption:	850 W
Filtration:	Cleanable 100 - mesh screen integrated into Suction Port
Overload Protection:	Motor Thermally Protected
High Pressure Shut-Off:	550 psig / 37.9 Bar
Refrigerants:	R-12, R-134a, R-401C, R-406A, R-500, R-401A, R-409A, R-401B, R-412A, R-411A, R-407D, R-22, R-411B, R-502, R-407C, R-402B, R408A, R-509, R-407A, R-404A, R-402A, R-507, R-407B, R-410A

Filter Maintenance

The TR21 is equipped with a 100-mesh screen filter which should be checked periodically as a partially clogged filter will slow down the recovery rate of this unit.

Check the filter cartridge as follows

1. Use a 5/8" socket or wrench to remove the IN port as shown in Figure – 1
2. Remove the suction port-filter cartridge as shown in Figure - 2
3. Either clean the current cartridge or replace with new cartridge (P/N CRXF3)
4. Inspect O-ring. Re-lubricate with compressor oil or equivalent
5. Place filter cartridge back into suction port fitting
6. Hand tighten this assembly back onto the TR21
7. Use a 5/8 socket or boxed end wrench to tighten 1/8 of a turn (Do Not over tighten – over tightening may damage the O-ring)
8. Check the connection for leaks




Piston Seal Maintenance

In cases where a customer is using this unit for virgin refrigerant recovery, it is recommended to add 0.25 ounce of refrigerant oil to the inlet port before each use.

RECOVERY UNITS - CPS

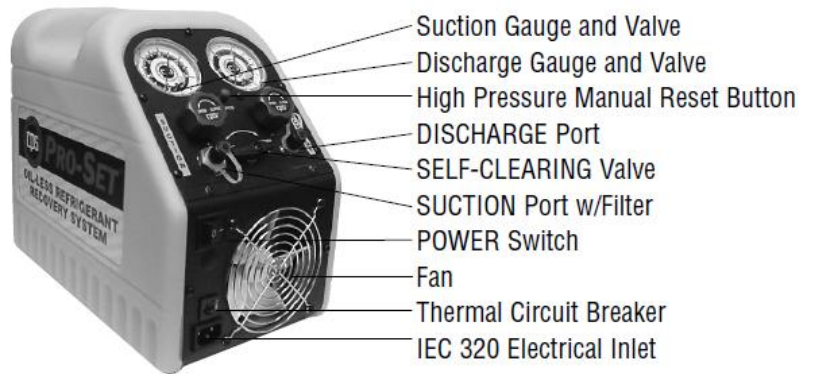
CPS – CR500E Recovery Unit

Airefrig Part Number	Description	List Price Ex GST
CR500E	 Oil-Less Refrigerant Recovery Machine Flow Rate for Direct Vapour : Up to 20 kg/hr Flow Rate for Direct Liquid : Up to 42 kg/hr Flow Rate for Push Pull Liquid : Up to 187 kg/hr	\$2,386.20

The CR500E is an oil-less refrigerant recovery machine designed to pump liquid or vapour refrigerant for commercial & residential refrigeration systems.

Features

- Maintenance free oil-less compressor
- On board SUCTION and DISCHARGE gauges.
- 0 to 55 bar discharge gauge (suit R-410A)
- Compact physical size.
- Lightweight only weighs 9.1 kg
- Integrated easy to use carrying handle.
- High Pressure manual reset button set at 38 bar.
- Easy access & secure filter accesses
- Replaceable or cleanable filter cartridge
- “On the Run” SELF-CLEARING valve.
(no need to turn off the unit when switching from recovery to self-clearing)



Specifications

Compressor Type:	1/2 HP Oil-less Reciprocating Compressor
Dimensions:	20cm wide x 37cm long x 30.5cm high
Weight:	9.1 kg
Operating Range:	0°C to 49°C
Power Source:	220/240 VAC 50Hz 1Ph
Power Consumption:	500 W
Suction Pressure Gauge:	-1 to 35 bar
Discharge Pressure Gauge:	0 to 55 bar
Filtration:	Cleanable 100-mesh screen integrated into Suction Port
Shut-off Valves:	Suction piston type & Discharge diaphragm type manifold valves
Construction:	Heavy gauge aluminum chassis with high density polyethylene case
Overload Protection:	5A thermal circuit breaker
High Pressure Shut-off:	38 bar (550 psig)
Control System:	Dependable electro-mechanical interlock system
Refrigerants:	R-12, R-134a, R-401C, R-500, R-401A, R-409A, R-401B, R-407D, R-22, R-502, R-407C, R-402B, R408A, R-509, R-407A, R-404A, R-402A, R-507, R-407B, R-410A



Note: CPS CR500 Recovery Unit maintenance and service info is in the following pages.

RECOVERY UNITS

CR500 Recovery Unit - Maintenance and Service Information

The CR500 and CR600 are both oil-less recovery machine designed for high performance with minimal maintenance, there are some simple procedures which form a routine to keep peak performance.

Filter Maintenance:

The CR Series is equipped with a 100-mesh screen filter. The filter should be checked periodically. A particularly clogged filter will slow down the recovery rate of this unit.

Replace the filter cartridge as follows:

- Use a 7/8" socket or boxed end wrench to loosen the suction port as shown in fig 1.
- Once loose, remove the suction port filter cartridge assembly as shown in fig 2.
- Either clean the current cartridge or replace with new cartridge.
- Inspect O ring. Re-lubricate with compressor oil or equivalent.
- Place filter back into suction port fitting.
- Hand tighten this assembly back on to the CR unit.
- Use a 7/8" socket or boxed wrench to tighten 1/8 of a turn. Do not over tighten, damage to the O ring may occur.
- Check the connection for leaks.



Fig 1



Fig 2

Service of control valves (diaphragm type)

Depending on the age of the unit the CR500 and CR 600 can use either piston or diaphragm control valves. The service kit for the piston type is part number MXPVO and the service kit for the diaphragm is M2XRK.

The CR500 and CR600 use two Teflon disc type valves. The valves are used only for the manifold assembly valves and can be easily replaced without removing this assembly from the unit.

Peel the label on the valve knob back to expose a Phillips head screw. Remove the screw. Use a 1" socket wrench to remove brass valve body. Remove and discard the Mylar disc, Teflon disc, brass pin and spring from valve cavity. Install new valve parts in the order they were removed. Tighten the brass valve body as follows: Hand tighten, then use 1" socket wrench until snug. Turn 1/8 of a turn. Do not over tighten. Check for leaks. Secure valve knob on valve stem. Detailed instructions are included in the M2XRK packet.

Service of Control Valves (piston type)

Locate and undo the screw securing the valve handle to the shaft. Remove the screw. Remove the handle using a 5/8" A/F spanner, undo the hex nut and remove assembly. Remove the spindle from collet piece. Remove O rings and undo screw which holds in the Teflon seal. Replace the Teflon seal and O rings. Lightly grease O rings and screw shaft. Re-assemble valve assembly and place in manifold. Tighten hex nut to 25 foot pounds. (tight !!) Attach control knob and re-fit screw.

SUBMERSIBLE RECOVERY SUB-COOLER

CPS – Submersible Recovery Sub-Cooler

Airefrig Part Number	Description	List Price Ex GST
SC410A	Submersible Recovery Sub-Cooler (supplied with bucket)	\$314.40

The effects of ambient temperature and elevated tank pressures on the speed of the refrigerant recovery process are in many cases more important than the speed of the recovery machine itself.

As the ambient temperature increases, the pressure in the recovery cylinder increases, significantly reducing the recovery speed and in many cases can lead to a high pressure shutdown as the recovery equipment and tank pressure limits are reached.

The Pro-Set SC410A submersible sub-cooler significantly reduces the temperature and pressure of recovered refrigerant during the recovery process, dramatically improving the recovery speed and high ambient performance of all commercially available recovery machines in addition to extending the life of the equipment.

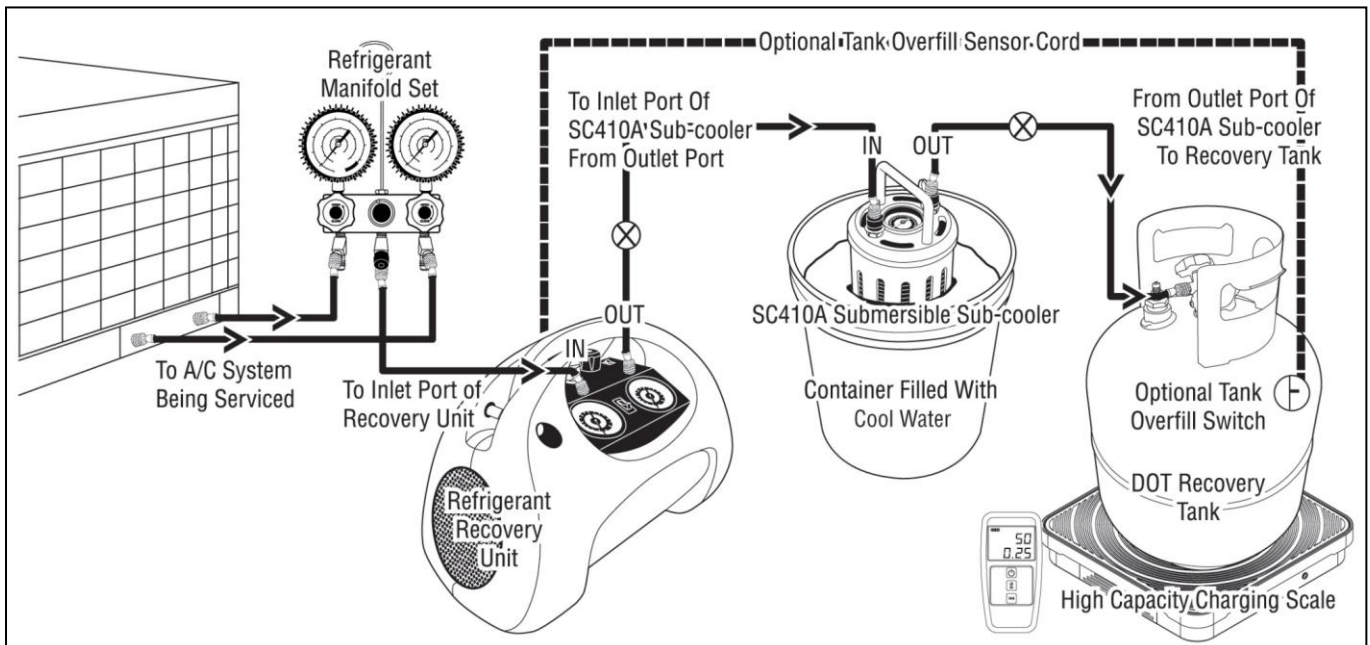
The Pro-Set SC410A is a patent pending "Innovation in Design" from CPS, intended for use with all major brands of refrigerant recovery equipment.

It is engineered for harsh field conditions and is extremely easy to use.

- Dramatically improves the recovery speed & high ambient performance of all commercially available recovery machines.
- Engineered to significantly reduce temperature and pressure of recovered refrigerants, including R-410A.
- Please refer to the diagrams shown for details on the proper operation of the SC410A.

Specifications

- Gauge : PSI/Bar oil filled
- Fittings : 1/4" SAE male flare
- Construction: Environmentally treated metal
- Dimensions: 110mm Diameter x 230mm High



CHARGING SCALES - CPS WIRELESS

CPS Wireless RF Charging Scales

Airefrig Part Number	Description	List Price Ex GST
CC240RF	Charging Scales Wireless RF (110 kg weight capacity)	\$805.65
CC840RF	Charging Scales Wireless RF with Solenoid Valve - Fully Auto & Programmable (110 kg)	\$1,340.70

CC240RF Wireless Scale

- Operates in the international ISM band for worldwide use
- Advanced software ensures uninterrupted connectivity between hand-held display unit & scale platform
- Accuracy specification exceeds all OEM requirements for charging accuracy
- Temperature compensated over the entire operating temperature range to maintain charging accuracy under all ambient conditions
- Selectable measurements in Imperial or Metric units
- Environmentally sealed strain gage beam load cell technology first introduced by CPS in 1985
- Designed to withstand overloads of 150%
- High contrast wide angle LCD Display for ease of viewing
- Platform can be removed from carrying case
- Magnetic back on handheld unit & hanging hook
- User selectable automatic power off to conserve batteries

SPECIFICATIONS

Working load capacity: 110kg / 240 lbs
 Operating Temp: -10°C to +50°C
 Resolution: ±10 grams / ± 0.25oz
 Overload Protection: Visual, electronic and mechanical
 Platform Dimensions: 22.23cm x 22.23cm
 Weight: kg / lb
 Scale platform power: 4 x AA
 Display unit power: 1 x 9V battery
 Battery Life: 32 hours of continuous use
 Battery Indicator: Battery symbol with 3 segment display
 RF frequency range: 2.4 GHz, ISM band
 RF Transmit range: 9m / 30ft
 Readout: Metric / Imperial
 Accuracy: 0.05% of reading or ±0.2oz / ±5g whichever is greater



CC840RF

CC840RF Wireless Scale with Integrated Solenoid valve for Fully Automatic programmable Operation

- Operates in the international ISM band for worldwide use
- User programmable, fully automatic operation
- Compatible with high pressure R-410A
- Advanced software ensures uninterrupted connectivity between hand-held display unit & scale platform
- Accuracy specification exceeds all OEM requirements for charging accuracy
- Temperature compensated over the entire operating temperature range to maintain charging accuracy under all ambient conditions
- Selectable measurements in Imperial or Metric units
- Environmentally sealed strain gage beam load cell technology first introduced by CPS in 1985
- Designed to withstand overloads of 150%
- High contrast wide angle LCD Display for ease of viewing
- Platform can be removed from carrying case
- Magnetic back on handheld unit & hanging hook
- User selectable automatic power off to conserve batteries

SPECIFICATIONS

Working load capacity: 110kg / 240 lbs
 Operating Temp: -10°C to +50°C
 Resolution: ±10 grams / ± 0.25oz
 Overload Protection: Visual, electronic and mechanical
 Platform Dimensions: 25.4cm x 25.4cm
 Weight: 9.8lb / 4.5kg
 Scale platform power: 4 x AA
 Display unit power: 1 x 9V battery
 Battery Life: 32 hours of continuous use
 Battery Indicator: Battery symbol with 3 segment display
 RF frequency range: 2.4 GHz, ISM band
 RF Transmit range: 9m / 30ft
 Readout: Metric / Imperial
 Accuracy: 0.05% of reading or ±0.2oz / ±5g whichever is greater



Removable scale platform



Wireless hand held display unit

CHARGING SCALES - CPS STANDARD

CPS Standard Charging Scales

CC220 and CC800

- High capacity 100Kg scale
- Calibrated to NIST standards
- Large, easy to read 37 x 48 mm display
- 10g resolution
- Hand held remote features 1.8m curly cord
- Hanging hook and magnet supplied for remote hand piece
- Full mechanical and visual overload protection
- Convenient 9v battery operation

CC800 also offers:

- Full programmable solenoid valve charging
- Audible alert for charge complete
- R410A compatible



CPS Charging Scales & Cylinder Heater Blanket

Airefrig Part Number	Description	List Price Ex GST
CC220	CPS Compute-A-Charge 100 Kg Capacity – Compact (See comparison notes above)	\$594.00
CC800A		\$1,340.70
CCXHBV	Cylinder Heater Blanket (220Vac / 340watts / +65°C)	\$378.84



CHARGING SCALES - FIELDPIECE

Fieldpiece Charging Scales

SRS2C – Refrigerant Weighting Scales

- Heavy duty plate aluminium for refrigerant cylinders
- Rubber corner protection
- 100 kg max weight range - 104 Kg overload
- Wireless hand piece that stows under platform
- Blue back-light on hand piece
- Hand piece has magnetic flip top to hang



Fieldpiece Weighing Scales

Airefrig Part Number	Description	List Price Ex GST
SRS2C	Refrigerant Wireless Scales c/w case	\$759.38