

**MAINTENANCE AND SERVICE AGREEMENT**

BETWEEN

**Gauteng Provincial Legislature**

(HEREINAFTER REFERRED TO AS 'THE CLIENT')

AND

.....  
(HEREINAFTER REFERRED TO AS 'THE CONTRACTOR')

**PROJECT : GPL Building**

**PROJECT NO : B1804/M1**

**1. SCOPE OF AGREEMENT**

- i) In terms of this Agreement the Contractor will regularly and systematically inspect, adjust, lubricate, and clean the plant as defined in Schedule A and perform such service and maintenance work as is described in Schedule B of this Agreement, at regular monthly intervals. The Contractor shall submit a detailed report on their findings, of which is to be duly signed and accepted by the Client's appropriate representative. This report, duly completed, shall accompany each relevant monthly invoice.
- ii) The Contractor shall comply with the requirements of the Consumer Protection Act 2011 (CPA) in every respect as it applies to both Service Provider and Client alike.
- iii) The charge for this inspection and maintenance service will be R ..... per annum, excluding Value Added Tax.
- iv) Invoiced monthly in twelve equal instalments of R ..... payable within thirty days from date of receipt of Contractor's invoices.
- v) The Contractor confirms that it has visited the site before entering into this agreement and that it has familiarised itself with the conditions relating to serviceability of all items of plant.
- vi) This Agreement provides for all service work to be carried out during normal working hours. Work done outside of normal working hours will necessitate additional labour charges based on the overtime rates stated herein.
- vii) In the event of a breakdown or emergency call out, the Contractor will be expected to respond to such a call out within 6 hours or sooner. To facilitate proper communications, the Contractor will be expected to maintain a cellular telephone. In the event of an emergency breakdown, the Contractor is required to respond immediately to such a call-out.
- viii) Should it be found during the schedule maintenance, that the repairs and/or replacement parts or services are required, the Contractor shall submit a quotation to the Engineer within 24 hours. The Contractor shall furthermore report his findings immediately to the Client, pending receipt of the relevant order number and /or written instruction to proceed with the said repair or replacement.
- ix) All consumable materials (other than cleaning and lubricating materials) such as air filters or media, vee belts, bearings, electrical components, heater elements, compressor lubricating oil, refrigerant gas, water treatment chemicals and paint, etc., required to maintain the equipment in proper working order will be chargeable to the Client's account, subject to the implementation of clause (vii) above. Water and electrical power required for carrying out the work is to be provided free of charge by the Client.
- x) With the authorisation of the Client, the Contractor may, at his discretion, carry out minor repairs to enable the proper and immediate operation of the plant or its associated equipment. The value of such running repair shall not exceed R2,000.00 (excl. VAT).

However, the necessary contractual procedures are to be implemented in accordance with clause (vii) of this document, as soon as possible after completion of the relevant repair and/or replacement.

- xi) To facilitate “out of town” locations, the Contractor is required to ensure sufficient “Van Stock” to include inter alia such items as: Refrigerant, contactors, overloads, HP/LP controls, oil pressure switch, 7-day timer, relays, solenoid coils, TEV power elements, refrigeration oil, driers, fittings, capillary tubes, etc.

Under no circumstances will the Client entertain additional labour and travel costs arising from the unavailability of spare parts and components necessary to effect minor repairs.

- xii) Non – Performance: Non compliance

Non-performance on the part of the Contractor, refers inter-alia to the following.

- Non-compliance with any procedural requirements as stipulated from time to time by the Engineer and/or the Client.
- Any direct or indirect breach of the Maintenance and Service Agreement / Contract.
- Non-compliance with **Schedule B** of the Maintenance and Service Agreement / Contract.
- Poor workmanship arising from, or as a result of recurring and on-going failures, tenant complaints and continuous repeat calls (come-backs) relating directly to recent repairs and maintenance.
- Non-compliance with the Occupational Health and Safety Act, 1993, National Building Regulations, the Safe Handling of Refrigerants and/or any other Act or regulation directly effecting the Service Agreement and Contract.
- Failure to introduce, complete and continuously update a suitable plant logbook or any other record provided on site for this purpose.

- xiii) **Non – Performance: Notice**

In the case of non-performance by the Service and Maintenance Contractor the Engineer may give the Contractor written notice to remedy the non-performance within a reasonable time of receipt of such notice. Should the Contractor not perform within the allocated time the Engineer may call in another Contractor to effect the necessary work pertaining to the written notice, the cost of which will be for the Contractors account subject to the same rates and parts mark-up mentioned in the contract including the cost of the Engineers involvement in accordance with the terms and conditions laid down by the SA Association of Consulting Engineers.

In the event that the Client fails to pay charges within the prescribed period then the Contractor shall be entitled to 30 days written notice to cancel the agreement.

- xiv) **Non – Performance: Penalties**

In the event of continuous non-performance by the Contractor, the Engineer reserves the right to implement the following at his/her discretion.

- Termination of Contractors Service Agreement.
- Withhold payment of monies due by the Client (in full or in part).
- Suspend the Contractor from the Engineers/Clients tender list until further notice.

## 2. **MAINTENANCE CO-ORDINATION MEETINGS**

Meetings may be convened by the Client at which representatives of the Contractor, Client and Engineer will be present. Minutes of the meetings will be kept by the Engineer.

Matters for discussion are:

- i) Operation
- ii) Plant performance logs
- iii) Complaint book
- iv) Malfunction and repair logs
- v) Plant Inspection reports
- vi) General

### 3. REQUIREMENTS FOR TENDER

- i) Only Maintenance Contractors who have a well established service and maintenance organisation, who offer the Planned Service and Maintenance specified, and who can prove that they have honoured similar Contracts, will be considered.
- ii) The lowest or any Tender will not necessarily be accepted. Any submitted Tender that has not complied with the full requirements as stated herein may be considered invalid.
- iii) The Tenderer shall inspect and examine the site and its surroundings and shall satisfy himself before submitting his tender as to the means of access, quantities and nature of work, and, in general, shall himself obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect his tender.
- iv) The contractor shall take all reasonable measures to safeguard performance of the installation at all times, subject to proper operation of the plant by the Client as defined by the Operating Manual, except for the specified routine annual and breakdown interference.
- v) The Contractor shall take all reasonable steps to ensure that the work is carried out in an efficient, effective and economic manner and with a minimum of inconvenience to the Tenants in the building. The Client shall provide such facilities and shall accede to such requests as may be considered reasonable to enable the Contractor to achieve the above objectives.
- vi) The Contractor undertakes to carry out the service to the best of his ability and with due diligence.
- vii) The Contractor shall be responsible for any damage to plant and equipment arising directly from negligence on his part, or failure to adhere to this contract.
- viii) The Contractor will be expected to supply competent and responsible artisans to carry out the service, maintenance and repair work. Each artisan is expected to be proficient in his respective discipline, i.e. mechanical, electrical, refrigeration, etc., and to be of Journeyman status. Proof of such qualification is to be submitted.
- ix) Furthermore, all responsible persons and artisans qualified in the refrigeration/airconditioning disciplines shall be registered with SARACCA in the "Safe handling of Refrigerants," in accordance with the requirements of the Montreal Protocol and shall carry on them, the relevant identification card in this regard, to be produced on request. Proof of such registration is to be submitted herewith.
- x) All repair work carried out by the Contractor shall be guaranteed for a period of twelve (12) months. Should the problem which gave rise to the repair reoccur within the twelve (12) month period, it will be rectified immediately, by the Contractor at no cost whatsoever to the Client. The twelve (12) month guarantee period will then recommence.
- xi) It is the responsibility of the Contractor to ensure full compliance with the requirements of the Occupational Health and Safety Act of 1993.
- xii) On arrival on site for each inspection and maintenance service visit or call-out, the Contractor's representative shall report to the Client's representative and on conclusion of each service, the Contractor shall request the Client's representative to sign an acknowledgement that the service has been undertaken and that the time spent on site is correct.
- xiii) Notwithstanding clauses 3 (vii) and 3 (xv) herein, whilst undertaking to carry out the work to the best of his ability, the Contractor shall **not** be responsible for any **consequential damage** to property, any loss of income, earnings and/or production as a result of the technicians **failure to detect or report** on any subsequent repairs and/or replacement parts required to any plant and/or its associated equipment deemed to be faulty.
- xiv) The Contractor shall also not be liable for any loss, damage or delay caused by acts of Government, strikes, lockouts, fire, explosion, theft, floods, riot, civil commotion, war, malicious mischief, act of God, or by any cause beyond his reasonable control, and in any event the Contractor shall not be liable for any consequential damage or losses as a result of such acts.
- xv) The Contractor shall however be liable for any damage to property arising from and as a direct result of negligence on the part of their staff, sub-contractors, agents or representatives.
- xvi) The Client undertakes to provide the Contractor with all reasonable access to the plant.
- xvii) The Client shall ensure that no person other than an employee of the Contractor, will be allowed to make any adjustments to any part of the equipment or system covered by this contract.
- xviii) The Contractor and all Subcontractors must provide the necessary minimum insurance cover to include the full provisions of the Workmen's Compensation Act and Common Law Liability Insurance with a Compensation limit of no less than **R 2,000,000-00 (Two Million Rands)**.
- xix) The Contractor shall provide the required Construction Industry Public Liability Insurance Cover Policy to include cover relating directly to Third Party Property damage, Third Party injury, Underground Services, Water damage, Elemental Perils, Theft, Malicious damage, Testing and/or any other relevant cover pertaining directly to the contracted scope of work to be performed on site / Clients premises. The policy shall clearly state the contract value limitations (Rand Value) as well as the value in Rands of the Excesses applicable.

Under no circumstances whatsoever, will the Client, its employees and/or Agents be held accountable for any injury, damage or any other form of liability/claim arising from the Contractor's negligence, oversight, incompetence and/or any other reason within their control and contracted scope of work.

**4. SERVICE CHARGES**

All repairs, replacements, breakdowns and emergency calls shall be carried out on a time and material basis at the following rates:

Transport: R ..... per km

Materials:	Up to R10,000-00	:	Cost plus ....25,0.....%
	R10,000-00 to R50,000-00	:	Cost plus ....20,0.....%
	Over R50,000-00	:	Cost plus ....15,0.....%
	Sub-contracted Services: Admin Fee	:	Cost plus ....10,0.....%

Labour Rates per hour	Normal Time	Overtime	Public Holidays/Sundays
Artisan including one assistant	R .....	R .....	R .....
Additional Assistants	R .....	R .....	R .....

**5. SITE STAFF**

The contractor shall be required to provide a suitable qualified full-time onsite Plant operator / Service man to be in attendance during normal working hours being :

Monday to Friday : 08:00 to 17:00

Included in the above shall be two 15 minute tea breaks (am and pm) and a lunch period not exceeding 30 minutes.

The duties of the Site operator / Service man shall include the following:

- i) Ongoing scheduled and routine Maintenance on a daily basis.
- ii) Respond to the tenant complaints as indicated by centre management.
- iii) Carry out all minor repairs, Adjustments, resetting of plant etc. Consider to be within His scope of technical expertise.
- iv) Communication and Co operation with Centre management and Tenants.
- v) The Maintenance of plant logbooks and to record plant Logs as required.
- vi) In the event of breakdowns considered beyond his level of expertise, He is required to initiate the required call-out, whereby the necessary expertise is summoned from His nearest local service Manager. In such instances, the site operator is the verbal instruction pertaining to the reported breakdown, whereby the problem can be resolved or the necessary spares obtained, prior to the Qualified Technician departing on site. Every effort is to made to prevent unnecessary call-outs.

**6. SUB-CONTRACTORS**

This contract shall include all services as specified under Schedule B. The Contractor may sub-contract to specialist firms the service and maintenance of these systems and equipment but without in any way relieving him of his overall contractual responsibility under this Contract.

The Client shall ensure that no other than an employee or representative of the Contractor will be allowed to make any adjustments to any part of the equipment or the system covered by this Agreement without the written consent of the Contractor.

**7. ENGINEER**

The Client may at his discretion appoint an Engineer to administer this Contract.

Authority of the Engineer:

The Engineer shall have general supervision and direction of the service and maintenance contract work. Supervision shall comprise periodic visits which the Engineer may consider necessary to inspect the standard of service and maintenance work for conformity with the contract documents. He is the authorised representative of the Client, only to the extent provided in the contract documents, and his terms of appointment. The Engineer has the power to issue the necessary instructions to ensure proper execution of the service and maintenance work in compliance with the requirements of the service and maintenance contract. All instructions shall be given in writing or through the minutes of the Maintenance Co-ordination Meetings. As the Engineer is the interpreter of the Conditions of Contract and judge of its performance, he shall side neither with the Client or the service and Maintenance Contractor, and shall use his appointment under the contract to enforce its faithful performance by both parties.

8. **DURATION**

This Agreement will become effective on ..... and will continue until terminated by either party. One month's written notice will be required of either party in the event of termination of the Agreement.

Failure by the Client to make payment on due date will entitle the Contractor at his option to terminate this agreement without prejudice to his right to recover arrears payment.

9. **AUTHORISATION**

The Client's representative authorised to sign the "Acknowledgement of Service" and to instruct the Contractor in connection with emergency calls and minor repairs and/or replacements shall be :

Name : Lesebelele Setino Title : Mr

Alternative : Dakalo Tshisikule Title : Mr

This proposal, embodying the Schedules of "Equipment to be Maintained and Serviced" and the "Service to be Provided", when accepted by the Client and the Contractor, shall constitute a binding Agreement between the parties.

This Agreement cannot be assigned or transferred to third parties without the written consent of both the Client and the Contractor.

10. **ACCEPTED BY :**

CLIENT : SIGNATURE .....

WITNESS : SIGNATURE .....

**for and on behalf of :** .....

CONTRACTOR : SIGNATURE .....

WITNESS : SIGNATURE .....

**for and on behalf of :** .....

**SIGNED AT.....(PLACE)**

**THIS.....DAY OF.....(MONTH) .....(YEAR)**

## SCHEDULE A - EQUIPMENT TO BE MAINTAINED AND SERVICED :

Brief Description of the Plant

### Ciat Chillers (2 OFF)

Model number : LX 2500X – HEE R134A  
Chiller No1 - serial number : 02407547/0001  
Chiller No2 - serial number : 02407547/0002  
Year : 2016  
Refrigerant : R134A

### Long-Coupled Chilled Water Pumps (3 OFF)

#### KSB Pump No.1

Type : ETA 65 - 315  
Pump 1 serial No.1 : 9973294941  
Pump 2 serial No.1 : 9973272437  
Pump 3 serial No.1 : 997329494?  
Impeller diameter : 319mm  
Year : 2016

### Electric Motor (3 OFF)

Capacity : 11kW  
Speed : 1460 r/min

### Chilled Water Air Handling Units (17 OFF)

#### AHU/05/06 (AHU – 7 South West shaft)

Make : Centurator  
Model number : 20 H  
Serial number : T – 6745  
Year : 1994

#### AHU/B1/03 (serving Committee Room)

Make : Centurator  
Model number : LSL – 111 V  
Serial number : T – 6762  
Year : 1994

#### AHU/B1/02 (serving Rates Hall)

Make : Centurator  
Model number : LSL – 114 V  
Serial number : T – 6740  
Year : 1994

#### AHU/B1/031 (serving Security)

Make : Centurator  
Model number : LSL – 111 V  
Serial number : T – 6759  
Year : 1994

#### AHU/GR/05 (serving Ground Floor)

Make : Centurator  
Model number : 3.75 V  
Serial number : T – 6783  
Year : 1994

#### AHU/01/21 (serving Second Floor Link)

Make : Centurator  
Model number : 3.75 V  
Serial number : T – 6761  
Year : 1994

#### AHU/04/09 (serving Selborne Hall)

Make : Centurator  
Model number : LSL – 122 H  
Serial number : T – 6742  
Year : 1994

**AHU/04/12 (serving North Wing West)**

**Make** : Centurator  
Model number : LSL – 114 H  
Serial number : T – 6738  
Year : 1994

**AHU/04/03 (serving Second Floor Link)**

**Make** : Centurator  
Model number : 3.75  
Serial number : T – 6760  
Year : 1994

**AHU/04/15 (serving State Dining Room)**

**Make** : Centurator  
Model number : LSL – 106  
Serial number : T – 6734  
Year : 1994

**AHU/04/16 ()**

**Make** : Centurator  
Model number : LSL – 114 H  
Serial number : T – 6737  
Year : 1994

**AHU/04/14 (serving Large Committee Room)**

**Make** : Centurator  
Model number : LSL – 106  
Serial number : T – 6735  
Year : 1994

**AHU/04/17 (serving Assembly Hall)**

**Make** : Centurator  
Model number : LSL – 111  
Serial number : T – 6733  
Year : 1994

**AHU/04/18 (serving Small Committee Room)**

**Make** : Centurator  
Model number : LSL – 106  
Serial number : T – 6736  
Year : 1994

**AHU/04/09 (serving Committee Room)**

**Make** : Centurator  
Model Number : LSL – 122 H  
Serial Number : T – 6742  
Year : 1994

**AHU/04/11 (serving North Wing)**

**Make** : Centurator  
Model Number : LSL – 117  
Serial Number : T – 6739  
Year : 1994

**AHU6 (North Toilets)**

**Make** : Centurator  
Model Number : 20 H  
Serial Number : T – 6743  
Year : 1994

**AHU5 (South Toilets)**

**Make** : Centurator  
Model Number : 20 H  
Serial Number : T – 6744  
Year : 1994

## Medium and Small Split Units

### Daikin Split Unit

Model Number : RY608V 1A  
Serial Number : 890 3594  
Cooling : 2330 Watt

### Daikin Split Unit

Model Number : Not Available  
Serial Number : Not Available  
Cooling : Not Available

### LG Split Unit (4 OFF)

#### No.1

Model Number : KSUH246C4U1  
Serial Number : Not available  
Cooling : 7040 Watts  
Refrigerant : R22

#### No.2

Model Number : KSUH246C4U1  
Serial Number : 208TKTF00129  
Cooling : 2550 Watts  
Refrigerant : R22

#### No.3

Model number : KSUH246C4U1  
Serial number : 208TKNA00135  
Cooling : 7040 Watts  
Refrigerant : R22

#### No.4

Model Number : KSUH246C4U1  
Serial Number : 208TKNA00063  
Cooling : 7040 Watts  
Refrigerant : R22

### Wall/Window Units (2 OFF)

Make : Eco Air  
Model Number : Not available  
No.1 - Serial Number : Not available  
No.2 - Serial Number : Not available

### Airco Split Unit (1 OFF)

Model Number : AUB – 36 HR  
Serial Number : B731939179007416400016  
Cooling : 36000 Btu/h  
Refrigerant : R22

### Daikin VRF Systems (3 OFF)

#### System 1

Outdoor Unit Model Number : RXYQ18P9W1B  
Outdoor Unit Serial Number : 948550058078  
Refrigerant : R410A  
Year : 2012

#### System 2

Outdoor Unit Model Number : RXYQ18P9W1B  
Outdoor Unit Serial Number : 948543015455  
Refrigerant : R410A  
Year : 2011

#### System 3

Outdoor Unit Model Number : RY250KUY1  
Outdoor Unit Serial Number : E008031  
Refrigerant : R22  
Year : 2011



**McQuay Ducted Hideaway (2 OFF) (serving Building Maintenance Operation serving Store Room)**

Indoor unit model number : MCC03CR- AFBB  
Outdoor unit model number : 20465206-01236  
Refrigerant : R407C (R22)

**McQuay Ducted Hideaway (2 OFF) (serving Building Maintenance Operation serving Store Room)**

Indoor unit model number : MCC050CR- AFBB  
Outdoor unit model number : 20464306-02008  
Refrigerant : R407C (R22)

**Ventilation Fans**

**Fan No FAF/RF/O1 (Canteen Exhaust Canopy)**

Make : Donkin  
Series : Majax – 2  
Serial Number : J71729/1  
Size : 630, 20, D, 8  
Speed : 1440  
Capacity : 1.1kW

**Fan No FAF/RF/O2 (Canteen Canopy Fresh Air)**

Make : Donkin  
Series : Majax – 2  
Serial Number : J71728/1  
Size : 800, 32, D, 8  
Speed : 1440  
Capacity : 2.2kW

**Fan No (Unknown) (area served unknown)**

Make : Donkin  
Series : Majax – 2  
Serial Number : J71202/1  
Size : 800, 32, D, 8  
Speed : 1440  
Capacity : 4 kW

**Fresh Air Fan (area served unknown)**

Make : Donkin  
Series : Majax – 2  
Serial number : J7120 3/1  
Size : 710, 30, D, 8  
Speed : 1440  
Capacity : 3 kW

**Extraction Fan (area served unknown)**

Make : Donkin  
Series : Majax – 2  
Serial number : J7120 3/1  
Size : 500, 20, C, 8  
Speed : 1440  
Capacity : 0,75 kW

**LOCATION**

**Address - Name of Building or Store** : GPL Building

**Street Name and Number** : Cnr Rissik and President Street

**Suburb & City or Town** : CBD, Johannesburg

**Name of Client** : Gauteng Provincial Legislature

**Postal Address - P O Box Number** : Private Bag X52, Johannesburg Code: 2000

**Telephone Numbers** : 011 498 5555 Fax No: 011 498 5999

**Name of Client's Representative** : Peter Skosana  
**Position Held** : Secretary to the Legislature, Gauteng Provincial Legislature

**Name of Representative on Site** : Nambula Kamungoma  
**Position Held** : Director: Operational Support Services  
**Site Telephone Number** : 011 498 5902

## **SCHEDULE B - SERVICE TO BE PROVIDED**

### **1. PACKAGED CHILLED WATER GENERATORS Air and/or Water Cooled (As applicable)**

#### **1.1 MONTHLY**

- 1.1.1 Isolate and remove all inspection panels, clean inside of units and rectify any damaged insulation.
- 1.1.2 Check Purge unit operation (centrifugal chiller).
- 1.1.3 Check oil filter and replace as required (centrifugal chiller).
- 1.1.4 Heat exchange coils to be cleaned (air cooled condensers).
- 1.1.5 Vee belts to be checked for correct tension and alignment and replaced, if necessary (air cooled condensers).
- 1.1.6 Drive pulleys on fans and motors to be tightened, if necessary (air cooled condensers).
- 1.1.7 Check condenser fans for excessive vibration (air cooled).
- 1.1.8 Bearings to be lubricated, if necessary.
- 1.1.9 Check oil pump heater (centrifugal chiller).
- 1.1.10 Switchboards and electrical control panels to be cleaned, check and tighten terminals and replace indicating light globes where necessary.
- 1.1.11 Circuit breakers and fuses to be checked and investigate reasons for any blown fuses or circuit breakers in OFF position, rectify faults and replace blown fuses and faulty circuit breakers.
- 1.1.12 Starters, Contactors and Relays to be checked to ensure moving bridges slide freely and that all contact points are clean. Investigate and rectify cause of excessive burning of contacts.
- 1.1.13 Time switch settings to be checked and reset to start and stop plant at correct time, if necessary.
- 1.1.14 Control thermostats operation to be checked and recalibrated, if necessary.
- 1.1.15 Safety controls to be checked and operation of controls to be tested.
- 1.1.16 Compressor oil level to be checked and topped up, if necessary.
- 1.1.17 Sight glasses to be checked for correct liquid charge and moisture in system. Refrigerant to be added to system, if necessary, after locating and rectifying leaks.
- 1.1.18 Liquid driers and strainers to be cleaned or changed, as necessary.
- 1.1.19 Compressors unloading mechanism to be checked, if applicable.
- 1.1.20 Compressor crankcase heater operation to be checked.
- 1.1.21 Refrigerant system suction, discharge and oil pressures to be checked and recorded while compressors are operating.
- 1.1.22 High and low pressures cut out and oil pressure switch operation and set points to be checked and reset if necessary (Refer manufacturer's manual for correct settings.)
- 1.1.23 Inspection panels to be replaced and all fastening devices secured.
- 1.1.24 Check operation of plant and record all pressures and temperatures.

## 1.2 **ANNUALLY**

- 1.2.1 Major service to chilled water generators in accordance with the manufacturers specifications.
- 1.2.2 All ferrous metal components to be examined, corrosion removed and repainted to prevent further corrosion.
- 1.2.3 Heat exchange coils to be cleaned with high pressure detergent solution or steam (air cooled condensers).
- 1.2.4 Control and safety devices to be recalibrated.
- 1.2.5 Operation of entire plant to be checked and recorded.
- 1.2.6 Perform acid test on compressor oil (laboratory test: "Wearcheck" or equal). Oil to be changed as required.
- 1.2.7 Change oil filters and drier cores
- 1.2.8 Check expansion valve superheats

## 2. **PACKAGED AIR CONDITIONING UNITS, AIR HANDLING PLANT AND CONDENSING UNITS Air and/or Water Cooled (As applicable)**

### 2.1 **MONTHLY**

- 2.1.1 Isolate and remove all inspection panels, clean inside of units and rectify any damaged insulation.
- 2.1.2 Air filters - Check pressure drop and record.  
Washable type to be removed, cleaned, dried and replaced.  
Disposable media type to be fitted with new media, if necessary.
- 2.1.3 Air filter frames to be checked for air by-pass and rectified, if necessary.
- 2.1.4 Heat exchange coils to be cleaned.
- 2.1.5 Vee belts to be checked for correct tension and alignment and replaced, if necessary.
- 2.1.6 Drive pulleys on fans and motors to be tightened, if necessary.
- 2.1.7 Bearings to be lubricated, if necessary.
- 2.1.8 Fresh air and return air damper settings and operation to be checked and adjusted, if necessary.
- 2.1.9 Switchboards and electrical control panels to be cleaned, check and tighten terminals and replace indicating light globes where necessary.
- 2.1.10 Circuit breakers and fuses to be checked and investigate reasons for any blown fuses or circuit breakers in OFF position, rectify faults and replace blown fuses and faulty circuit breakers.
- 2.1.11 Starters, Contactors and Relays to be checked to ensure moving bridges slide freely and that all contact points are clean. Investigate and rectify cause of excessive burning of contacts.
- 2.1.12 Time switch settings to be checked and reset to start and stop plant at correct time, if necessary.
- 2.1.13 Condensate drip pans to be cleaned, check water flow and remove any blockages from drain piping.
- 2.1.14 Spray chamber sumps to be drained, cleaned and refilled and check that all spray nozzles are clean and set correctly, if applicable.
- 2.1.15 Flexible connections to be checked and air leaks rectified.
- 2.1.16 Heater batteries to be tested and faulty elements to be recorded.
- 2.1.17 Control thermostats operation to be checked and recalibrated, if necessary.
- 2.1.18 Safety controls to be checked and operation of controls to be tested.
- 2.1.19 Compressor oil level to be checked and topped up, if necessary.
- 2.1.20 Sight glasses to be checked for correct liquid charge and moisture in system. Refrigerant to be added to system, if necessary, after locating and rectifying leaks.

- 2.1.21 Liquid driers and strainers to be cleaned or changed, as necessary.
- 2.1.22 Compressors unloading mechanism to be checked, if applicable.
- 2.1.23 Compressor crankcase heater operation to be checked.
- 2.1.24 Refrigerant system suction, discharge and oil pressures to be checked and recorded while compressors are operating.
- 2.1.25 High and low pressures cut out and oil pressure switch operation and set points to be checked and reset if necessary (Refer manufacturer's manual for correct settings).
- 2.1.26 Inspection panels to be replaced and all fastening devices secured.
- 2.1.27 Lubricate damper linkages, check operation and record damper operating parameters.
- 2.1.28 Operate and check operation of plant. Take and record wet and dry bulb temperature in each conditioned zone and outside with reliable sling psychrometer.
- 2.2 **ANNUALLY** - during September, in addition to above.
- 2.2.1 All ferrous metal components to be examined, corrosion removed and repainted to prevent further corrosion.
- 2.2.2 Heat exchange coils to be cleaned with high pressure detergent solution or steam.
- 2.2.3 Control and safety devices to be recalibrated.
- 2.2.4 Operation of entire plant to be checked and recorded.
- 2.2.5 Perform acid test on compressor oil.
- 2.2.6 Weather proofing to be attended to as required.

### **3. CHILLED WATER FAN COIL UNITS (As applicable)**

#### **3.1 MONTHLY**

- 3.1.1 Remove and wash R/A ceiling grille filter.
- 3.1.2 Examine fan impellor(s) and motor.
- 3.1.3 Check for unusual noises.
- 3.1.4 Check operation of thermostat fan speed selector and heater elements.
- 3.1.5 Check operation of chilled water control valve.
- 3.1.6 Check for water leaks.
- 3.1.7 check for air leaks on flexible ductwork.

#### **3.2 ANNUALLY**

- 3.2.1 Check condition of finned coil and pressure wash as required.
- 3.2.2 Check condition of all ferrous metal components. Derust and repaint to prevent further corrosion, as required.
- 3.2.3 Check condition of chilled water pipe insulation at unit and reinstate as required.
- 3.2.4 Check condition of condensate trays. Remove corrosion and scale. Treat with bitumen or epoxy paint.

**4. SPLIT TYPE AIR CONDITIONING UNITS INCLUDING VARIABLE REFRIGERENT VOLUME UNITS, CONSOLE SPLITS, MID AND HIGH WALL SPLITS, UNDER CEILING SPLITS AND CASSETTE TYPE UNITS. (As applicable)**

**4.1 MONTHLY**

- 4.1.1 Clean filters, where necessary.
- 4.1.2 Check cooling and heating operation.
- 4.1.3 Check fans and fan motor operation.
- 4.1.4 Check condensate drains for obstructions.
- 4.1.5 Test thermostat and controls operation.
- 4.1.6 Generally clean equipment externally.
- 4.1.7 Operate unit and check all functions. Advise Client of any malfunctions.

**4.2 ANNUALLY - during July\BI-ANNUALLY - during March and September, in addition to above.**

- 4.2.1 Chemically pressure clean evaporator coil (where access allows).
- 4.2.2 Chemically pressure clean condenser coil.
- 4.2.3 Clean condensate pans and drains.
- 4.2.4 All ferrous metal components to be examined, corrosion removed and repainted with Techtyl or similar to prevent further corrosion (coastal applications only).
- 4.2.5 Leak test refrigerant system.
- 4.2.6 Put into operation and check all functions.
- 4.2.7 Report any malfunctions to Client/Engineer in writing.

**5. WINDOW/WALL TYPE AIR CONDITIONING UNITS INCLUDING STANDARD CONSOLE UNITS AND CURTAIN WALL CONSOLE UNITS (As applicable)**

**5.1 MONTHLY**

- 5.1.1 Clean filters, where necessary.
- 5.1.2 Check cooling and heating operation.
- 5.1.3 Check fans and fan motor operation.
- 5.1.4 Check condensate drains for obstructions.
- 5.1.5 Test thermostat and controls operation.
- 5.1.6 Generally clean equipment externally.
- 5.1.7 Operate unit and check all functions. Advise Client of any malfunctions.

**5.2 ANNUALLY - during July\BI-ANNUALLY - during March and September, in addition to above.**

- 5.2.1 Remove unit to on site wash bay or cleaning area.
- 5.2.2 Chemically pressure clean evaporator coil, condenser coil and condensate pan.
- 5.2.3 Leak test refrigerant system.
- 5.2.4 All ferrous metal components to be examined, corrosion removed and repainted with Techtyl or similar to prevent further corrosion (coastal applications only).
- 5.2.5 Put into operation and check all functions.
- 5.2.6 Report any malfunctions to Client/Engineer.

## **6. PUMPS (As applicable)**

### **6.1 MONTHLY**

- 6.1.1 Bearings to be lubricated, check pump bearings for oil level and adjust, as necessary.
- 6.1.2 Gland packing to be checked for excessive leakage and adjust or replace, as necessary.
- 6.1.3 Flexible drive coupling alignment and rubbers to be checked and rectified, if necessary.
- 6.1.4 Holding down bolts to be tightened and corrosion removed and painted, if necessary.
- 6.1.5 Clean down pump and motor and check water flow and remove any blockage from drain piping.
- 6.1.6 Water valves on open condenser water circuits to be fully opened and closed, to prevent lime scale formation from inhibiting valve action.

### **6.2 ANNUALLY** - during September, in addition to above.

- 6.2.1 Flexible drive coupling and rubbers to be examined for excessive wear.
- 6.2.2 Gland packing and studs to be replaced.
- 6.2.3 Check condition of impeller, shaft and bearings and replace as required.
- 6.2.4 All ferrous metal components to be examined, corrosion, algae and lime scale to be removed and repainted to prevent further corrosion.

## **7. FANS (As applicable)**

### **7.1 MONTHLY**

- 7.1.1 Bearings to be lubricated on drive motor and fan, if necessary.
- 7.1.2 Vee belts to be checked for correct tension and alignment, and replaced if necessary, and drive pulleys to be tightened, if necessary.
- 7.1.3 Vortex cables to be adjusted, if necessary.
- 7.1.4 Vanes to be checked for tightness and lubricate bolts.
- 7.1.5 Flexible connections to be checked and air leaks rectified.
- 7.1.6 Casing and holding down bolts to be checked for corrosion and security.
- 7.1.7 Check bearing temperatures.
- 7.1.8 Check noise and vibration.
- 7.1.9 Check wear on fan blades.
- 7.1.10 Check security of fan wheels on shaft.
- 7.1.11 Clean air inlet screen.
- 7.1.12 Clean blades of dirt accumulation.

### **7.2 ANNUALLY** - during September -in addition to the above.

- 7.2.1 All ferrous metal components to be examined, corrosion removed and repainted to prevent further corrosion.
- 7.2.2 Linkages to be renewed if defective and lubricate swivel bolts.
- 7.2.3 Bearings to be regreased, where necessary.
- 7.2.4 Check motor starter and run-up speeds.
- 7.2.5 Check bearing bolts.
- 7.2.6 Check drive shaft alignment and condition.
- 7.2.7 Check drive belts and replace as necessary.

## **8. ELECTRICAL COMPONENTS AND CONTROL PANELS AND ASSOCIATED SWITCHGEAR (As applicable)**

### **8.1 QUARTERLY**

- 8.1.1 Panels to be cleaned internally.
- 8.1.2 Terminals to be checked and tightened.
- 8.1.3 Indicating light globes to be replaced, where necessary.
- 8.1.4 Circuit breakers and fuses to be checked and investigate reasons for any blown fuses or circuit breakers on OFF position; rectify faults and replace blown fuses and faulty circuit breakers.
- 8.1.5 Starters, Contactors and Relays to be checked to ensure moving bridges slide freely and that all contact points are clean. Investigate and rectify cause of excessive burning of contacts.
- 8.1.6 Time switch settings to be checked and reset to start and stop plant at correct time, if necessary.
- 8.1.7 Check cable ways.
- 8.1.8 Check cabling loops to doors, for scuffing.
- 8.1.9 Check interlocks and inter-action with associated control systems.
- 8.1.10 Check equipment amperages.
- 8.1.11 Check access door seals, handles and fittings.

### **8.2 ANNUALLY - during September, in addition to the above.**

- 8.2.1 Thermal overload settings to be checked and reset, if necessary.
- 8.2.2 Star Delta starter timers to be checked and delay timers to be correctly set.
- 8.2.3 Automatic sequences to be checked and reset, if necessary.
- 8.2.4 Electric heater connections to be checked for correct amperage and faulty elements to be recorded.
- 8.2.5 Internal wiring to be tied up and labelling to be checked.
- 8.2.6 Calibrate volt and ammeters.
- 8.2.7 Check insulation resistance.
- 8.2.8 Check earth impedance.

## **9. CONTROLS (As applicable)**

### **9.1 MONTHLY**

- 9.1.1 Pneumatic controls system compressor air intake oil level and motor bearings to be checked and rectified, if necessary.
- 9.1.2 Clean and replace intake and discharge Air filters.
- 9.1.3 Air compressor safety controls to be checked and operation of controls to be tested.
- 9.1.4 Adjust belt tension as required.
- 9.1.5 Control thermostats operation to be checked and calibrated, if necessary.
- 9.1.6 Check operation of Air dryer and related controls.
- 9.1.7 Check pressure reducing valve, pressure relief valve and pressure switch.
- 9.1.8 Drain filter bowl and replace filter as required.
- 9.1.9 Operate and check operation of plant. Take and record Wet and Dry bulb temperatures in each conditioned zone and outside with reliable sling psychrometer.
- 9.1.10 Check actuator mountings and lubrication.



- 9.1.11 Check all air connections for tightness.
- 9.1.12 Check all electrical connections for tightness.
- 9.1.13 Check operation of control valves.
- 9.1.14 Check responses of actuators and primary elements.
- 9.1.15 Clean and check operation of all Air terminal boxes.
- 9.2 **ANNUALLY** - during September, in addition to the above.
- 9.2.1 Motorised damper, linkages and motors to be checked and operation observed and reset, if necessary by specialist contractor.
- 9.2.2 Operation of entire plant to be checked and recorded by specialist contractor.
- 9.2.3 Controllers, actuators and primary elements to be checked.

**10. GENERAL (As applicable)**

**10.1 MONTHLY**

- 10.1.1 Attend to any complaints reported by the Client's representative.
- 10.1.2 While attending to any defects and servicing the plant, the Contractor shall not unduly disturb the occupants in the areas concerned.
- 10.1.3 Replace all inspection panels and covers and refix all screws, bolts and nuts, and replace, if necessary.
- 10.1.4 Clean all plant and equipment and record and report dirty plant condition to correct authority.
- 10.1.5 Lock switchpanels and plant rooms and return keys to proper authority.
- 10.1.6 Sign Log Book and enter details where required.
- 10.1.7 Acknowledgement of service and report to be completed and signed by Client's representative. Report on remedial work undertaken and on any faults found and replacements and repairs required.

**A COPY OF EACH SUCH ACKNOWLEDGEMENT OF SERVICE AND REPORT TO BE SUBMITTED TO THE CLIENT AND THE ENGINEER BY THE CONTRACTOR WITHIN FOURTEEN (14) DAYS OF EACH SERVICE**

**11. CAUTION**

- 11.1 Air Conditioning Plants shall never be operated with any safety or overload protection device bridged out.
- 11.2 When power is initially switched on, after being off or disconnected for more than one hour, the compressors should not be operated for a further period of two hours.

**12. AIR CONDITIONING SURVEY**

**12.1 MONTHLY**

- 12.1.1 Check Zone Room temperature, wet bulb and dry bulb, for each room\shop within that zone, simultaneously checking plant operating parameters.
- 12.1.2 Record all Tenant complaints by means of a "Tenant Report Schedule" and obtain the relevant tenant's signature.

**12.2 ANNUALLY**

- 12.2.1 Check zone air flow and air distribution within that zone, simultaneously checking plant operating parameters. Attend to air balancing as required.

**NOTE : MUST BE COMPLETED**

**SCHEDULE C**

**SCHEDULE OF STAFF AVAILABLE.**

Tenderers to indicate the staff available to carry out the contract.

For this, the following is required:-

- (a) A diagram of responsibility
- (b) Labour available (Quantities):
  - (1) Artisans -
  - (2) Apprentices -
  - (3) Operators -
  - (4) Labourers -

**NAMES OF SENIOR PERSONNEL WHO WILL BE DEALING WITH THIS CONTRACT (from Director to Foreman)**

NAME	Position	EXPERIENCE

**NOTE : MUST BE COMPLETED**

**SCHEDULE D**

**SCHEDULE OF SUBCONTRACTORS PROPOSED BY THE TENDERER**

The tenderer shall state in the schedule below the names of all subcontractors, he wishes to employ in the works and shall define their duties and outline their experience.

The successful tenderer may not substitute a sub-contractor, equipment manufacturer or supplier from those stated below or in the Technical Schedules without the written permission of the Engineers.

NAME OF CONTRACTOR	PROPOSED DUTIES	EXPERIENCE

**NOTE : MUST BE COMPLETED**

**SCHEDULE E**

<b>COMPANY TOOLS LIST</b>			
<input checked="" type="checkbox"/> <b>Please tick box</b>			
<input type="checkbox"/>	Acetylene Welding Set - Large	<input type="checkbox"/>	Pressure Gauges, Hoses And Fittings
<input type="checkbox"/>	Amperage Logger	<input type="checkbox"/>	Puller Set
<input type="checkbox"/>	Angle Grinder - Large	<input type="checkbox"/>	Refrigerant Recovery Unit
<input type="checkbox"/>	Angle Grinder - Small	<input type="checkbox"/>	Scaffolding SABS
<input type="checkbox"/>	Bench Grinder	<input type="checkbox"/>	Screw Drivers - Combination Set
<input type="checkbox"/>	Bench Vice	<input type="checkbox"/>	Slings
<input type="checkbox"/>	Binder Test Probes & Hoses (4 Off)	<input type="checkbox"/>	Sound Level Meter
<input type="checkbox"/>	Block And Tackle - 10 Ton	<input type="checkbox"/>	Spanners - Combination Set
<input type="checkbox"/>	Block And Tackle - 3 Ton	<input type="checkbox"/>	Step Ladder - 6ft
<input type="checkbox"/>	Chain Blocks	<input type="checkbox"/>	Step Ladder - 8ft
<input type="checkbox"/>	CO <sup>2</sup> Meter	<input type="checkbox"/>	Tacho Meter
<input type="checkbox"/>	Collapsible Hood	<input type="checkbox"/>	Tape Measure
<input type="checkbox"/>	Compressor Analyser	<input type="checkbox"/>	Temperature & RH Logger
<input type="checkbox"/>	Cut Off Saw	<input type="checkbox"/>	Torque Wrench
<input type="checkbox"/>	Digital Ac / Amp Clamp Tester	<input type="checkbox"/>	Vacuum Cleaner
<input type="checkbox"/>	Digital Air Speed Velocity & Temperature Meter	<input type="checkbox"/>	Vacuum Gauge
<input type="checkbox"/>	Digital Anemometer & Temperature Meter	<input type="checkbox"/>	Vacuum Pump - 2 Stage & More
<input type="checkbox"/>	Digital Differential Manometer (Air Pressure)	<input type="checkbox"/>	Vernier Set
<input type="checkbox"/>	Digital Differential Manometer (Water Pressure)	<input type="checkbox"/>	Vibration Meter
<input type="checkbox"/>	Digital Hand-Held Thermometer / RH Meter	<input type="checkbox"/>	Voltage Logger
<input type="checkbox"/>	Digital Multi-Meter	<input type="checkbox"/>	Welding Machine
<input type="checkbox"/>	Digital Thermometer with Thin Probe for Binders	<input type="checkbox"/>	Workshop Hoist
<input type="checkbox"/>	Drill Press		
<input type="checkbox"/>	Drilling Machine - Hilti Heavy Duty		<b>Additional</b>
<input type="checkbox"/>	Extension Ladder	<input type="checkbox"/>	
<input type="checkbox"/>	Fan	<input type="checkbox"/>	
<input type="checkbox"/>	Grease Gun	<input type="checkbox"/>	
<input type="checkbox"/>	Hand Riveter	<input type="checkbox"/>	
<input type="checkbox"/>	Heater Blanket	<input type="checkbox"/>	
<input type="checkbox"/>	High Pressure Washer	<input type="checkbox"/>	
<input type="checkbox"/>	Hydraulic Jack	<input type="checkbox"/>	
<input type="checkbox"/>	Hydraulic Puller Set	<input type="checkbox"/>	
<input type="checkbox"/>	Infrared Temperature Thermometer	<input type="checkbox"/>	
<input type="checkbox"/>	Inspection Mirror	<input type="checkbox"/>	
<input type="checkbox"/>	Laser Tape Measure	<input type="checkbox"/>	
<input type="checkbox"/>	Leak Detector	<input type="checkbox"/>	
<input type="checkbox"/>	Magnehelic Differential Gauges & Hoses	<input type="checkbox"/>	
<input type="checkbox"/>	Magnifying Glass	<input type="checkbox"/>	
<input type="checkbox"/>	Nitrogen Gauge	<input type="checkbox"/>	
<input type="checkbox"/>	Oil Pump	<input type="checkbox"/>	
<input type="checkbox"/>	Pitout Tube	<input type="checkbox"/>	
<input type="checkbox"/>	Porta Pack	<input type="checkbox"/>	
<input type="checkbox"/>	Portable Air Pressure Gauge Meter	<input type="checkbox"/>	
<input type="checkbox"/>	Portable Flushing Unit	<input type="checkbox"/>	
<input type="checkbox"/>	Portable Lead Light With Stand	<input type="checkbox"/>	
<input type="checkbox"/>	Portable Scale	<input type="checkbox"/>	
<input type="checkbox"/>		<input type="checkbox"/>	

## TECHNICIAN TOOLS LIST

Please tick box

<input type="checkbox"/>	Allen Key Set: Metric / Imperial	<input type="checkbox"/>	Pliers - Pinch Off
<input type="checkbox"/>	Ball Pen Hammer	<input type="checkbox"/>	Pliers - Round Nose
<input type="checkbox"/>	Bearing Pullers	<input type="checkbox"/>	Pliers - Water Pump
<input type="checkbox"/>	Calipers - Straight , In & Outside	<input type="checkbox"/>	Porta Pack Welding Set
<input type="checkbox"/>	Capillary Tube Cutter	<input type="checkbox"/>	Psychrometric Sling
<input type="checkbox"/>	Chisel Set	<input type="checkbox"/>	Punch
<input type="checkbox"/>	Circlip Plier Set	<input type="checkbox"/>	Ratchet Wrench
<input type="checkbox"/>	Clamp On Tong Tester	<input type="checkbox"/>	Refrigeration Gauge Manifold
<input type="checkbox"/>	Combination Spanners: 23 - 34mm	<input type="checkbox"/>	Refrigeration Scale
<input type="checkbox"/>	Copper Pipe Cutting And Bending Set	<input type="checkbox"/>	Retractable Knife
<input type="checkbox"/>	Crimping Tool	<input type="checkbox"/>	Rivet Gun
<input type="checkbox"/>	Digital AC / Amp Clamp Tester	<input type="checkbox"/>	Safety Eyewear
<input type="checkbox"/>	Digital Thermometer	<input type="checkbox"/>	Safety Shoes
<input type="checkbox"/>	Drill Machine: 13mm / 550 Watt	<input type="checkbox"/>	Screw Driver Set
<input type="checkbox"/>	Ear Protection	<input type="checkbox"/>	Scriber
<input type="checkbox"/>	Electric Drill With Hammer Action	<input type="checkbox"/>	Side Cutter
<input type="checkbox"/>	Electric Soldering Iron	<input type="checkbox"/>	Socket Set: 6 To 14 mm
<input type="checkbox"/>	Extension Cord: 50m	<input type="checkbox"/>	Socket Set: 6 To 34 mm
<input type="checkbox"/>	Face Masks	<input type="checkbox"/>	Spanner Set: 6 - 22mm
<input type="checkbox"/>	File Set (Flat / Round / Square)	<input type="checkbox"/>	Spirit Level
<input type="checkbox"/>	Flaring & Swaging Tools	<input type="checkbox"/>	Straight Edge (Stainless Steel)
<input type="checkbox"/>	Flashlight	<input type="checkbox"/>	Tape Measure
<input type="checkbox"/>	Grease Gun	<input type="checkbox"/>	Temperature Probes
<input type="checkbox"/>	Grinder - Large	<input type="checkbox"/>	Tin Snips
<input type="checkbox"/>	Grinder - Small	<input type="checkbox"/>	Toolbox
<input type="checkbox"/>	Hacksaw	<input type="checkbox"/>	Torch ( Flash Light)
<input type="checkbox"/>	Hammer - 2lb	<input type="checkbox"/>	Transfer Pump
<input type="checkbox"/>	Hammer - 4lb	<input type="checkbox"/>	Utility Knife
<input type="checkbox"/>	Hard Hat	<input type="checkbox"/>	Vacuum Cleaner
<input type="checkbox"/>	Hi Pressure Blower	<input type="checkbox"/>	Vacuum Gauge
<input type="checkbox"/>	High Pressure Washer	<input type="checkbox"/>	Vacuum Pump - Large
<input type="checkbox"/>	Hosepipe - 20m X 15mm	<input type="checkbox"/>	Vacuum Pump - Small
<input type="checkbox"/>	Infrared Temperature Tester	<input type="checkbox"/>	Vice Grip
<input type="checkbox"/>	Inspection Mirror	<input type="checkbox"/>	Wire Stripper
<input type="checkbox"/>	Ladder		
<input type="checkbox"/>	Leak Detector		<b>Additional</b>
<input type="checkbox"/>	Manifold Gauges	<input type="checkbox"/>	
<input type="checkbox"/>	Multi Meter	<input type="checkbox"/>	
<input type="checkbox"/>	Oil Pump	<input type="checkbox"/>	
<input type="checkbox"/>	Overalls	<input type="checkbox"/>	
<input type="checkbox"/>	Pin Punch Set	<input type="checkbox"/>	
<input type="checkbox"/>	Pipe Benders	<input type="checkbox"/>	
<input type="checkbox"/>	Pipe Cutters: 1/4 - 5/8	<input type="checkbox"/>	
<input type="checkbox"/>	Pipe Cutters: 7/8 - 3 1/8	<input type="checkbox"/>	
<input type="checkbox"/>	Pipe Wrench - Large	<input type="checkbox"/>	
<input type="checkbox"/>	Pipe Wrench - Small	<input type="checkbox"/>	
<input type="checkbox"/>	Plier - Combination	<input type="checkbox"/>	
<input type="checkbox"/>	Plier - Long Nose	<input type="checkbox"/>	
<input type="checkbox"/>	Pliers - Crimping	<input type="checkbox"/>	