

Air Conditioning Installation Specifications for Domestic Single Storey

Condensed Contractors Edition



FORD & DOONAN
Air Conditioning Systems

Version One
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INTRODUCTION

This booklet is to be used as a specification for all work done for the Ford and Doonan group of companies. Its purpose is to provide a reference for resource and information on the standards expected by Ford and Doonan on each and every installation.

This document is progressive in its nature and seeks to continue to improve by input from all parties involved.

Ford and Doonan aim to maintain the highest level of quality in its installations – by doing this we continue to build our reputation as a quality company and subsequently generate more work for all of us.

GENERAL REQUIREMENTS AND INFORMATION

The following is some standard items that Ford and Doonan ask you have before commencing installations.

- Ford and Doonan magnetic signage must be positioned appropriately on vehicles (to the front half of the vehicle, preferably on the doors)
- Uniforms with Ford and Doonan logo's must be worn when on site. Shirts only supplied by Ford and Doonan are acceptable, blue pants/shorts?
- An appropriate white vehicle, which is reliable and clean, must be supplied.
- Communication is imperative and a mobile phone is required with an answering service
- Vacuum cleaners, drop sheets and adequate cleaning equipment, ie spray and wipe
- Personal Protective Equipment (PPE) ie dust masks, eye protection, ear muffs, first aid kit, fire extinguisher, steel capped boots, hard hats and harness
- Current tagged tools leads, and earth leakage protection as per Australian Standards
- Ladders that meet the safety criteria to suite your type of work. (i.e. electrical work use fibreglass?)

ON ARRIVAL TO SITE

- Walk through the site and familiarise yourself with the building, in conjunction with the plan and complete a job safety analysis. (JSA) and carry out your safe work method based on the JSA.
- Check all paper work and any orders or deliveries are correct and complete ie. Correct unit model supplied to site, and colour (evaps), duct, fittings and equipment. If something is incorrect or missing phone the relevant installations administrator immediately so that it can be rectified on the day.
- Check model number of unit against paperwork to ensure that the correct unit has been received. Pay close attention to units single or three phase power is an option. (ie 3HP ducted unit)
- Check that the A/C unit packaging for any signs of damage. If there appears to be damage open the packaging to ascertain if the unit itself is damaged. If the unit is damaged phone the relevant installation's administrator immediately.
- Visually check fragile components eg, grilles etc, on arrival to confirm that there is no damaged items preventing completion

BEFORE DEPARTING SITE

- **Site must be cleared of all rubbish and boxes.** Return to Ford and Doonan for recycling
- Inside areas must be vacuumed and walls and ceilings wiped of any marks
- Ensure Ford and Doonan stickers are fitted to:
 1. Front of condenser (metallic type)
 2. To the controller (small bubble sticker)
- Set time clock on controllers
- Re-bag any unused full lengths of duct (spare bags available from F&D store)
- Complete paperwork and record the serial and model numbers on outdoor AND indoor units prior to leaving site

Showing professionalism through courteous behaviour, attention to detail, spending that extra five minutes tidying up before leaving will give the client a sense of completion and satisfaction.

This is standard on all Ford and Doonan installations

DUCT INSTALLER MINIMUM STANDARDS

OUTLETS AND RETURN AIR

- Must be installed square to the walls or windows, drop sheets must be used throughout the building, particularly under the outlets.
- Roof insulation **must** be re-positioned if displaced during installation
- Must be wiped clean of hand marks and dust once fitted, including the return air grille
- Must be touched up with white paint if chipped during installation
- Must have diffuser blades set in an appropriate position to air condition the space
- Locate the outlets as close as practical to the plan location. Liaise with Builders supervisor on locations if unable to locate as per plan.
- All timbers trimmed out for grilles, particularly the Return Air Grille **MUST BE** re-supported, strong enough to take a persons weight, with timber or PGI angle or timber
- Return air grill shall be screwed and silver foil taped to return air box in order to create a total seal

FAN COIL UNIT

- To be positioned and orientated as per plan
- Hung via booker rod and unistrut
- 500-1000mm above ceiling
- To have ~10mm fall to drain end
- Must have a safety tray installed under and screwed to unistrut with AV mounts between FCU and tray

STARTER SETS

- To be fully screwed on all 4 sides
- Internally silicone sealed to FCU flange

DUCTING

- To be hung 500-1000mm above ceiling
- To be installed as per drawing with the airflow correct as indicated on the duct (some flexible duct is air flow directive)
- Is to be 'hung' every 1.2m (or as required to prevent sagging) with blue band to a consistent level throughout the roof space to prevent duct and fittings touching the ceiling
- When joining lengths of flexible duct, the supply air duct must be inserted into the next piece of duct, recognising the direction of airflow so as to create an uninterrupted airway
- Duct insulation must be pulled back over the joint, spigot or damper motor to prevent 'sweating'
- NOTE: blow in insulation must not be disturbed around down lights or exhaust fans, do not disrupt barriers in roof space around fittings as these are installed to prevent blow in insulation ingress
- Ducting is not to be over-stretched and left in a 'taught' state
- The duct attached to each outlet shall be hung with blue band strapping to create a 'goose neck' affect.
- Supply air flexible duct is to be cut where required, to create straight uninhabited runs.
- When Green duct is specified only the last 3 metres to the outlet shall be Gold.
- Return air duct is to be a minimum of 6 metres per duct.
- Any tears in the outer casing are to be repaired with silver tape
- **All rubbish is to be removed from the roof space. Including cut offs, tape, bags.**



**“GOOSE NECK” AFFECT ENSURES AIR FLOW IS DISTRBUTED EVENLY
OVER FACE OF GRILLE**

REFRGERATION INSTALLER MINIMUIM STANDARD

- **REFRIGERATED PIPE-UP**

- The installer must hold the appropriate ARCTICK accreditation
- Mechanical bend on all work outside of roof space.
- Refrigerant pipe is to be run in a manner to prevent it being damaged.
 - Run pipe work in the roof space to prevent it being,
 - Stood on
 - Grabbed
 - Tripped over
- Completely covered with correct sized pipe insulation, glued or taped at joints, on both pipes.
- Fixed at least every 3m mechanically, saddles, strap, etc being sure not to crush insulation.
- All pipe is to be reamed/de burred for flares and expansion joints
- Suitable lubricant must be applied to the face of all flares prior to tightening.
- An awareness of units that may require additional refrigerant upon commissioning is essential. Where additional refrigerant is added, (or removed) the corrected amount must be recorded in the CU cabinet. Most manufactures provide charging information on the unit specs on the unit. Use appropriate scales for recrding and measuring adjusted refrigerant quantities,
- Welding of copper pipe. Use dry nitrogen to purge while welding and always carry a fire extinguisher. Solder should be brown tip 6% silver content
- Minimise number and locations of welded connections. (2 welded joint per system)
- All welds and flares must be leak checked before leaving site
- Appropriate refrigerant tools (flaring blocks, gauges etc) to suit refrigerant R410 etc.
- All pipe ups are required to use VAC – U – STAT evacuated to 250 microns



VAC – U - STAT

DRAINS

- The main drain must be run to ground level usually with the refrigerant pipe work, or if not an appropriate run next to a down pipe, and to a floor grate.
- NEVER run drains into stormwater piping
 - Or gutters
 - Or down pipes
 - Or rain heads
- Only use 20mm PVC for drains.
- Support every 1 – 1.5m with saddles, or threaded rod and clips. (These are available from the Ford and Doonan store)
- All joints must be thread sealed or glued
- PVC joint to from drip tray to be PVC glued and screwed.
- The fall should be 1:60 (10cm over 6m) minimum
- Primary drain to be run, if possible, to a ground level storm water grate
 - Saddle vertically to wall face every 2m or run down inside pipe cover (secured internally)
- Emergency drain
 - NEVER 'Teed' into main drain
 - Never on the front of the house
 - Run to a *conspicuous* position. Liaise with client on location where possible, above a window, or laundry door.
- The 'P' trap on the main drain is to be 30mm lower than the inlet pipe and vented where necessary. If a 'P' trap is required



**MAIN DRAIN AND
EMERGENCY DRAIN**



A NEATLY RUN DRAIN WILL CAUSE NO PAIN

OUTDOOR, CONDENSING UNIT (CU)

- Is to be located in the position as per the Ford and Doonan plan or agreed with the builder. If the client wishes to change the position on the day of installation, call the building supervisor to confirm the change of position..
- Position CU level on slabs or paving
 - Top of slabs shall be set to -1c
- Compact soil beneath slabs and wet down if necessary. Otherwise CU may sag on the compressor end
- Ensure sufficient air flow will occur through and around the unit – 150mm off wall and clearance of at least 1.0m free flow in front. If you think air recirculation is an issue advise supervisor and seek an alternative location.
- Position CU for vertical pipe run from indoor if possible
- Pipe cover is to be fixed to wall with a minimum of six, **Phillip's head** tap in fasteners (so it can be removed) per length and is to incorporate refrigerant pipes, drain and electrical. Liaise with electrician.
- Pipe cover must be plumb/ vertical – check that it is level
- Position unit on par blocks mounts as standard
- Put Ford and Doonan stickers on to outdoor unit.
- It is preferable and generally mandatory to take the unit to the final location in its box to avoid damage and scratching
- The unit should be lifted out of the box base that protects the bottom of the unit, then onto the par blocks without having the paint and anti rust protection scratched off under the feet
- A lanyard is to be attached behind the ODU securing it to the wall via a coach bolt and wall plug.



BRACKETS FOR CONDENSING UNITS

- Must be firmly bolted to outside wall using at least 4 off HRD HGS 10-30 fixing or equivalent. (relative to the unit being mounted)
- Unit must be level on the brackets
- Unit must be fixed at all four points, ie each foot plate of unit with waffle rubber under foot and 6mm x 25mm zinc plated bolts, nuts and washers.
- Unit must be checked for service access and clearances for airflow before leaving site



LEAK TESTING AND EVACUATION

- Leak testing, all systems are to be evacuated to 250 microns and held off for 15 minutes. If system will not hold 250 microns contact your supervisors. Do not let refrigerant charge into a system that does not hold 250 microns. You must have a Vacustat.

COMMISSIONING

- Check unit operation on all cycles
- Check airflow to every outlet and adjust as required
- Check every zone is operable.
- Check that all stickers are fitted and fit if required as per specifications
- Check and report of job cleanliness, ie boxes and rubbish removed, manholes, walls and outlets clean and patched as required
- Record model number and serial numbers of all indoor and outdoor units on commissioning sheets

ELECTRICAL INSTALLATION **GUIDELINES**

- Manufactures specifications for cable type and size must be adhered to, including the requirement for shielded cable and fuse size.
- All crimped cable assemblies are to be tested using a cable tester.
- Interconnecting cable must be protected via a C.B.
- Controllers:
 - Install controllers at 1500 AFL
 - Mount the Zone controller in line with the A/C controller and double check straightness
- All conduits/fitting/isolators must be glued and saddled as per AS standards.
 - Remember to seal the top of isolators
- Isolators must be mounted on the wall
- Remove all rubbish – wire off cuts tape, screws, knock outs etc
- All zone systems are to be supplied from the fan coil unit using a 413 socket. This can be mounted within the control box of the FCU
- Duct tape rots in the sun (within a year or two). It must not be used for saddling conduits to our piping externally. insulated tape and black wire ties which are UV approved for outdoor use
- Drop sheets must be used inside every time your drill into a wall

COMMISSIONING

- All zone shall be checked for functionality
- All zones shall be named
- The time on the controllers is required to be set
- Check unit operation on all cycles
- Record model number and serial numbers of all indoor and outdoor units.