

National Apprenticeship - Occupational Profile

Craft Occupation	Agricultural Mechanics
Industry Served	The Tractor and Farm Machinery Industry
Profile of Craft	<p>The servicing, maintenance, repair and installation of the mechanical and electrical equipment of tractor and farm machinery.</p> <p>At the end of the apprenticeship, the craftsperson will be able to demonstrate competence in the following skills:</p>

Core Skills

Farm Machinery

Carry out manufacturer's service schedules and diagnose and rectify general faults on ploughs, cultivators, balers, wrappers, harvesters (forage, combine and beet), seed drills, mowers, hedge cutters, vacuum tankers, diet feeders, fertiliser spreaders and sprayers.

Fgas

Describe the overall aim of Regulation No. 842/2006 of the European Parliament and of the Council of 17 of May 2006 in relation to the air conditioning systems of automotive vehicles (MACs). List the dangers to personal health and related safety regulations related to the refrigerant gas contained in mobile air conditioning (MAC) systems. Describe the location of possible leaks of refrigerant gas from an automotive air con unit.

Engine/Fuel

Diagnose engine faults. Carry out compression tests. Remove/overhaul cylinder heads. Carry out manufacturer's service schedule. Remove and refit engine components. Set injection pump and ignition timing.

Transmission

Remove and fit transmission components. Diagnose faults and overhaul 4-wheel drive steering axles, rear axles, manual and power shift transmissions. Diagnose faults and remove and fit clutches, driveshaft joints, bearings, chains, sprockets, pulleys, belts, bushes, and seals.

Hydraulic

Carry out manufacturer's service schedule. Diagnose faults and carry out basic repairs on hydraulic systems and components. Remove and fit components. Carry out pressure and flow tests on the hydraulic system. Make up and fit hydraulic pipes and hoses.

Electrical/Electronics

Diagnose and rectify faults in electrical circuits using wiring diagrams and multimeter. Diagnose faults in starting and charging systems. Remove and fit components.

Brakes

Diagnose and rectify faults in mechanical, hydraulic and air braking systems of agricultural tractors and farm machines. Remove and fit basic electrical/electronic components.

Core Skills

Cont'd

Steering/Suspension

Diagnose faulty steering system components. Remove and fit components. Overhaul manual type steering box. Carry out steering system adjustments. Diagnose and rectify faults in a tractor front axle suspension system.

Wheels/Tyres

Remove and fit wheels and tyres. Inflate tyres.

Cab and Air Conditioning

Diagnose faults in cab and seat suspension systems and fit replacement parts. Disconnect and reconnect air conditioning system when removing engine and/or cab. Remove and fit air conditioning components.

Metal Work

Make up simple components, and carry out repairs using bench fitting, gas cutting, glazing, soldering, gas welding and MMA and MIG electric welding techniques.

Specialist Skills

Farm Machinery

Diagnose and rectify complex faults on farm machines. Calibrate fertiliser distributors, grain drills and sprayers

Mobile Air Conditioning (MAC) systems'

Discuss and demonstrate best practice for handling of Fgases storage cylinders, the safe recovery and disposal of Fgas. Perform full servicing of an air conditioning system of an automotive vehicle to include: leak detection, recovery, vacuum and refill.

Engine/Fuel

Test engine/PTO performance on a dynamometer. Check emissions using smoke meter. Replace diesel injector nozzles. Carry out engine overhaul.

Transmission

Diagnose faults and overhaul CVT and hydrostatic transmissions.

Hydraulics

Diagnose faults in and overhaul hydraulic components (pumps, motors, valves, cylinders etc.)

Electrical/Electronics

Diagnose faults in the electronic systems of tractors and farm machines using electronic test equipment.

Air Conditioning

Diagnose faults in an air conditioning system. Evacuate and recharge air conditioning systems.

Steering

Diagnose and rectify faults in a hydrostatic steering motor

Common Skills

Engine/Fuel

Remove and refit engines. Remove and replace basic components. Bleed fuel systems.

Transmission

Remove and refit transmissions and associated external components.

Hydraulics

Remove and refit hydraulic components (pumps, cylinders, motors, hoses etc.)

Electrical/Electronics

Remove and fit complete electronic components

Brakes

Remove and refit brake components. Check brake system for correct operation.

Steering and Suspension

Diagnose faulty steering system components. Remove and fit components. Carry out steering system adjustments. Diagnose and rectify faults in basic suspension systems.

Wheels/Tyres

Remove and fit wheels and tyres. Inflate tyres.

Cab and Air Conditioning

Remove and refit air conditioning components.

Metal Work

Make up simple components, and carry out repairs using bench fitting, brazing, soldering, gas welding and MIG electric welding techniques.

Personal Skills

- Communications
- Customer relations
- Adaptability
- Ability to work as a team member
- Ability to work independently
- Initiative
- Problem solving
- Planning and organisation
- Information gathering
- Safety awareness

NOTE: Integrated curriculum includes maths, science and theory
