

NEW ZEALAND **MOTOR INDUSTRY**—APPRENTICESHIP ORDER

In the Court of Arbitration of New Zealand—In the matter of the Apprentices Act 1948; and in the matter of the conditions of apprenticeship in the motor industry.

WHEREAS application has been made to the Court by the New Zealand Motor Trades Apprenticeship Committee for a new apprenticeship order governing the conditions of apprenticeship in the motor industry for the whole of New Zealand: And whereas the Court has heard the employers, workers, and other persons concerned and has considered the recommendations made to it by the said committee: And whereas the Court has deemed it expedient to make a new order under section 13 of the Apprentices Act 1948, prescribing wages, hours, and other conditions of employment to be incorporated in contracts of apprenticeship in the said industry, and prescribing such other matters and things as the Court is required and authorised by the said section or elsewhere to prescribe: Now, therefore, the Court doth hereby order and prescribe as follows:

1. *Industry to Which Order Applies*—The industry to which this order shall apply is the motor industry in the following branches, as referred to in the Schedule to this order: motor mechanics': automotive electrical: automotive machining: motorcycle mechanics': automotive diesel mechanics'. Provided that any contract of apprenticeship in the branch "tractor mechanics", as described in clause 1 and the Schedule of the order in force prior to 3 September 1956 shall, unless the parties to the contract otherwise elect, continue in effect as a contract in the "tractor mechanics" branch.

2. *Application of Order*—The provisions of this order shall apply to all employers of apprentices in the motor industry throughout New Zealand (whether bound by an award or agreement relating to the industry or not) and to all apprentices employed by such employers in such industry and to all contracts of apprenticeship (including those in force at the time of coming into force of this order) between such employers and apprentices, whether or not such contracts have been reduced to writing. (An "agreement" is an industrial agreement filed under section 103 of the Industrial Conciliation and Arbitration Act 1954, or an agreement filed under section 8 of the Labour Disputes Investigation Act 1913.)

3. *Interpretation*—Where no local apprenticeship committee has been appointed in any locality, or where the Court has discharged any local apprenticeship committee, the words “local apprenticeship committee” wherever used in subsequent clauses of this order shall be deemed to mean “District Commissioner of Apprenticeship”, hereinafter referred to as the “local committee” and “District Commissioner” respectively.

4. *Prior Consent of Committee*—(a) No employer shall engage any person on probation as an apprentice or enter into any contract of apprenticeship without the prior consent in writing of the appropriate local committee.

(b) An employer, before taking an apprentice to learn a branch of the industry, shall first satisfy the local committee that he is a suitable employer, is in a position to continue in business as an employer, and has the facilities for properly teaching him the branch of the industry.

5. *Contracts to be Registered*—Every contract of apprenticeship and every alteration or amendment thereof shall be in writing and shall be registered with the appropriate District Commissioner within a period of 28 days after the commencement of the employment of the apprentice (in the case of an original contract), or within 14 days after the making of the alteration (in the case of an altered contract).

If the contract or alteration is not presented for registration as aforesaid, the parties thereto shall be severally liable under the Apprentices Act 1948, to a fine not exceeding £10.

6. *Minimum Age*—The minimum age at which a person may commence to serve as an apprentice shall be 15 years.

7. *Prerequisite Education*—It shall be necessary for any person desiring to become an apprentice to produce to the local committee evidence that he has satisfactorily completed two years’ post-primary education or, having been prevented by exceptional circumstances from completing two years’ post-primary education, has nevertheless attained a standard of education satisfactory to the New Zealand committee. In any such exceptional cases the local committee may, with the prior approval of the New Zealand committee, consent to the apprenticeship and such consent may, if the New Zealand committee considers it necessary, be given upon the condition that the apprentice shall attend approved classes or take a correspondence course in subjects prescribed by the New Zealand committee for such time as the New Zealand committee considers necessary.

8. *Term of Apprenticeship*—(a) Except as provided in subclause (b) of this clause, the term of apprenticeship shall be 10,000 hours, divided into ten 1,000-hour periods.

(b) In the case of an apprentice who has obtained a School Certificate or in the examination for that certificate has obtained not less than 50 per cent of the possible marks in each of such subjects as are approved from time to time by the New Zealand committee, the term shall be 9,000 hours divided into nine 1,000-hour periods.

(c) A person who has attained the age of 18 years and who desires to enter into a contract of apprenticeship may apply to the local committee for a special contract of apprenticeship under section 25 of the Apprentices Act 1948.

(d) Except for annual holidays under the Annual Holidays Act 1944, all holidays provided for in the award or agreement referred to in clause 11 of this order which are taken by an apprentice shall be deemed to be time served under this contract, reckoning eight hours for any one day. Time worked on such holidays shall be added to the time deemed to be served.

(e) All time lost by an apprentice through his own default or sickness in any period of his employment shall be made up before such apprentice shall be considered to have entered upon the next succeeding period of his employment, and the total period of his employment shall be extended by a period equivalent to such lost time. Time lost through accident arising out of or in the course of the employment shall be made up by the extension of the final period, with wages at the rate prescribed for that period; but if the time so lost exceeds 4,000 hours then the extension of the period and the obligation to pay the wages prescribed for that period shall not be continued beyond the time necessary to give the apprentice a total of 6,000 hours of actual work as an apprentice.

(f) An apprentice working overtime shall have such time added to his ordinary time in calculating the respective 1,000-hour period of his employment.

(g) Except where otherwise provided, only working-hours shall be reckoned as time served.

(h) Where the New Zealand committee is of the opinion that time served in a related or similar occupation prior to the date of application for the engagement of an apprentice should be credited to the apprentice, it may, on application made to it by or through a local committee, fix the term of apprenticeship.

9. *Period of Probation*—(a) The period of probation to be prescribed in any contract to enable the parties to determine whether or not it shall be continued shall not exceed three months.

(b) When an apprentice is transferred from one employer to another, there shall be a period of probation not exceeding three months to enable the parties to the contract to determine whether or not it shall be continued with the employer to whom the apprentice is transferred.

10. *Proportion*—(a) (i) The proportion of the total number of apprentices to the total number of journeymen employed by any employer shall not be more than one to every journeyman employed.

(ii) Notwithstanding the foregoing provision the New Zealand committee on the recommendation of a local committee, may approve a proportion in excess of one to one in cases where the local committee has been satisfied that the employer has the necessary facilities for teaching the branch or branches of the industry mentioned in the contract of apprenticeship; provided that in no case shall the proportion of apprentices to journeymen exceed two to one.

(b) The proportion of apprentices to journeymen employed by any employer in any branch shall, for the purpose of determining whether or not such employer is entitled to enter into a contract of apprenticeship with an apprentice, be based upon the number of journeymen who at the date of making application to the local committee had been employed in that branch in that establishment for not less than two-thirds full time for a period of 12 months preceding that date.

(c) Where the local committee is satisfied that the employer meets the requirements laid down in subclause (b) of clause 4 hereof, it may, at its discretion, waive subclause (b) above.

(d) For the purposes of this order, an employer who himself works substantially at the trade shall be entitled to count himself as a journeyman.

(e) For the purposes of this order "journeyman" shall mean a worker who has completed a contract of apprenticeship or who has had at least five years' experience in the skills prescribed for the relevant branch of the industry.

(f) The powers and discretions provided for in section 29 of the Apprentices Act 1948, may be exercised by the District Commissioner and a local committee, notwithstanding that an employer to whom it is proposed to transfer an apprentice is already employing the full proportion of apprentices as determined by this order.

11. *Wages*—(a) The minimum weekly rates of wages payable to apprentices shall be the undermentioned percentages of the minimum weekly wage rate for journeymen (or if no weekly wage rate is prescribed, then an amount equal to 40 times the minimum hourly rate of wages for journeymen) in the branch of the industry in which the apprentice is employed as prescribed by the award or agreement relating to the employment of such journeymen in the establishment in which the apprentice is employed and in force for the time being and from time to time:

For apprentices serving a 10,000-hour term of apprenticeship:	Per Cent
For the first 1,000-hour period	32
For the second 1,000-hour period	37
For the third 1,000-hour period	42
For the fourth 1,000-hour period	47
For the fifth 1,000-hour period	52
For the sixth 1,000-hour period	57
For the seventh 1,000-hour period	62
For the eighth 1,000-hour period	67
For the ninth 1,000-hour period	72
For the tenth 1,000-hour period	77
For apprentices serving a 9,000-hour term of apprenticeship:	
For the first 1,000-hour period	37
For the second 1,000-hour period	42
For the third 1,000-hour period	47
For the fourth 1,000-hour period	52
For the fifth 1,000-hour period	57
For the sixth 1,000-hour period	62
For the seventh 1,000-hour period	67
For the eighth 1,000-hour period	72
For the ninth 1,000-hour period	77

(b) (i) An apprentice passing the First Qualifying Examination as prescribed by the New Zealand Trades Certification Board and approved by the New Zealand Motor Trade Certification Board, shall be entitled to an additional 5s. a week from the date he completes 4,000 hours of his apprenticeship, or from the date of the granting of a pass in this examination if that date is later than the date on which he completes 4,000 hours of his apprenticeship.

(ii) An apprentice passing the Second Qualifying Examination as prescribed by the New Zealand Trades Certification Board and approved by the New Zealand Motor Trade Certification Board, shall be entitled to an additional 5s. a week from the date he completes 6,000 hours of his apprenticeship, or from the date of a granting of a pass in this examination if that date is later than the date on which he completes 6,000 hours of his apprenticeship.

(iii) The hours prescribed in paragraphs (i) and (ii) of this subclause shall be deemed to include any period by which the term of a contract of apprenticeship has been reduced under the provisions of this order.

12. *Technical Classes*—(a) Where an apprentice resides or works within a convenient distance of a school which the New Zealand Motor Trades Apprenticeship Committee is satisfied can during normal working hours provide instruction on the syllabus prescribed by the New Zealand Motor Trade Certification Board, it may order such apprentice to attend during three years of his apprenticeship at such school for four continuous hours of instruction in each week, or alternatively, at the discretion of the New Zealand committee, for eight hours of instruction in each fortnight. (“Convenient distance” shall be determined by the New Zealand committee, having regard to distance, transport facilities, and the home circumstances of the apprentice and to any recommendation that may be made by the local committee.)

(b) As an alternative to the provisions of subclause (a) above the New Zealand committee may order an apprentice, whether he resides or works within a convenient distance of a school or not, to attend during three years of his apprenticeship for not more than four weeks in a year at a school which the New Zealand committee is satisfied can provide courses of instruction on the syllabus prescribed by the New Zealand Motor Trade Certification Board.

(c) Where an apprentice has been ordered to attend classes as provided in subclauses (a) and (b) above, the employer shall permit him to attend such classes.

(d) An employer shall not be entitled to make any deduction from the wages of an apprentice ordered to attend a school during normal working-hours; but absence without leave from such school shall be treated as absence through the apprentice's default and the employer shall be entitled to make a rateable deduction from the wages as provided in clause 14 of this order. For the purposes of the term of apprenticeship, time spent at a school during normal working-hours shall be reckoned as time served.

(e) An apprentice ordered to attend as provided in subclauses (a) or (b) above may also be ordered to attend evening classes working on the syllabus referred to for not more than two evenings a week during three years of his apprenticeship: Provided that if a local committee considers that the attendance or progress of an apprentice at evening classes is unsatisfactory, he may be ordered by the New Zealand committee to attend classes for such further period as may be approved by that committee.

(f) As an alternative to attendance at evening classes as mentioned in the preceding subclause, the New Zealand committee may order any apprentice ordered to attend as in subclauses (a) and (b) above, to enrol for and carry on with the Education Department's Technical Correspondence School a course approved by that committee.

(g) Where an apprentice ordered to attend evening classes does not regularly attend such classes, the local committee may exercise the powers delegated to it by the Court under the section 13(4) (i) and (j) of the Apprentices Act 1948, viz. it may order that any increase in wages due to an apprentice shall be withheld by the employer for such period as the local committee may think fit, and it may also order that the period during which any increase in wages shall be withheld shall not be deemed to be included in the period of apprenticeship.

(h) If a local committee receives from the Technical Correspondence School an unsatisfactory report on an apprentice's progress in the theory relating to his trade, it may exercise the same powers as are set out in subclause (g) above.

(i) Where an apprentice is required to attend a school or classes by virtue of the preceding subclauses of this clause, the employer shall refund to him the amount paid in fees in each year in which his attendance is not less than 75 per cent of the maximum possible.

13. *Apprentices From Overseas*—A person under 21 years of age who has served part of his apprenticeship to the trade outside of New Zealand may complete the term of apprenticeship herein provided for with an employer in the district on furnishing to the District Commissioner a certificate from his former employer and such other evidence (if any) as the District Commissioner and the local committee may require in order to show the time served by such person as an apprentice outside of New Zealand. The District Commissioner shall refuse to register any contract of apprenticeship entered into under the provisions of this clause until such evidence has been furnished to the satisfaction of himself and

the committee. Any party affected by the decision of the District Commissioner may within 14 days appeal to the Court, whose decision shall be final and conclusive.

14. *Deductions by Employer*—An employer shall be entitled to make a rateable deduction from the wages of an apprentice for any time lost through sickness in excess of five working-days in any 1,000-hour period, or for any time lost through his own default. Accidents not arising out of and in the course of the employment shall be deemed to be sickness and the provisions of this order relating to payment of and deductions from wages and making up time in case of sickness shall apply also. The employer may require the production of a medical certificate before payment is made for time lost through sickness or accident.

15. *Hours*—The hours worked by an apprentice shall, subject to the provisions of any statute, be those normally worked by journeymen as prescribed by the award or agreement referred to in clause 11 of this order.

16. *Overtime*—(a) An apprentice under 16 years of age shall not be permitted to work overtime.

(b) Apprentices under 18 years of age shall not be required or permitted to work overtime more than six hours in any one week.

(c) Apprentices over 18 years of age shall not be required or permitted to work overtime more than 10 hours in any one week.

(d) An employer shall not permit an apprentice to work overtime on any night on which he has to attend classes at a school.

(e) Payment for overtime shall be calculated in the manner prescribed for journeymen in the award or agreement referred to in clause 11 of this order and at the wage rate received by the apprentice.

17. *Conditions of Award to Apply*—The conditions of the award or agreement referred to in clause 11 of this order, in so far as they relate to the method and time of payment of wages, holidays, travelling time, outside work, country work, and meal money, overall allowance, and other matters (other than tool-money) relating generally to the employment of journeymen and not in conflict with this order, shall apply to apprentices.

18. *Tool-money*—(a) Subject to the provisions of subclause (b) hereof, the employer shall pay to the apprentice tool-money at the rate prescribed for workers in the award or agreement referred to in clause 11 of this order and the apprentice shall purchase each year tools to the value of the annual sum payable by way of tool-money.

(b) The employer may either purchase, or advance to the apprentice by way of orders on suitable suppliers such sums as are sufficient for the purchase of tools to at least the value of the annual sum payable by way of tool-money, and the cost of such purchases, or such advances, shall be repaid by deductions from the tool-money payable by virtue of subclause (a) of this clause.

(c) If a contract is terminated, the apprentice shall return to the employer any tools supplied or the value thereof in excess of the amount of tool-money provided for by subclause (a) of this clause.

19. *Contracts to Accord With Act*—Every contract of apprenticeship shall accord with the provisions of the Apprentices Act 1948, and this order, and shall make provision, either expressly or by reference to the said Act or this order, for the several matters provided for therein, and shall not contravene the provisions of any Act relating to the employment of boys and youths. In default of such provision being made in any such contract of apprenticeship, or in so far as such provision is defective or ambiguous, the contract shall be deemed to provide that the conditions of apprenticeship shall not be less favourable to the apprentice than the minimum requirements of this order.

20. *Obligations of Apprentice*—It shall be an implied term in every contract of apprenticeship that the apprentice will diligently and faithfully obey and serve the employer as his apprentice for the prescribed term; that he will not absent himself from the employer's service during working-hours without leave of the employer (subject to appeal to the local committee) or except as permitted by this order; and that he will not commit or permit or be accessory to any hurt or damage to the employer or his property, nor conceal any such hurt or damage if known to him, but will do everything in his power to prevent the same.

21. *Obligations of Employer*—(a) It shall be an implied term in every contract of apprenticeship that the employer will during the prescribed term to the best of his power, skill, and knowledge, train and instruct the apprentice, or cause him to be trained and instructed, as a competent journeyman in the branch of the industry to which he is apprenticed in accordance with the provisions of the Apprentices Act 1948, and of this order and any amendments thereof.

(b) Every contract shall contain a list of the operations and skills to be taught the apprentice, based on the Schedule to this order, and approved by the local committee.

(c) Where, in the opinion of the local committee, any employer is not able to train fully an apprentice in a recognised branch of the industry the committee shall grant the apprenticeship only if an exchange of apprentices is arranged with one or more other employers in a similar position, to the satisfaction of the committee, and the conditions written into the contract.

(d) In every contract made after the coming into force of this order there shall be included the title of the person who is to undertake or supervise the actual training of the apprentice. The responsibility of the person so included by his title shall be limited to actual training or supervision thereof, and shall not be held to relieve the employer as contracting party of his contractual responsibilities.

22. *Premiums Forbidden*—No premium in respect of the employment of any person as an apprentice shall be paid to or received by an employer, whether such premium is paid by the person employed or by any other person.

23. *Special Contracts*—The provisions of this order shall not necessarily apply in the case of a special contract of apprenticeship entered into under the provisions of section 25 of the Apprentices Act 1948.

24. *Revocation of Order*—The New Zealand Motor Industry apprenticeship order, dated the 16th day of August 1956, and recorded in 56 Book of Awards 1457, and any amendments thereto are hereby revoked as from the date of coming into operation of this order, but all resolutions and orders of the New Zealand committee, or of local committees, made by them pursuant to the said order and its amendments shall continue in force as fully and effectually as if they had been made pursuant to this order, and accordingly shall where necessary be deemed to have so been made.

25. This order shall operate and take effect as from the 7th day of March 1960.

SCHEDULE

Operations and Skills

1. *Motor Mechanics*—(a) Basic – for all apprentices in the branch:

- (i) Correct use of files, hack-saws, scrapers, chisels, drills, taps, dies, reamers, spanners, and all simple hand tools. Care, maintenance, and methods of sharpening, hardening, and tempering all types of hand tools. Care, maintenance, and use of all precision tools such as micrometers, dial gauges, and calipers. Use and maintenance of valve-seat cutters, valve-seat hones, valve-facing machines, bushing hones, power drills and grinders. Instruction in soldering, brazing and oxy-acetylene welding practices. Riveting and correct treatment of bolts, studs and locks.

- (ii) General instruction in dis-assembly and assembly of all major petrol engine units. Correct application and use of torque wrenches and all special tools. Methods of measuring and determining limits of petrol engine wear. Fitting cylinder sleeves. Fittings pistons, piston rings and gudgeon pins. Fitting of bearings. Straightening and aligning connecting rods. Boring and honing cylinders. Remetalling bearings. Instruction in valve conditioning and valve grinding. Engine lubrication. Engine troubles and knocks. Repair and maintenance of carburettors, fuel pumps and the fuel system. Valve timing.
 - (iii) Modern methods of lubrication. Correct grades and types of oils and greases and when and where to be used. Overhaul and adjustment of clutches, gear and hydraulic transmissions, rear axles. Care and maintenance of cooling systems. Overhaul of water pumps. Overhaul and adjustment of brakes and braking systems. Checking and testing for warrant of fitness for road vehicles. Recognition of worn parts by visual inspection and measurement.
 - (iv) Ignition timing. Complete engine tune-up procedure including the use of compression gauge, vacuum gauge, and gas analyser. Cleaning and testing spark plugs.
 - (v) Care and maintenance of batteries, including battery charging and the mixing of electrolyte. Removing and replacing batteries. Basic electricity. Use of voltmeters, ammeters, and hydrometer in testing batteries and the electrical system. Diagnosing and repairing faults in starters, generators, voltage regulators, lighting system and electrical accessories.
- (b) Motor vehicles: Steering faults and their remedy. Repair of chassis and suspension system. The fitting of wheels, rims and tyres. The fitting and repair of tubeless tyres. Wheel alignment and the recognition of steering faults by visual inspection of tyres.
- (c) Tractors: Repair and maintenance of wheeled and track type petrol tractors. Repair of tracks and carriers. Repair and maintenance of all attachments such as hydraulic pumps, controls, power take-off, hoists and winches. Fitting, repair and maintenance of tractor tyres, tubes and wheels. Steering clutches. Adjustment of steering boxes on wheel type tractors. Types of steel wheels and ground grips. Safety precautions in handling tractors.
2. *Automotive Electrical*—(a) Correct use of files, hack-saws, chisels, drills, taps and dies and reamers, spanners and all simple hand tools; soldering and brazing. Care and maintenance and sharpening of all types of hand tools. Removing and replacing, care and maintenance of batteries; charging preparation. Cleaning and testing spark-plugs.
- (b) Removing of starters, generators, distributors, and various electrical units and preparing same for overhaul. Elementary application of testing equipment related to the above. Charging of batteries, dismantling for repair or inspection; mixing electrolyte; use of hydrometer and high-rate testing equipment.
- (c) Bench testing and diagnosing faults in starters, generators, distributors, coils and condensers. Use of testing equipment in relation to the above. Diagnosing and repairing elementary wiring faults.
- (d) Diagnosing electrical and ignition faults on vehicles, and use of testing equipment for same. Complete overhaul and repairing of starters, generators, and ignition systems; voltage and current regulators. Rewiring of electrical systems; lighting system repairs and adjustments. Carburettor overhaul and adjustment. Fuel system and fuel pump overhaul.

(e) During the last 2,000 hours the apprentice should be able to carry out a wide variety of electrical work and generally widen his experience.

3. *Automotive Machining*—(a) Correct use of files, hack-saws, chisels, drills, taps and dies, reamers, and all simple hand tools; soldering and brazing. Care and maintenance and sharpening of all types of hand tools. General instruction in the correct methods of dis-assembly on all automobile units. Elementary lathe work.

(b) Use and maintenance of scrapers, valve-seat-cutters, calipers, micrometers and gauges, and sharpening and hardening in connection with all hand tools. Riveting and correct treatment of bolts, studs and locks. Valve-facing, valve-seat honing, and grinding of valves. Correct use of torsion wrench in relation to the assembly of automobile units. Measuring engine wear; tolerances. General lathe-work in relation to automobile repairs.

(c) Remetalling and machining of main and big-end bearings and the fitting of same. Straightening and aligning of connecting-rods. Grinding and turning and fitting of pistons; fitting piston-rings and gudgeon-pins. Cylinder reboring and honing.

(d) Complete reconditioning of all automobile units, including tolerances, meshing, clearances, for transmissions, differentials, steering, suspension units, brakes and hydraulic system. Crankshaft grinding.

(e) During the last 2,000 hours the apprentice should be able to carry out a wide variety of work and generally widen his experience.

4. *Motor-cycle Mechanics*—(a) Correct use of files, hack-saws, chisels, drills, taps and dies and reamers, spanners, and all simple hand tools; soldering and brazing. Care and maintenance and sharpening of all types of hand tools. General instruction in the correct methods of dis-assembly and assembly on all motor-cycle and similarly constructed units. The fitting of tyres and wheels; tube repairs. Cleaning and testing spark-plugs.

(b) Use and maintenance of scrapers, valve-seat-cutters, calipers, micrometers and gauges, and sharpening and hardening in connection with all tools, riveting and correct treatment of bolts, studs and locks. Valve-facing, seat-honing, and grinding of valves. Measuring engine wear. Adjusting brakes. Use of voltmeter, ammeter and hydrometer in testing batteries. Mixing of electrolyte.

(c) The fitting of bearings; straightening and aligning connecting rods; fitting pistons and rings; fitting gudgeon-pins. Engine trouble and knocks. Steering faults and their remedy. Clutch and transmission adjustments and overhaul. Diagnosing faults in the ignition and electrical system and methods of repair. Carburettor overhaul and adjustment. Fuel system and overhaul. Checking and testing for warrants of fitness.

(d) Complete engine tune-up procedure, voltmeter, ammeter, generators, voltage regulators, and electrical accessories. Complete overhauls of all motor-cycle and similarly constructed units, with particular attention to recognition of worn parts, by visual inspection and measurement.

General—Gas welding. Fitting and brazing tubes to motor-cycle frames and forks. Aligning frames and forks. Rebuilding and repairing motor-cycle wheels. Cutting and screwing spokes. Use of dial test indicators and straightening and truing flywheels. Internal combustion engine theory and practice as applicable to motor-cycle and similar engines. Simple carburation. Modern lubrication and types of oils used as applicable to motor-cycles. Removing, replacing, and care of batteries as applicable to motor-cycles. Steering forks as applicable to motor-cycles. Turning and fitting bushes, gudgeon-pin, mainshaft, cam and gearbox bushes. Lathe-turning, lapping big-end bearings and fitting rollers.

5. *Automotive Diesel Mechanics*—(a) Basic:

- (i) Correct use of files, hack-saws, scrapers, chisels, drills, taps, dies, reamers, spanners, and all simple hand tools. Care, maintenance, and methods of sharpening, hardening and tempering all types of hand tools. Care, maintenance, and use of all precision tools such as micrometers, dial gauges and calipers. Use and maintenance of valve-seat cutters, valve-seat hones, valve-facing machines, bushing hones, power drills and grinders. Instruction in soldering, brazing and oxy-acetylene welding practices. Riveting and correct treatment of bolts, studs and locks.
 - (ii) General instruction in dis-assembly and assembly of all major diesel engine units. Correct application and use of torque wrenches and all special tools. Methods of measuring and determining limits of diesel engine wear. Fitting cylinder sleeves. Fitting pistons, piston rings and gudgeon pins. Fitting of bearings. Straightening and aligning connecting rods. Boring and honing cylinders. Remetalling bearings. Instruction in valve conditioning and valve grinding. Engine lubrication. Engine troubles and knocks.
 - (iii) Modern methods of lubrication. Correct grades and types of oils and greases and when and where to be used. Overhaul and adjustment of clutches, gear and hydraulic transmissions, rear axles. Care and maintenance of cooling systems. Overhaul of water pumps. Overhaul and adjustment of brakes and braking systems. Checking and testing for warrant of fitness for road vehicles. Recognition of worn parts by visual inspection and measurement.
 - (iv) Care and maintenance of batteries, including battery charging and the mixing of electrolyte. Removing and replacing batteries. Basic electricity. Use of voltmeters, ammeters, and hydrometer in testing batteries, and the electrical system. Diagnosing and repairing faults in starters, generators, voltage regulators and the lighting system.
 - (v) Dis-assembly, assembly and testing of injector nozzles. Some instruction on calibrating and phasing injector pumps, with particular emphasis on the limitation of the field serviceman. Timing the pump. Repair and maintenance of the fuel system, filters and primary lift pump. Testing and diagnosing diesel engine faults. Storing and handling diesel fuel.
- (b) Diesel Motor Vehicle: Care, maintenance and fitting of truck and bus tyres, tubes and wheels—correct loading. Load distribution for articulated units. Hydraulic and air systems for brakes, doors and trailers. Power and remote steering controls.
- (c) Diesel Tractors: Repair and maintenance of wheeled and track type tractors. Repair of tracks and carriers. Repair and maintenance of all attachments such as hydraulic pumps, controls, power take-offs, hoists and winches. Fitting, repair and maintenance of tractor tyres, tubes and wheels. Steering clutches. Adjustment of steering boxes on wheel type tractors. Types of steel wheel and ground grips. Safety precautions in handling tractors.
- (d) Diesel Earth Moving Equipment. Care, maintenance, and fitting of special tyres, tubes and wheels for earth moving equipment. Repair and maintenance of track type vehicles. Repair of tracks and carriers. Overhaul and maintenance of all hydraulic and air controls and attachments. Hydraulic and air braking systems. Power and remote steering controls. Safety precautions in handling the equipment.

Dated this 26th day of February 1960.

[L.S.]

A. TYNDALL, Judge.