MORRIS

G10 to G17

SERVICE INFORMATION

Published by
MORRIS MOTORS LIMITED
COWLEY, OXFORD

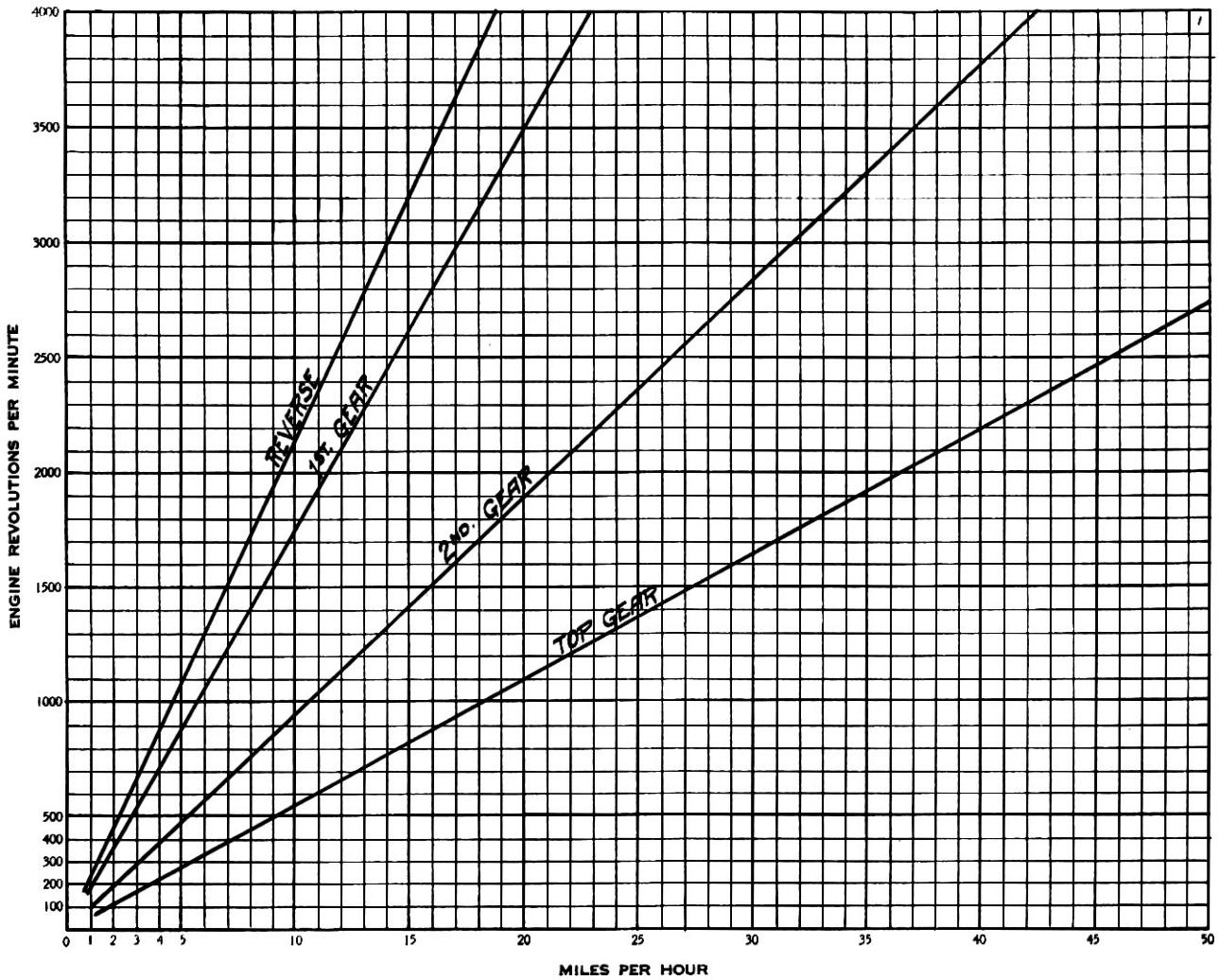
MORRIS ARCHIVE

MORRIS ARCHIVE

Date of issue: July, 1928

Engine Revolution and Road Speed Charts

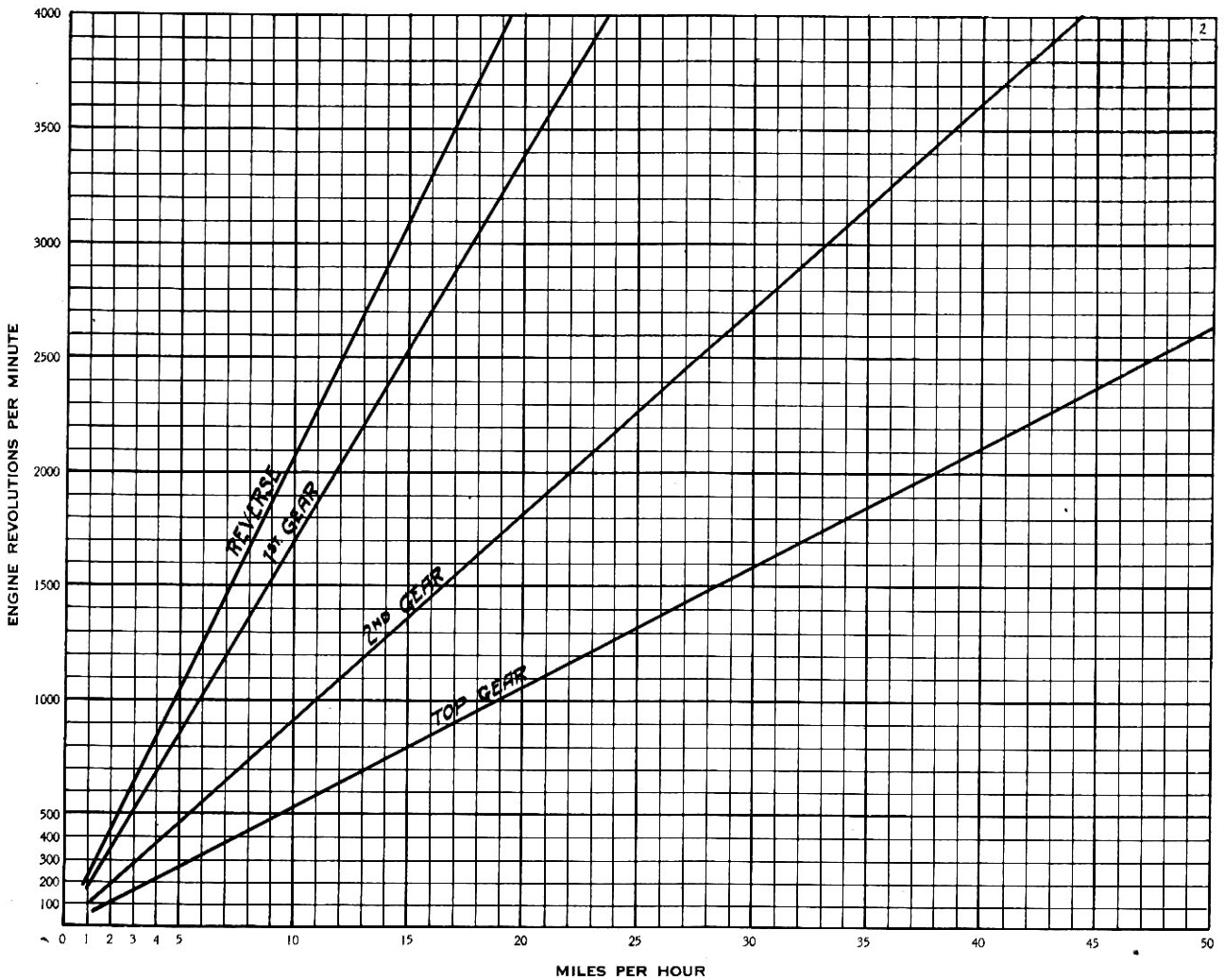
BACK AXLE GEAR RATIO 4.42 to 1 **TYRES 27 in.**



Date of issue: July, 1928

Engine Revolution and Road Speed Charts—*continued*

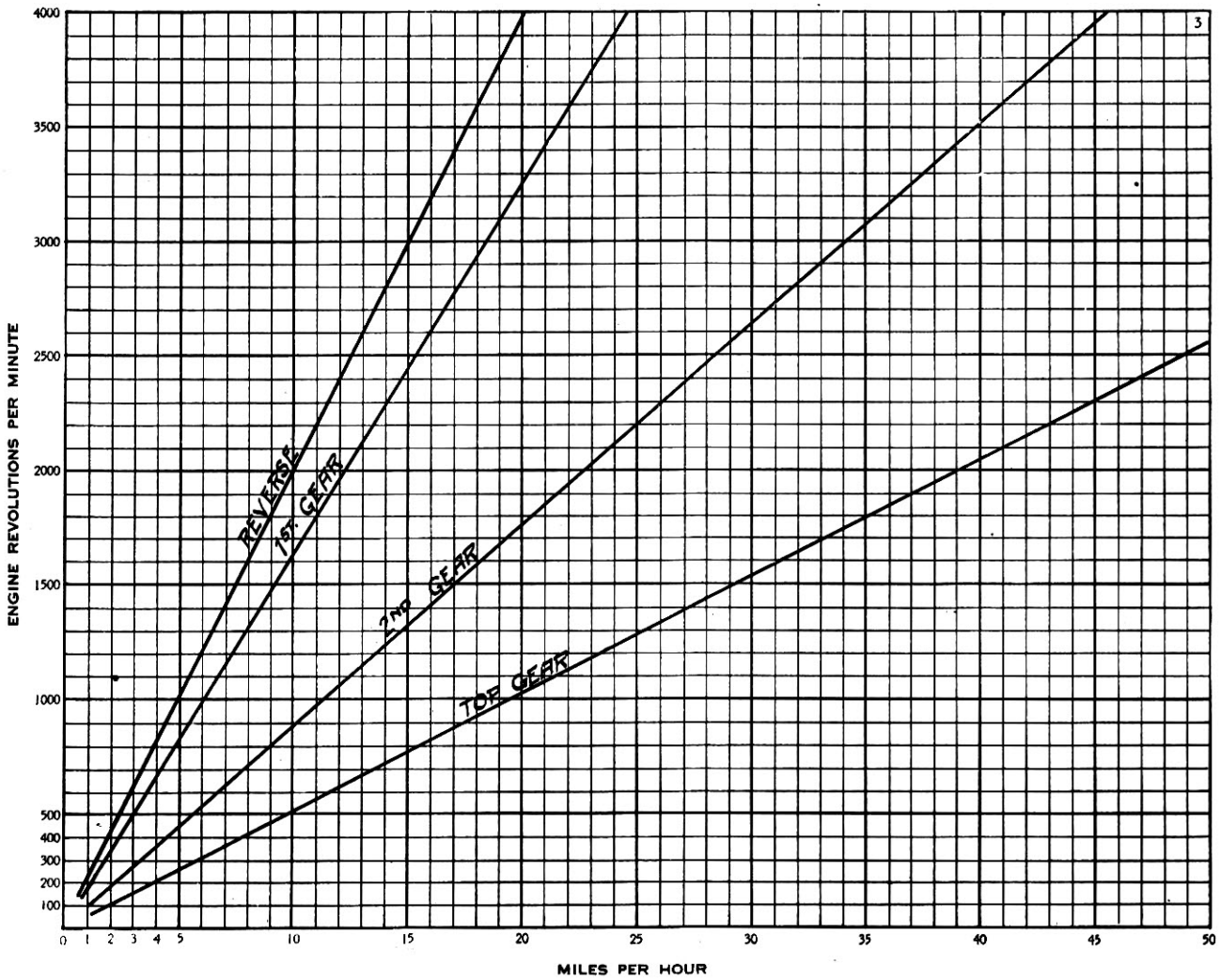
BACK AXLE GEAR RATIO 4.42 to 1 **TYRES 28 in.**



Date of issue: July, **1928**

Engine Revolution and Road Speed Charts—*continued*

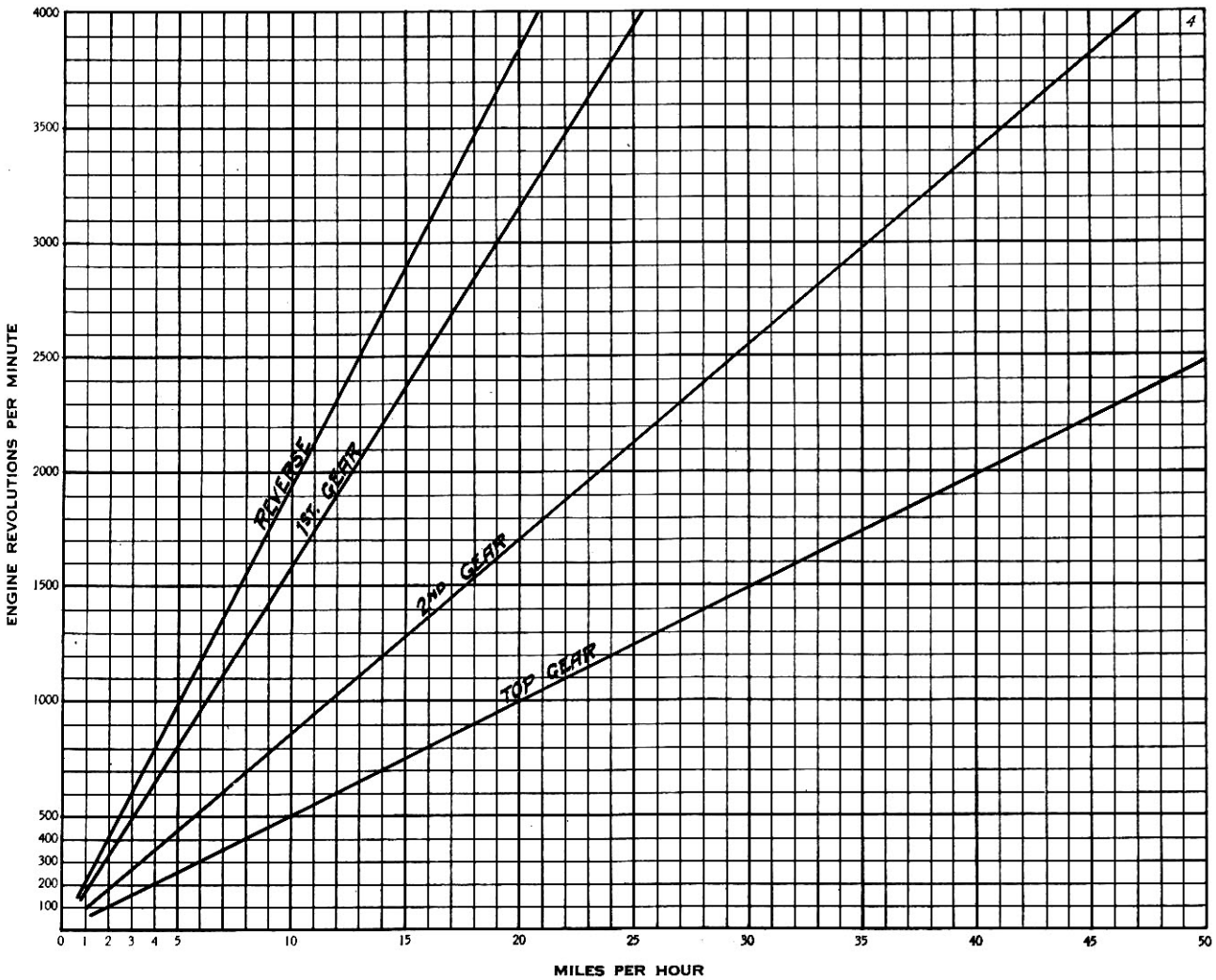
BACK AXLE GEAR RATIO 4.42 to 1 **TYRES 29 in.**



Date of issue: July, 1928

Engine Revolution and Road Speed Charts—*continued*

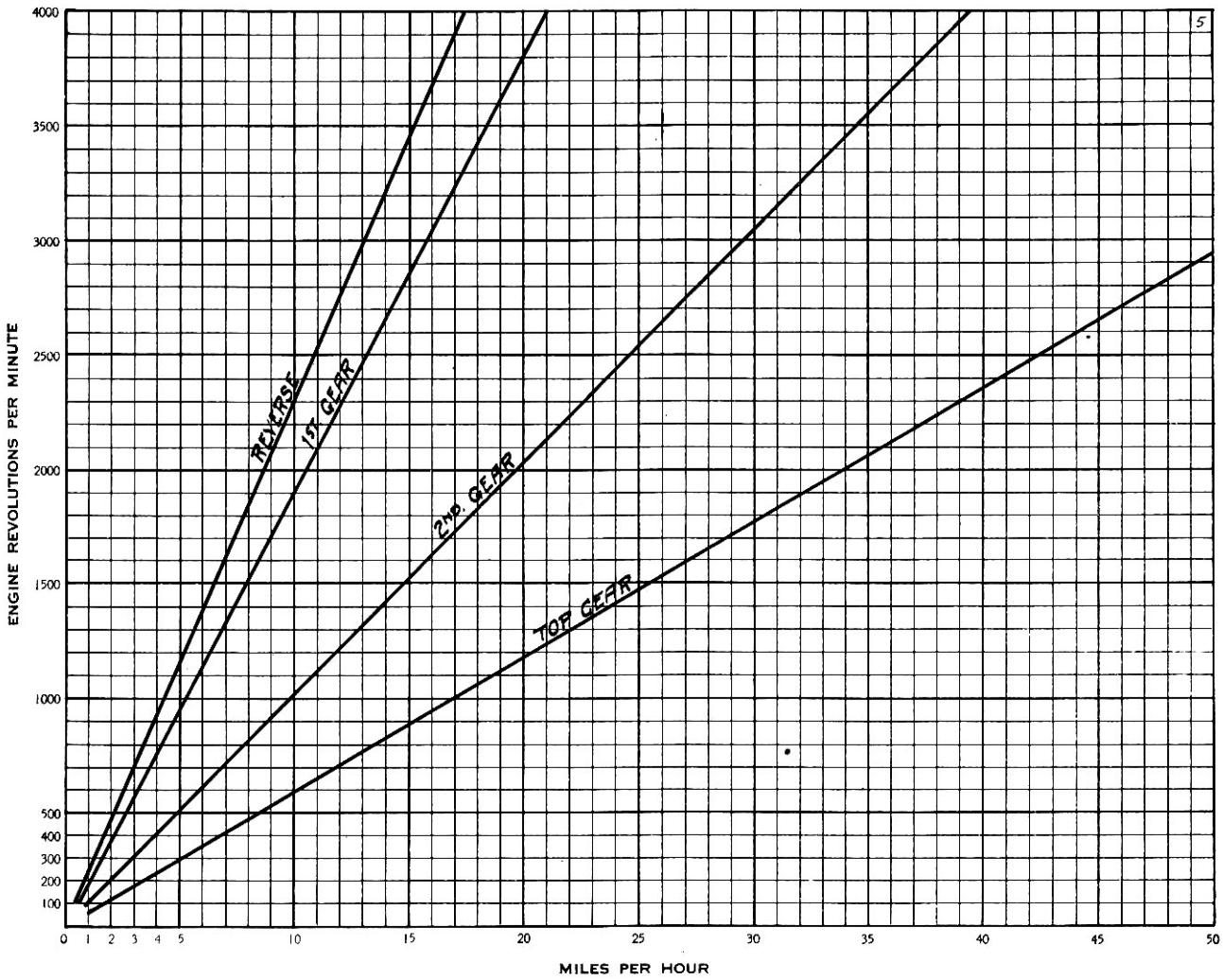
BACK AXLE GEAR RATIO 4.42 to 1 **TYRES 30 in.**



Date of issue: July, 1928

Engine Revolution and Road Speed Charts—*continued*

BACK AXLE GEAR RATIO 4.75 to 1 **TYRES 27 in.**



Date of issue: July, 1928

Engine Revolution and Road Speed Charts—*continued*

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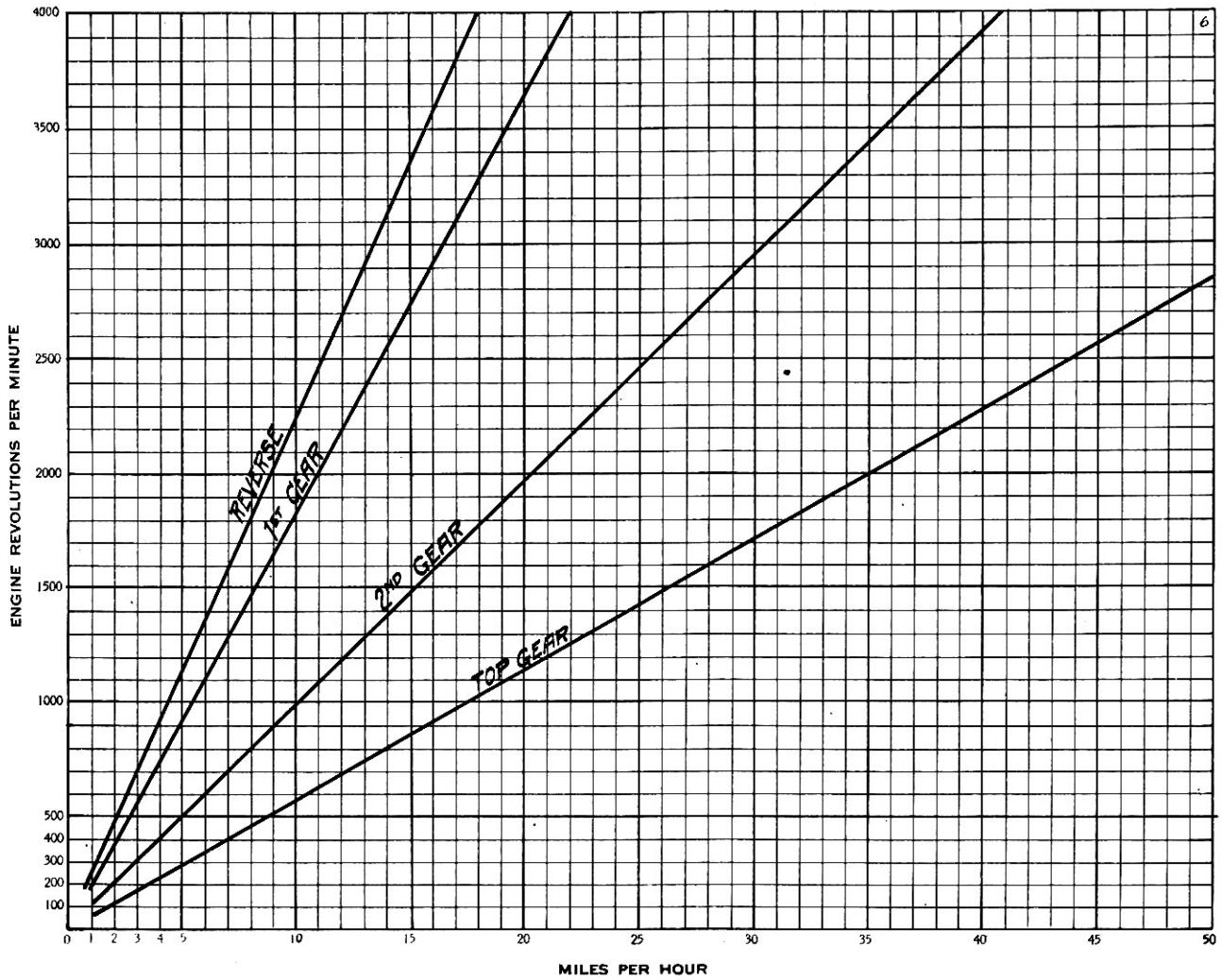

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Engine Revolution and Road Speed Charts—*continued*

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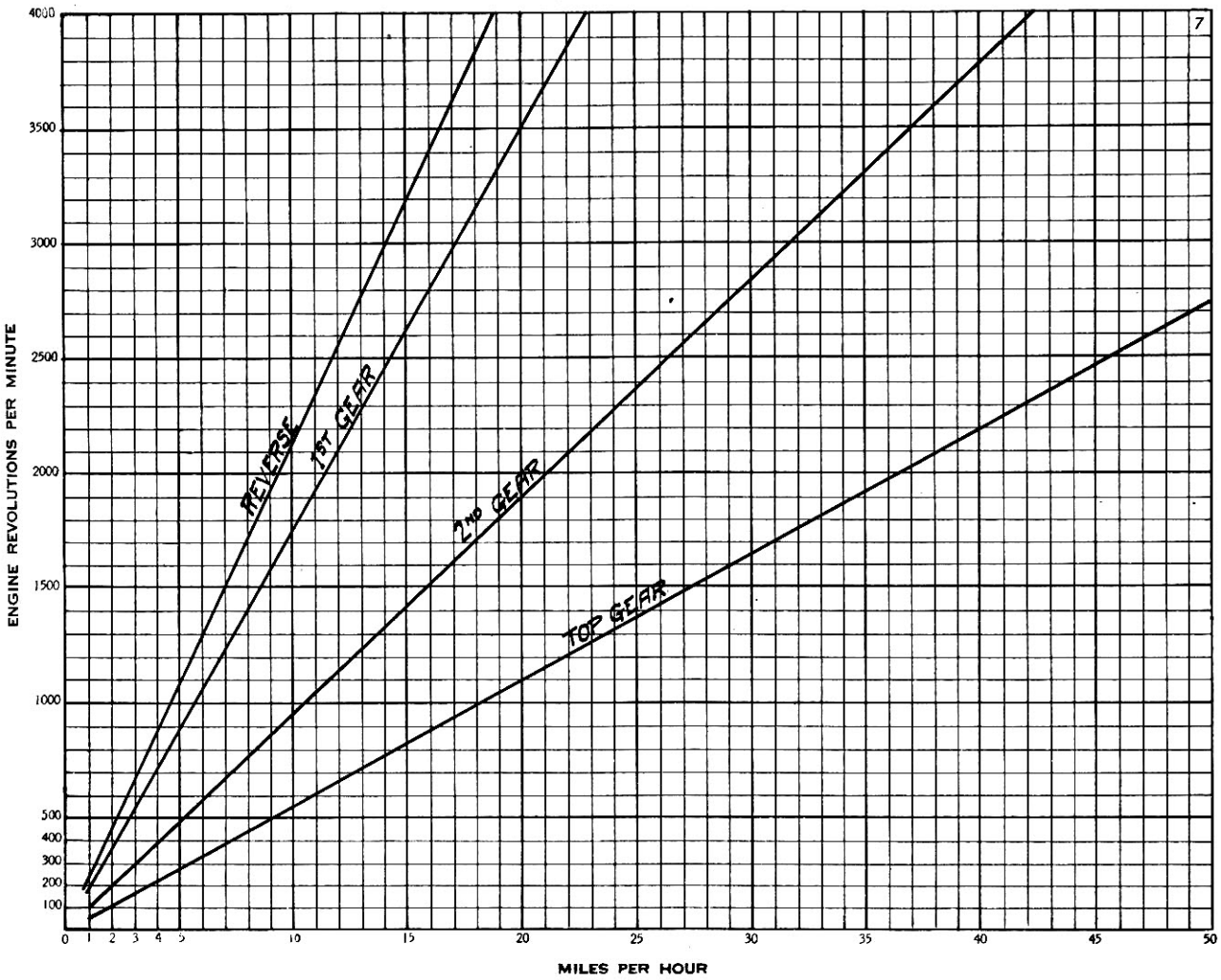

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Engine Revolution and Road Speed Charts—*continued*

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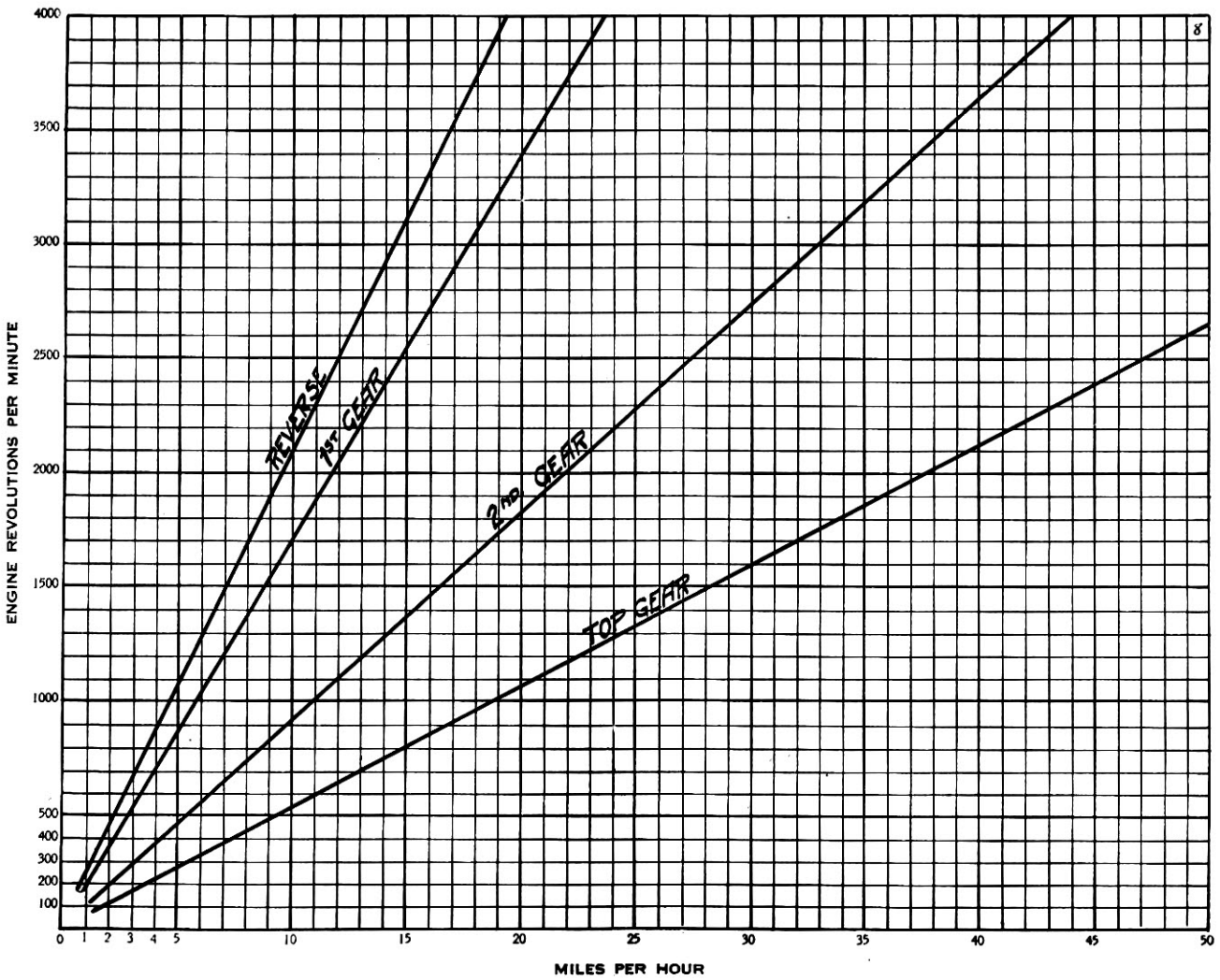
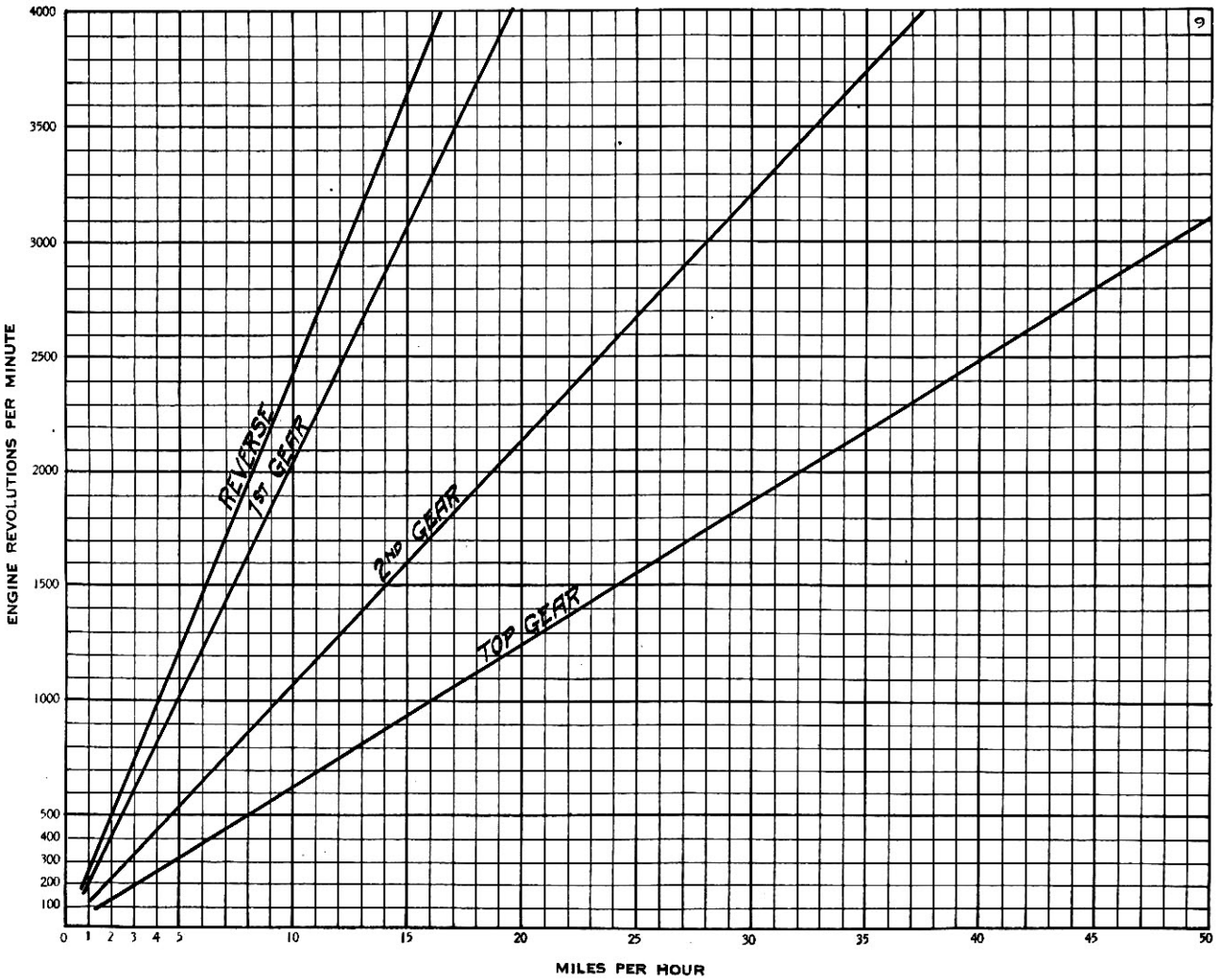


Date of issue: July, 1928

Engine Revolution and Road Speed Charts—*continued*

BACK AXLE GEAR RATIO 5 to 1 TYRES 27 in.



Date of issue: July, 1928

Engine Revolution and Road Speed Charts—*continued*

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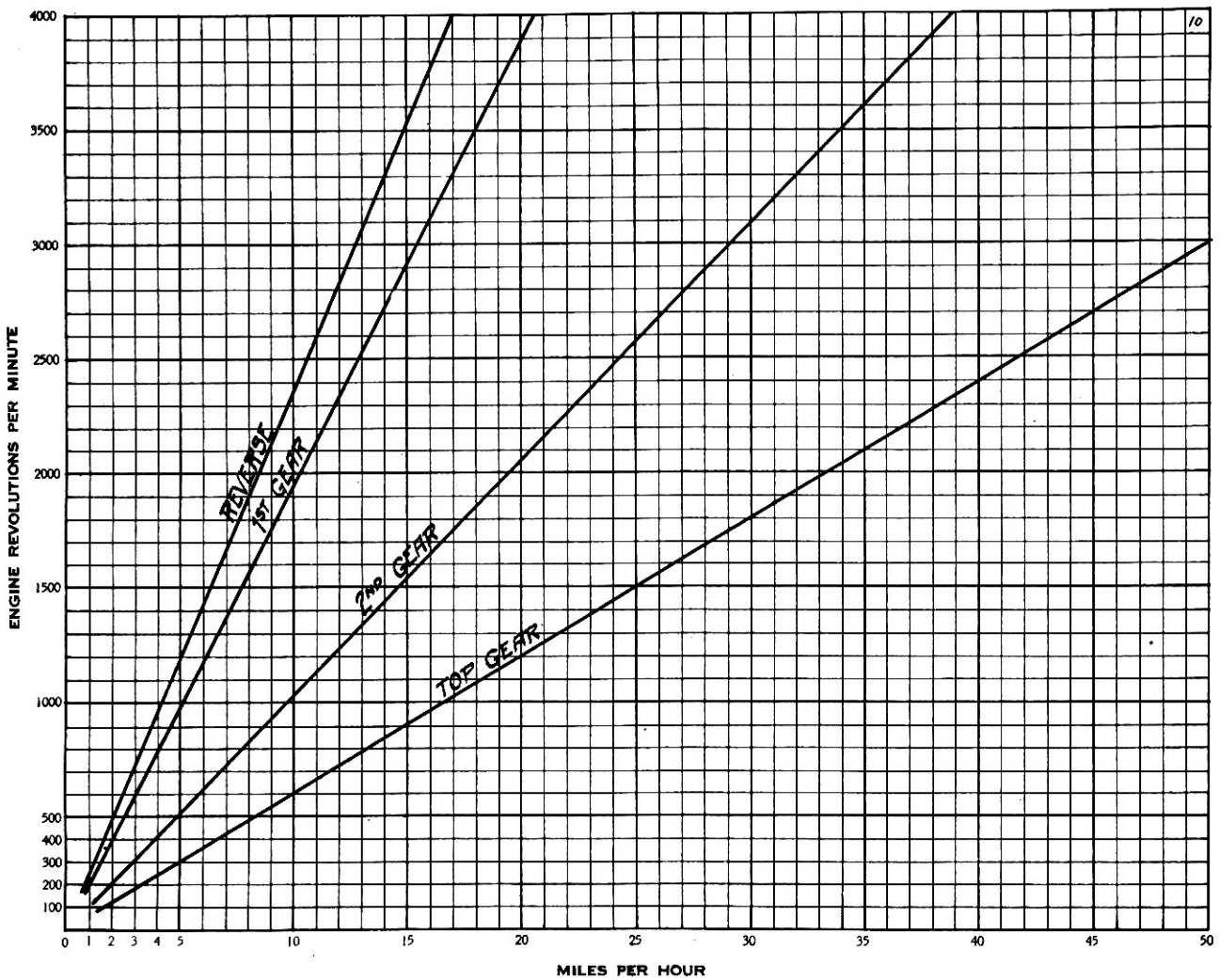

Date of issue: July, 1928

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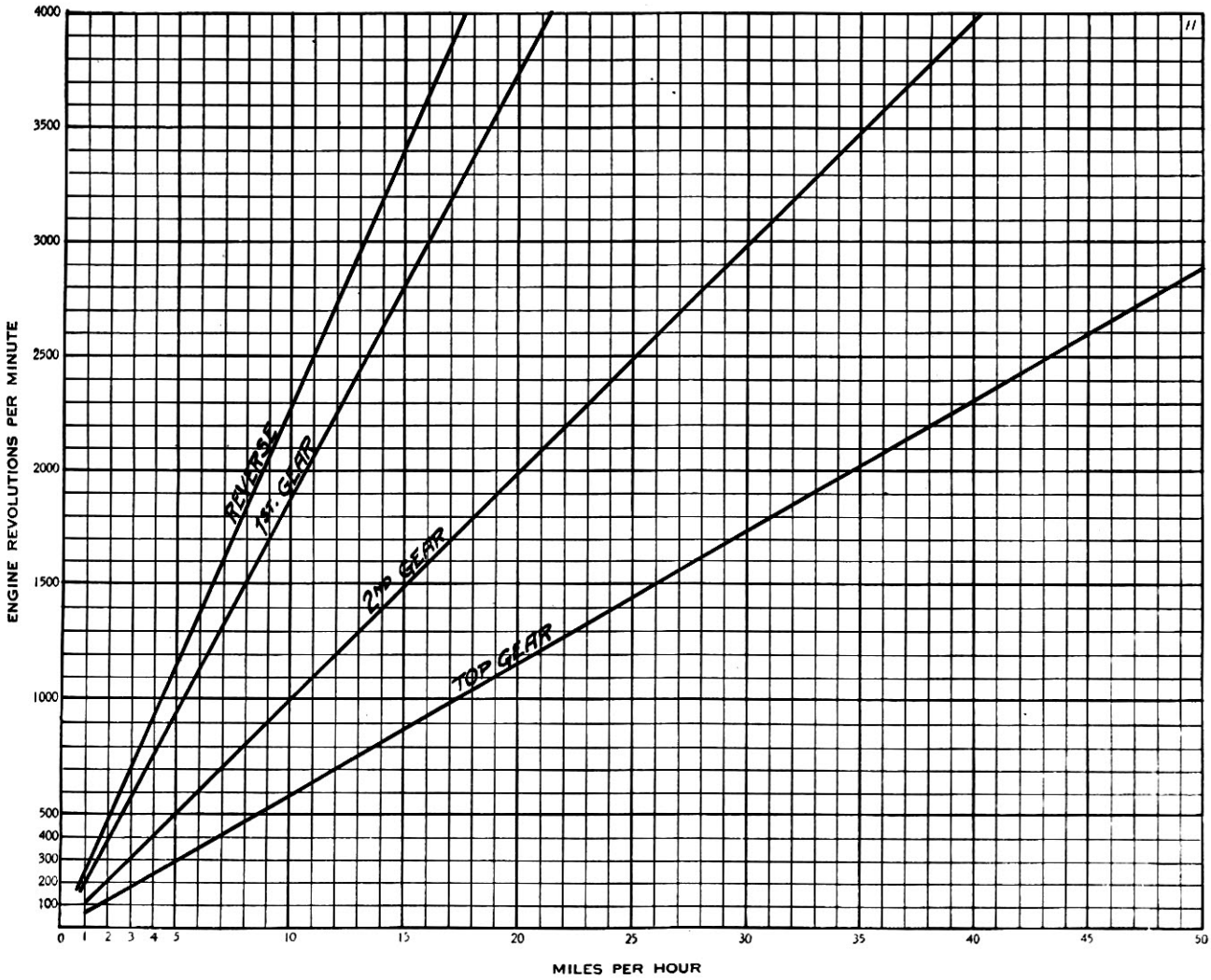

Date of issue: July, 1928

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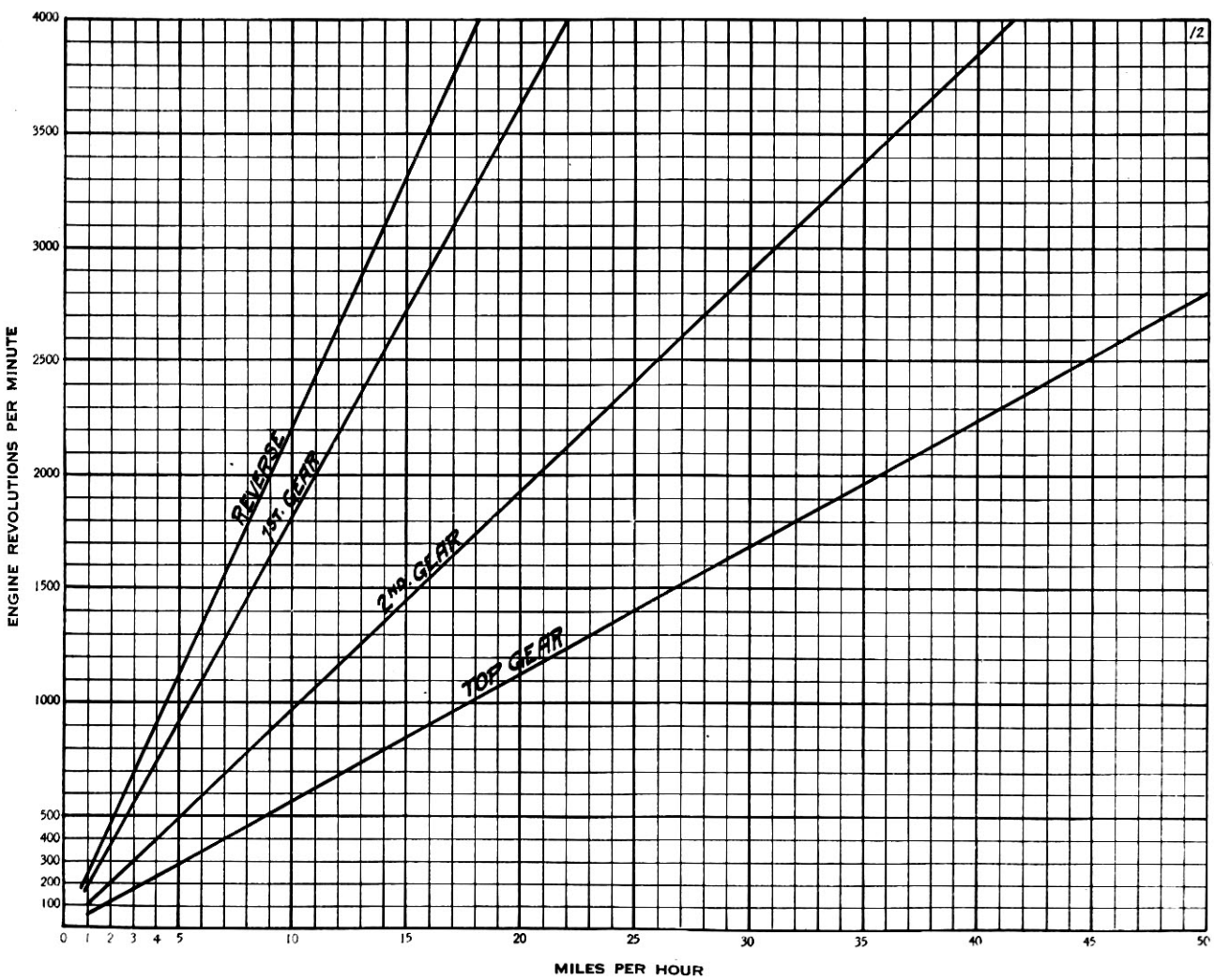

Date of issue: March, 1934

Steering Turning Circles

(*Approximate*)

Model	Right Hand	Left Hand
M.O. 1926 and earlier	40′ 6″	39′ 0″
M.O. 1927-8	41′ 4″	41′ 4″
M.C. 1926 and earlier	38′ 6″	36′ 0″
M.C. 1927-8	40′ 6″	40′ 2″
M.O. 56″ Track 1927-8	43′ 9″	42′ 0″
M.C. 56″ Track 1928	43′ 9″	42′ 0″
M.O. 15.9 h.p.	43′ 2″	44′ 0″
Morris Six 1928	46′ 3″	46′ 3″
18 h.p. Morris Isis Six 1931	44′ 6″	45′ 8″
Morris Isis Six 1932	48′ 3″	39′ 6″
Morris Isis Six 1933	48′ 3″	39′ 6″
Morris Isis Six 1934	49′ 3″	42′ 11″
Morris "25" 1933	43′ 1″	48′ 8″
Morris "25" 1934	43′ 1″	48′ 8″
Morris Ten Four 1933	37′ 0″	37′ 0″
Morris Ten Four 1934	38′ 1″	37′ 1″
Morris Ten Six 1934	38′ 11″	40′ 6″
Morris Minor 1929	32′ 3″	31′ 5″
Morris Minor 1932	31′ 4″	30′ 6″
Morris Minor 1933 (short)...	31′ 4″	30′ 6″
Morris Minor 1933 (long)	39′ 2″	37′ 0″
Morris Minor 1934 (short)...	32′ 11″	29′ 7″
Morris Minor 1934 (long)	37′ 4″	34′ 10″
Morris Cowley 1931	41′ 3″	39′ 3″
Morris Cowley 1932	39′ 6″	38′ 0″
Morris Cowley 1933	39′ 6″	38′ 0″
Morris Cowley 1934	40′ 10″	39′ 0″
Morris Cowley Six 1934	42′ 0″	39′ 5″
15 h.p. Morris Major Six 1931	41′ 3″	39′ 3″
Morris Major Six 1933	40′ 1″	40′ 2″
15 h.p. Morris Oxford Six 1931	44′ 8″	44′ 6″
Morris Oxford Six 1932	45′ 10″	43′ 2″
Morris Oxford Six 1933	45′ 10″	43′ 2″
Morris Oxford Six 1934	43′ 6″	45′ 4″

Date of issue: July, 1928

ANTI-FREEZING SOLUTIONS

De-natured Alcohol (% by volume)	Water (% by volume)	Freezing Temperatures	
		Degrees F.	Degrees C.
20%	80%	Plus 13°	Minus 10.5°
30%	70%	Minus 3°	Minus 18.4°
40%	60%	Minus 20°	Minus 28.8°
50%	50%	Minus 30°	Minus 34.4°

Glycerine in Radiator (% by volume)	Water (% by volume)	Freezing Temperatures	
		Degrees F.	Degrees C.
0	100%	Plus 32°	0
5%	95%	Plus 30.5°	Minus 1°
10%	90%	Plus 29°	Minus 2°
15%	85%	Plus 25°	Minus 4°
20%	80%	Plus 21°	Minus 6°
25%	75%	Plus 17°	Minus 8.5°
30%	70%	Plus 12°	Minus 11°
35%	65%	Plus 6°	Minus 14.5°
40%	60%	0	Minus 18°
45%	55%	Minus 7°	Minus 22°
50%	50%	Minus 15°	Minus 26°

Revised : 1st *April,* 1940

Chassis Frame Repairs

FOR the information of our Distributors and Dealers we detail below our standard flat rate retail charges for Chassis frame repairs. These prices are only applicable to England, Scotland, Wales and Northern Ireland, carriage charges extra.

In connection with this, we would point out that a " repairable " chassis frame is one which will not require more than one new side member in addition to straightening. Any damaged frame which would require two new side members, or a new cruciform in addition to one side member, can only be replaced by an entirely new frame at ordinary list prices.

In order to obviate delay whilst chassis frame repairs are being executed we will, immediately on receipt of a damaged frame, or advice of one in transit, dispatch a replacement repaired frame in its place. This will be charged out at our ordinary list price pending receipt and examination of the damaged frame, and provided we are satisfied that the latter is "repairable," we will adjust our debit so that the net cost will be in accordance with the undermentioned prices, viz. :—

STANDARD FLAT RATE CHARGES FOR CHASSIS FRAME REPAIRS

Model	*Retail Repair* £ s. d.
Morris Minor, O.H.V.	4 10 0
Morris Minor, S.V. (S.W.B.)	4 0 0
Morris Minor, S.V. (L.W.B.)	4 10 0
Morris Minor, S.V., 1934	4 15 0
Morris Minor Vans	4 0 0
Morris Eight, 1935	5 10 0
Morris Eight Van	5 15 0
Morris Ten-Four, 1933	4 15 0
Morris Ten-Four, 1934-1935	6 15 0
Morris Ten-Six, 1934-1935	7 5 0
Morris Cowley, 1922-1933	5 15 0
Morris Cowley, 1934	7 5 0
Morris Twelve-Four, 1935	7 5 0
Morris Light Van (8-10 cwt.)	5 15 0
Morris Light Van, 1935	7 5 0
Morris Oxford, 1922-1929	5 15 0
Morris Oxford (16/40 h.p.), 1927-1929	11 0 0
Morris Major, 1931-1933	6 15 0
Morris Cowley Six, 1934	7 10 0
Morris Fifteen-Six, 1935	7 10 0
Morris Oxford Six, 1930-1931	7 15 0
Morris Oxford Six, 1932-1933	9 10 0
Morris Oxford Six, 1934	12 15 0
Morris Oxford Six, 16 and 20 h.p., 1935	12 15 0
Morris Six, 1928-1929	11 0 0
Morris Isis, 1930-1933	11 15 0
Morris Isis, 1934-1935	15 10 0
Morris Twenty-five, 1933	14 12 6
Morris Twenty-five, 1934-1935	16 0 0
SERIES II MODELS	
Morris Eight	5 10 0
Morris Ten- and Twelve-Four	9 2 6
Morris 10-cwt. Van	6 15 0
Morris Fourteen-Six	11 0 0
Morris Sixteen-Six	12 15 0
Morris Eighteen-Six	12 15 0
Morris Twenty-one-Six	13 15 0
Morris Twenty-five-Six	13 15 0
SERIES III MODELS	
Morris Ten-Four	9 2 6
Morris Twelve-Four	9 2 6
Morris Fourteen-Six	11 0 0
Morris Twenty-five-Six	13 5 0
Morris Eight, Series " E "	6 15 0

Whilst every endeavour will be made to maintain these prices, we reserve the right to make any alteration w ce.

When ordering replacement repaired chassis frames it is essential to quote model and ch ıber.

Orders and damaged chassis frames for repair should be addressed to Messrs. Morris Motors vice (Technical) Department, Cowley, Oxford.

Date of issue: November, **1928**

Morris Spare Parts Service

DISTRIBUTION OF SPARE PARTS

THE distribution of Morris Spare Parts is primarily made through the Main Dealers, who undertake to carry adequate stocks for the purpose and in turn to supply Sub-Dealers, the Trade, and Morris owners, in their respective territories.

STOCK OF SPARE PARTS

The basis of a Main Dealer's stock of Spare Parts is laid down in the Dealer's Contract at £1 in value (overseas £2) for every Morris car sold into the territory, which figure is cumulative over a period of the past ten years, with a minimum of £250.

This same stipulation applies to the value of stock of Spare Parts to be maintained by an Authorised Sub-Dealer, with the exception that the minimum is only £50 value. Generally speaking, as a basis this is found in practice to be satisfactory, but care must be taken to keep the stock representative, and for this purpose we issue a printed schedule of suggested lists of stock. This also serves for the periodical Inventory which it is stipulated every Dealer shall render to the Company. On completion of the Inventory, Dealers can see at a glance if their stocks are unbalanced or deficient.

CONTROL OF STOCK

It cannot be too strongly urged on Dealers to keep a proper control over their stocks of Spare Parts by means of stock and/or bin cards showing monthly disbursements and balances.

By keeping proper records, requirements can be more or less accurately forecasted and orders placed reasonably in advance.

Visits of inspection may be made to our Service Department by appointment, and we are only too willing to offer advice on Service matters generally at any time.

METHOD OF ORDERING

Dealers are recommended as far as possible to order their Spare Parts requirements in bulk once a month and to maintain sufficient stocks accordingly, as by this means the cost of carriage and crates is very considerably reduced, as is also the handling of orders.

In order to equalise as far as possible the daily flow of stock orders to be dealt with in our Stores, we have allotted every Main Dealer a definite day each month on which stock orders should reach these Works, and it will materially assist us to give prompt attention to Dealers' orders if this is strictly observed. A specially printed Order Pad in duplicate is issued for the purpose.

Small supplementary orders for Spare Parts by post, phone and wire are costly to handle, both to Dealers and to us in overhead expenses, carriage charges, crates, etc., and should be the exception and not the rule.

SERVICE SIGNS

All Authorised Morris Dealers are invited to display the universal Morris Sales and Service Sign which designates the Authorised Morris Dealer. One double-sided enamelled sign complete with wall brackets, type (*a*), or a single-sided enamelled sign, type (*b*), will be issued on loan to every Authorised Morris Dealer in respect of each separate and distinct premises, free of charge except for payment of packing and carriage. Alternatively, or in addition, the sign may be had with coloured glass panels fitted for two electric lamps complete with wall brackets, type (*c*), at a cost of £5 plus packing and carriage.

Should a Dealer for any reason cease to represent the Company, these signs must be returned, and refund will be made for payments made, exclusive of carriage, in respect of type (*c*).

Additional signs types (*a*) and (*b*) may be had on payment of 30s. and 15s. each respectively.

Revised: 1st *April,* 1940

Re-Boring Cylinder Blocks

WE are in a position to undertake, expeditiously, the re-boring of cylinder blocks for all Morris models, including the supply of new pistons and gudgeon pins, at standard retail charges as under, carriage charges extra, viz. :—

	£	s.	d.
Morris Minor, O.H.V. and S.V.	3	5	0
Morris Eight, 1935	3	5	0
Morris Ten-Four	4	10	0
Morris Cowley, 11.9 h.p.	5	0	0
Morris Twelve-Four	5	0	0
Morris Cowley, 14/32 h.p.	5	10	0
Morris Oxford, 14/32 h.p.	5	10	0
Morris Oxford, 16/40 h.p.	6	0	0
Morris Ten-Six	6	0	0
Morris Cowley Six	6	12	6
Morris Fifteen-Six	6	12	6
Morris Major	6	12	6
Morris Oxford Six, 15 h.p.	6	12	6
Morris Oxford Six, 16 h.p.	6	17	6
Morris Oxford Six, 20 h.p.	7	5	0
Morris Six	7	0	0
Morris Isis	7	0	0
Morris Twenty-five	7	10	0
SERIES II MODELS			
Morris Eight	3	5	0
Morris Ten-Four	4	10	0
Morris Twelve-Four and 10-cwt. Van	5	0	0
Morris Fourteen-Six	6	12	6
Morris Sixteen-Six	6	17	6
Morris Eighteen-Six	7	0	0
Morris Twenty-one-Six	7	5	0
Morris Twenty-five-Six	7	10	0
SERIES III MODELS			
Morris Ten-Four	4	10	0
Morris Twelve-Four	5	0	0
Morris Fourteen-Six	6	12	6
Morris Twenty-five-Six	7	10	0
Morris Eight, Series "E"	3	5	0
Morris Ten, Series "M"	4	10	0

NOTE.—The above prices are only applicable to England, Scotland, Wales and Northern Ireland, and are subject to alteration without notice.

Cylinder blocks for re-bore, stripped as specified below, should be consigned to :—

Messrs. Morris Motors Ltd., Service (Technical) Department, Cowley, OXFORD,

carefully labelled "For Re-bore," "Urgent," stating name and address of sender and chassis and engine numbers of owner's car. A covering order, also giving above particulars, should be sent under separate cover similarly addressed.

The following points should be borne carefully in mind :—

(*a*) **Packing.** Cylinder blocks should be consigned, carriage paid, in a box which is strong enough to withstand the journey to and from Cowley. We advise sticking one of the special labels "Urgent—Cylinder Block for Re-boring" to the packing case. These labels have been issued already, but further supplies can be obtained upon application.

(*b*) **Stripping.** Cylinder blocks should be sent **stripped of crankshaft, camshaft, cylinder head, cylinder head studs, main bearings** and, of course, any accessories. **An extra labour charge will be made if these parts are not all removed.** Bearing blocks and caps should be left in position. The magneto cross shaft may be left in position on the 11.9 h.p. and 14/32 h.p. blocks.

(*c*) **Finish and standardisation.** The work is carried out on the most up-to-date machinery obtainable, and perfect balance of the reciprocating parts is assured. Cylinders are bored to a standard size, and will therefore take standard-sized pistons which can always be supplied from stock.

(*d*) **Low cost.** The charges made represent practically net cost of executing the work on a big duction basis. The re-boring scheme has been instituted from a policy point of and not as a source of revenue, for **the utmost importance is attached to ha this class of work carried out by our own experts.**

Revised : 1st *July,* 1939

Re-Boring Cylinder Blocks—*continued*

We do not undertake welding of any sort.

In order to facilitate quick overhauls, we will, if requested, forward a replacement re-bored block, ex stock, immediately on receipt of an order giving full particulars as to the chassis and engine numbers and model for which required.

The original unit, together with a letter of advice, should be sent promptly to the Service Department at Cowley, in our packing case, properly labelled for identification, and if in satisfactory condition for re-boring, the initial charge for the replacement block will be adjusted in accordance with the above prices for re-boring.

Orders should state definitely whether customer's own block is to be re-bored and returned or a replacement re-bored block forwarded in exchange ; also whether blocks are to be forwarded per goods, goods express, or passenger train.

Note : Cylinder blocks are accepted for re-boring up to .050 in. oversize provided same are not damaged or cracked, etc. Re-boring necessarily increases the cylinder diameters and an owner may become liable to an additional horse-power tax.

Send Morris cylinder blocks to the Morris Works for re-boring, for we are confident that upon the efficiency of this class of work depends to a very large extent the reputation of Morris cars, in which are bound up our mutual interests.

Revised: 1st *February,* 1946

Morris Radiator Repairs

IN view of the fact that radiator repairs is a specialised trade, and to obviate delays in transit to and from Cowley, we have appointed firms in various towns as Authorised Morris Radiator Repair Stations.

These firms have been specially selected for their ability to execute repairs in accordance with the high standard set by us and **they undertake to abide by our standardised charges, and to use only genuine Morris replacement parts.**

They are also authorised to deal on our behalf with all claims under the Guarantee in respect of radiators: such claims must, however, be submitted by Distributors and Dealers, as it is not intended that Morris owners shall be referred direct to the Authorised Repair Stations, which are appointed only for the convenience of Distributors and Dealers.

The standardised charges for supplying and fixing new blocks, no other parts being damaged or missing, are as follows:—

	£	s.	d.
Morris Minor O.H.V. 1928/31	5	3	6
Morris Minor S.V. and Van 1931/34	4	12	0
Morris Family Eight 1932	5	3	6
Morris Eight, Series I and Van	4	6	0
Morris Ten-Four 1933/35	5	3	6
Morris Ten-Six 1933/35	5	3	6
Morris Cowley 1927/30	5	15	0
Morris Cowley 1931	6	3	6
Morris Cowley 1932/34	6	6	6
Morris Twelve-Four 1935	6	6	6
Morris Cowley Six	6	6	6
Morris Fifteen-Six 1935	6	6	6
Morris Light Van 1927/30	5	15	0
Morris Light Van 1931/33	5	15	0
Morris Light Van 1934/35	6	6	6
Morris Oxford 1927/29	7	15	0
Morris Major 1931	6	18	0
Morris Major 1932/33	6	6	6
Morris Oxford Six 1930	8	6	6
Morris Oxford Six 1931/33	6	18	0
Morris Oxford Six 1934	8	6	6
Morris Sixteen and Twenty 1935	7	3	6
Morris Six 1928/29	8	15	6
Morris Isis 1930/31	8	1	0
Morris Isis 1932/35	8	1	6
Morris "25" 1933/35	8	1	6
SERIES II MODELS			
Morris Eight	4	6	0
Morris Ten-Four	6	2	0
Morris Twelve-Four	6	2	0
Morris 10-cwt. Van	5	18	6
Morris Fourteen-Six	6	2	0
Morris Sixteen, Eighteen, Twenty-one and Twenty-five	8	1	6
SERIES III MODELS			
Morris Ten-Four	6	2	0
Morris Twelve-Four	5	18	6
Morris Fourteen-Six	6	2	0
Morris Twenty-five-Six	8	1	6
Morris Series "E" Eight	4	6	0
Morris Series "M" Ten	5	18	6
Morris 10-cwt. Van, Series "Y"	4	12	0
Morris 8 Van, Series "Z"	4	6	0

The above prices are only applicable to England, Scotland, Wales and Northern Ireland. Carriage charges extra.

In order that Morris owners shall not have their cars laid up whilst radiator repairs are effected, the authorised Repair Stations carry a stock of guaranteed service radiators, which can be loaned temporarily, or, providing the owner consents, can be taken in exchange—payment being subsequently adjusted in accordance with the cost of repairs and standardised labour charges for fitting such exchanged radiators.

Distributors and Dealers are requested to send all radiators requiring attention only to an Authorised Morris Radiator Repair Station or to Morris Motors Ltd., Radiators Branch, Osberton Works, Woodstock Road, Oxford.

The responsibility for Service on Radiators to Morris owners rests with the Distributors and Dea not the Authorised Radiator Repair Stations.

In cases where radiators are damaged beyond economical repair, same should be replaced rely new radiators which must be obtained from the Service Department, Morris Motors L ley, Oxford. Guarantee claims to be referred to an Authorised Repair Station or direct to iators Branch at Oxford.

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Revised: 3rd May, 1948

Morris Radiator Repairs—*continued*

LIST OF MORRIS RADIATOR REPAIR STATIONS

SERVICE STATIONS

		Telephone No.	*Telegraphic Address.*
BELFAST, N.I.	Serck Radiators Ltd., 308 Albertbridge Road.	58343	Serckrad, Belfast.
BIRMINGHAM, 13.	Serck Radiators Ltd., Service and Repair Depot, Springfield Road, Moseley.	Springfield 1175/6	Serckrad, Birmingham.
BRISTOL, 5.	Alfred J. Rees & Son, Bishop Street, Russell Town Avenue, Lawrence Hill.	56074/5	Rees, Phone, Bristol.
CARDIFF.	Serck Radiators Ltd., Clive Road, Canton.	Cardiff 6124	Serckrad, Cardiff.
DUBLIN, Eire.	George Pappin & Sons Ltd., 26 Little Ship Street.	51607	
EXETER.	Alfred J. Rees & Son, Radford Road, Holloway Street.	Exeter 4227	
LEEDS, 12.	Marston Excelsior Ltd., 49–61 Armley Road.	37351/7	Cooling, Phone, Leeds.
LIVERPOOL.	Liverpool Radiator Co. Ltd., Fontenoy Street.	Central 0382/3	Livradco, Liverpool
LONDON, N.W.10.	Serck Radiators Ltd., Park Royal Road, North Acton.	Elgar 6041/4	Serckrad, Phone, London
MAIDSTONE.	Serck Radiators Ltd., 147A Wheeler Street.	Maidstone 2035	Serckrad, Maidstone
NEWCASTLE-ON-TYNE, 4.	Serck Radiators Ltd., Skinnerburn Road.	33863	Serckrad, Newcastle-on-Tyne
NOTTINGHAM.	Minerva Motor Radiator Co., Boulevard Works, Radford.	75631	Motorad, Nottingham
PLYMOUTH.	Edmund Metal Works Ltd., Sutton Road.	2181 (2 lines)	Edmund Metal Works, Plymouth
SOUTHAMPTON.	Serck Radiators Ltd., Firgrove Road, Freemantle.	71057–8 (2 lines)	Serckrad, Southampton
SUDBURY, Suffolk.	Serck Radiators Ltd., Meadow Lane.	2557	Serckrad, Sudbury
TOCK, Devon.	Edmund Metal Works Ltd.	554	

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Revised: 3rd May, 1948

Morris Radiator Repairs—*continued*

SUB-SERVICE STATIONS

		Telephone No.	*Telegraphic Address.*
ABERDEEN.	Francis Craigmile & Sons, 56 Gordon Street.	3599	Radiators, Aberdeen
BOURNEMOUTH.	Hants. & Dorset Sheet Metal Co.,	Winton 2116	
BRISTOL.	Perry & Fudge, Globe Works, Horsefair.	22345	Ventilator, Bristol
BURSLEM Stoke-on-Trent	F. Copestick & Co. Ltd., Reginald Street.	Stoke-on-Trent 84141/2	
CARLISLE.	Serck Radiators Ltd., Newark Terrace, Newmarket Road.	1119	Serckrad, Carlisle
CHANNEL ISLANDS	Jersey Motor Panels, Georgetown.	Central 2543	Hodgskin, Jersey.
CHESTER.	Serck Radiators Ltd., Parkgate Road.	878	Serckrad, Chester
DONCASTER	Higgins & Parkes Ltd. North Bridge Road.	Doncaster 3107	
DUNDEE.	Leslie & Murray, 25 Miln Street,	4851	
EDINBURGH, 11.	Alder & Mackay Ltd., Hermand Terrace.	61162/3	Alder, Edinburgh
GLASGOW, S.W.2.	Serck Radiators Ltd., Montrose Avenue, Hillington.	Halfway 11658/9	Serckrad, Glasgow
HULL.	The Paragon (Hull) Motor Co. Ltd., Service Depot, Boothferry Road.	Central 36843	Benzina, Hull
INVERNESS	Francis Craigmile & Sons, 6/7 Huntley Place.	Inverness 680	
KILMARNOCK.	Serck Radiators Ltd., 16 Waterside Street.	Kilmarnock 747	Serckrad, Kilmarnock
LEICESTER.	Victory Radiator & Welding Works, Woodgate.	5611–2–3–4	
LEIGH-ON-SEA.	J. Keeling & Sons, 1009–1011 London Road.	75229	
LINCOLN.	E. J. Bowman (Yorks.) Ltd., Lindum Motor Works, Monks Road.	Lincoln 1643	Lincoln 1643, Bowman
LIVERPOOL, 1.	W. Watson & Co. (Liverpool) Ltd., Radiator Dept., Oldham Street.	Royal 7080 (10 lines)	Berliet, Liverpool
LONDON, N.W.5.	J. Lancaster Radiators Ltd., Boston Works, Dartmouth Park Hill, Tufnell Park.	ARChway 3906 and 4523	
NCHESTER, 10.	H. O. Serck Ltd., 21 Lyon Street.	Collyhurst 1541 (2 lines)	Serckrad, Manchester

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Revised: 3rd May, 1948

Morris Radiator Repairs—*continued*

		Telephone No.	*Telegraphic Address.*
MANCHESTER.	Pendleton Radiator Co. (Salford) Ltd., Frederick Road, Pendleton.	Pendleton 1709	
MANCHESTER, 15.	C. W. Scrouther & Co., Talbot Mills, Ellesmere Street, Hulme.	Blackfriars 9452	
NEWCASTLE-ON-TYNE, 2.	Charles G. S. Buist Ltd., St. Mary's Place.	28486/7	
NORTHAMPTON.	Central Sheet Metal Co., St. Michael's Road.	676	
NORWICH.	W. F. Smith & Sons, 90 King Street,	Norwich 20030	
PERTH.	R. Wilson, St. Catherine's Road.	770	
PRESTON.	E. Ashwell & Son, 44/46 New Hall Lane.	5139 Preston	Radiators, Preston
SHEFFIELD, 2.	Walter Fox & Partners Ltd. 16 Suffolk Road.	22010 and 22019	Mudguards, Sheffield.
SHEFFIELD, 8.	F. E. Hall & Co. Ltd. Little Norton Lane, Meadowhead.	45921 (3 lines)	
SWANSEA.	B. T. Rees, 53a Oxford Street.	5484	
WOLVERHAMPTON.	Baggott's Motor Fittings, Steelhouse Lane.	20110 Rad. Dept. 23391	

Date of Issue: April, **1929**

Cellulose Re-finishing Processes

GENERAL

1. With lacquer almost any car can be finished in less than a week's time, the average shop working period being four to five days.
Whereas it is generally recommended that cars be stripped of the old finish before applying lacquer, there are a great many cases where lacquer may be successfully applied over the original paint, enamel or lacquered surface. Whether this is a proper and safe procedure is to be determined largely by the condition of the surface and the painter's experienced judgment.
To finish with lacquer not only requires less time and operations than with paint and varnish, but requires less floor space, dispenses with the operation or maintenance of expensive drying ovens, requires no dark or dust-proof finishing rooms, and does not involve any elaborate investment. All that is necessary is a suitable spraying outfit adapted for lacquer finishing, such as is described later in this manual, handled by competent workmen.
It is recommended that the work be done in a dry, light, airy room where the ventilation is good, care being exercised to avoid direct draughts blowing on freshly sprayed surfaces. It is well to have the finishing room warm enough at all times to prevent the chilling of lacquer materials, and thereby assist in the smooth flowing of the lacquers after they are sprayed on the work. Approximately 75 degrees Fahrenheit is the ideal working temperature, below 70 degrees being regarded as an unfavourable temperature for best results.

EQUIPMENT

2. The necessary equipment consists chiefly of a suitable spray gun, air compressor, air hose, booth or hood and exhaust fan.

SPRAY GUN

3. The spray gun, with the necessary hose connections, is usually connected with a pressure gauge and a reducing valve for regulating the air pressure. Spray guns which are made especially for the application of lacquers should furnish a uniform and adequate flow of material, atomised or finely broken up into a sufficiently fine spray to do the work smoothly and uniformly. Detailed information concerning any spray gun may be obtained direct from its manufacturer.
To get the best results do not attempt to spray both undercoatings and lacquer with the same gun, or at least not the same nozzle. The two kinds of materials are entirely unlike in character, hence an extra nozzle tip, at least, will be found an economy and aid to general shop work.

USE OF SPRAY GUN

4. In using the spray gun the pressure should be regulated according to the colour to be applied.
The following recommendations are based on a general experience, viz.:

For black, blues and other lighter gravity colours, material compression tank 1 to 4 lb.; spray pressure 60 lb.

Cream, old ivory, yellows and heavier gravity colours, material compression tank 1 to 4 lb.; spray pressure 50 lb.

It is also important to bear in mind that the gun should be directed so that the spray strikes at right angles to the plane of work. In other words, the spray should always be directed in a straight line upon that part of the car which is being sprayed.
The spray gun should be held from eight to ten inches from the work, depending on the colour of lacquer which is being applied. For white, cream, yellow, red and other heavy gravity colours the gun should be held about ten inches away. For blues, blacks and other lighter gravity colours, the gun should be held about eight inches away. The operator should use slow, even strokes over the entire length or width of a panel, instead of spraying with a circular or uneven motion. Always keep the work wet, remembering that the stream from a spray gun is thinner on the edges than at the centre, and it is therefore recommended that each spray course overlap the preceding one. On narrow stiles the spraying should be done up and down, making sure to turn the spray nozzle in the direction of the work to be done.
No matter how familiar the operator may be with this class of work, it is well to regulate the gun on a separate panel or other suitable surface before actually starting work on the customer's car. As soon as the spray gun is operating satisfactorily so as to ensure covering the work rapidly with a wet, uniform coating, the operator can then begin work on the car itself. Always start the work at the farthest point away from, and work uniformly towards, the exhaust fan, to avoid spray dust settling on the finished parts of the work.

COMPRESSION SYSTEM

5. There are various types of air compressors on the market, some of which are particularly well adapted for automobile spraying. It is always necessary, however, in the case of any make decided on, to ensure some
ıns of removing oil and moisture, usually present in some degree in connection with compressed air.
ple oil and water separator may be made by running the hose connection through a four-inch iron
ipped with a 60- to 100-mesh screen at the outlet end, the pipe being loosely stuffed with clean, dry, fine v
vings. This should also have a pet cock at the outlet, which should be opened for draining each time be
inning work, and as often as is necessary during the day, while the fine wood shavings should be chai
ıuently, inasmuch as they soon become saturated with oil and water.

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Cellulose Re-finishing Processes—*continued*

EXHAUST FAN

6. The necessity of an exhaust fan for removing the fumes from the rapidly evaporating solvents is entirely a matter of personal choice, although its use has many advantages desirable for the successful application of lacquers and the comfort of the workmen. These are usually a part of a complete spray booth or hood, but may be installed in the windows, or one side of the room, if preferred. They may be obtained from the spray equipment manufacturers, with full directions for their installation and use.

MATERIAL FEED

7. Wherever there is a sufficient amount of work to be done we suggest the use of either a gravity or tank pressure feed in preference to a cup feed, as the two former methods will ensure a better volume and more even flow of material, and obviate the intermittent " spitting " of the gun when used in connection with a cup feed, especially when the material in the cup runs low or the spray must be directed upwards.

CLEANING THE WORK

8. **One of the most important factors in the successful use of lacquers is the absolute necessity for having all surfaces thoroughly free from grease, dirt, oil, acid, alkalis, wax or any other extraneous material before primers of any kind are applied.** If this caution is not strictly observed, unfavourable results are likely to ensue, simply because anything that interferes with the prompt and hard drying of the primer coat will render such primer unfit and unable to unite thoroughly with the under surface, and thereby successfully resist the active solvents which must be used in the making of every good nitrocellulose lacquer, either clear or coloured.
It is not enough to well wipe off a metal body with a naphtha-saturated rag. This may remove the bulk of the grease and dirt, but the surface should be further thoroughly cleaned by wiping with thinner or cleaner, care being exercised to see that any residue of dirt or grease remaining in scratches, file marks, small holes, etc., is all cleaned out. Dirty or greasy rags are to be avoided for this work, for even a very light film of grease, wax, acid or other extraneous matter remaining on the surface may cause trouble.
Rusty surfaces should be well scrubbed with di-oxidine or similarly constituted cleaners of proven quality.

RE-FINISHING OLD WORK

9. In the case of re-finishing old work which has been stripped to the metal with a caustic or any other paint removing solution, it is vitally necessary that every trace of alkali be first neutralised by washing with a three to five per cent. acetic acid solution and then re-washed with plenty of cold and finally hot water to facilitate drying of the surface. A simple and definite method of determining the alkaline or acid condition of any surface is to test it after rinsing off the acid bath, by the use of slips of blue litmus paper, applied to the surface at various points while it is still wet.
If the blue litmus turns only very slightly pinkish after a period of, say, five minutes, it is an indication that the caustic, or paint remover, has been removed, and that the surface is only so slightly acid as to be safe for the primer coat. In the case of stripping with paint and varnish removers, the stripped surface should be thoroughly cleaned with naphtha, care being taken to get into all corners and crevices; next re-clean the surface with benzole or cleaner, so that any wax or carbolic acid from the remover remaining on the work may be entirely removed, for **remember, wax or acid is not dissolved by naphtha.**
As an additional safeguard, we suggest that oil, wax, moisture or any other similar residue may be driven out from back of mouldings, hinges and other inaccessible places, by the proper use of an ordinary blow lamp, which, however, should never be used where there is danger from lacquer fumes.
Live steam, if available, is one of the very best mediums for finally cleaning either the body or chassis before re-finishing, as the steam not only penetrates minute cracks and crevices and dissolves and forces out any oil, wax or other residue from hidden places, but at the same time heats such surfaces so that they dry rapidly, thus obviating rusting.
Another serious source of trouble from non-drying may come from moisture in the air compressor tank, line or hose, or at times—in the case of new rubber hose—from rubber that is dissolved out by the lacquer solvents, and which, when combined with the lacquer, prevents drying for days at a time.
In cases where lacquer is used over old paint coats instead of stripping off, the old varnish surface should be well cleaned, but not sanded down, rusted spots and bare places cleaned and touched up with primer, holes or other necessary places puttied and sanded, and then the whole body given a light (not flooded) coat of lacquer, followed by two or more coats as suggested for stripped work.

CLEANING EQUIPMENT

10. Spray guns and hose should be drained and thoroughly cleaned at least twice a day, and all other spraying equipment at least once a day. Do not allow lacquer to stand in rubber hose for any length of time, as some lacquer solvents are also rubber solvents, and, through attacking the hose, will cause non-drying—see preceding paragraphs.
For cleaning after spraying oil base undercoatings use naphtha. For cleaning after spraying lacquer materials any kind use lacquer cleaner or thinners. Any time spent in keeping spraying apparatus in prime condition will be well repaid in the better work which will ensue.

MORRIS ARCHIVE

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Cellulose Re-finishing Processes—*continued*

REMOVAL OF WHEELS, WINGS, BONNET, ETC.

11. It is more convenient and better results can be secured by first removing such interfering parts as wheels, wings, radiator, bonnet, etc., before commencing to spray. These parts can be better finished separately, in the same manner as the body.

PROTECT PARTS NOT TO BE SPRAYED

12. Before starting the work, windows and other similar surfaces and parts should be protected by covering with paper or masking compound, thereby obviating the necessity for extensive cleaning thereafter. Nickelled parts not readily removable may be protected by coating with a light film of masking compound, heavy vaseline, cup grease or soft soap, any one of which is easily cleaned off upon conclusion of the work. **Care must, however, be exercised that such coatings do not come in contact with any surfaces to be primed or lacquered.**

Take notice :

Since work may be properly done under several different systems, we suggest that lacquer users read carefully all we have said about oil and varnish base and cellulose primers, surfacers and putties, and also consult schedules before starting work.

It will be seen that work may be carried through entirely with either oil base or cellulose undercoatings, or, if preferred, a combination of both, viz.: Oil base primers may be used followed by cellulose surfacers and putties, and in all cases satisfactorily finished with lacquer.

OLEO RESINOUS SYSTEM OF UNDERCOATINGS (OIL AND VARNISH BASE)

Application

13. **Oil Base Primer.** Red motorcar primer is especially adapted for use under lacquer finishes. To ensure proper results, all priming coats should be applied evenly over the surfaces in a medium, but **never a heavy coat.**

Before applying the primer, the body which has been stripped and cleaned, as already recited, should be sanded with No. 180 sandpaper or emery cloth to remove all traces of rust and dirt, then regularly dusted.

Once a body has been finally cleaned off, the surface should not be touched with dirty, greasy or moist hands.

Primers and surfacers should be thoroughly stirred or agitated as may be required before use, so as to restore and maintain their original consistency. If not thoroughly stirred there will be an excess of liquid, which will prevent proper covering and drying, while the subsequent use of the remaining material containing too large a percentage of pigment will produce a surface lacking in elasticity and durability.

If on account of standing exposed, oil base primers and surfacers " body up," due to evaporation of volatiles, they should be restored to their normal gravity before using, by thinning properly with white spirits. However, care should be taken not to over-dose them, as that will cut down their elasticity and binding qualities.

In selecting the proper primer, surfacer or putty for each job to be finished, consideration should be given to the fact that brown and red undercoatings should be given preference whenever the finishing colour will permit, as the oxides are particularly well adapted for use on metal surfaces and underneath lacquers.

Grey surfacers and putty may be used to advantage over red or brown primers or under light coloured finishing coats.

If by reason of unclean undersurfaces the primer has been prevented from drying and hardening sufficiently, causing such surfaces to show a tendency to rise in spots upon applying the lacquer, spray on only a light first coat, and, when the lacquer has dried, sand out the raised spots, and if of any extent touch up with primer. If, however, rising is confined to narrow lines, respray with lacquer after sanding and proceed regularly with the work.

In the case of planted on (not pressed in) body mouldings, care should be taken to spray back of mouldings as well as possible to obviate rusting at those points.

After spraying oil base primer, air drying at 75 degrees Fahrenheit, with proper ventilation, should follow overnight or until thoroughly hard.

OIL BASE MOTORCAR SURFACER

14. After thorough drying of the primer, one or more coats of surfacer, as may be necessary, should be sprayed in the usual manner. Allow each coat to dry overnight at 75 degrees Fahrenheit. Do not apply more coats of surfacer than may be necessary to enable sanding out thoroughly to a proper surface, as from the very nature of such materials they cannot add anything to the elasticity and life of any finished surface.

GLAZING (OR STOPPING)

15. When the coats of primer and surfacer have thoroughly dried, the car should be inspected for rough surfaces and holes, which should be glazed with glazing putty (oil base) in the usual manner. It is well to remember that lacquer will not fill up deep scratches; consequently such places, holes, etc., must be properly puttied.

eferably on the last coat of surfacer, but if puttying is done on the primer it may be immediately foll a coat of surfacer, allowing the putty and surfacer to dry together. Do not attempt to fill up deep other imperfections of surface with a single puttying, but instead remedy by re-puttying such pl ereby obviating tardy drying, shrinking, cracking, etc. **Smooth and thorough glazing will ob e need of a great deal of sanding later on.**

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Cellulose Re-finishing Processes—*continued*

CELLULOSE SYSTEM

16. It is most important, and particularly where work is intended to be done with lacquer primer, that the surface must be absolutely free from water, grease, oil or any other extraneous matter. Read again instructions under "Cleaning the Work," paragraph 8.
Lacquer primer red cellulose should be used as it is furnished, i.e. not thinned, and be applied in the same way as cellulose oil base primer, and for ensuring optimum results may be followed in from twenty minutes to an hour with lacquer surfacer, blue, grey or red, the necessary coats of which may follow each other immediately, or at intervals of an hour or more, if preferred.
If, say, three coats are applied in immediate succession, let stand to dry (at temperature of 70 degrees Fahrenheit) four hours before spot puttying with lacquer putty, grey or red, and as soon as this operation has been completed the work may be sanded out as already directed for oil base surfacers and putty—the work should then be dusted and tack ragged, and the finishing coats of lacquer applied.
Note. Where extensive putty glazing is necessary, lacquer putty may be reduced to spraying consistency and sprayed on.
It is also permissible, where desired, to spot putty with lacquer putty immediately after priming, then follow with lacquer surfacers and let all coats dry together.

RUBBING AND SANDING (OR FACING)

17. After the thorough drying of the surfacing coats the work is now ready to be either rubbed with pumice stone and water, or water sanded with No. 280 wet or dry sandpaper (sanding being the method now most generally used). It is important, as far as possible, to rub in one direction, and this direction should be along the same lines of rubbing and polishing to be later followed for the final coat of lacquer. Rub or sand until the surfacer and putty is largely removed, the surface is smooth and all scratches have been removed ; otherwise they are likely to show up in the final finish.
After a suitable surface has been obtained, wash the job thoroughly with clean water. Should there be any rubbed-through spots of any extent showing after the body has dried, these should be touched up with oil base primer before lacquering. This is not necessary, however, when the rubbed-through areas are slight.

LACQUER COATS

18. In view of the fact that upon the application of the lacquer coats depends the final appearance of the job, it is of the utmost importance that the operator pay especial attention to the proper method of spraying. For this reason it is recommended that he again refer to the paragraphs under "Spray Gun," in which the correct method of using the gun is described. **Let us repeat :** be sure to start the work farthest away from the fan in order to avoid spray dust settling on the finished work, gradually working towards the direction of the fan. Be sure the gun is always held at right angles to the job and at the same distance from the work ; otherwise a uniform coating cannot be applied, or the desired result secured.
Further, do not use too great an air pressure, hold the gun too close or too far away from the work, or use the lacquer too heavy in consistency, or run your exhaust fan at too high a speed, thus creating too great a draught, as any of these factors may have a tendency to cause excessive "orange peel" effect and increase cost for rubbing and polishing to the desired surface.

SPRAYING LACQUERS

19. Thoroughly agitate the lacquer by shaking the package or by stirring until the material is uniform throughout, and any pigment which may have settled is thoroughly re-incorporated.
Next reduce lacquer 100 per cent.—that is, by thinning one part of lacquer with one part of lacquer thinner, adding the thinner gradually, meanwhile stirring constantly, so that the mixture may be smooth and even. In reducing, always use lacquer thinner.
Always keep the container well covered, as lacquer thinners are highly volatile ; hence, they evaporate rapidly.
Make sure that the moisture and oil separator in the air line is always working properly, as described in the paragraph under "Spray Gun," paragraph 3. This is important, inasmuch as oil and water contaminating any lacquer will cause trouble. Avoid open doors, windows or draughts over or near the job being sprayed.
Before spraying face of panels, spray all edges first, to make sure of there being enough stock on the edges to eliminate the possibility of cutting through in the final rubbing and polishing operations.
When spraying, avoid, as much as possible, doubling on any surface, as doubling is likely to cause sagging. Should any sagging occur, sand out the sags with fine wet or dry sandpaper and water before applying the next coat.
Three properly sprayed coats are usually sufficient for a good job, but, depending on the condition of the surface and the colour being used, four or more coats are sometimes necessary.
While all three coats may be applied in immediate succession, we recommend, instead, one hour between the first and second, and two hours between the second and third coats.
For very best results we suggest that the second coat be lightly wet sanded with No. 320 sandpaper, and the
rface then dusted and wiped off with a tack rag before applying the third or finishing coat.
hen spraying any quick, hard drying materials like lacquer, care should be exercised to avoid bridging
om moulding to body or at the joint in the body at the lower sill, where the forward and back sheets n
any coat has so bridged, break the bridge with a thin spatula before it dries hard, otherwise it may crack
ip off, due to the weaving of the body, when it goes into service.

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Cellulose Re-finishing Processes—*continued*

FINAL RUBBING (FACING) AND POLISHING

20. In rubbing out lacquers avoid the use of wooden blocks, as that practice causes many cases of cutting through on high spots and edges that would not occur with the use of a uniform hand pad.
To ensure best results wait at least six hours, or, better still, overnight before rubbing and polishing a job which has received its final coat of lacquer. If a satin finish is desired it will not be necessary to do any final rubbing and polishing. However, if a lustre is wanted it will be necessary to rub and polish as follows :—
A mixture of three parts of petrol or naphtha and one part of raw linseed oil may be used, instead of water sanding, with No. 400 wet and dry sandpaper. Final polish with very fine pumice stone and water or with any of the good polishing compounds on sale in the market. Rub and polish in one direction, using even strokes, the same as in rubbing varnish.
After rubbing and polishing, the surface may be waxed, if desired, by applying a high grade polishing wax, which in turn should be thoroughly cleaned and polished off with several pads of clean cheesecloth.
In rubbing and polishing operations, economy in the use of cheesecloth may be had by cutting and folding the cloth to proper size. These pads may be refolded from time to time, as is necessary, until all sides have been used.
In places where production is large and competent rubbers are not available, relief is afforded by resort to mechanical rubbing machines, both rotary and horizontal. Full information regarding such devices may be had from their respective makers.

STRIPING AND BLACKING-OFF MOULDINGS

21. A sword striping pencil of the proper size to make the desired width of stripe should be used, and the stripe should be put on with one straight stroke.
For blacking-off mouldings use a good camel hair pencil of proper size to cover the mould in one operation. Do not brush back and forth, but draw the pencil in one direction only.
Where fancy colours or gold are desired for fine lining, high grade Japan colours and bronzes may be used, thinned with a good grade of finishing varnish to ensure proper elasticity and wear.

TWO-COLOUR WORK

22. When two or more colours are to be used it is advisable after the surfacing operations have been finished to apply all lacquer coats on the lower panels first, avoiding as much as possible any over-spray from the ground colour and lacquer getting on and above the moulding. After the last coat on the lower side is dry, heavy wrapping paper or several sheets of newspaper should be attached to that part of the body by means of vegetable paste or wide electrician's friction tape, or such surfaces coated with masking compound to prevent any over-spray from settling on the lower panel.
If, when papering off a body in two-colour work, glued strip paper is used, it should be wet with molasses water, and in that way kept from sticking too tightly. The upper edge should also be left loose for an eighth of an inch or so, thereby enabling the water used in soaking it loose to get directly to the glued part before attempting to remove it. Unless it is well soaked loose, the glue may pull the lacquer coats off in spots.

Date of issue: January, 1930

Cellulose Re-finishing Processes—*continued*

SCHEDULE No. 1 (*Amended January,* 1930)

To produce the highest type of re-finished jobs with Oil Base Undercoats throughout on metal surfaces which have been stripped and thoroughly cleaned.

Material.	Reduction.	Application.	Time of Air Drying at 70° Fahr.	Treatment.
Oil Base Primer Red No. F2511	None unless goods are too heavy to go on and level out smoothly, then use White Spirits or Turpentine Substitute.	Spray.	Overnight.	Sand lightly with fine (280) sandpaper to remove nibs or dirt if necessary.
Glazing Putty Brown No. H3610	Thin if necessary with White Spirits.	Knife-glaze smoothly all scratches, pits, file marks, etc.	3 to 4 hours.	If knife-glazing is carefully done, leaving no rough or sharp edges, no sanding is necessary.
Oil Base Surfacer Brown No. E2009	Thin 5 parts Surfacer with 1 part Petrol.	Spray on 2 or 3 good, full coats, as necessary, in one day.	Allow all coats to dry overnight.	Start the sanding with No. 280 wet or dry sandpaper and finish with No. 320 paper and allow body to dry until all moisture has evaporated.
Lacquer.	Reduce gallon for gallon with A.14 Thinner or A.1	Spray 3 double coats, each alternate coat vertically and horizontally.	Overnight.	Sand with No. 400 wet or dry sandpaper until most of the orange peel is removed, wash off thoroughly and let dry.
A.14 Thinner or A.1 Thinner.		Used as mist coat.	2 to 4 hours.	Then polish out with rotten stone and water or with any good polishing compound.

SCHEDULE No. 1A

To produce the highest type of re-finished job with Cellulose Undercoats throughout on metal surfaces which have been stripped and absolutely cleaned.

Material.	Reduction.	Application.	Time of Drying.	Treatment.
Lacquer Primer.	None.	Spray.	20 mins. to 1 hour at 70° Fahr.	None necessary.
Lacquer Glazing Putty, Red or Grey.	With A.1 Thinner to right working consistency.	Knife-glaze pits, file marks, scratches, etc.	20 mins. to 1 hour.	None necessary if glazing is carefully done.
Lacquer Surfacer Grey or Red.	Thin 1 to 1 with A.1 Thinner.	Spray on 2 or 3 coats as is necessary.	20 mins. to 1 hour between coats.	Start sanding with No. 280 and finish with No. 320 wet or dry sandpaper and allow body to dry out thoroughly until all water has evaporated.
Lacquer.	Thin 1 to 1 with A.1 Thinner.	Spray on 3 double coats, each alternate coat vertically and horizontally.	Overnight.	Sand with No. 400 wet or dry sandpaper until most of orange peel is removed —wash off thoroughly and let dry.
A.1 Thinner.		Used as mist coat	2 to 4 hours.	Then polish out with rotten stone and water or any good polishing compound.

SCHEDULE No. 1B

To produce a high type durably finished job **with a combination of Oil Base and Cellulose** Undercoats in less ti ipped bodies than shown in Schedule No. 1, but not so quick as Schedule No. 1A.

Prime with Oil Base Primer as directed in Schedule No. 1, and follow from thereon to completion (beginning with L azing Putty) as directed in Schedule 1A.

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Cellulose Re-finishing Processes—*continued*

SCHEDULE No. 2

To produce a well re-finished job over old finish (not to be stripped)—clean off thoroughly and sand surface all over with No. 280 and petrol, to remove any old disintegrated finish—do not scratch or break the surface more than is necessary.

Material.	Reduction.	Application.	Time of Drying.	Treatment.
Lacquer Primer-Surfacer, Red	1 to 1 with A.1 Thinner	Spray on 2 coats, the first one light.	20 mins. to 1 hour between coats.	Sand out as per Schedule No. 1A.
Lacquer.	1 to 1 with A.1 Thinner.	2 or 3 double coats.	Overnight.	As per Schedule No. 1A.

SCHEDULE No. 3

For a still quicker and cheaper job, " In to-day and out to-morrow."

Clean up, remove rust, touch up scored places with Lacquer Primer-Surfacer Red, sand lightly and follow with two coats Lacquer and succeeding operations as per Schedule No. 2.

SPRAYING EQUIPMENT MANUFACTURERS

Aerograph Co. Ltd.,
43 Holborn Viaduct,
London, E.C.1.

Attwood's Spraying Equipment Ltd.,
86 Rosebery Avenue,
London, E.C.1.

B.E.N. Patents Ltd.,
92 Tottenham Court Road,
London, W.1.

Midland Fan Co. Ltd.,
212 Aston Road,
Birmingham.

S. G. Nicholson,
254/6 Rocky Lane,
Nechells,
Birmingham.

De Vilbiss Co. Ltd.,
West Drayton.