

CASE
130 and 180
Compact Tractors

Service Manual

9-76391

Reprinted

CASE

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130 AND 180 COMPACT TRACTORS

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10

Series

General

SECTION

C

SPECIFICATIONS FOR

K 241S AND K 301S

ENGINES

USED ON

THE

130 AND 180

GARDEN TRACTORS

K241S engine

K241S ENGINE SPECIFICATIONS

Type ----- Kohler, 1 Cylinder, 4 Stroke Cycle
Air Cooled, "L" Head Engine
Bore ----- 3.250 Inches
Stroke ----- 2.880 Inches
Piston Displacement ----- 23.9 Cubic Inches
Compression Ratio ----- 6 to 1
Max. Comp. at Cranking Speed (Engine at Operating
Temperature ----- 110 to 120 PSI at Sea Level
Crankcase Vacuum (Engine Running) --- 5 to 10 Inches Vacuum at Sea Level
Ignition ----- 12 Volt Coil, Breaker Point

CYLINDER BORE

Diameter of Cylinder Bore Std. A, B ----- 3.2505-3.2545 Inches
.010 Oversize A, B + 10 ----- 3.2605-3.2615 Inches
.020 Oversize A, B + 20 ----- 3.2705-3.2715 Inches
.030 Oversize A, B + 30 ----- 3.2805-3.2815 Inches
Cylinder Bore Must Be Bored or Honed Oversize If Taper or Out of Round
Exceeds ----- .005 Inches

PISTON AND PISTON PIN

Diameter of Std. Piston at Bottom of Skirt ----- 3.2470-3.2480 Inches
Diameter of Std. Piston at Top of Skirt ----- 3.2425-3.2535 Inches
(Measured Just Below Oil Ring)
Diameter of Std. Piston at Top ----- 3.218-3.220 Inches
Piston Pin ----- Full Floating Type, Retained in
Place With Two Retainer Rings.
Piston Pin Bore in Piston Std. ----- .8595-.8596 Inches
Piston Pin Diameter Std. ----- .8591-.8593 Inches
.005 Oversize ----- .8641-.8643 Inches
Piston Pin Length ----- 2.738-2.753 Inches
Piston Pin Fit in Piston (Select Fit) ----- .0000-.0003 Inches
Piston Pin Fit in Connecting Rod ----- .0003-.0008 Inches

PISTON RINGS

Rings Per Piston ----- (2 Compression-1 Oil)
1st (Top) Compression-Chrome, Taper Face, Relief Indicates Top Side
Side Clearance ----- .002-.004 Inches
Width ----- .093-.094 Inches
2nd Compression-Chrome, Relief Indicates Bottom Side
Side Clearance ----- .0015-.0035 Inches
Width ----- .093-.094 Inches
3rd Oil Ring ----- Cast W/ Expander
Side Clearance ----- .001-.003 Inches
Width ----- .1860-.1870 Inches
Ring End Gap - When Installed in Bore ----- .010-.020 Inches
Replacement Ring Width
1st. Comp. ----- .0925-.0935 Inches
2nd. Comp. ----- .0665-.0675 Inches
2nd. Comp. Rail ----- .0235-.0245 Inches
3rd. Oil Rail ----- .0235-.0245 Inches
3rd Oil Ring ----- .134-.135 Inches

CONNECTING ROD

Connecting Rod Length from Center of Pin Hole
To Center of Bearing Journal ----- 5.560-5.562 Inches
Piston Pin Hole Diameter in Rod ----- .8596-.8599 Inches
Inside Diameter of Rod Journal, Std. ----- 1.5005-1.5010 Inches
Undersize ----- 1.4905-1.4910 Inches
Connecting Rod to Crank Journal Clearance ----- .0005-.0015 Inches
Connecting Rod to Crank End Play Clearance ----- .007-.016 Inches

CRANKSHAFT AND BEARINGS

Type Main Bearings ----- Ball Bearings
Crankshaft Rod Journal ----- 1.4995-1.5000 Inches

Crankshaft Rod Journal Width ----- 1.079-1.084 Inches
Crankshaft End Play ----- .003-.020 Inches
Measured at Bearing Plate and Shim to Proper End Play

CAMSHAFT

Camshaft End Play ----- .005-.010 Inches
Camshaft Pin Diameter ----- .4980-.4985 Inches
Camshaft Inside Diameter ----- .4995-.5015 Inches
Camshaft Pin to Camshaft Clearance ----- .001-.0035 Inches
Camshaft Pin to Breaker Cam Clearance ----- .001-.0025 Inches

VALVE LIFTERS

Valve Lifter Outside Diameter in Block ----- .6232-.6237 Inches
Valve Lifter Bore in Block ----- .6245-.6255 Inches
Valve Lifter to Block Clearance ----- .0008-.0023 Inches

VALVES

Intake Valve Tappet Clearance (Cold) ----- .008-.010 Inches
Exhaust Valve Tappet Clearance (Cold) ----- .017-.020 Inches
Angle of Valve Face - Intake and Exhaust ----- 44 Degrees
Valve Length - Intake and Exhaust ----- 4.572-4.582 Inches
Max. Valve Face Runout - Intake ----- .0015 Inches
Max. Valve Face Runout - Exhaust ----- .003 Inches
Valve Head Diameter - Intake ----- 1.370-1.380 Inches
Valve Head Diameter - Exhaust ----- 1.120-1.130 Inches
Valve Stem Diameter - Intake ----- .3105-.3110 Inches
Valve Stem Diameter - Exhaust ----- .3090-.3095 Inches
Intake Valve Stem to Guide Clearance ----- .001-.0025 Inches
Exhaust Valve Stem to Guide Clearance ----- .0025-.004 Inches

VALVE SEATS

Seat Angle - Intake and Exhaust ----- 45 Degrees
Max. Seat Runout - Intake and Exhaust ----- .002 Inches
Seat Width - Intake ----- .037-.045 Inches
Seat Width - Exhaust ----- .031-.062 Inches
Exhaust Seat Insert ----- Replaceable
Outside Diameter of Exhaust Insert ----- 1.2535-1.2545 Inches
Exhaust Insert Height ----- .219-.221 Inches

VALVE GUIDES

Valve Guide Length ----- 2.125 Inches
Valve Guide Outside Diameter ----- .6260-.6265 Inches
Valve Guide to Block (Press Fit) ----- .0005-.002 Inches
Valve Guide Inside Diameter - Before Installing ----- .307-.308 Inches
Ream Valve Guides After Installing to ----- .312-.313 Inches

VALVE SPRINGS

Spring Free Length ----- 1.793 Inches
Spring Pressure When Comp. to 1.469 In. (Valve Closed) --- 27 to 31 Lbs.
Spring Pressure When Comp. to 1.165 In. (Valve Open) --- 54 to 62 lbs.

GOVERNOR

Governor Stub Shaft Outside Diameter ----- .3735-.3740 Inches
Governor Gear Bore for Stub Shaft ----- .3745-.3755 Inches
Stub Shaft to Governor Gear Clearance ----- .0005-.002 Inches
Governor Spring Free Length With 2 Lbs. Pre-Load ----- 2.62 Inches
Governor Spring Extended to 2.88 Inches ----- 5.5 to 6.5 Pounds

K301S ENGINE SPECIFICATIONS

Type	Kohler, 1 Cylinder, 4 Stroke Cycle, Air Cooled, "L" Head Engine
Bore	3.380 Inches
Stroke	3.250 Inches
Piston Displacement	29.07 Cubic Inches
Compression Ratio	6 to 1
Max. Comp. at Cranking Speed (Engine at Operating Temperature)	110 to 120 PSI at Sea Level
Crankcase Vacuum(Engine Running)	5 to 10 Inches Vacuum at Sea Level
Ignition	12 Volt Coil, Breaker Points

CYLINDER BORE

Diameter of Cylinder Bore Std. A, B	3.3745-3.3785 Inches
.010 Oversize A, B + 10	3.3845-3.3855 Inches
.020 Oversize A, B + 20	3.3945-3.3955 Inches
.030 Oversize A, B + 30	3.4045-3.4055 Inches
Cylinder Bore Must Be Bored or Honed Oversize If Taper or Out of Round Exceeds	.005 Inches

PISTON AND PISTON PIN

Diameter of Std. Piston at Top	3.356-3.360 Inches
Diameter of Std. Piston at Top of Skirt (Measured Just Below Oil Ring)	3.369-3.370 Inches
Diameter of Std. Piston at Bottom of Skirt	3.371-3.372 Inches
Piston Pin	Full Floating Type Retained in Place With Two Retainer Rings.
Piston Pin Bore In Piston, Std.	.8752-.8754 Inches
Piston Pin Diameter Std. .005 Oversize	.8752-.8754 Inches .8802-.8804 Inches
Piston Pin Length	2.735-2.750 Inches
Piston Pin Fit In Piston	One Thumb Push Fit
Piston Pin Fit In Connecting Rod	.0003-.0008 Inches

PISTON RINGS

Rings Per Piston	(2 Compression-1 Oil)
1st(Top)Compression-Chrome, Tapered Face. Relief Indicates Top Side.	
Side Clearance	.002-.004 Inches
Width	.078 Inches
2nd - Compression	Chrome, Relief Indicates Bottom Side
Side Clearance	.002-.004 Inches
Width	.078 Inches
3rd - Oil Ring	Cast W/Expander
Side Clearance	.001-.003 Inches
Width	.1870 Inches
Ring End Gap When Installed In Bore	.010-.020 Inches
Replacement Ring Width	
1st Comp.	.077-.078 Inches
2nd Comp.	.077-.078 Inches
3rd Oil Rail	.0235-.0245 Inches
3rd Oil Ring	.134-.135 Inches

CONNECTING ROD

Connecting Rod Length From Center of Pin Hole To Center of Bearing Journal	5.295-5.297 Inches
Piston Pin Hole Diameter In Rod	.8757-.8760 Inches
Inside Diameter of Rod Journal, Std. Undersize	1.5005-1.5010 Inches 1.4905-1.4910 Inches
Connecting Rod To Crank Journal Clearance	.0005-.0015
Connecting Rod To Crank End Play Clearance	.007-.016 Inches

CRANKSHAFT AND BEARINGS

Type Main Bearings	Ball Bearings
Crankshaft Rod Journal	1.4995-1.5000 Inches
Crankshaft Rod Journal Width	1.079-1.084 Inches
Crankshaft End Play Measured at Bearing Plate and Shim to Prover End Play.	.003-.020 Inches

CAMSHAFT

Camshaft End Play	.005-.010 Inches
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K301S engine

Camshaft Pin Diameter	.4980-.4985 Inches
Camshaft Inside Diameter	.4995-.5015 Inches
Camshaft Pin to Camshaft Clearance	.001-.0035 Inches
Camshaft Pin to Breaker Cam Clearance	.001-.0025 Inches

VALVE LIFTERS

Valve Lifter Outside Diameter In Block	.6232-.6237 Inches
Valve Lifter Bore In Block	.6245-.6255 Inches
Valve Lifter To Block Clearance	.008-.0023 Inches

VALVES

Intake Valve Tappet Clearance (Cold)	.008-.010 Inches
Exhaust Valve Tappet Clearance (Cold)	.017-.020 Inches
Angle of Valve Face - Intake and Exhaust	44 Degrees
Valve Length - Intake and Exhaust	4.572-4.582 Inches
Max. Valve Face Runout - Intake	.0015 Inches
Max. Valve Face Runout - Exhaust	.003 Inches
Valve Head Diameter - Intake	1.370-1.380 Inches
Valve Head Diameter - Exhaust	1.120-1.130 Inches
Valve Stem Diameter - Intake	.3105-.3110 Inches
Valve Stem Diameter - Exhaust	.3090-.3095 Inches
Intake Valve Stem to Guide Clearance	.001-.0025 Inches
Exhaust Valve Stem to Guide Clearance	.0025-.004 Inches

VALVE SEATS

Seat Angle - Intake and Exhaust	45 Degrees
Max. Seat Runout Intake and Exhaust	.002 Inches
Seat Width - Intake	.037-.045 Inches
Seat Width - Exhaust	.031-.062 Inches
Exhaust Seat Insert	Replaceable
Outside Diameter of Exhaust Insert	1.2535-1.2545 Inches
Exhaust Insert Height	.219-.221 Inches

VALVE GUIDES

Valve Guide Length	2.125 Inches
Valve Guide Outside Diameter	.6260-.6265 Inches
Valve Guide to Block (Press Fit)	.0005-.002 Inches
Valve Guide Inside Diameter - Before Installing Ream Valve Guides After Installing to	.307-.308 Inches .312-.313 Inches

VALVE SPRINGS

Spring Free Length	1.793 Inches
Spring Pressure When Comp. to 1.469 In. (Valve Closed)	27 to 31 Lbs.
Spring Pressure When Comp. to 1.165 In. (Valve Open)	54 to 62 Lbs.







GOVERNOR

Governor Stub Shaft Outside Diameter	.3735-.3740 Inches
Governor Gear Bore for Stub Shaft	.3745-.3755 Inches
Stub Shaft to Governor Gear Clearance	.0005-.002 Inches
Governor Spring Free Length with 2 Lb. Pre-Load	2.62 Inches
Governor Spring Extended to 2.88 Inches	5.5 to 6.5 Inches

GENERAL TORQUE SPECIFICATION TABLE (Revised 5-64)

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN

NOTE: These values apply to fasteners as received from supplier, dry, or when lubricated with normal engine oil. They do not apply if special graphited or moly-disulphide greases or other extreme pressure lubricants are used. This applies to both UNF and UNC threads.

SAE Grade No.	5		8 *			
Bolt head identification marks as per grade Note: Manufacturing Marks Will Vary						
	Torque Foot Pounds			Torque Foot Pounds		
Bolt Size	Min.	Max.	Min.	Max.		
1/4"	9	11	12	15		
5/16	15	18	24	28		
3/8	35	40	45	50		
7/16	54	60	70	80		
1/2	80	90	110	125		
9/16	110	120	160	180		
5/8	150	165	220	240		
3/4	260	280	380	420		
7/8	360	400	600	660		
1"	540	600	900	1000		
1-1/8	720	800	1280	1440		
1-1/4	1000	1100	1800	2000		
1-3/8	1460	1680	2380	2720		
1-1/2	1940	2200	3160	3560		

* Thick nuts must be used with Grade 8 bolts

GENERAL ENGINE TORQUE SPECIFICATION TABLE

Thread Size	Torque Inch Pounds		Torque Foot Pounds	
	UNC	UNF	UNC	UNF
Bolt Size				
1/4"	70	85		
5/16	150	165		
3/8			22	25
7/16			35	45
1/2			50	70

SPECIAL ENGINE TORQUE SPECIFICATIONS

- Cylinder Head Bolts* ----- Torque to 280 Inch Lbs., Loosen, Retorque to 300 Inch Lbs.
- Connecting Rod Bolt* ----- Torque to 300 Inch Lbs.
- Flywheel Nut ----- Torque to 100 Ft. Lbs.
- Spark Plug ----- Torque to 27 Ft. Lbs.

*Lubricate With Grease Upon Assembly

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Series

Engines

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