

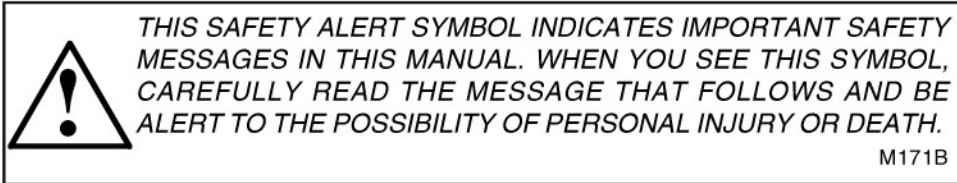
**CASE**  
**130 and 180**  
**Compact Tractors**

**Service Manual**

9-76391

Reprinted




**CASE**



If Safety Decals on this machine use the words **Danger, Warning or Caution**, which are defined as follows:

- **DANGER:** Indicates an immediate hazardous situation which if not avoided, will result in death or serious injury. The color associated with Danger is RED.
- **WARNING:** Indicates an potentially hazardous situation which if not avoided, will result in serious injury. The color associated with Warning is ORANGE.
- **CAUTION:** Indicates an potentially hazardous situation which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

If Safety Decals on this machine are ISO two panel Pictorial, decals are defined as follows:

- The first panel indicates the nature of the hazard.
- The second panel indicates the appropriate avoidance of the hazard.
- Background color is YELLOW.
- Prohibition symbols such as   and  if used, are RED.



# WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE INJURY OR DEATH. BEFORE USING THIS MACHINE, MAKE CERTAIN THAT EVERY OPERATOR:

- Is instructed in safe and proper use of the machine.
- Reads and understands the Manual(s) pertaining to the machine.
- Reads and understands ALL Safety Decals on the machine.
- Clears the area of other persons.
- Learns and practices safe use of machine controls in a safe, clear area before operating this machine on a job site.

It is your responsibility to observe pertinent laws and regulations and follow Case Corporation instructions on machine operation and maintenance.

# TABLE OF CONTENTS

## 130 AND 180 COMPACT TRACTORS

SERIES	SECTION	DESCRIPTION	FORM NUMBER
10		<b>GENERAL</b>	
	C	Specifications For K241S And K301S Engines .....	9-76411
20		<b>ENGINES</b>	
	M	Servicing The Kohler K241S And K301S Engines .....	9-76361
30		<b>FUEL SYSTEM</b>	
	N	Servicing The Carburetor And Fuel Pump .....	9-76361
40		<b>ELECTRICAL</b>	
	F	Electrical System .....	9-76371
50		<b>STEERING</b>	
	O	Servicing The Steering System .....	9-76311
60		<b>POWER TRAIN</b>	
	S	Servicing The Two Speed Transmission .....	9-76301
80		<b>HYDRAULICS</b>	
	B	Servicing The Hydraulic Pump .....	9-76291
	D	Servicing The Control Valve And Orbital Motor .....	9-76351
90		<b>ACCESSORIES</b>	
		Installing - Operating - Adjusting The 38" And 44"	
		Rotary Mowers And 44" Dozer Blade .....	9-76501
		Servicing The Rotary Mower And Dozer Blade .....	9-76461





**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
-------------------	------------------

# 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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