

HEAT TREAT SPECIFICATION

PART NO. 10307-DA

2 - 26 19x25

Farmall

WORKS

PURCHASED FROM TRACTOR WORKS.

NAME Piston PinMATERIAL MD 5120~~XXXXXX~~
~~XXXXXX~~~~XXXX~~
CR

SIZE

NO. PCS.
REQUIRED

WEIGHT PER PIECE

ROUGH

FINISH

FOR

ITEM
NO.

1

HEAT FOR FORGING AT

IN

TIME

2

3

FORGE

QUENCH

4

5

DRAW

6

7

NORMALIZE AT

IN

PUSH
TIMEHOLD
TIMETOTAL
TIME

8

9

ANNEAL AT

10

11

CLEAN

MACHINE

12

13

PROTECT Clay inside when carburizing.NO. OF PCS.
PER BOX

14

15

CARBURIZE AT 1625-1675⁰ INPUSH
TIMEHOLD
TIMETOTAL
TIME

16

17

DEPTH OF CASE

COOL IN Box

QUENCH IN

18

19

MACHINE

20

21

HEAT AT 1575-1625⁰ F. INPUSH
TIMEHOLD
TIMETOTAL
TIME

22

23

QUENCH IN Oil. AT

FOR

24

25

REHEAT AT 1400-1450⁰ INPUSH
TIMEHOLD
TIMETOTAL
TIME

26

27

QUENCH IN Water AT

FOR

28

29

DRAW (PARTIAL)

30

31

DRAW AT 400⁰ INPUSH
TIMEHOLD
TIMETOTAL
TIME

32

33

QUENCH IN

34

35

REMARKS:

36

37

PURCHASED FROM TRACTOR WORKS.

38

39

40

41

42

BRINELL

ROCKWELL

SHORE

FILE

43

PHYSICAL AND
MICROSCOPIC
TESTS

75-90

45

46

47

N.T. Nilson
METALLURGIST 7

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 10307-DA

HEAT TREAT SPECIFICATION

PART NO 10300-DA

5 - 28 193 28 Farmall WORKS
 NAME Connecting Rod. PURCHASED FROM TRACTOR WORKS.

MATERIAL MD 1040 FORGING ~~XXXX~~ ~~XXXX~~ SIZE NO. PCS.
 WEIGHT PER PIECE REQUIRED

ROUGH FINISH FOR

ITEM

NO.

1

HEAT FOR FORGING AT

IN

TIME

2

3

FORGE

QUENCH

4

5

DRAW

6

7

NORMALIZE AT

IN

PUSH
TIMEHOLD
TIMETOTAL
TIME

8

9

ANNEAL AT

1600°F.

for 1 hr. 30 min. Cool in air.

10

11

CLEAN

MACHINE

12

13

PROTECT

NO. OF PCS.
PER BOX

14

15

CARBURIZE AT

IN

PUSH
TIMEHOLD
TIMETOTAL
TIME

16

17

DEPTH OF CASE

COOL IN

QUENCH IN

18

19

MACHINE

20

21

HEAT AT 1500-1525°F.

IN

PUSH
TIMEHOLD 1 hr
TIME 30 min.TOTAL
TIME

22

23

QUENCH IN Water

AT

FOR

24

25

REHEAT AT 900-1000°F.

IN

PUSH
TIMEHOLD 1 hr.
TIME 30 min.TOTAL
TIME

26

27

QUENCH IN Water

AT

FOR

28

29

DRAW (PARTIAL)

30

31

DRAW AT

IN

PUSH
TIMEHOLD
TIMETOTAL
TIME

32

33

QUENCH IN

34

35

REMARKS:

36

37

38

39

40

41

42

43

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47

Electric Furnace used for all operations.
 PURCHASED FROM TRACTOR WORKS.

BRINELL

ROCKWELL

SHORE

FILE

PHYSICAL AND
MICROSCOPIC
TESTS

30-40

N.T. Wilson

METALLURGIST

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 10300-DA

HEAT TREAT SPECIFICATION

PART NO. 10356-DA

5- 28 19329

Farmall WORKS
PURCHASED FROM TRACTOR WORKS.

NAME Crank Shaft.

MATERIAL 1D 3140 FORGING ~~HT~~ ~~SA~~ SIZE No. PCS.
~~SA~~ REQUIRED

WEIGHT PER PIECE

ROUGH	FINISH	FOR			
ITEM NO.					
1	HEAT FOR FORGING AT	IN		TIME	
2					
3	FORGE	QUENCH			
4					
5	DRAW				
6					
7	NORMALIZE AT	IN	PUSH TIME	HOLD TIME	TOTAL TIME
8					
9	ANNEAL AT 1650-1700°F.				
10					
11	CLEAN	MACHINE			
12					
13	PROTECT				NO. OF PCS. PER BOX
14					
15	CARBURIZE AT	IN	PUSH TIME	HOLD TIME	TOTAL TIME
16					
17	DEPTH OF CASE		COOL IN		QUENCH IN
18	ANNEAL				
19	MACHINE				
20					
21	HEAT AT 1525-1560°F.	IN	PUSH TIME	HOLD 4 hrs. 10 min.	TOTAL TIME
22					
23	QUENCH IN Water	AT	FOR		
24					
25	REHEAT AT 950-1000°F.	IN	PUSH TIME	HOLD 3 hrs. 50 min.	TOTAL TIME
26					
27	QUENCH IN Cool in air	AT	FOR		
28					
29	DRAW (PARTIAL)				
30					
31	DRAW AT Min. 400°	IN	PUSH TIME	HOLD TIME	TOTAL TIME
32	(ALL OVER)				
33	QUENCH IN				
34					
35	REMARKS:				

Rough forging may equal or exceed above hardness.

This sheet applies to electric furnace only.
PURCHASED FROM TRACTOR WORKS.

42	BRINELL	ROCKWELL	SHORE	FILE
43	PHYSICAL AND MICROSCOPIC TESTS		43-48	
44				
45				
46				
47				

H.T. Nison
METALLURGIST 7

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 10356-DA

HEAT TREAT SPECIFICATION

PART NO 18766-DA

1 - 16 1932 Farmall WORKS

NAME Camshaft

MATERIAL MD1015F₄ FORGING

1/2"

SIZE 2-1/4" Rd.

NO. PCS.
REQUIRED

1

WEIGHT PER PIECE

ROUGH 15.00# FINISH 11.4# FOR 3-3/4 x 5 - 4 Cyl. Engine T-20

ITEM
NO.1 HEAT FOR FORGING AT 2250-2300°F. IN TIME 25-30 Min.
(Tractor Wks.)

2 FORGE QUENCH

3 DRAW

4 NORMALIZE AT

IN

PUSH
TIMEHOLD
TIMETOTAL
TIME

5 ANNEAL AT

11 CLEAN Pickle at MACHINE Copper plate rough forging and machine.
12 Tractor Wks.13 PROTECT Copper plate and paint thread end NO. OF PCS.
14 with non-case PER BOX 1515 CARBURIZE AT 1675-1725°F. IN Holcroft Gas PUSH 96 min. HOLD TOTAL 31 hrs.
16 Carburizer TIME TIME

17 DEPTH OF CASE 1/16 - 3/32" COOL IN Box. QUENCH IN

18 ANNEAL

19 MACHINE

21 HEAT AT 1450-1500°F. IN Hevi-Duty PUSH HOLD TOTAL 2 hrs.
22 Batch Type TIME TIME

23 QUENCH IN Brine. AT FOR

24 Sand Blast - X

25 REHEAT AT IN PUSH HOLD TOTAL
26 TIME TIME

27 QUENCH IN AT FOR

29 DRAW (PARTIAL) Thread ends and timing gear with torch.

31 DRAW AT (ALL OVER) IN PUSH HOLD TOTAL
32 TIME TIME

33 QUENCH IN

34 Inspect for hardness.

35 REMARKS:

36

37

38

39

40

41

42 BRINELL

ROCKWELL

SHORE

FILE Hard

43 PHYSICAL AND
44 MICROSCOPIC
TESTS

75-90 Check with file.

45

46

47

R. E. McGee.
METALLURGIST

HEAT TREAT SPECIFICATION

PART NO. 17224-D

1 - 19 193 2

Farmall

WORKS

NAME Rear Axle.MATERIAL LD 3140 FORGING~~MD~~~~3040X~~~~30X~~

SIZE

3-3/4" Rd.NO. PCS.
REQUIRED

2

WEIGHT PER PIECE

ROUGH 37.50FINISH 26.81

FOR

F-20 FarmallITEM
NO.1 HEAT FOR FORGING AT 2400°F. IN TIME (Milwaukee Wks)
2 See note under remarks.

3 FORGE QUENCH

5 DRAW

7 NORMALIZE AT

IN

PUSH
TIMEHOLD
TIMETOTAL
TIME9 ANNEAL AT 1650°F. Holcroft Annealer 24 min.12 hrs.
48 min.11 CLEAN Rattle MACHINE Finish machine except grind.

13 PROTECT

NO. OF PCS.
PER BOX

15 CARBURIZE AT

IN

PUSH
TIMEHOLD
TIMETOTAL
TIME

17 DEPTH OF CASE

COOL IN

QUENCH IN

18 ANNEAL

19 MACHINE

21 HEAT AT 1475-1525°F. IN Elec. Rotary PUSH TIME 6 min. HOLD TIME TOTAL TIME 3 hrs.23 QUENCH IN Water. AT FOR

25 REHEAT AT

IN

PUSH
TIMEHOLD
TIMETOTAL
TIME

27 QUENCH IN AT FOR

29 DRAW (PARTIAL)

31 DRAW AT 550°F. (Min) IN Homo PUSH TIME HOLD TIME TOTAL TIME 4 hrs.

32 Brush and polish for inspection.

33 QUENCH IN

35 REMARKS:

- 36 1. Quench axle in water to flange. Leave flange soft.
- 37 2. Swaged at Milwaukee Works, and Flange upset in 7" Ajax at
- 38 Farmall.

42 BRINELL

ROCKWELL

SHORE

FILE

43 PHYSICAL AND
44 MICROSCOPIC
45 TESTS

62-67 on splines and bearing

R. E. McGee.

METALLURGIST

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 17224-D

HEAT TREAT SPECIFICATION

PART NO. 15041-D

12 - 29 1931 Farmall WORKSNAME Belt Pulley Shaft Bevel Gear.MATERIAL MD 3115 FORGING XXX SIZE 2" Sq. NO. PCS. REQUIRED 1WEIGHT PER PIECE
ROUGH 3.40# FINISH 1.75# FOR F-20 Farmall

ITEM NO.	1	HEAT FOR FORGING AT	2250°F.	IN		TIME	1 hr. (Tractor Wks)
2							
3		FORGE		QUENCH			
4							
5		DRAW					
6							
7		NORMALIZE AT		IN	PUSH TIME	HOLD TIME	TOTAL TIME
8							
9		ANNEAL AT	1725°F.	2 hrs. - 30 min.	(Tractor Works)		
10							
11		CLEAN	Pickle at	MACHINE	Finish machine except broaching of spline.		
12			Tractor Works.				
13		PROTECT	Both sides with copper caps and		NO. OF PCS. PER BOX	44	
14			non-case.				
15		CARBURIZE AT	1650-1700°F.	IN Holcroft Gas	PUSH TIME	32 Min.	HOLD TIME
16				Carburizer			TOTAL TIME
17		DEPTH OF CASE	3/64-1/16"	COOL IN	Box.		QUENCH IN
18		ANNEAL					
19		MACHINE					
20							
21		HEAT AT	1550-1575°F.	IN Gas Rotary	PUSH TIME	3 min.	HOLD TIME
22							TOTAL TIME
23		QUENCH IN	Oil	AT	FOR		1 hr. 12 min.
24							
25		REHEAT AT	1450-1475°F.	IN Gas Rotary	PUSH TIME	3 min.	HOLD TIME
26							TOTAL TIME
27		QUENCH IN	Oil	AT	FOR		1 hr. 12 min.
28		Wash - X					
29		DRAW (PARTIAL)					
30		Sand Blast - X					
31		DRAW AT (ALL OVER)	300-350°F.	IN Homo	PUSH TIME		HOLD TIME
32							TOTAL TIME
33		QUENCH IN					1 hr. 30 min.
34		Polish for inspection (Three teeth)					
35		REMARKS:					
36		1. Grind bore and broach splines after heat treatment. Bore					
37		must be kept soft.					
38							
39							
40							
41							
42		BRINELL		ROCKWELL		SHORE	FILE Hard
43		PHYSICAL AND MICROSCOPIC TESTS				75-85	Check with file.
44							
45							
46							
47							

R. E. McGee.
METALLURGIST

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 15041-D

HEAT TREAT SPECIFICATION

PART No 20696-D

12 - 29 1931 Farmall WORKSNAME Transmission Spline Shaft & Bevel Pinion.MATERIAL MD3115 FORGING XX XX SIZE 1-7/8" Rd. NO. PCS. REQUIRED 1WEIGHT PER PIECE
ROUGH 14.3 FINISH 9.67 FOR F-20 Farmall

ITEM NO.	1	HEAT FOR FORGING AT	2000-2100° F.	IN	Gas Forge Furnace	TIME	20 min.
2							
3		FORGE	2" Ajax.	QUENCH			
4							
5		DRAW					
6							
7		NORMALIZE AT		IN		PUSH TIME	HOLD TIME
8							TOTAL TIME
9		ANNEAL AT	1650° F. Holcroft Annealer		28 min.		18 hrs.
10							40 min.
11		CLEAN	MACHINE		Gear, rough cut large spline, copper plate thread end, rough cut small spline.		
12							
13		PROTECT	Section to be threaded by copper plate			NO. OF PCS. PER BOX	
14							
15		CARBURIZE AT	1650-1700° IN Holcroft Gas Carburizer		32 min.	HOLD TIME	TOTAL TIME
16							21 hrs.
17		DEPTH OF CASE	3/64-1/16"		COOL IN Box		20 min.
18		ANNEAL					QUENCH IN
19		MACHINE					
20							
21		HEAT AT	1575° F.	IN Rotary (24")	PUSH TIME 4 min.	HOLD TIME	TOTAL TIME
22							1 hr.
23		QUENCH IN	Oil	AT	FOR		30 min.
24		Draw	all in Homo - 900-1100°		Total Time 4 hrs.		
25		REHEAT AT	Gear end only Lead pot		PUSH TIME	HOLD TIME	TOTAL TIME
26							8 min.
27		QUENCH IN	Water	AT	FOR		
28		Wash - X					
29		DRAW (PARTIAL)					
30		Sand Blast - X					
31		DRAW AT (ALL OVER)	300-350°	IN Homo	PUSH TIME	HOLD TIME	TOTAL TIME
32							1 hr.
33		QUENCH IN					30 min.
34		Polish for Inspection - X					

REMARKS:

1. Finish spline, cut threads and grind after heat treatment.
2. Hold spline hardness to low limit for cutting of splines.

BRINELL

ROCKWELL

SHORE

FILE Hard

PHYSICAL AND MICROSCOPIC TESTS

Gear end 75-85
Splined end 45-55R. E. McGee.
METALLURGIST

HEAT TREAT SPECIFICATION

PART NO. 20697-D

12 - 29 193 1 Farmall WORKS

NAME Second and Third Speed Sliding Gear.

MATERIAL MD3115 FORGING ~~XXX~~ ~~XXXX~~ SIZE 3-3/4" Rd. NO. PCS. REQUIRED 1WEIGHT PER PIECE
ROUGH 14.58 FINISH 9.0 FOR F-20 Farmall

ITEM NO. 1 HEAT FOR FORGING AT 2250-2300° F. IN TIME 40-45 min. (Tractor Wks.)

2 *

3 FORGE QUENCH

4 Anneal - 1725° F. for 2 hrs. 30 min. (Tractor Works)

5 ~~XXX~~ Pickle - Tractor Works.

6 Rough machine blank.

7 NORMALIZE AT IN PUSH TIME HOLD TIME TOTAL TIME

8

9 ANNEAL AT 1550° F. in rotary 6 min. push - total time 3 hrs.

10

11 CLEAN MACHINE Finish machine, except broaching of splines.

12

13 PROTECT Bore with copper caps and non-case NO. OF PCS. PER BOX 12

14

15 CARBURIZE AT 1650-1700° in Holcroft Gas 32 min. HOLD TIME TOTAL TIME 21 hr. 20 min.

16 carburizer

17 DEPTH OF CASE 3/64-1/16" COOL IN box. QUENCH IN

18

19 MACHINE

20

21 HEAT AT 1550-1575° F. IN Gas rotary PUSH TIME 3 min. HOLD TIME TOTAL TIME 1 hr. 12 min.

22

23 QUENCH IN Oil. AT FOR

24

25 REHEAT AT 1450-1475° IN Gas Rotary PUSH TIME 3 min. HOLD TIME TOTAL TIME 1 hr. 12 min.

26

27 QUENCH IN Oil. AT FOR

28 Wash - X

29 DRAW (PARTIAL)

30 Sand Blast - X

31 DRAW AT 300-350° F. IN Homo PUSH TIME HOLD TIME TOTAL TIME 1 hr. 30 min.

32 (ALL OVER)

33

34 QUENCH IN

35 Polish for inspection. (Three teeth)

36 REMARKS:

37 1. Grind bore and broach splines after heat treatment.

38 Bore must be kept soft. Chamfer bore after inspection.

39

40

41

42 BRINELL ROCKWELL SHORE FILE Hard

43 PHYSICAL AND MICROSCOPIC TESTS 75-85 Check with file.

44

45

46

47

R. E. McGee.
METALLURGIST

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 20697-D

HEAT TREAT SPECIFICATION

PART No 20698-D

12 - 29 193 1 Farmall WORKS

NAME Low Speed Gear.

MATERIAL MD 3115 FORGING MK
~~STEEL~~ ~~EX~~ SIZE 2-1/4" Rd. NO. PCS. REQUIRED 1WEIGHT PER PIECE
ROUGH 3.3# FINISH 1.63# FOR F-20 Farmall

ITEM NO.	1	HEAT FOR FORGING AT	2250-2300°F	IN		TIME	25-30 min.	
2							(Tractor Works)	
3		FORGE *		QUENCH				
4		Pickle at Tractor Works.						
5		DRAW						
6								
7		NORMALIZE AT		IN	PUSH TIME	HOLD TIME	TOTAL TIME	
8								
9		ANNEAL AT	1650°F.	in Holcroft Annealer	28 min.			18 hrs.
10								50 min.
11		CLEAN Rattle		MACHINE	Finish machine and broach keyway.			
12								
13		PROTECT						No. of Pcs. PER BOX 48
14								
15		CARBURIZE AT	1650-1700°F	in Holcroft Gas Carburizer	PUSH TIME 32 min.	HOLD TIME	TOTAL TIME	21 hrs.
16								20 min.
17		DEPTH OF CASE	3/64 - 1/16"		COOL IN	Box.		QUENCH IN
18		ANNEAL						
19		MACHINE						
20								
21		HEAT AT	1550-1575°F.	IN Gas Rotary	PUSH TIME 3 min.	HOLD TIME	TOTAL TIME	1 hr.
22								12 min.
23		QUENCH IN	Oil	AT	FOR			
24								
25		REHEAT AT	1450-1475°F.	IN Gas Rotary	PUSH TIME 3 min.	HOLD TIME	TOTAL TIME	1 hr.
26								12 min.
27		QUENCH IN	Oil.	AT	FOR			
28		Wash - X						
29		DRAW (PARTIAL)						
30		Sand Blast - X						
31		DRAW AT (ALL OVER)	300-350°F.	IN	PUSH TIME	HOLD TIME	TOTAL TIME	1 hr.
32								30 min.
33		QUENCH IN						
34		Polish for inspection. (Three teeth)						
35		REMARKS:						
36								
37								
38								
39								
40								
41								
42		BRINELL		ROCKWELL		SHORE		FILE Hard
43		PHYSICAL AND MICROSCOPIC TESTS						75-85 Check with file.
44								
45								
46								
47								

R. E. McGee.

METALLURGIST

FOR CHANGES, SEE REVERSE SIDE.

PART No. 20698-D

HEAT TREAT SPECIFICATION

PART NO 20699-D

12 - 29 193.1

Farmall

WORKS

NAME Second Speed Gear.

MATERIAL MD 3115 FORGING

*6

CASTING

*2

SIZE 2-1/4" Rd.

NO. PCS.
REQUIRED 1

WEIGHT PER PIECE

ROUGH 4.05#

FINISH 2.10#

FOR F-20 Farmall.

ITEM
NO.

1 HEAT FOR FORGING AT 2250-2300°F.

IN

TIME 25-30 Min.

2

3

FORGE *

QUENCH

(Tractor Wks.)

4

5

DRAW

6

7

NORMALIZE AT

IN

PUSH
TIMEHOLD
TIMETOTAL
TIME

8

9 ANNEAL AT 1725°F. - 2 hrs. - 30 min. (Tractor Works.

10

11

CLEAN Pickle at

MACHINE

Finish machine and cut keyway.

12

13

PROTECT

NO. OF PCS.
PER BOX 36

14

15

CARBURIZE AT 1650-1700°F. IN Holcroft Gas

PUSH 32 min. HOLD

TOTAL 21 hrs.

16

Carburizer

20 min.

17

DEPTH OF CASE 3/64-1/16"

COOL IN Box.

QUENCH IN

18

19

MACHINE

20

21

HEAT AT 1550-1575°F. IN Gas Rotary

PUSH 3 min. HOLD

TOTAL 1 hr.

22

23

QUENCH IN Oil.

AT

FOR

12 min.

24

25

REHEAT AT 1450-1475°F. IN Gas Rotary

PUSH 3 min. HOLD

TOTAL 1 hr.

26

27

QUENCH IN Oil.

AT

FOR

12 min.

28

Wash - X

29

DRAW (PARTIAL)

30

Sand Blast - X

31

DRAW AT 300-350°F. IN Homo

PUSH
TIMEHOLD
TIMETOTAL
TIME

32

Polish for inspection. (Three teeth)

33

QUENCH IN

34

35

REMARKS:

36

1. Grind bore after heat treatment.

37

38

39

40

41

42

BRINELL

ROCKWELL

SHORE

FILE Hard

43

PHYSICAL AND
MICROSCOPIC
TESTS

75-85 Check with file.

45

46

47

R. E. McGee.

METALLURGIST

HEAT TREAT SPECIFICATION

PART NO. 20700-D

12 - 29 193 1, Farmall WORKS

NAME Third Speed Gear.

MATERIAL MD 3115 FORGING ~~CRONIX~~ ~~CRONIX~~ SIZE 2" R.C. Sq. NO. PCS. REQUIRED 1WEIGHT PER PIECE
ROUGH 4.75# FINISH 2.40# FOR F-20 Farmall.

ITEM No.	1	HEAT FOR FORGING AT 2250-2300°F.	IN		TIME 20-25 Min.	
2					(Tractor Wks.)	
3	FORGE *		QUENCH			
4						
5	DRAW					
6						
7	NORMALIZE AT		IN	PUSH TIME	HOLD TIME	TOTAL TIME
8						
9	ANNEAL AT 1725°F.	- 2 hrs. 30 min.				(Tractor Works)
10						
11	CLEAN Pickle at	MACHINE	Finish machine and cut key way.			
12	Tractor Works.					
13	PROTECT			NO. OF PCS. PER BOX		32
14						
15	CARBURIZE AT 1650-1700°F.	IN Holcroft Gas	PUSH 32 min.	HOLD TIME		TOTAL TIME 21 hrs.
16		Carburizer				20 min.
17	DEPTH OF CASE 3/64 - 1/16"		COOL IN Box.			QUENCH IN
18	ANNEAL					
19	MACHINE					
20						
21	HEAT AT 1550-1575°F.	IN Gas Rotary	PUSH 3 min.	HOLD TIME		TOTAL TIME 1 hr.
22						12 min.
23	QUENCH IN Oil	AT	FOR			
24						
25	REHEAT AT 1450-1475°F.	IN Gas Rotary	PUSH 3 min.	HOLD TIME		TOTAL TIME 1 hr.
26						12 min.
27	QUENCH IN Oil.	AT	FOR			
28	Wash - X					
29	DRAW (PARTIAL)					
30	Sand Blast - X					
31	DRAW AT 300-350°F.	IN Homo	PUSH TIME	HOLD TIME		TOTAL TIME 1 hr.
32	(ALL OVER)					30 min.
33	QUENCH IN					
34						
35	REMARKS:					
36	1. Grind Bore after heat treatment.					
37						
38						
39						
40						
41						
42	BRINELL	ROCKWELL	SHORE			FILE Hard
43	PHYSICAL AND MICROSCOPIC TESTS					75-85 Check with file.
44						
45						
46						
47						

R. E. McGee.
METALLURGIST

HEAT TREAT SPECIFICATION

PART NO. 20701-D

1 - 18 193 2 Farmall WORKSNAME Fourth Speed Gear.MATERIAL MD 3115 FORGING 42
~~SAE 5140~~ ~~22~~ SIZE 2-1/4" R.C. Sq. NO. PCS. REQUIRED 1

WEIGHT PER PIECE

ROUGH 5.5# FINISH 3.1# FOR F-20 Farmall.ITEM
NO.

1	HEAT FOR FORGING AT	2250-2300°F.	IN			TIME 25-30 min.
2						(Tractor Works.)
3	FORGE *		QUENCH			
4						
5	DRAW					
6						
7	NORMALIZE AT		IN	PUSH TIME	HOLD TIME	TOTAL TIME
8						
9	ANNEAL AT	1725°F. for 2 hrs. - 30 min.				(Tractor Works)
10						
11	CLEAN Pickle at Tractor		CHINE			Finish machine.
12	Works.					
13	PROTECT					NO. OF PCS. PER BOX
14						24
15	CARBURIZE AT	1650-1700°F. in Holcroft Gas		PUSH TIME	HOLD TIME	TOTAL TIME
16		Carburizer		32 min.		21 hrs. 30 min.
17	DEPTH OF CASE	3/64-1/16"		COOL IN		QUENCH IN
18	ANNEAL					
19	MACHINE					
20						
21	HEAT AT	1550-1575°F. in Gas Rotary		PUSH TIME	HOLD TIME	TOTAL TIME
22				3 min.		1 hr. 12 min.
23	QUENCH IN	Oil.	AT	FOR		
24						
25	REHEAT AT	1450-1475°F. in Gas Rotary		PUSH TIME	HOLD TIME	TOTAL TIME
26				3 min.		1 hr. 12 min.
27	QUENCH IN	Oil.	AT	FOR		
28	Wash - X					
29	DRAW (PARTIAL)					
30	Sand Blast - X					
31	DRAW AT (ALL OVER)	300-350°F. in Homo		PUSH TIME	HOLD TIME	TOTAL TIME
32						1 hr. 30 min.
33	QUENCH IN					
34	Polish for inspection .	(Three teeth)				
35	REMARKS:					
36						
37						
38						
39						
40						
41						
42	BRINELL	ROCKWELL		SHORE		FILE Hard
43	PHYSICAL AND MICROSCOPIC TESTS			75-85	Check with file.	
44						
45						
46						
47						

R. E. McGee.

METALLURGIST

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 20701-D

HEAT TREAT SPECIFICATION

PART NO 20702-D

1 - 18 193 2Farmall WORKSNAME High Speed Sliding Gear.MATERIAL MD 3115 FORGING MA 95 SIZE 2 1/2" R.C. Sq. NO. PCS. REQUIRED 1WEIGHT PER PIECE
ROUGH 6.10# FINISH 3.4# FOR F-20 Farmall.

ITEM NO.	1	HEAT FOR FORGING AT	2250-2300°F.	IN		TIME	25-30 min.	
	2						(Tractor Works)	
	3	FORGE	*		QUENCH			
	4							
	5	DRAW						
	6							
	7	NORMALIZE AT		IN		PUSH TIME	HOLD TIME	TOTAL TIME
	8							
	9	ANNEAL AT	1725°F. for 2 hrs. - 30 min.					(Tractor Works)
	10							
	11	CLEAN	Pickle at	MACHINE	Finish machine.			
	12		Tractor Works.					
	13	PROTECT	Bore with copper caps and non-case.				NO. OF PCS. PER BOX	20
	14							
	15	CARBURIZE AT	1650-1700°F. in Holcroft Gas		PUSH 32 min.	HOLD		TOTAL 21 hrs.
	16		Carburizer		TIME	TIME		20 min.
	17	DEPTH OF CASE	3/64-1/16"		COOL IN	Box.		QUENCH IN
	18	ANNEAL						
	19	MACHINE						
	20							
	21	HEAT AT	1550-1575°F. in Gas Rotary		PUSH 3 min.	HOLD		TOTAL 1 hr.
	22				TIME	TIME		12 min.
	23	QUENCH IN	Oil.	AT	FOR			
	24							
	25	REHEAT AT	1450-1475°F. in Gas Rotary		PUSH 3 min.	HOLD		TOTAL 1 hr.
	26				TIME	TIME		12 min.
	27	QUENCH IN	Oil.	AT	FOR			
	28		Wash - X					
	29	DRAW (PARTIAL)						
	30		Sand Blast - X					
	31	DRAW AT	300-350°F. in Homo		PUSH	HOLD		TOTAL 1 hr.
	32	(ALL OVER)			TIME	TIME		30 min.
	33	QUENCH IN						
	34		Polish for inspection. (Three teeth)					
	35	REMARKS:						
	36		1. Grind bore and broach splines after heat treatment.					
	37		Bore must be kept soft. Chamfer bore after inspection.					
	38							
	39							
	40							
	41							
	42	BRINELL		ROCKWELL		SHORE		FILE Hard
	43	PHYSICAL AND MICROSCOPIC TESTS						
	44					75-85	Check with file.	
	45							
	46							
	47							

R. E. McGee.
METALLURGIST

HEAT TREAT SPECIFICATION

PART NO 20703-D

12 - 29 1931 Farmall WORKS

NAME Low Speed Sliding Gear.

MATERIAL 1D 3115 FORGING ~~STEEL~~ ~~HR~~ ~~HR~~ SIZE 3-1/8" Rd. NO. PCS. REQUIRED 1WEIGHT PER PIECE
ROUGH 8.5# FINISH 4.6# FOR F-20 Farmall

ITEM NO.	1	HEAT FOR FORGING AT	2100-2300°	IN		TIME	25 min. (Ft. Wayne)
2							
3		FORGE *		QUENCH			
4							
5		DRAW					
6							
7		NORMALIZE AT	1650°	IN	PUSH TIME	HOLD TIME	TOTAL TIME 3 hrs. (Ft. Wayne)
8							15 min. (Wayne)
9		ANNEAL AT					
10							
11		CLEAN Pickle at	MACHINE	Finish machine except broach spline.			
12		Ft. Wayne					
13		PROTECT Both sides with copper caps and			NO. OF PCS. PER BOX		16
14		non case.					
15		CARBURIZE AT	1650-1700°	IN Holcroft Gas	PUSH TIME 32 min.	HOLD TIME	TOTAL TIME 21 hrs.
16				Carburizer			20 min.
17		DEPTH OF CASE	3/64-1/16"	COOL IN	Box.		QUENCH IN
18		ANNEAL					
19		MACHINE					
20							
21		HEAT AT	1550-1575°F.	IN Gas Rotary	PUSH TIME 3 min.	HOLD TIME	TOTAL TIME 1 hr.
22							12 min.
23		QUENCH IN	Oil.	AT	FOR		
24							
25		REHEAT AT	1450-1475°F.	IN Gas Rotary	PUSH TIME 3 min.	HOLD TIME	TOTAL TIME 1 hr.
26							12 min.
27		QUENCH IN	Oil.	AT	FOR		
28		Wash - X					
29		DRAW (PARTIAL)					
30		Sand Blast - X					
31		DRAW AT	300-350°F.	IN Home	PUSH TIME	HOLD TIME	TOTAL TIME 1 hr.
32		(ALL OVER)					30 min.
33		QUENCH IN					
34		Polish for inspection (Three teeth)					
35		REMARKS:					
36		1. Grind bore and broach splines after heat treatment.					
37		Bore must be kept soft. Chamfer bore after inspection.					
38							
39							
40							
41							
42		BRINELL		ROCKWELL		SHORE	FILE Hard
43		PHYSICAL AND MICROSCOPIC TESTS					
44						75-85	Check with file.
45							
46							
47							

R. E. McGee.

METALLURGIST

HEAT TREAT SPECIFICATION

PART NO. 20704-D

12-29 193 1 Farmall WORKS

NAME Reverse Gear

MATERIAL MD 3115 FORGING ~~STEEL~~ ~~STEEL~~ SIZE 3-1/8" Rd. NO. PCS. REQUIRED 1WEIGHT PER PIECE
ROUGH 8.1# FINISH 4.2# FOR F-20 Farmall.

ITEM NO.	1	HEAT FOR FORGING AT	2100-2200°F.	IN		TIME	14 min.	(Ft. Wayne)
2								
3		FORGE *		QUENCH				
4								
5		DRAW						
6								
7		NORMALIZE AT	1650°F.	IN	PUSH TIME	HOLD TIME	TOTAL TIME	3 hrs. (Ft. Wayne)
8								15 min.
9		ANNEAL AT						
10								
11		CLEAN Pickle at		MACHINE	Finish machine except grinding of bore.			
12		Ft. Wayne						
13		PROTECT					NO. OF PCS. PER BOX	24
14								
15		CARBURIZE AT	1650-1700°F.	IN Holcroft Gas	PUSH TIME	HOLD TIME	TOTAL TIME	21 hrs.
16				Carburizer				20 min.
17		DEPTH OF CASE	3/64-1/16"		COOL IN	Box	QUENCH IN	
18		ANNEAL						
19		MACHINE						
20								
21		HEAT AT	1550-1575°F.	IN Gas Rotary	PUSH TIME	HOLD TIME	TOTAL TIME	1 hr.
22								36 min.
23		QUENCH IN	Oil.	AT	FOR			
24								
25		REHEAT AT	1450-1475°F.	IN Gas Rotary	PUSH TIME	HOLD TIME	TOTAL TIME	1 hr.
26								12 min.
27		QUENCH IN	Oil.	AT	FOR			
28		Wash - X						
29		DRAW (PARTIAL)						
30		Sand Blast - X						
31		DRAW AT (ALL OVER)	300-350°F.	IN Homo	PUSH TIME	HOLD TIME	TOTAL TIME	1 hr.
32								30 min.
33		QUENCH IN						
34		Polish for inspection. (Three teeth)						
35		REMARKS:						
36		1. Grind bore after heat treatment.						
37								
38								
39								
40								
41								
42		BRINELL		ROCKWELL		SHORE		FILE Hard
43		PHYSICAL AND MICROSCOPIC TESTS						
44								75-85 Check with file.
45								
46								
47								

R. E. McGee.

METALLURGIST

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 20704-D

HEAT TREAT SPECIFICATION

PART NO. 20714-D

12 - 30 193 1 Farmall WORKS

NAME Power Take Off Shaft Bevel Gear

MATERIAL MD 3115 FORGING ~~SAE~~ ~~SAE~~ SIZE 2 1/4" R.C. Sq. NO. PCS. REQUIRED 1WEIGHT PER PIECE
ROUGH 5.95# FINISH 3.25# FOR F-20 Farmall

ITEM No.	1	HEAT FOR FORGING AT 2250-2300°F.	IN		TIME 25-30 min.	
2					(Tractor Works)	
3	FORGE		QUENCH			
4						
5	DRAW					
6						
7	NORMALIZE AT		IN	PUSH TIME	HOLD TIME	TOTAL TIME
8						
9	ANNEAL AT 1725°F.	for 2 hrs. - 30 min.				(Tractor Works.)
10						
11	CLEAN Pickle at	MACHINE Finish machine except broach splines.				
12		Tractor Works				
13	PROTECT Bore with copper caps and non case.				NO. OF PCS. PER BOX 18	
14						
15	CARBURIZE AT 1650-1700°F.	Holcroft Gas	PUSH TIME 32 min.	HOLD TIME		TOTAL TIME 21 hrs.
16		Carburizer				20 min.
17	DEPTH OF CASE 3/64-1/16"		COOL IN Box.			QUENCH IN
18	ANNEAL					
19	MACHINE					
20						
21	HEAT AT 1550-1575°F.	IN Gas Rotary	PUSH TIME 3 min.	HOLD TIME		TOTAL TIME 1 hr.
22						12 min.
23	QUENCH IN Oil	AT	FOR			
24						
25	REHEAT AT 1450-1475°F.	IN Gas Rotary	PUSH TIME 3 min.	HOLD TIME		TOTAL TIME 1 hr.
26						12 min.
27	QUENCH IN Oil	AT	FOR			
28	Wash - X					
29	DRAW (PARTIAL)					
30	Sand Blast - X					
31	DRAW AT 300-350°F.	IN Home	PUSH TIME	HOLD TIME		TOTAL TIME 1 hr.
32	(ALL OVER)					30 min.
33	QUENCH IN					
34	Polish for inspection. (Three Teeth)					

REMARKS:

- Grind bore and broach after heat treatment. Bore must be kept soft. Chamfer bore after inspection.

BRINELL

ROCKWELL

SHORE

FILE Hard

PHYSICAL AND
MICROSCOPIC
TESTS

75-85 Check with file.

R. E. McGee.

METALLURGIST

HEAT TREAT SPECIFICATION

PART NO. 20715-D

12 - 30 1931 Farmall WORKS

NAME Power Take Off Gear

MATERIAL MD 3115 FORGING ~~XX~~ ~~XX~~ SIZE 6" x 1-3/4" Flat NO. PCS. REQUIRED 1WEIGHT PER PIECE
ROUGH 14.00 FINISH 9.60# FOR F-20 Farmall

ITEM NO. 1 HEAT FOR FORGING AT 2250-2300°F. IN TIME 35-40 min. (Tractor Works)

2

3 FORGE * QUENCH

4

5 DRAW

6

7 NORMALIZE AT IN PUSH TIME HOLD TIME TOTAL TIME

8

9 ANNEAL AT 1725°F. for 2 hrs. - 30 min. (Tractor Works)

10

11 CLEAN Pickle at MACHINE Finish machine except broach splines.

12 Tractor Works.

13 PROTECT Bore with copper caps and non case. NO. OF PCS. PER BOX 5

14

15 CARBURIZE AT 1650-1700°F. Holcroft Gas PUSH TIME 32 min. HOLD TIME TOTAL TIME 21 hrs.

16 Carburizer 20 min.

17 DEPTH OF CASE 3/64-1/16" COOL IN Box. QUENCH IN

18 ANNEAL

19 MACHINE

20

21 HEAT AT 1500-1525°F. IN Elec. Rotary PUSH TIME 3 min. HOLD TIME TOTAL TIME 1 hr.

22 30 min.

23 QUENCH IN Oil ~~XX~~ ~~XX~~ in Gleason Press.

24 Wash - X

25 REHEAT AT IN PUSH TIME HOLD TIME TOTAL TIME

26 Sand Blast - X

27 QUENCH IN AT FOR

28

29 DRAW (PARTIAL)

30

31 DRAW AT 300-350°F. IN Homo PUSH TIME HOLD TIME TOTAL TIME 1 hr.

32 30 min.

33 QUENCH IN

34 Polish for inspection. (Three teeth)

35 REMARKS:

36 1. Grind bore and broach after heat treatment. Bore must be

37 kept soft. Chamfer bore after inspection.

38

39

40

41

BRINELL

ROCKWELL

SHORE

FILE Hard

PHYSICAL AND
MICROSCOPIC
TESTS

75-85 Check with file.

R. E. McGee.
METALLURGIST

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 20715-D

HEAT TREAT SPECIFICATION

PART NO. 15103-DA

1 - 12 193.2 Farmall WORKSNAME Bevel Ring GearMATERIAL MD 3115 FORGING ~~XX~~ ~~XXXX~~ ~~XX~~ SIZE 9" x 1 1/4" Flat NO. PCS. REQUIRED 1WEIGHT PER PIECE
ROUGH 23.0 FINISH 14.06# FOR F-20 Farmall.

ITEM NO.	1	HEAT FOR FORGING AT	2300°F.	IN		TIME	1 hr. (Tractor Wks.)
2							
3		FORGE		QUENCH			
4							
5		DRAW					
6							
7		NORMALIZE AT		IN	PUSH TIME	HOLD TIME	TOTAL TIME
8							
9		ANNEAL AT	1725°F. for 2 hrs - 30 min.				(Tractor Works)
10							
11		CLEAN	Pickle at	MACHINE	Finish machine		
12			Tractor Works.				
13		PROTECT				NO. OF PCS. PER BOX	6
14							
15		CARBURIZE AT	1650-1700°F.	IN Holcroft Gas	PUSH 32 min.	HOLD TIME	TOTAL 21 hrs.
16				Carburizer	TIME	TIME	20 min.
17		DEPTH OF CASE	3/64-1/16"		COOL IN	Box	QUENCH IN
18		ANNEAL					
19		MACHINE					
20							
21		HEAT AT	1525°F.	IN Hagan Rotary	PUSH 32 Min.	HOLD TIME	TOTAL 1 hr.
22					TIME	TIME	30 min.
23		QUENCH IN	Oil	XX	XX Gleason Press		
24		Wash - X					
25		REHEAT AT		IN	PUSH TIME	HOLD TIME	TOTAL TIME
26		Sand Blast - X					
27		QUENCH IN		AT	FOR		
28							
29		DRAW (PARTIAL)					
30							
31		DRAW AT	300-350°F	IN Homo	PUSH TIME	HOLD TIME	TOTAL 1 hr.
32		(ALL OVER)					30 min.
33		QUENCH IN					
34		Polish for inspection (Three Teeth)					
35		REMARKS:					
36							
37							
38							
39							
40							
41							
42		BRINELL		ROCKWELL		SHORE	FILE Hard
43		PHYSICAL AND MICROSCOPIC TESTS				75-85	Check with file.
44							
45							
46							
47							

R. E. McGee.
METALLURGIST

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 15103-DA

HEAT TREAT SPECIFICATION

PART NO 15291-DA

1 - 13 1932 Farmall WORKS

NAME Differential Bevel Gear.

MATERIAL MD 3115 FORGING ~~XXXX~~ ~~XX~~ SIZE 2-1/4" Sq. NO. PCS. REQUIRED 2WEIGHT PER PIECE
ROUGH 7.25# FINISH 4.25# FOR F-20 Farmall and F-12

ITEM NO.	1	HEAT FOR FORGING AT	2300°F.	IN		TIME	1 hr. (Tractor Wks)
2							
3		FORGE		QUENCH			
4							
5		DRAW					
6							
7		NORMALIZE AT	1600-1650°	IN Hagan Normalizer	PUSH TIME	12 min.	HOLD TIME
8							TOTAL TIME
9		ANNEAL AT					3 hrs. 12 mins.
10							
11		CLEAN	Rattle	MACHINE	Finish machine except spline.		
12							
13		PROTECT Bore with copper caps and non-case.					NO. OF PCS. PER BOX
14							20
15		CARBURIZE AT	1650-1700°	IN Holcroft Gas Carburizer	PUSH TIME	32 min.	HOLD TIME
16							TOTAL TIME
17		DEPTH OF CASE	1/32 - 3/64"		COOL IN	Box	QUENCH IN
18		ANNEAL					
19		MACHINE					
20							
21		HEAT AT	1550-1575°F.	IN Gas Rotary	PUSH TIME	3 min.	HOLD TIME
22							TOTAL TIME
23		QUENCH IN	Oil	AT	FOR		1 hr. 12 Min.
24							
25		REHEAT AT	1450-1475°F.	IN Gas Rotary	PUSH TIME		HOLD TIME
26							TOTAL TIME
27		QUENCH IN	Oil	AT	FOR		1 hr. 12 Min.
28		Wash - X					
29		DRAW (PARTIAL)					
30		Sand Blast - X					
31		DRAW AT (ALL OVER)	300-350°F.	IN Homo	PUSH TIME		HOLD TIME
32							TOTAL TIME
33		QUENCH IN	Water				1 hr. 30 min.
34		Polish for inspection (Three teeth.)					

REMARKS:

1. Broach splines after heat treatment. Bore must be kept soft.
2. Chamfer after inspection for hardness of bore.

41	BRINELL	ROCKWELL	SHORE	FILE Hard
42				
43	PHYSICAL AND MICROSCOPIC TESTS		75-85	Check with file.
44				
45				
46				
47				

R. E. McGee.

METALLURGIST

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 15291-DA

HEAT TREAT SPECIFICATION

PART NO. 15350-D

1 - 13 1932 Farmall WORKSNAME Differential PinionMATERIAL MD 3115 FORGING~~XXX~~~~CRACK~~~~95x~~SIZE 1-3/4" Rd.NO. PCS.
REQUIRED

4

WEIGHT PER PIECE

ROUGH 2.00# FINISH 0.87# FOR F-12 and F-20 Farmall.ITEM
NO.1 HEAT FOR FORGING AT 2300°F. IN TIME 1 hr. (Tractor Wks.)2
3 FORGE QUENCH4
5 DRAW6
7 NORMALIZE AT 1650-1650° IN Hagan Normal-izer PUSH TIME 12 min. HOLD TIME TOTAL TIME 3 hrs.
8 12 min.

9 ANNEAL AT

10
11 CLEAN Rattle MACHINE Finish machine.12
13 PROTECTNO. OF PCS.
PER BOX 6414
15 CARBURIZE AT 1650-1700° IN Holcroft Gas Carburizer PUSH TIME 32 Min. HOLD TIME TOTAL TIME 21 hrs.
16 20 min.17 DEPTH OF CASE 1/32 - 3/64" COOL IN Box

18 ANNEAL

19 MACHINE

20
21 HEAT AT 1525°F. IN Gas Rotary PUSH TIME 3 min. HOLD TIME TOTAL TIME 1 hr.
22 12 min.23 QUENCH IN Oil AT FOR24
25 REHEAT AT

26 IN PUSH TIME HOLD TIME TOTAL TIME

27 QUENCH IN AT FOR

28 Wash - X

29 DRAW (PARTIAL)

30 Sand Blast - X

31 DRAW AT 300-350°F. IN Homo PUSH TIME HOLD TIME TOTAL TIME 1 hr.
32 30 min.

33 QUENCH IN

34 Polish for inspection. (Three teeth)

35 REMARKS:

36

37

38

39

40

41

42 BRINELL

ROCKWELL

SHORE

FILE Hard

43 PHYSICAL AND
44 MICROSCOPIC
45 TESTS

75-85 Check with file.

46

47

R. E. McGee.

METALLURGIST

HEAT TREAT SPECIFICATION

PART No 23306-D

8 - 3 193 3 Farmall WORKS

NAME Drive Pinion

MATERIAL MD 3115 FORGING HK
~~STEEL~~ ~~XX~~ SIZE 2-7/8" Rd. NO. PCS. REQUIRED 2

WEIGHT PER PIECE

ROUGH 5.81# FINISH 2.81# FOR F-20 Farmall

ITEM NO.

1 HEAT FOR FORGING AT 2100-2200°F. IN TIME 15 min. (Ft. Wayne)

2

3 FORGE * QUENCH

4

5 DRAW

6

7 NORMALIZE AT 1650°F. IN PUSH TIME HOLD TIME TOTAL TIME 3 hrs.
8 15 min. (Ft. Wayne)

9

9 ANNEAL AT

10

11 CLEAN Pickle at MACHINE Finish machine except spline.
12 Ft. Wayne

13 PROTECT Bore with copper caps and non case NO. OF PCS. PER BOX 27

14

15 CARBURIZE AT 1650-1700°F. Holcroft Gas PUSH 32 min. HOLD TIME TOTAL TIME 21 hrs.
16 Carburizer 20 min.

17

17 DEPTH OF CASE 3/64-1/16" COOL IN Box. QUENCH IN

18

18 ANNEAL

19

19 MACHINE

20

21 HEAT AT 1550-1575°F. IN Gas Rotary PUSH 3 min. HOLD TIME TOTAL TIME 1 hr.
22 12 min.

23

23 QUENCH IN Oil AT FOR

24

25 REHEAT AT 1450-1475°F. IN Gas Rotary PUSH 3 min. HOLD TIME TOTAL TIME 1 hr.
26 12 min.

27

27 QUENCH IN Oil AT FOR

28

28 Wash - X

29

29 DRAW (PARTIAL)

30

30 Sand Blast - X

31

31 DRAW AT 300-350°F. IN Homo PUSH TIME HOLD TIME TOTAL TIME 1 hr.
32 30 min.

33

33 QUENCH IN

34

34 Polish for inspection. (Three teeth)

35

35 REMARKS:

36

36 1. Broach after heat treatment. Bore must be kept soft.
37 2. Chamfer after inspection for hardness of bore.

38

39

40

41

42

43

44

45

46

47

BRINELL

ROCKWELL

SHORE

FILE Hard

PHYSICAL AND
MICROSCOPIC
TESTS

75-90 Check with file.

R. E. McGee.
METALLURGIST

HEAT TREAT SPECIFICATION

PART NO. 26422-D

12 - 15 193 3 Farmall WORKSNAME Drive GearMATERIAL MD 3147 FORGING HX GE SIZE NO. PCS. REQUIRED 2WEIGHT PER PIECE
ROUGH 49.5 FINISH 28.5 FOR F-20 Farmall

ITEM NO.	DESCRIPTION	IN	PUSH TIME	HOLD TIME	TOTAL TIME
1	HEAT FOR FORGING AT				
2					
3	FORGE				
4					
5	DRAW				
6					
7	NORMALIZE AT	IN			
8					
9	ANNEAL AT <u>1700°F.</u> at Tractor Works.				
10					
11	CLEAN <u>Pickled</u> MACHINE <u>Finish machine.</u>				
12					
13	PROTECT				
14					
15	CARBURIZE AT	IN			
16					
17	DEPTH OF CASE		COOL IN		QUENCH IN
18	ANNEAL				
19	MACHINE				
20					
21	HEAT AT <u>1525-1550°F.</u> IN <u>Lead Pot</u>				
22					
23	QUENCH IN <u>Gleason Press</u>		FOR		
24					
25	REHEAT AT	IN			
26					
27	QUENCH IN	AT	FOR		
28	<u>Wash - X</u>				
29	DRAW (PARTIAL)				
30					
31	DRAW AT <u>650°F.</u> IN <u>Homo</u>				
32	(ALL OVER)				
33	QUENCH IN				
34	<u>Sand Blast. - X</u>				
35	REMARKS:				
36					
37					
38					
39					
40					
41					
42	BRINELL	ROCKWELL	SHORE	FILE	
43	PHYSICAL AND MICROSCOPIC TESTS				
44					
45	<u>Brin. 461-534.</u>				
46					
47					

R. E. McGee.

METALLURGIST

FOR CHANGES, SEE REVERSE SIDE.

PART NO. 26422-D