Technical Manual

DRAWING NO. 564B767 | SHEET NO. 1 | DBT AMERICA | P.O. BOX 1879 COLS. OHIO 43216

REVISIONS
GIVE MK.-INITALS-DATE
A MK-5669S ROLFE 5-21-02
B MK-42 REH 03/13/03
C GRPS 3,4, REH 06/06/03
D MK-111 RPZ 11/12/03

DRAWN D ROLFE DATE 10-30-01 DIRECTED R.ZYCH
CHECKED DMR DATE 10-30-01 APPROVED
FOR METHODS CHECK-SEE DWGS: 563B104

9	8	7	6	5	4	3	2	1	GR.	MAT'L.	MK.	DESCRIPTION	CAT. NO.	ORIG. DRW.	MK.
								X			1	R.H. TRAM GEAR CASE ASS'Y.	492177		
							X				2	L.H. TRAM GEAR CASE ASS'Y.	492178		
						1		1			3	R.H. TRAM GEAR CASE MACHINING	492175	564G768	1
					1		1				4	L.H. TRAM GEAR CASE MACHINING	492176	564G776	1
					-	-	-	-	REF.		5	MOTOR,TRAM DRIVE	-	-	
					1	1	1	1			6	TRAM DRIVE SHAFT	492183	564G818	1
					1	1	1	1			7	SEAL CARRIER	486705	549F288	1
					1	1	1	1			8	CRAWLER PLANETARY ASSEMBLY	492185	564B822	1
					1	1	1	1			9	7T CRAWLER DRIVE SPROCKET COMP.	492190	564G812	1
					1	1	1	1			10	51T GEAR	486617	549F328	1
					1	1	1	1			11	44T IDLER GEAR	486618	549F329	1
					1	1	1	1			12	15T PINION	486619	549F330	1
					1	1	1	1			13	RING GEAR	492181	564G815	1
					1	1	1	1			14	INPUT PLANET CARRIER ASSEMBLY	486652	549B350	1
					1	1	1	1			15	BEARING CARRIER	486620	549F351	1
					1	1	1	1			16	IDLER SHAFT	486621	549F352	1
					1	1	1	1			17	SHIM .020 THK.	486622	549F353	1
					3	3	3	3			18	SHIM .007 THK.	486623	549F353	2
					4	4	4	4			19	SHIM .005 THK.	486624	549F353	3
					1	1	1	1			20	SHIM .020 THK.	486625	549F353	4
					3	3	3	3			21	SHIM .007 THK.	486626	549F353	5
					3	3	3	3			22	SHIM .005 THK.	486627	549F353	6
					1	1	1	1			23	BEARING CARRIER	486750	549F354	1
					1	1	1	1			24	BEARING CARRIER	486751	549F355	1
					1	1	1	1			25	TRAM MOTOR QUILL SHAFT	492184	564G819	1
					1	1	1	1			26	SUN GEAR FINISHED	492182	564G816	1
					1	1	1	1			27	SHIM .020 THK.	486754	549F575	1
					3	3	3	3			28	SHIM .007 THK.	486755	549F575	2
					4	4	4	4			29	SHIM .005 THK.	486756	549F575	3
					1	1	1	1			30	RETAINER PLATE	486757	549F576	1
					1	1	1	1			31	COVER PLATE	492011	562G148	1
					1	1	1	1			32	GASKET FOR MK-31	492012	562G148	2
					1	1	1	1			33	SPHERICAL ROLLER BRG.SKF *23938CAC/W33	70791	521.220	P5
					2	2	2	2			34	BEARING CONE TIMKEN* 39590	62688	521.710	P5
					2	2	2	2			35	BEARING CUP TIMKEN* 39520	402665	521.710	P5
					2	2	2	2			36	BEARING CONE TIMKEN* 598	70799	521.710	P7
					2	2	2	2			37	BEARING CUP TIMKEN* 592A	158143	521.710	P7
					2	2	2	2			38	BEARING CONE TIMKEN* 48290	62956	521.710	P8
					2	2	2	2			39	BEARING CUP TIMKEN* 48220	62957	521.710	P8
					1	1	1	1			40	EXTERNAL RETAINING RING TRUARC*5100-250	170937	527.712	P1

DISTR. CODE SEE STD. 110.118 | STD: | SPECIAL: A | 12 | ENG. SEC. B | ORDER NO. -

SHOW TOTAL NUMBER OF SHEETS ON SHEET 1 ONLY

TITLE: TRAM GEAR CASE ASSEMBLY | DRAWING NO. 564B767 | SHEET NO. 1 OF 3 SHEETS

DRAWING NO. 564B767 | SHEET NO. 2 | DBT AMERICA | P.O. BOX 1879 COLS. OHIO 43216

REVISIONS: A B C D

DRAWN ROLFE DATE 10-30-01 DIRECTED R.ZYCH
CHECKED DMR DATE 10-30-01 APPROVED
FOR METHODS CHECK-SEE DWGS: 563B104

9	8	7	6	5	4	3	2	1	GR.	MAT'L.	MK.	DESCRIPTION	CAT. NO.	ORIG. DRW.	MK.
					1	1	1	1			41	INTERNAL RETAINING RING TRUARC*N5000-362	70800	527.712	P1
											42				
					1	1	1	1			43	3/16 X 4 3/8 O.D. "O"RING PARKER* 2-345	68818	531.462	P6
					1	1	1	1			44	3/16 X 5 1/2 O.D. "O"RING PARKER* 2-354	69470	531.462	P6
					1	1	1	1			45	3/16 X 10 7/8 O.D. "O"RING PARKER* 2-378	68207	531.462	P6
					=	=	=	=			46	1/8 X 8" O.D. "O"RING PARKER* 2-265	166356	531.462	P5
					1	1	1	1			47	1/4 X 10 1/2 O.D. "O"RING PARKER* 2-449	68797	531.462	P7
					1	1	1	1			48	1/4 X 13 1/2 O.D. "O"RING PARKER* 2-456	68561	531.462	P7
					1	1	1	1			49	1/4 X 14 1/2 O.D. "O"RING PARKER* 2-457	68766	531.462	P7
					1	1	1	1			50	1/2 X 1"LG. HARDENED DOWEL PIN	66084	561.533	P1
					1	1	1	1			51	1" X 4"LG. HARDENED DOWEL PIN	63659	561.533	P1
					14	14	14	14	GRD 5		52	1/2-13 X 1 1/4 LG. H.H.C.S. DRILLED HD.	68019	C-68019	1
					6	6	6	6	GRD 5		53	5/8-11 X 1 1/2 LG. H.H.C.S.	67795	561.321	P3
					10	10	10	10			54	1/2-13 X 1 1/4 LG. NYLOC S.H.C.S.	70641	561.328	P1
					33	33	33	33			55	3/4-10 X 1 3/4 LG. NYLOC S.H.C.S.	70803	561.328	P1
					18	18	18	18			56	3/4-10 X 5 1/2 LG. NYLOC S.H.C.S.		564A842	3
					18	18	18	18			57	3/4-10 X 8 1/2 LG. NYLOC S.H.C.S.	70802	561.328	P1
					6	6	6	6			58	5/8 SPRING LOCKWASHER	23356	561.731	P1
											59				
											60				
					1	1	1	1			61	1/8 RELIEF FITTING ALEMITE* 47200	67698	531.511	P4
					1	1	1	1		•169	62	•14 GAGE X 5'-0" LG. LOCKWIRE			
					1	1	1	1		DRG	63	LOCKWIRE INSTRUCTIONS		511A060	
								1		DRG	64	R.H.TRAM GEAR CASE ASSEMBLY DRG.		564GB04	
								1		DRG	65	R.H. SECTION A-A		564GB05	
								1		DRG	66	R.H. VIEW B-B		564GB06	
								1		DRG	67	R.H. SECTION C-C		564GB07	
							2	2			68	1"-8 X 3" LG. SOCKET HEAD CAP SCR	66887	561.327	P1
								1		DRG	69	L.H.TRAM GEAR CASE ASSEMBLY DRG.		564GB08	
								1		DRG	70	L.H. SECTION A-A		564GB09	
								1		DRG	71	L.H. VIEW B-B		564GB10	
								1		DRG	72	L.H. SECTION C-C		564GB11	
					1	1	1	1			73	3/4" SOCKET HEAD PIPE PLUG (MAGNETIC)	70592	553.471	P3
					2	2	2	2			74	DUO-CONE SEAL	4B7095	C487095	1
					3	3	3	3			75	1/2" SOCKET HEAD PIPE PLUG (NPTF)	63145	553.471	P1
					4	4	4	4			76	1/4" SOCKET HEAD PIPE PLUG (NPTF)	63143	553.471	P1
					4	4	4	4			77	1" HARDENED STEEL WASHER	67000	561.716	P1
					2	2	2	2			78	1"-8 X 4" LG. SOCKET HEAD CAP SCR	66890	561.327	P1
								—		REBUILD	79	R.H.TRAM GEAR CASE ASSEMBLY REBUILD	492179		
								—		REBUILD	80	L.H.TRAM GEAR CASE ASSEMBLY REBUILD	492180		

DISTR. CODE SEE STD. 110.118 | STD: | SPECIAL: A | 12 | ENG. SEC. B | ORDER NO.

SHOW TOTAL NUMBER OF SHEETS ON SHEET 1 ONLY

TITLE: TRAM GEAR CASE ASSEMBLY | DRAWING NO. 564B767 | SHEET NO. 2 OF 3 SHEETS

DRAWING NO. 564B767 | SHEET NO. 3 | DBT AMERICA | PO BOX 1879 COLS. OH 43216

REVISIONS: A B C D

DRAWN ROLFE DATE 10/30/01 DIRECTED R.ZYCH
CHECKED DMR DATE 10/30/01 APPROVED
FOR METHODS CHECK-SEE DWGS: 563B104

9	8	7	6	5	4	3	2	1	GR.	MAT'L.	MK.		CAT. NO.	ORIG. DRW.	MK.
					1	1	1	1			81	OIL LEVEL SIGHT GLASS (1" NPT)	499004	551A574	3
					1	1	1	1			82	1/8" X 4-3/8" O.D. "O"RING *2-243	64514	531.462	P4
					1	1	1	1			83	BEARING RETAINER	491472	5576594	1
					6	6	6	6		GRD 5	84	1/2"-13 X 1" LG HEX HEAD CAP SCR (SPCL)	438855	561.320	P2
					1	1	1	1			85	3/4" SOCKET HEAD PIPE PLUG (NPTF)	63146	553.471	P1
					2	2	2	2			86	39590/39520 MICROPOLY BEARING SET	70939	C70939	1
					3	3	3	3			87	.005 SHIM	491478	5576588	4
					3	3	3	3			88	.007 SHIM	491479	5576588	5
					1	1	1	1			89	.020 SHIM	491480	5576588	6
					1	1	1	1			90	15T 4P IDLER	491467	5576590	1
							2	2			91	CLAMP BAR	492186	564GB20	1
							=	=			92	SNAP RING (RELIANCE P/N 418057-62-A)			
							=	=			93	SHAFT PLUG (RELIANCE P/N 418057-278-A)			
							=	=			94	O-RING FOR MK-93 SHAFT PLUG (RELIANCE P/N 35500-18-FV)			
					1	1	1	1			95	TRAM MOTOR WATER PIPING		566G374	1
											96				
					2	2				GRD 8	97	1"-8 X 2-3/4" LG HEX HEAD CAP SCR	71386	561.321	P3
					2	2					98	CLAMP BAR		567G945	1
							X				99				
							X				100	R.H. TRAM GEAR CASE ASS'Y.			
					X						101	L.H. TRAM GEAR CASE ASS'Y.			
						1				DRG	102	R.H.TRAM GEAR CASE ASSEMBLY DRG.		568G046	
						1				DRG	103	R.H. SECTION A-A		568G047	
						1				DRG	104	R.H. VIEW B-B		568G048	
						1				DRG	105	R.H. SECTION C-C		568G049	
					1					DRG	106	L.H.TRAM GEAR CASE ASSEMBLY DRG.		568G050	
					1					DRG	107	L.H. SECTION A-A		568G051	
					1					DRG	108	L.H. VIEW B-B		568G052	
					1					DRG	109	L.H. SECTION C-C		568G053	
											110				
					=	=	=	=			111	TRAM SPROCKET REPAIR KIT		568G600	1
											112				
								1	1	DRG	113	TRAM CASE ASSM INSTRUCTIONS MK-1,2		568A601	
											114				
					1	1				DRG	115	TRAM CASE ASSM INSTRUCTIONS MK-100,101		568A602	
											116				
											117				
											118				
											119				
											120				

DISTR. CODE SEE STD. 110.118 | STD: | SPECIAL: A | 12 | ENG. SEC. B | ORDER NO.

SHOW TOTAL NUMBER OF SHEETS ON SHEET 1 ONLY

TITLE: TRAM GEAR CASE ASSEMBLY | DRAWING NO. 564B767 | SHEET NO. 3 OF 3 SHEETS

REVISIONS		
REV	DESCRIPTION (ZONE-WAS-BY-DATE)	
A		

DRAWING NUMBER 564G823 SHEET

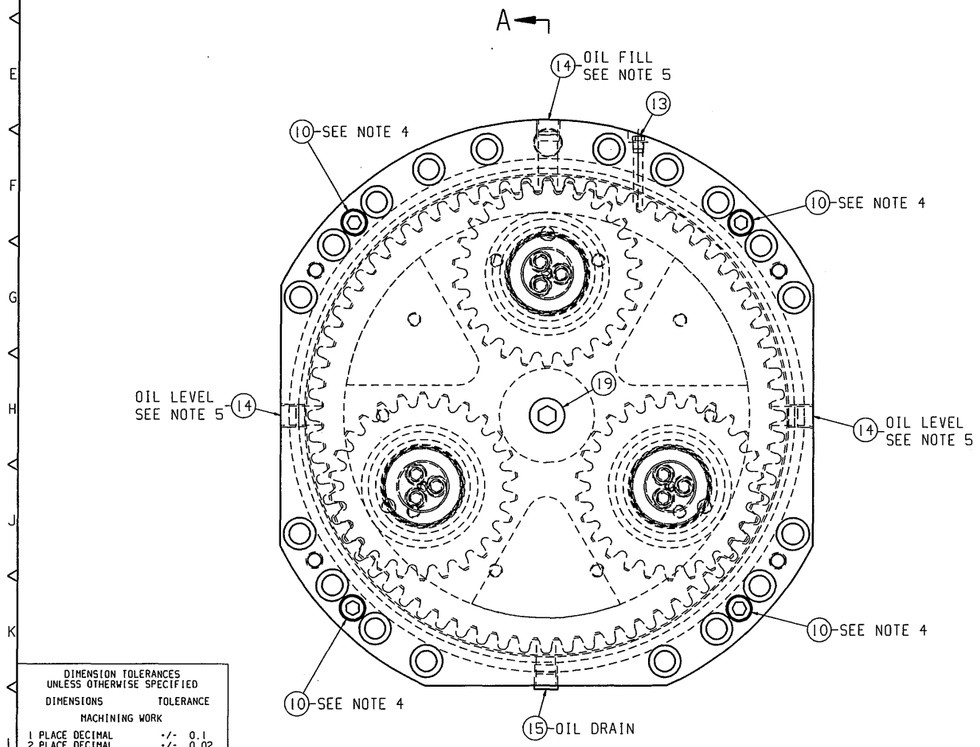
DBT AMERICA
PO BOX 1879, COLUMBUS, OHIO 43216

CRAWLER PLANETARY ASSEMBLY
30M MINER

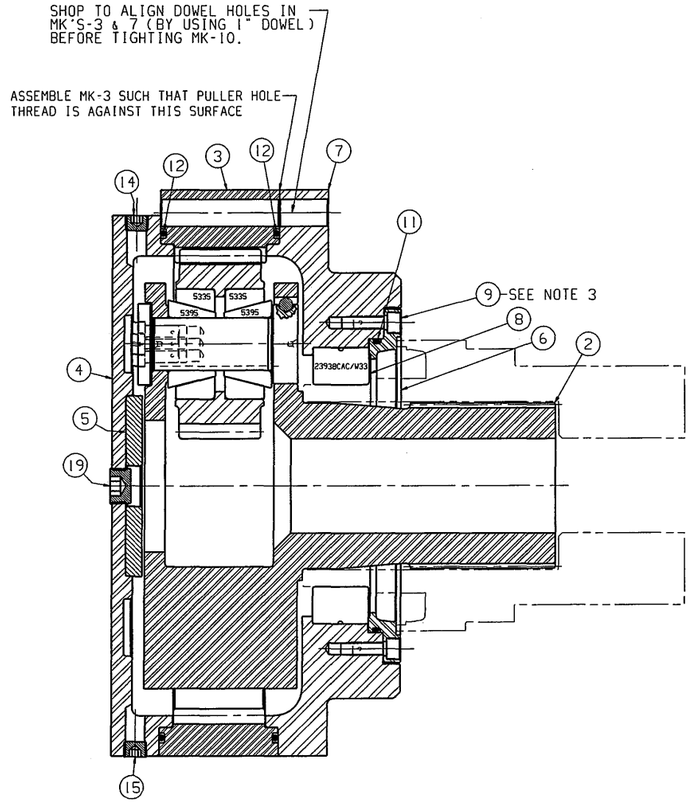
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

SCALE	1:2	DO NOT SCALE DRAWING		
DRAWN BY	ROLFE	DATE 10-29-01	DIRECTED R.ZYCH	CUST.
CHECKED	DMR	DATE 10-29-01	APPROVED	ORDER NO.

NOTES:
1. FOR IDENTIFICATION OF MARK NUMBERS SEE DRAWING 564B822.
2. BEFORE ASSEMBLY ALL PARTS ARE TO BE CLEANED OF ANY SUBSTANCE PLACED ON THEM BY VENDOR.
3. TORQUE ALL 1/2 SOCKET HEAD CAP SCREWS MK-9 TO 89 FT-LBS (121 N-M).
4. TORQUE ALL 5/8 SOCKET HEAD CAP SCREWS MK-10 TO 172 FT-LBS (233 N-M).
5. MK-14 PIPE PLUGS MUST BE FLUSH WITH MK-4 COVER.



MK-1
487 LBS



SECTION A-A

DIMENSION TOLERANCES UNLESS OTHERWISE SPECIFIED

DIMENSIONS	TOLERANCE
MACHINING WORK	
1 PLACE DECIMAL	+/- 0.1
2 PLACE DECIMAL	+/- 0.02
3 PLACE DECIMAL	+/- 0.005
STANDARD SURFACE FINISH 250 MICRO BREAK ALL SHARP EDGES TO 1/64 X 45°	
WELDING WORK	
UNDER 30" LONG	+/- 1/16
30" TO UNDER 60" LONG	+/- 1/8
60" LONG AND OVER	+/- 3/16

FLAME CUTTING	UNDER 6 FEET	6 FEET AND OVER
3/16" TO 1" THK	+/- 1/16	+/- 3/32
1" TO 4" THK	+/- 3/32	+/- 1/8
4" THK & OVER	+/- 1/8	+/- 3/16

FOR METHODS CHECK SEE DRAWING 549F293 | DIST. CODE SEE STD 110-110 | STANDARD A | SPECIAL 1 2 | SECTION B | DRAWING NUMBER 564G823 | SHEET

REVISIONS		
ZONE	DESCRIPTION (ZONE-WAS-BY-DATE)	
A	E-4: 0.375 +.005 -.005	
	G-13 REMOVED: ⌖ .005 |A+B|	
	ROLFE 5-7-91	
B	E-4 WAS 0.0375	
	RSS 11/6/91	
C	A-3. WAS 0.625.	
	A-4. WAS 0.025.	
	B-7. WAS 0.0042.	
	A-9. WAS 2.6641 & 0.3863, 7.0943 & 7.0848, & 17.2292	
	A-13. WAS 8620H.	
	E-15. WAS 21.97.& 17.23	
	SKC. 5-15-92	
D	B-10 WAS 17.2714	
	GEO 2/9/94	

3.000 REF
1.500

0.0025 TO
0.0035 TYP

CROWN PROFILE

VIEW B-B

TYPE OF GEAR	EXTERNAL SPUR INVOLUTE
NO. OF TEETH	26 DIAMETRAL PITCH 4
TYPE OF TEETH	FULL DEPTH
TYPE OF ROOT	FULL FILLET
PRESSURE ANGLE	25° HOB POSITION 0.000
ADDENDUM	0.2500 WHOLE DEPTH (APPROX.) 0.5625
OUTSIDE DIAMETER (SPECIAL?)	NO 7.0000
BASE CIRCLE DIAMETER	5.8910
TOOTH THICKNESS REDUCTION FOR BACKLASH	0.0062
IDENTIFICATION OF MATING GEAR	
CAT. NO. 486638	DRG. NO. 549F282 MK. 1
CAT. NO. 486665	DRG. NO. 549F284 MK. 1
CENTER DISTANCE	5.2500

INSPECTION DATA (AFTER HEAT TREATMENT)	
SPAN MEASUREMENT OF 4 TEETH (ALLOWABLE VARIATION ON ANY ONE GEAR 0.001 MAX)	2.6623 +0.0000 -0.0049
CHORDAL ADDENDUM	0.2558
CHORDAL THICKNESS	0.3863 +0.0000 - 0.0049
MEASUREMENT OVER 0.4320 DIAMETER PINS	7.0904
	7.0809
ROLL ANGLE TO START OF ACTIVE PROFILE	14.27
CENTER DISTANCE WITH - TOOTH MASTER GEAR N/A	
AGMA CLASS #8 GEAR PER AGMA 309.03 JAN 1973	
AGMA CLASS #6 FOR LEAD TOLERANCE ONLY	
RUNOUT TOLERANCE	0.0046
PITCH TOLERANCE	0.0011
TOOTH PROFILE TOLERANCE	0.0016
LEAD TOLERANCE	0.0015
TOOTH TO TOOTH COMPOSITE TOLERANCE	0.0018
TOTAL COMPOSITE TOLERANCE	0.0063

CARBURIZE CASE HEAT TREAT SPECIFICATIONS
SPECIFY AREA TO BE HEAT TREATED: GEAR TEETH ONLY

REFER TO DETAIL/MK 001 FOR PATTERN.

CARBURIZE TO EFFECTIVE CASE DEPTH OF .040-.055 INCH AT 50 HRC.
NO DECACBURIZATION.
QUENCH & TEMPER (HARDEN) TO SURFACE HARDNESS OF 60-64 HRC AND CORE HARDNESS 32-42 HRC.
COLD TREAT & RE-TEMPER YES/NO YES

SIGNATURE:

NOTES
1. NO FINISHING OF TOOTH PROFILE AFTER HEAT TREAT

DRAWING NO. 549F283 SHEET X

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DRESSER Construction & Mining Equipment
JEFFREY DIVISION, Mining Machinery
Post Office Box 1879 Columbus, Ohio 43216

TITLE
26T 4P PLANET GEAR
1026 HH MINER

SCALE 1.00•1.00 DO NOT SCALE DRAWING

DRAWN ROLFE	DATE 12-5-90	DIRECTED SHERREN	CUST.
CHECKED BY D.ROLFE	DATE 12-4-90	APPROVED	ORDER NO. 5907

QUANT.	MATERIAL	MK	DESCRIPTION	CAT.NO.	ORIG.DRG.	MK
X		1	26T 4P PLANET GEAR	486664		
1	4820H	2	GEAR FORGING #98569		549F322	1
		3				
		4				
		5				

GR MACHINE 1026 CLASS 5498290 FIRST USED

125 3.250 +.000 -.005 125
3.000 +.000 -.005 0.125
.010 C .010 C .010 C .010 C
1.437 +.005 -.000
B A 0.375 +.005 -.000
.002 A -C-
.002 B
.06 X 45° CHAMFER 2 PLACES
0.06 R 0.06 R
4.56 DIA +.0010 -.0000 DIA
4.0605 +.0010 -.0000 DIA
3.50 DIA
4.56 DIA +.0010 -.0000 DIA
4.0605 +.000 -.005 DIA
125 125
-B- .002 A
63 63
-A-
0.12 R 0.12 R
B B

SECTION A-A

50 TOOTH FACE
125 ROOT AREA (MUST BE FREE FROM NOTCHES OR STEPS)

BREAK EDGES AND REMOVE ALL BURRS ON GEAR TEETH. 1/64 MIN. TO 1/16 MAX.

A

6.5000 PITCH DIA.
Ø.005 A
A

STAMP DATE CODE AND STEEL GRADE HERE.

STAMP "J" TRADEMARK AND CAT. NO. 486664 HERE.

A

MK-1
18 LBS

.00150
.0008
.0008
0.D. 36.77
S.T.R. 33.15
PROFILE

ROLL ANGLES IN DEGREES — TIP RELIEF ON PLANET GEAR TEETH

S.T.R. 33.15
B 29.93
O.P.D. 26.72
.0008 HALF OF TOOTH PROFILE TOLERANCE
A 20.49
S.A.P. 14.27
0.0016 TOOTH PROFILE TOLERANCE

ROLL ANGLES IN DEGREES

ALLOWABLE VARIATION FROM INVOLUTE OF PLANET GEAR TEETH

DIMENSION TOLERANCES UNLESS OTHERWISE SPECIFIED

MACHINE WORK

DIMENSIONS	TOLERANCE
1 PLACE DECIMAL	+/- .1
2 PLACE DECIMAL	+/- .02
3 PLACE DECIMAL	+/- .005

WELDMENTS		MACHINING ROUGHNESS
UNDER 30 LG	+/- 1/16	
30 TO UNDER 60 LG	+/- 1/8	250 MICRO
60 LG AND OVER	+/- 3/16	

FLAME CUTTING	UNDER 6 FT	6 FT & OVER
.18 TO .99 THK	+/- 1/16	+/- 3/32
1.00 TO 3.99 THK	+/- 3/32	+/- 1/8
4.00 & OVER THK	+/- 1/8	+/- 3/16

BREAK ALL SHARP EDGES TO 1/64 X 45°

FOR METHODS CHECK-SEE DRG | DISTR. CODE SEE STD. MTD. 110 | STD: | SPECIAL: | ENG. SECT. B | DRAWING NUMBER 549F283 | REV. NO.

180788

DRAWING NUMBER 564B940 | SHEET 1

DBT AMERICA

P.O. BOX 1879
COLS. OHIO 43216

	ORDER	ORDER	ORDER	ORDER	ORDER	ORDER	ORDER	ORDER	USED ON
	30M	30M	30M	30M	30M	30M	30M	30M	CLASS
	MINER	MINER	MINER	MINER	MINER	MINER	MINER	MINER	MACHINE
	9	8	7	6	5	4	3	2	1	GR

REVISIONS

	GIVE MK-INITALS-DATE
A	CHANGED MK-87 FRITZ COLE 5-2-02
B	ADDED MKS-12 & 84 MK-65 QTY REMOVED. MK-140 DMR 11-15-03

DRAWN COLE DATE 9/24/01 | DIRECTED ZYCH
CHECKED COLE DATE 9/24/01 | APPROVED

FOR METHODS CHECK SEE 560B461

QUANTITY								MAT'L	MK	DESCRIPTION	CAT NO	ORIG DRG	MK
							X		1	LH INPUT GEARCASE ASSY (2.86 RATIO)	492115		
							X		2	RH INPUT GEARCASE ASSY (2.86 RATIO)	492116		
									3				
						X			4	LH INPUT GEARCASE ASSY (3.07 RATIO)	492117		
					X				5	RH INPUT GEARCASE ASSY (3.07 RATIO)	492118		
									6				
				X					7	LH INPUT GEARCASE ASSY (3.32 RATIO)	492119		
			X						8	RH INPUT GEARCASE ASSY (3.32 RATIO)	492120		
									9				
		X							10	LH INPUT GEARCASE ASSY (3.57 RATIO)	492151		
	X								11	RH INPUT GEARCASE ASSY (3.57 RATIO)	492152		
	1	1	1	1	1	1	1		12	ASSEMBLY INSTRUCTIONS		568A605	
									13				
								DRG	14	LH CUTTING HD INPUT GEARCASE ASSY		564G941	
								DRG	15	LH CUTTING HD INPUT GEARCASE ASSY		564G942	
									16				
								DRG	17	RH CUTTING HD INPUT GEARCASE ASSY		564G943	
								DRG	18	RH CUTTING HD INPUT GEARCASE ASSY		564G944	
									19				
								DRG	20	LH CUTTING HD INPUT GEARCASE ASSY		564G945	
								DRG	21	LH CUTTING HD INPUT GEARCASE ASSY		564G946	
									22				
								DRG	23	RH CUTTING HD INPUT GEARCASE ASSY		564G947	
								DRG	24	RH CUTTING HD INPUT GEARCASE ASSY		564G948	
									25				
								DRG	26	LH CUTTING HD INPUT GEARCASE ASSY		564G949	
								DRG	27	LH CUTTING HD INPUT GEARCASE ASSY		564G950	
									28				
								DRG	29	RH CUTTING HD INPUT GEARCASE ASSY		564G951	
								DRG	30	RH CUTTING HD INPUT GEARCASE ASSY		564G952	
									31				
								DRG	32	LH CUTTING HD INPUT GEARCASE ASSY		564G207	
								DRG	33	LH CUTTING HD INPUT GEARCASE ASSY		564G208	
									34				
								DRG	35	RH CUTTING HD INPUT GEARCASE ASSY		564G209	
								DRG	36	RH CUTTING HD INPUT GEARCASE ASSY		564G210	
									37				
									38				
									39	LH CUTTING HD INPUT GEARCASE MACHINING		564G419	1
									40	RH CUTTING HD INPUT GEARCASE MACHINING		564G413	1

DISTR CODE SEE STD 110.118 | STANDARD A | SPECIAL 1 2 | ENG SEC B | ORDER NO

TITLE: CUTTING HEAD INPUT GEARCASE ASSY | DRAWING NUMBER 564B940 | SHEET 1 | OF 4

DRAWING NUMBER 564B940 | SHEET 2

DBT AMERICA

P.O. BOX 1879
COLS. OHIO 43216

	ORDER	ORDER	ORDER	ORDER	ORDER	ORDER	ORDER	ORDER	USED ON
	30M	30M3	30M	30M3	30M	30M3	30M	30M3	CLASS
	MINER	MINER	MINER	MINER	MINER	MINER	MINER	MINER	MACHINE
	9	8	7	6	5	4	3	2	1	GR

REVISIONS

A B

DRAWN COLE DATE 9/24/01 | DIRECTED ZYCH
CHECKED COLE DATE 9/24/01 | APPROVED

FOR METHODS CHECK SEE 560B461

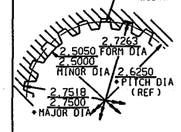
QUANTITY								MAT'L	MK	DESCRIPTION	CAT NO	ORIG DRG	MK
									41				
2	2	2	2	2	2	2	2		43	BEARING,CONE 5583	71379	521.710	PG4
2	2	2	2	2	2	2	2		44	BEARING,CUP 5535	62722	521.710	PG4
									45				
2	2	2	2	2	2	2	2		46	BEARING,CONE 42690	70822	521.710	PG6
2	2	2	2	2	2	2	2		47	BEARING,CUP 42620	68793	521.710	PG6
									48				
1	1	1	1	1	1	1	1		49	BEARING,CONE 42368	70784	521.710	PG7
1	1	1	1	1	1	1	1		50	BEARING,CUP 42584	158207	521.710	PG7
									51				
1	1	1	1	1	1	1	1		52	BEARING,CONE 47896	62884	521.710	PG7
1	1	1	1	1	1	1	1		53	BEARING,CUP 47820	188141	521.710	PG7
									54				
									55				
1	1	1	1	1	1	1	1		56	CARRIER,IDLER SHAFT BEARING	492121	564G137	1
1	1	1	1	1	1	1	1		57	CARRIER,INPUT SHAFT BEARING	492122	564G138	1
1	1	1	1	1	1	1	1		58	CARRIER,OUTPUT SHAFT BEARING	492123	564G139	1
									59				
									60				
									61				
1	1	1	1	1	1	1	1		62	COVER,FINISHED	492125	564G412	4
									63				
									64				
1	1	1	1	1	1	1	1	#913	65	RTV ADHESIVE/SEALANT, RUBBER 12oz CARTRIDGE			
									66				
									67				
						1			68	GEAR,LH HELIX 40T 5P	492127	564G188	1
		1		1					69	GEAR,LH HELIX 41T 5P	492128	564G189	1
1									70	GEAR,LH HELIX 42T 5P	492153	564G211	1
									71				
							1		72	GEAR,RH HELIX 40T 5P	492129	564G190	1
			1		1				73	GEAR,RH HELIX 41T 5P	492130	564G191	1
	1								74	GEAR,RH HELIX 42T 5P	492154	564G212	1
									75				
				1	1	1	1		76	GEAR,SPUR 33T 4P	486365	548F525	1
1	1	1	1	1					77	GEAR,SPUR 34T 4P	492131	564G192	1
									78				
									79				
2	2	2	2	2	2	2	2		80	LEVEL,OIL	499004	551A574	3

DISTR CODE SEE STD 110.118 | STANDARD A | SPECIAL 1 2 | ENG SEC B | ORDER NO

TITLE: CUTTING HEAD INPUT GEARCASE ASSY | DRAWING NUMBER 564B940 | SHEET 2 | OF 4

REVISIONS		
REV	DESCRIPTION	(ZONE-WAS-BY-DATE)
A		

INTERNAL SPLINE (INVOLUTE, FLAT ROOT, MAJOR DIAMETER FIT)



CIRCULAR SPACE WIDTH	MIN. EFFECTIVE	0.1963
	MAX. EFFECTIVE	0.1978 (REF)
	MIN. ACTUAL	0.1983 (REF)
	MAX. ACTUAL	0.1997
NUMBER OF TEETH		21
PITCH		8/16
PRESSURE ANGLE		30
BASE DIAMETER		2.6733 (REF)
MEASUREMENT BETWEEN TWO PINS		2.3107 **
		2.3079 **
PIN DIAMETER		0.2160
PROFILE TOLERANCE		0.0005 (REF)
(ZERO AT PITCH DIAMETER)		-0.0007 (REF)
TOTAL INDEX TOLERANCE		0.0018 (REF)
LEAD TOLERANCE		0.0005
LENGTH OF ENGAGEMENT		2.7650

*ECCENTRICITY BETWEEN THESE DIAMETERS MUST BE ABSORBED WITHIN THE LIMITS OF MAJOR DIAMETER AND EFFECTIVE TOOTH THICKNESS.

IDENTIFICATION OF MATING SPLINE:
CAT# 492138 DRG# 564G418 MK 1

NOTES
1. NO FINISHING OF TOOTH PROFILE AFTER HEAT TREAT
2. **CUT PIN MEASUREMENT +.005 FOR HEAT TREATMENT SHRINKAGE.

TYPE OF GEAR	EXTERNAL	HELICAL	INVOLUTE
HELIX ANGLE	15°	HAND OF HELIX	RIGHT
NO. OF TEETH	41	DIAMETRAL PITCH	5
TYPE OF TEETH	FULL DEPTH		
TYPE OF ROOT	FULL FILLET		
PRESSURE ANGLE	25°	HOB POSITION	0.000
ADDENDUM	0.2000	WHOLE DEPTH (APPROX.)	0.4500
OUTSIDE DIAMETER (SPECIAL?)	NO		8.8893
BASE CIRCLE DIAMETER			7.6450
TOOTH THICKNESS REDUCTION FOR BACKLASH			0.0046

IDENTIFICATION OF MATING GEAR
CAT. NO. 492132 DRG. NO. 564G193 MK. 1
CENTER DISTANCE 6.4679

CARBURIZE CASE HEAT TREAT SPECIFICATIONS
SPECIFY AREA TO BE HEAT TREATED: GEAR TEETH AND INTERNAL SPLINE
REFER TO DETAIL/MK 001 .

CARBURIZE TO EFFECTIVE CASE DEPTH OF .035-.050 INCH AT 50 HRC.
NO DECARBURIZATION.
QUENCH & TEMPER (HARDEN) TO SURFACE HARDNESSS OF 60-64 HRC AND CORE HARDNESS 30-42 HRC.
COLD TREAT & RE-TEMPER YES/NO YES.
SPLINE HARDNESS TO BE MINIMUM 50 HRC
SIGNATURE:

INSPECTION DATA (AFTER HEAT TREATMENT)

SPAN MEASUREMENT OF 7 TEETH (ALLOWABLE VARIATION ON ANY ONE GEAR 0.001 MAX)	3.9425 -0.0000 -0.0039
CHORDAL ADDENDUM	0.2026
CHORDAL THICKNESS	0.3095 +0.0000 - 0.0039
MEASUREMENT OVER 0.3456 DIAMETER PINS	8.9587
	8.9505
ROLL ANGLE TO START OF ACTIVE PROFILE	22.0730
CENTER DISTANCE WITH - TOOTH	
MASTER GEAR N/A	
AGMA CLASS #8 GEAR PER AGMA 309.03 JAN 1973	
AGMA CLASS #6 FOR LEAD TOLERANCE ONLY	
RUNOUT TOLERANCE	0.0044
PITCH TOLERANCE	0.0011
TOOTH PROFILE TOLERANCE	0.0015
LEAD TOLERANCE	0.0012
TOOTH TO TOOTH COMPOSITE TOLERANCE	0.0017
TOTAL COMPOSITE TOLERANCE	0.0061

DRAWING NUMBER 564G191 SHEET 1 OF 2

DBT AMERICA
PO BOX 1879, COLUMBUS, OHIO 43216

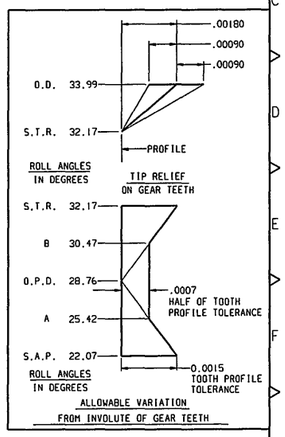
41T 5P RH HELICAL GEAR - 30M

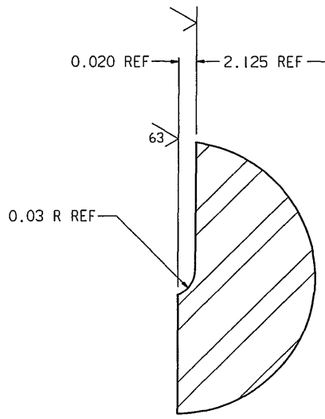
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

SCALE 1:2 DO NOT SCALE DRAWING

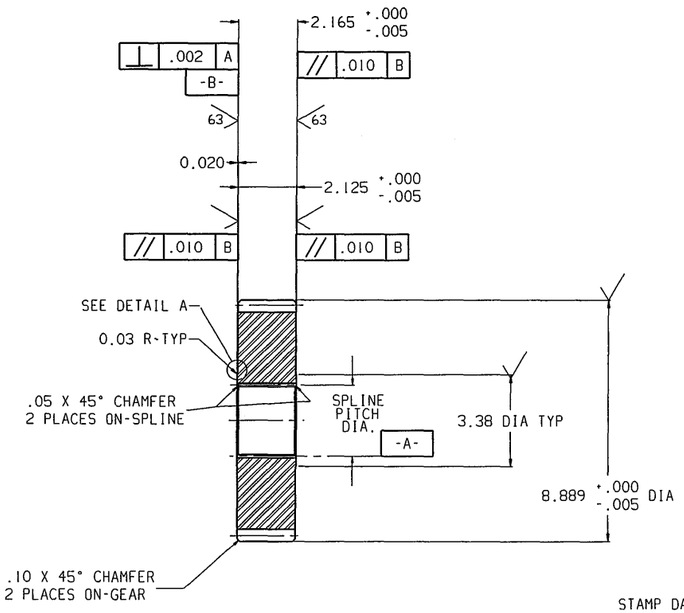
DRAWN	COLE	DATE	9/1/01	DIRECTED	ZYCH	CUSTOMER
CHECKED	COLE	DATE	9/1/01	APPROVED		ORDER NO

QUANT	MATERIAL	MK	DESCRIPTION	CAT NO	DRIG DRG	MK
X		1	41T 5P RH HELICAL GEAR	492130		
1	4820H	2	GEAR FORGING #98519		548F530	1
		3				
		4				
		5				

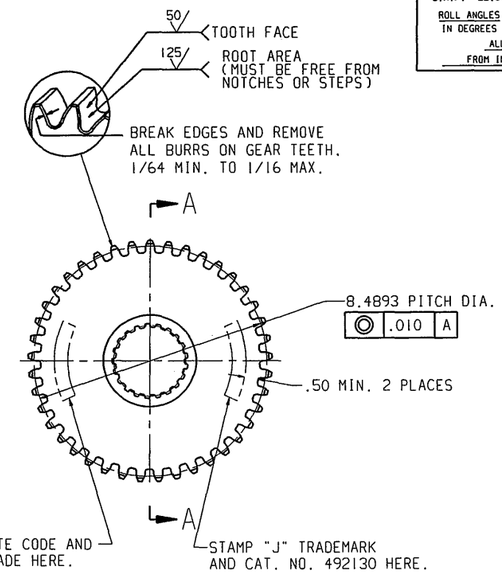




DETAIL A
SCALE 32 = 1



SECTION A-A



MK-1 GEAR

DIMENSION TOLERANCES UNLESS OTHERWISE SPECIFIED		
DIMENSIONS		TOLERANCE
MACHINING WORK		
1 PLACE DECIMAL	+/-	0.1
2 PLACE DECIMAL	+/-	0.02
3 PLACE DECIMAL	+/-	0.005
STANDARD SURFACE FINISH 250 MICRO BREAK ALL SHARP EDGES TO 1/64 X 45°		
WELDING WORK		
UNDER 30" LONG	+/-	1/16
30" TO UNDER 60" LONG	+/-	1/8
60" LONG AND OVER	+/-	3/16

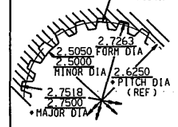
FLAME CUTTING	UNDER 6 FEET	6 FEET AND OVER
3/16" TO 1" THK	+/- 1/16	+/- 3/32
1" TO 4" THK	+/- 3/32	+/- 1/8
4" THK & OVER	+/- 1/8	+/- 3/16

FOR METHODS CHECK SEE DRAWING	BITER CODE SEE 510.110.110	STANDARD	SPECIAL	SECTION	DRAWING NUMBER	SHEET
548F523	A		1 2	B	564G191	

181105

REVISIONS		
REV	DESCRIPTION (ZONE-WAS-BY-DATE)	
A		

INTERNAL SPLINE (INVOLUTE, FLAT ROOT, MAJOR DIAMETER FIT)



	MIN. EFFECTIVE	0.1963
CIRCULAR SPACE WIDTH	MAX. EFFECTIVE	0.1978 (REF)
	MIN. ACTUAL	0.1983 (REF)
	MAX. ACTUAL	0.1997
NUMBER OF TEETH		21
PITCH		8/16
PRESSURE ANGLE		30
BASE DIAMETER		2.2733 (REF)
MEASUREMENT BETWEEN TWO PINS		2.3107 **
		2.3079 **
PIN DIAMETER		0.2160
PROFILE TOLERANCE		+0.0005 (REF)
(ZERO AT PITCH DIAMETER)		-0.0007 (REF)
TOTAL INDEX TOLERANCE		0.0018 (REF)
LEAD TOLERANCE		0.0005
LENGTH OF ENGAGEMENT		2.1650

*ECCENTRICITY BETWEEN THESE DIAMETERS MUST BE ABSORED WITHIN THE LIMITS OF MAJOR DIAMETER AND EFFECTIVE TOOTH THICKNESS.

IDENTIFICATION OF MATING SPLINE:
CAT# 492138 ORG# 564G418 MK 1

NOTES
1. NO FINISHING OF TOOTH PROFILE AFTER HEAT TREAT
2. **CUT PIN MEASUREMENT +.005 FOR HEAT TREATMENT SHRINKAGE.

TYPE OF GEAR	EXTERNAL	SPUR	INVOLUTE
NO. OF TEETH	20	DIAMETRAL PITCH	4
TYPE OF TEETH	FULL DEPTH		
TYPE OF ROOT	FULL FILLET		
PRESSURE ANGLE	25°	HOB POSITION	0.0625
ADDENDUM	0.3125	WHOLE DEPTH (APPROX.)	0.5625
OUTSIDE DIAMETER (SPECIAL?)	NO		5.6250
BASE CIRCLE DIAMETER			4.5315
TOOTH THICKNESS REDUCTION FOR BACKLASH			0.0035
IDENTIFICATION OF MATING GEAR			
CAT. NO. 492131	DRG. NO. 564G192	MK. 1	
CENTER DISTANCE	6.8113		

CARBURIZE CASE HEAT TREAT SPECIFICATIONS
SPECIFY AREA TO BE HEAT TREATED: GEAR TEETH AND INTERNAL SPLINE
REFER TO DETAIL/MK 001 .

CARBURIZE TO EFFECTIVE CASE DEPTH OF .040-.055 INCH AT 50 HRC.
NO DECACBURIZATION.
QUENCH & TEMPER (HARDEN) TO SURFACE HARDNESSS OF 60-64 HRC AND CORE HARDNESS 30-42 HRC.
COLD TREAT & RE-TEMPER YES/NO YES.
SPLINE HARDNESS TO BE MINIMUM 50 HRC
SIGNATURE:

INSPECTION DATA (AFTER HEAT TREATMENT)
SPAN MEASUREMENT OF 3 TEETH (ALLOWABLE VARIATION ON ANY ONE GEAR 0.001 MAX) 1.9650 +0.0000 -0.0049

CHORDAL ADDENDUM	0.3225
CHORDAL THICKNESS	0.4469 +0.0000 - 0.0049
MEASUREMENT OVER 0.4800 DIAMETER PINS	5.8401
	5.8318
ROLL ANGLE TO START OF ACTIVE PROFILE	16.8925
CENTER DISTANCE WITH - TOOTH	
MASTER GEAR N/A	
AGMA CLASS #8 GEAR PER AGMA 309.03 JAN 1973	
AGMA CLASS #6 FOR LEAD TOLERANCE ONLY	
RUNOUT TOLERANCE	0.0043
PITCH TOLERANCE	0.0010
TOOTH PROFILE TOLERANCE	0.0015
LEAD TOLERANCE	0.0016
TOOTH TO TOOTH COMPOSITE TOLERANCE	0.0019
TOTAL COMPOSITE TOLERANCE	0.0062

DRAWING NUMBER 564G197 SHEET

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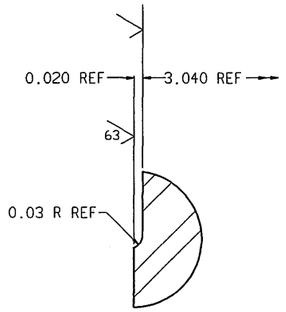
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

MACHINE CLASS	30M	MINER	5468940	FIRST USED			
SCALE	1:1	DO NOT SCALE DRAWING					
DRAWN	COLE	DATE	9/27/01	DIRECTED	ZYCH	CUSTOMER	
CHECKED	COLE	DATE	9/27/01	APPROVED		ORDER NO	

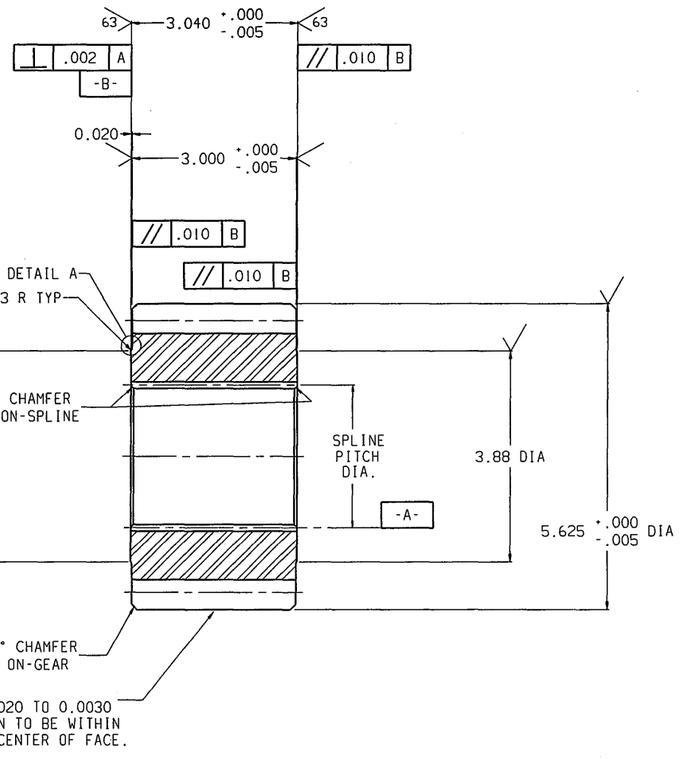
QUANT	MATERIAL	MK	DESCRIPTION	CAT NO	ORIG DRG	MK
X		1	20T 4P SPUR PINION	492136		
1	4820H	2	FORGING,PINION #98517		548F529	1
		3				
		4				
		5				

DBT AMERICA
PO BOX 1879, COLUMBUS, OHIO 43216

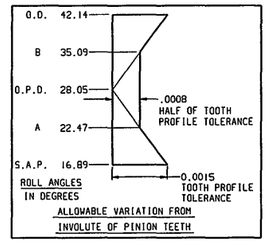
20T 4P
SPUR PINION
30M



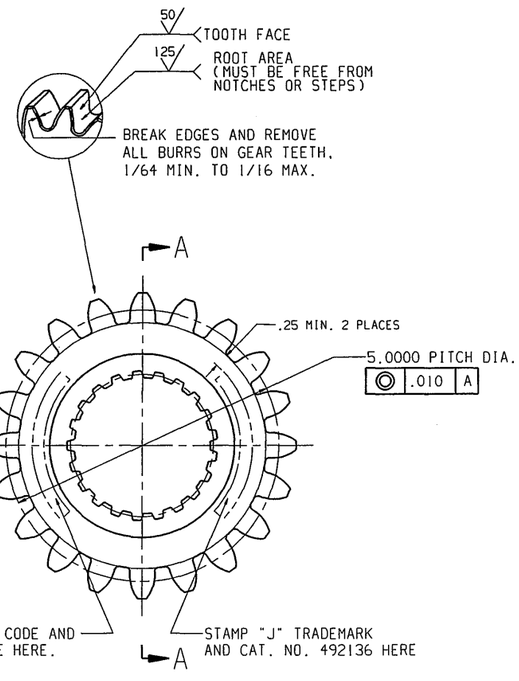
DETAIL A
SCALE 8 = 1



SECTION A-A



ALLOWABLE VARIATION FROM INVOLUTE OF PINION TEETH



MK-1 PINION

DIMENSION TOLERANCES UNLESS OTHERWISE SPECIFIED	
DIMENSIONS	TOLERANCE
MACHINING WORK	
1 PLACE DECIMAL	+/- 0.1
2 PLACE DECIMAL	+/- 0.02
3 PLACE DECIMAL	+/- 0.005
STANDARD SURFACE FINISH 250 MICRO BREAK ALL SHARP EDGES TO 1/64 X 45°	
WELDING WORK	
UNDER 30" LONG	+/- 1/16
30" TO UNDER 60" LONG	+/- 1/8
60" LONG AND OVER	+/- 3/16

FLAME CUTTING	UNDER 6 FEET	6 FEET AND OVER
3/16" TO 1" THK	+/- 1/16	+/- 3/32
1" TO 4" THK	+/- 3/32	+/- 1/8
4" THK & OVER	+/- 1/8	+/- 3/16

FOR METRICS CHECK-SEE DRG 564G198 | DISTR CODE SEE STD 110.118 | STD [A] | SPECIAL [1][2] | SECTION B | DRAWING NUMBER 564G197 | SHEET

181090

DRAWING NUMBER 564B859 | SHEET 1

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REVISIONS — GIVE MK-INITALS-DATE

- A CHGD MKS 17.19-21.62 66.67.77.85.110-112. 118-120.125-127: ADDED MK 18: DELETED MK 80: REH 04/30/02
- B MKS-48. 71. 72 DMR 2-03-03
- C MK-100 RPZ 10/1/03
- D MK-58.59 RPZ 2/12/04

DRAWN COLE DATE 11/10/01 | DIRECTED ZYCH | FOR METHODS CHECK SEE 548B634

CHECKED COLE DATE 11/10/01 | APPROVED

GR	MACHINE	CLASS	USED ON	ORDER
9				
8				
7				
6				GR-1
5	MINER	30MB		GR-1
4	MINER	30MB		GR-1
3	MINER	30MB		GR-1
2	MINER	30MB		ORDER
1	MINER	30MB	CLASS	USED ON

QUANTITY								MAT'L	MK	DESCRIPTION	CAT NO	ORIG DRG	MK
							X		1	CUTTING HEAD GEARCASE ASSEMBLY			
							-	REBUILD	2	CUTTING HEAD GEARCASE ASSEMBLY			
									3				
						X			4	LH DRIVE HUB SUB-ASSEMBLY			
					X				5	RH DRIVE HUB SUB-ASSEMBLY			
									6				
				X					7	LH GEAR SUB-ASSEMBLY			
			X						8	RH GEAR SUB-ASSEMBLY			
									9				
							2		10	PLANET CARRIER SUB-ASSEMBLY	486614	548F624	14
									11				
									12				
							1	DRG	13	LH DRIVE HUB SUB-ASSEMBLY		565G161	
						1		DRG	14	RH DRIVE HUB SUB-ASSEMBLY		565G162	
									15				
				1				DRG	16	LH GEAR SUB-ASSEMBLY		565G163	
			1					DRG	17	RH GEAR SUB-ASSEMBLY		565G163	
							1	DRG	18	LH CUTTING HEAD SUB-ASSEMBLY & VIEWS		565G164	
							1	DRG	19	RH CUTTING HEAD SUB-ASSEMBLY & VIEWS		565G165	
							1	DRG	20	LH CUTTING HEAD GEARCASE ASSEMBLY		565G166	
							1	DRG	21	RH CUTTING HEAD GEARCASE ASSEMBLY		565G167	
							1	DRG	22	CUTTING HEAD GEARCASE ASSEMBLY		565G168	
									23				
			1	1	1	1	1	DRG	24	CUTTING HD GC INSTALLATION INSTRUCTION		565A169	
									25				
							1		26	CUTTING HEAD GEARCASE FINAL MACHINING		564G834	1
									27				
									28				
						1	1		29	BEARING ASSY	486596	C486596	1
							2		30	BEARING ASSY	492107	564A410	1
									31				
									32				
			2	2					33	BEARING.CONE LL-566848	70777	521.710	P9
			2	2					34	BEARING.CUP LL-566810	70776	521.710	P9
									35				
			1	1					36	BEARING.CONE L-860048	70773	521.710	P9
			1	1					37	BEARING.CUP L-860010	70772	521.710	P9
									38				
			1	1					39	BEARING.CONE LL-957049	70775	521.710	P9
			1	1					40	BEARING.CUP LL-957010	70774	521.710	P9

DISTR CODE SEE STD 110.118 | STANDARD A | SPECIAL 12 | ENG SEC B | ORDER NO

TITLE: CUTTING HEAD GEARCASE ASSY | DRAWING NUMBER: 564B859 | SHEET 1 | OF 4

DRAWING NUMBER 564B859 | SHEET 2

DBT AMERICA

P.O. BOX 1879
COLS. OHIO 43216

REVISIONS — A B C D

DRAWN COLE DATE 11/10/01 | DIRECTED ZYCH | FOR METHODS CHECK SEE 548B634

CHECKED COLE DATE 11/10/01 | APPROVED

GR	MACHINE	CLASS	USED ON	ORDER
9				
8				
7				
6				GR-1
5	MINER	30MB		GR-1
4	MINER	30MB		GR-1
3	MINER	30MB		GR-1
2	MINER	30MB		ORDER
1	MINER	30MB	CLASS	USED ON

QUANTITY								MAT'L	MK	DESCRIPTION	CAT NO	ORIG DRG	MK
							2		41	BEARING.CONE 42687	70771	521.710	P5
							2		42	BEARING.CUP 42620	68793	521.710	P5
									43				
							2		44	BLOCK SET.WEDGE	486504	548F637	1
									45				
				1	1				46	CARRIER.BEARING&CAT SEAL		565F170	1
							2		47	CARRIER.BEVEL PINION BEARING	486540	548F687	1
							~~2~~ 1		48	CARRIER.DOUBLE SEAL	486528	548F682	1
				1	1				49	CARRIER.INSIDE BEARING		565F171	1
						1			50	CARRIER.LH OUTSIDE BEARING	486465	548F642	2
						1			51	CARRIER.LH CAT SEAL		565F172	1
					1				52	CARRIER.RH OUTSIDE BEARING	486508	548F638	2
					1				53	CARRIER.RH CAT SEAL		565F173	1
									54				
									55				
							2		56	GEAR.RING	486358	548F617	2
									57				
					-		1		58	GEAR SET.SPIRAL BEVEL (LH SIDE ONLY)	486472	548F641	3
				-			1		59	GEAR SET.SPIRAL BEVEL (RH SIDE ONLY)	486464	548F640	3
							2		60	GEAR.SUN	486373	548F619	2
									61				
					1	1			62	HUB ASSY.CUTTING HEAD DRIVE		565F174	5
									63				
							2		64	LOCK.SHAFT (RINGFEDER)	486564	C486564	1
									65				
				1	1		1	169	66	LOCKWIRE 1/16x10 FT			
				1	1		1	DRG	67	LOCKWIRE PROCEDURE DRAWING		511A060	
									68				
							4		69	O-RING 1/8Øx 1-7/8 OD #2-223	179670	531.462	P4
							4		70	O-RING 1/8Øx 3-1/4 OD #2-234	63858	531.462	P4
							~~2~~ 3		71	O-RING 1/8Øx 6-1/2 OD #2-259	187652	531.462	P5
							~~2~~ 4		72	O-RING 1/8Øx 8-1/4 OD #2-266	68203	531.462	P5
					1				73	O-RING 1/8Øx15-1/4 OD #2-281	471063	531.462	P5
				1	1				74	O-RING 1/8Øx18-1/4 OD #2-284	69991	531.462	P5
									75				
						1			76	O-RING 3/16Øx17-3/8 OD #2-386	70787	531.462	P6
				1	1	1	1	2	77	O-RING 3/16Øx20-3/8 OD #2-389	70770	531.462	P6
									78				
							2		79	O-RING 1/4Øx 9-1/2 OD #2-447	68712	531.462	P7
									80				

DISTR CODE SEE STD 110.118 | STANDARD A | SPECIAL 12 | ENG SEC B | ORDER NO

TITLE: CUTTING HEAD GEARCASE ASSY | DRAWING NUMBER: 564B859 | SHEET 2 | OF 4

DRAWING NO. 564B402 | SHEET NO. 1

DBT AMERICA — P.O. BOX 1879, COLS. OHIO 43216

REVISIONS — GIVE MK.-INITALS-DATE
- A MK-103 RPZ 5/29/02
- B MK-101 REH 5/22/03
- C MK-17 RPZ 10/1/03
- D MK-6 & 7 RPZ 2/12/04

9	8	7	6	5	4	3	2	1	GR. CLASS	MACHINE	FIRST USED ON
				GR-1	GR-1	GR-1	GR-1	ORDER			
				30M	30M	30M	30M	30M	MACHINE		
				MINER	MINER	MINER	MINER	MINER	CLASS		

DRAWN COLE DATE 9-4-1 | DIRECTED ZYCH | FOR METHODS CHECK-SEE DWGS: 548B634
CHECKED COLE DATE 9-4-1 | APPROVED

QUANT.									MAT'L.	MK.	DESCRIPTION	CAT. NO.	ORIG. DRW.	MK.
								X		1	CUTTING HEAD GEARCASE ASSEMBLY	492109		
								1		2	CUTTING HEAD GEARCASE MACHINED		564G388	1
								2		3	SEAL TUBE	492105	548F648	2
								4		4	"O" RING 2-234 1/8 x 3 1/4 O.D.	63858	531.462	P4
								4		5	RETAINING RING - INTERNAL	62611	527.713	P2
								1		6	SPIRAL BEVEL GEAR SET	486464	548F640	3
								1		7	SPIRAL BEVEL GEAR SET	486472	548F641	3
								2		8	BEARING CARRIER	486540	548F687	1
								6		9	.005 SHIM	486537	548F688	1
								6		10	.007 SHIM	486538	548F688	2
								2		11	.020 SHIM	486539	548F688	3
								8		12	5/8-11 x 1 1/2 HHCS W/ 1/8 HOLE IN HEAD	68738	C-68738	
								8		13	5/8 HARD WASHER	66993	561.716	
				1	1	1	1	1	169	14	1/16 LOCKWIRE x 10'-0"			
								-		15	61T 3P. SPIRAL BEVEL GEAR		548F628	
							1	1		16	INSIDE BEARING CARRIER	486473	548F643	2
							1	1		17	CAT DUO-CONE SEAL #195-3495		566A847	1
							2	2		18	TIMKEN CUP LL-566810	70776	521.710	
							2	2		19	TIMKEN CONE LL-566848	70777	521.710	
							1	1		20	SEAL CARRIER	486531	548F647	1
							3	3		21	.005 SHIM	486568	549F380	1
							3	3		22	.007 SHIM	486569	549F380	2
							1	1		23	.020 SHIM	486570	549F380	3
							1	1		24	BEARING RETAINER	486567	548F679	1
							5	5		25	.005 SHIM	486534	548F680	3
							5	5		26	.007 SHIM	486533	548F680	2
							1	1		27	.020 SHIM	486532	548F680	1
							1	1		28	BEARING RETAINER	486529	548F644	1
							1	1		29	BEARING RETAINER	486551	549F379	1
							3	3		30	.005 SHIM	486571	549F377	1
							3	3		31	.007 SHIM	486572	549F377	2
							1	1		32	.020 SHIM	486573	549F377	3
							12	12	12	33	1/2-13 x 1 HHCS W/ 1/8 HOLE IN HEAD	438855	C-438855	
							1	1		34	TIMKEN CUP LL-957010	70774	521.710	
							1	1		35	TIMKEN CONE LL-957049	70775	521.710	
							1	1		36	"O" RING 2-284 1/8 x 18 1/4 O.D.	69991	531.462	P5
							1	1		37	TIMKEN CUP L-860010	70772	521.710	
							1	1		38	TIMKEN CONE L-860048	70773	521.710	
							1	-		39	61T 3P. SPIRAL BEVEL GEAR		548F632	
								X	1	40	61T GEAR SUB-ASSEMBLY GR. 2 FOR R.H. SIDE			

DISTR. CODE SEE STD. 110.118 | STD: A | SPECIAL: | ENG. SEC. B | ORDER NO.

TITLE: CUTTING HEAD GEARCASE ASSEMBLY | DRAWING NO. 564B402 | SHEET NO. 1 OF 3 SHEETS (SHOW TOTAL NUMBER OF SHEETS ON SHEET 1 ONLY)

DRAWING NO. 564B402 | SHEET NO. 2

DBT AMERICA — P.O. BOX 1879, COLS. OHIO 43216

REVISIONS — A B C D

9	8	7	6	5	4	3	2	1	GR. CLASS	MACHINE	FIRST USED ON
				GR-1	GR-1	GR-1	GR-1	ORDER			
				30M	30M	30M	30M	30M	MACHINE		
				MINER	MINER	MINER	MINER	MINER	CLASS		

DRAWN COLE DATE 9-4-1 | DIRECTED ZYCH | FOR METHODS CHECK-SEE DWGS: 548B634
CHECKED COLE DATE 9-4-1 | APPROVED

QUANT.									MAT'L.	MK.	DESCRIPTION	CAT. NO.	ORIG. DRW.	MK.
								X		1	61T GEAR SUB-ASSEMBLY GR. 3 FOR L.H. SIDE			
								6		42	.005 SHIM	486577	548F615	3
								6		43	.007 SHIM	486576	548F615	2
								2		44	.020 SHIM	486575	548F615	1
								2		45	BEARING ASSY (CUP JHM-72021OP/CONE JHM-720249P)	492107	564A410	1
										46				
								2		47	TIMKEN CUP 42620	068793	521.710	
								2		48	TIMKEN CONE 42687	70771	521.710	
								2		49	OIL SEAL	70783	531.611	P6
										50				
								32		51	3/4-10 x 2 1/2 NYLOK SKT. HD. CAPSCR.	64595	561.328	P1
								84		52	3/4 SPECIAL HARDENED WASHER	482311	C-482311	
								2		53	RING GEAR	486358	548F617	
								6		54	"O" RING 2-389 3/16 x 20 3/8 O.D.	70770	531.462	
								6		55	3/4-10 x 6 1/2 NYLOK SKT. HD. CAPSCR.	70829	561.328	P1
								52		56	3/4-10 x 8 NYLOK SKT. HD. CAPSCR.	70786	561.328	P1
							1			57	OUTSIDE BEARING CARRIER R.H.	486508	548F638	2
						1				58	OUTSIDE BEARING CARRIER L.H.	486465	548F642	2
						1	1			59	BEARING RETAINER	486535	548F683	1
					3	3				60	.005 SHIM	486548	549F378	1
					3	3				61	.007 SHIM	486549	549F378	2
					1	1				62	.020 SHIM	486550	549F378	3
										63				
						1				64	SEAL CARRIER R.H.	492005	562697B	1
				1						65	SEAL CARRIER L.H.	492006	562697B	1
					4					66	.005 SHIM	486547	548F690	2
					2					67	.007 SHIM	486546	548F690	1
					1	1				68	CUTTING HEAD HUB	492106	564G409	2
					1	1				69	CAT DUO-CONE SEAL #6T8433	447962	C-447962	
				18	24					70	5/8-11 x 2 NYLOK SKT. HD/ CAPSCR.	70816	561.328	P1
					1					71	"O" RING 2-281 1/8 x 15 1/4 O.D.	471063	531.462	
					X			1		72	CUTTING HEAD HUB SUB-ASSEMBLY GR. 4 R.H.			
								2		73	SUN GEAR	486373	548F619	2
								2		74	PLANET CARRIER SUB-ASSEMBLY	486614	548F624	14
								2		75	7/8 DIA. HARDENED DOWEL PIN	62563	561.533	
					1	1				76	TIMKEN BEARING ASSEMBLY	486596	C-486596	1
								2		77	DOUBLE SEAL CARRIER	486528	548F682	1
								2		78	"O" RING 2-259 1/8 x 6 1/2 O.D.	187652	531.462	
								2		79	"O" RING 2-266 1/8 x 8 1/4 O.D.	068203	531.462	
								2		80	SHAFT LOCK (RINGFEDER)	486564	C-486564	1

DISTR. CODE SEE STD. 110.118 | STD: A | SPECIAL: | ENG. SEC. B | ORDER NO.

TITLE: CUTTING HEAD GEARCASE ASSEMBLY | DRAWING NO. 564B402 | SHEET NO. 2 OF 3 SHEETS (SHOW TOTAL NUMBER OF SHEETS ON SHEET 1 ONLY)

DRAWING NO. 564B402 | SHEET NO. 3

DBT AMERICA — P.O. BOX 1879, COLS. OHIO 43216

REVISIONS — A B C D

9	8	7	6	5	4	3	2	1	GR. CLASS	MACHINE	FIRST USED ON
				GR-1	GR-1	GR-1	GR-1	ORDER			
				30M	30M	30M	30M	30M	MACHINE		
				MINER	MINER	MINER	MINER	MINER	CLASS		

DRAWN COLE DATE 9-4-1 | DIRECTED ZYCH | FOR METHODS CHECK-SEE DWGS: 548B634
CHECKED COLE DATE 9-4-1 | APPROVED

QUANT.									MAT'L.	MK.	DESCRIPTION	CAT. NO.	ORIG. DRW.	MK.
								2		81	RETAINER	486527	548F681	1
								48		82	1"-8 x 2 3/4 NYLOK SKT.HD. CAPSCR.	70788	561.328	P1
								2		83	WEDGE BLOCK SET	486504	548F637	1
								2		84	SEAL RETAINER	486530	548F646	1
								2		85	"O" RING 2-447 1/4 x 9 1/2 O.D.	068712	531.462	P7
								1		86	CUTTING HEAD MAIN SHAFT	486512	548F670	1
								2		87	THRUST RING	486566	548F678	1
							12	12		88	1/2-13 x 1 1/4 HHCS W/ 1/8 HOLE IN HEAD	68019	C-68019	
									GD 5	89	CUTTING HEAD HUB SUB-ASSEMBLY GR. 5 L. H.			
								X		90	"O" RING 2-386 3/16 x 17 3/8 O.D.	70787	531.462	
								1		91	CUTTING HEAD GEARCASE ASSEMBLY	492110		
									* REBUILD	92	CUTTING HEAD GEARCASE ASSEMBLY DWG		564G406	
									NO MAT'L	93	CUTTING HEAD GEARCASE ASS'Y DWG R.H.SIDE		564G405	
									NO MAT'L	94	CUTTING HEAD GEARCASE ASS'Y DWG L.H.SIDE		564G404	
									NO MAT'L	95	CUTTING HEAD GEARCASE ASS'Y DWG		564G403	
								3		96	0.005 SHIM	487744	551F985	1
								1		97	0.007 SHIM	487745	551F985	2
								3		98	0.020 SHIM	487746	551F985	3
								3		99	0.005 SHIM	487747	551F985	4
								3		100	0.007 SHIM	487748	551F985	5
								6		101	3" SOCKET HEAD PIPE PLUG	66555	553.471	PG1
								2		102	1-1/2" MAGNETIC DRAIN PLUG	70635	553.471	PG3
								1	NO MAT'L	103	GEAR CASE INSTALLATION INSTRUCTION DRG.		566A375	
							2	2		104	1/2 X 1 1/4 LG HD'N DOWEL PIN	62536	561.533	
							16	16	GD 8	105	1/2-13 X 1 1/2 HHCS W/ 1/8 HOLE IN HEAD	70373	C-70373	
										106				
										107				
										108				
										109				
										110				
										111				
										112				
										113				
										114				
										115				
										116				
										117				
										118				
										119				
										120				

DISTR. CODE SEE STD. 110.118 | STD: A | SPECIAL: | ENG. SEC. B | ORDER NO.

TITLE: CUTTING HEAD GEARCASE ASSEMBLY | DRAWING NO. 564B402 | SHEET NO. 3 OF 3 SHEETS (SHOW TOTAL NUMBER OF SHEETS ON SHEET 1 ONLY)

REVISIONS	
BY	DESCRIPTION (ZONE-WAS-BY-DATE)
A	C-11 REMOVED; 9.307
	C-10 DIM.ADDED
	G-11 WAS:1.000
	G-10 WAS:8.625 DIA
	G-10 WAS:.25x 45°
	K-11 WAS:+.001 -.001
	DMR 12-20-90
B	A-7 ADDED NEW GEAR
	DATA STANDPAT
	H-13 REMOVED .0652
	DIMENSION
	H-12 REMOVED
	70.208 ROOT ANGLE
	H-12 REMOVED
	73.929 FACE ANGLE
	J-14 ADDED 14.7066
	INSIDE DIAMETER
	H-14 ADDED 20.4351
	OUTSIDE DIAMETER
	K-13 WAS 3.0083
	K-11 WAS 2.367
	RPZ 3/1/91
C	C-8 WAS .01/.013
	RPZ 3/28/03
D	C-14 ADDED SHOT
	PEENING NOTE
	D-3 CHANGED NOTE
	RPZ 12/8/03

CARBURIZE CASE HEAT TREAT SPECIFICATIONS

SPECIFY AREA TO BE HEAT TREATED: GEAR TEETH

REFER TO DETAIL/MK 002 FOR PATTERN.

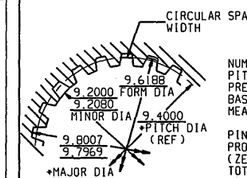
CARBURIZE TO EFFECTIVE CASE DEPTH OF .045-.060 INCH AT 50 HRC.
NO DECARBURIZATION.
QUENCH & TEMPER (HARDEN) TO SURFACE HARDNESSS OF 60-64 HRC AND CORE HARDNESS 34-42 HRC.
COLD TREAT & RE-TEMPER YES/NO YES
SIGNATURE:

THIS GEAR IS PART OF A SET CAT. 486472 DRG. 548F641

TYPE OF GEAR	SPRIAL BEVEL
SHAFT ANGLE	90
NUMBER OF TEETH	61 Ⓑ
OUTER TRANS. DIAM. PITCH (DTE)	3
PRESSURE ANGLE	20°
MEAN SPIRAL ANGLE	30°
HAND OF SPIRAL	LEFT
CUTTER RADIUS (R)	5.3150
CUTTER BLADE MODULE (MO)	0.2362
NO. OF STARTS CUTTER HEAD (ZO)	5
TOOL EDGE RADIUS	0.0709
ANGLE MODIFICATION (TETA K)	0°
THICKNESS MODIF. FACTOR (XS)	0.1150
ADDENDUM MODIF. FACTOR (X1)	0.3100
STUB FACTOR (HAP)	1.0000
ADDENDUM (THEORETICAL)	0.1711
WHOLE DEPTH (THEORETICAL)	0.5580
MEAN NORMAL CIR. TOOTH THICKNESS	0.3325
MEAN NORMAL CHORDAL TOOTH THICKNESS (AFTER BACKLASH IS CUT)	0.3287
MEAN CHORDAL ADDENDUM	0.1716
BACKLASH (WITH CONTROL GEAR) Ⓒ	0.010/0.013
AGMA QUALITY NUMBER	11
IDENTIFICATION OF MATING PINION	19 TEETH
CAT. NO. ------ DRG. NO. 548F633	

NOTE: These dimensions are for reference in developing the pair of mating gears. They do not include allowances for conflexing. Developing dimensions may be obtained from the factory set-up sheet. The control geor is cut with backlash.

INTERNAL SPLINE (INVOLUTE, FILLET ROOT, SIDE FIT)



MIN. EFFECTIVE	.3142
MAX. EFFECTIVE	.3162 (REF)
MIN. ACTUAL	.3170 (REF)
MAX. ACTUAL	.3190
NUMBER OF TEETH	47
PITCH	5/10
PRESSURE ANGLE	30°
BASE DIAMETER	8.1406 (REF)
MEASUREMENT BETWEEN PINS	8.9073
	8.9037
PIN DIAMETER	.3456
PROFILE TOLERANCE	+.0006 (REF)
(ZERO AT PITCH DIAMETER)	-.0002 (REF)
TOTAL INDEX TOLERANCE	.0027 (REF)
LEAD TOLERANCE	.0005
LENGTH OF ENGAGEMENT	1.7500

*ECCENTRICITY BETWEEN THESE DIAMETERS MUST BE ABSORBED WITHIN THE LIMITS OF MAJOR DIAMETER AND EFFECTIVE TOOTH THICKNESS.

IDENTIFICATION OF MATING SPLINE:
CAT= 486373 DRG= 548F619 MK 2

FILLET ROOT SIDE FIT

DIMENSION TOLERANCES UNLESS OTHERWISE SPECIFIED

MACHINE WORK

DIMENSIONS	TOLERANCE
1 PLACE DECIMAL	+/- .1
2 PLACE DECIMAL	+/- .02
3 PLACE DECIMAL	+/- .005

WELDMENTS

		MACHINING ROUGHNESS
UNDER 30 LG	+/- 1/16	
30 TO UNDER 60 LG	+/- 1/8	250 MICRO
60 LG AND OVER	+/- 3/16	

FLAME CUTTING	UNDER 6 FT	6 FT & OVER
.18 TO .99 THK	+/- 1/16	+/- 3/32
1.00 TO 3.99 THK	+/- 3/32	+/- 1/8
4.00 & OVER THK	+/- 1/8	+/- 3/16

BREAK ALL SHARP EDGES TO 1/64 X 45°

DRAWING NO. 548F632 SHEET

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DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

SCALE: .2 DO NOT SCALE DRAWING

DRAWN A. REAMS DATE 10/19/90 DIRECTED V. LEVENSTEIN CUST.

CHECKED A. REAMS DATE 10/19/90 APPROVED ORDER NO.

3	2	1	0	MINER	30M	CLASS	548F641	FIRST USED

QUANT.	MATERIAL	MK	DESCRIPTION	CAT.NO.	ORIG.DRG.	MK
	1 4820H	1	FORGING PAT # 98529		548F627	1
X		2	61T 3P L.H. GEAR			
		3				
		4				

USE ON L.H. SIDE OF AUGER GEAR CASE

DBT AMERICA
PO BOX 1879, COLUMBUS, OHIO 43216

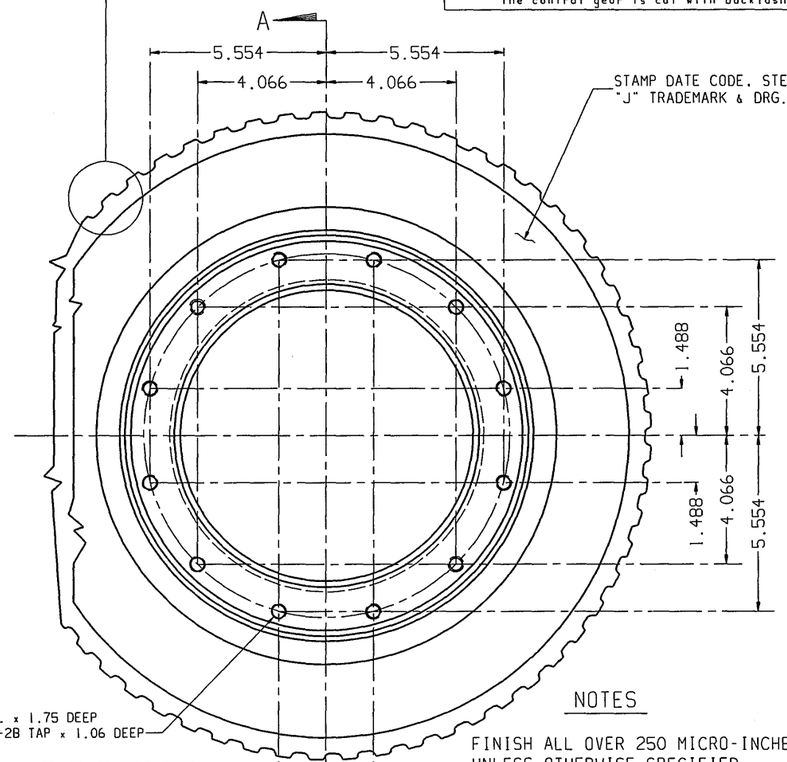
TITLE
61T 3P L.H. SPIRAL BEVEL GEAR KLINGELNBERG 30M

Ⓓ SHOT PEENING SPECIFICATIONS
FOR DETAIL MK-2 AFTER HEAT TREAT
SHOT SIZE - 170H
SHOT HARDNESS - 55/62 HRC
ALMEN 'A' INTENSITY - 0.010/0.014 A
INTENSITY TO BE VERIFIED
COVERAGE - 100% IN ROOTS OF TEETH
VERIFY COVERAGE WITH PEEN SCAN
SIGNATURE -

Ⓓ ROOT AREA MUST BE FULLY DEVELOPED BY FINISHING CUTTER. NO STEPS ARE TO BE LEFT ON THE FLANKS OF TEETH OR IN RADIUS AT ROOT OF TEETH.

BREAK EDGES AND REMOVE ALL BURRS ON GEAR TEETH. 1/64 MIN. TO 1/16 MAX.

THIS IS THE PREFERED CONTACT PATTERN ON A COMPLETED GEAR RUN ON A TEST MACHINE UNDER LIGHT LOAD WITH A CONTROL GEAR.



STAMP DATE CODE, STEEL GRADE, "J" TRADEMARK & DRG. 548F632 ON THIS SURFACE. // .002 B

SECTION A-A

POLISH FILLETS

DETAIL "B"

NOTES

FINISH ALL OVER 250 MICRO-INCHES
UNLESS OTHERWISE SPECIFIED
POLISH FILLETS NOT NECESSARY
IF PROFILED ON NC MACHINE

MK. 2 EST. WT. 274 LBS.

CHARACTERISTIC	SYMBOL		CHARACTERISTIC	SYMBOL
FOR SINGLE FEATURE: FLATNESS		FOR RELATED FEATURES: PARALLELISM		//
STRAIGHTNESS		PERPENDICULARITY (SQUARENESS)		⊥
ROUNDNESS (CIRCULARITY)		ANGULARITY		∠
CYLINDRICITY		RUNOUT		↗
PROFILE OF ANY LINE		POSITION TOLERANCE: TRUE POSITION		⌖
PROFILE OF ANY SURFACE		CONCENTRICITY		◎
GEOMETRIC FORM TOLERANCES		SYMMETRY		⌯

FOR METHODS CHECK-SEE ORG	DISTR. STD:	SPECIAL:	INC. SECT.	DRAWING NUMBER	SHEET NO.
549F298	CODE SEE SHEET 1	A B	B	548F632	X

280203

REVISIONS	
REV	DESCRIPTION (ZONE-WAS-BY-DATE)
A	

INTERNAL SPLINE (INVOLUTE, FLAT ROOT, SIDE FIT)

	MIN. EFFECTIVE	MAX. EFFECTIVE	MIN. ACTUAL	MAX. ACTUAL
CIRCULAR SPACE WIDTH	.3927	.3944 (REF)	.3951	.3968 (REF)

7.9135
6.5100 FORM DIA
6.5000 MINOR DIA
6.7500 *PITCH DIA (REF)
7.0945 7.0915 *MAJOR DIA

NUMBER OF TEETH	27
PITCH	4/8
PRESSURE ANGLE	30
BASE DIAMETER	5.8457 (REF)
MEASUREMENT BETWEEN PINS	6.1288
	6.1189
PIN DIAMETER	.4320
PROFILE TOLERANCE	+.0006 (REF)
(ZERO AT PITCH DIAMETER)	-.0008 (REF)
TOTAL INDEX TOLERANCE	.0022 (REF)
LEAD TOLERANCE	.0010
LENGTH OF ENGAGEMENT	7.000

*ECCENTRICITY BETWEEN THESE DIAMETERS MUST BE ABSORED WITHIN THE LIMITS OF MAJOR DIAMETER AND EFFECTIVE TOOTH THICKNESS.

IDENTIFICATION OF MATING SPLINE:
CAT* ---- DRG* 565G176 MK 1

(E) SPLINE DIMENSIONS GIVEN ARE FINISHED DIMENSIONS "AFTER" INDUCTION HARDENING "NO ALLOWANCE FOR SHRINKAGE"

FLAT ROOT SIDE FIT SPLINE A

INTERNAL SPLINE (INVOLUTE, FLAT ROOT, SIDE FIT)

	MIN. EFFECTIVE	MAX. EFFECTIVE	MIN. ACTUAL	MAX. ACTUAL
CIRCULAR SPACE WIDTH	.3927	.3947 (REF)	.3955	.3975 (REF)

11.2700
11.2600 FORM DIA
11.2500 MINOR DIA
11.500 *PITCH DIA (REF)
11.8459 11.8415 *MAJOR DIA

NUMBER OF TEETH	46
PITCH	4/8
PRESSURE ANGLE	30
BASE DIAMETER	9.9593 (REF)
MEASUREMENT BETWEEN PINS	10.8892
	10.8846
PIN DIAMETER	.4320
PROFILE TOLERANCE	+.0006 (REF)
(ZERO AT PITCH DIAMETER)	-.0008 (REF)
TOTAL INDEX TOLERANCE	.0027 (REF)
LEAD TOLERANCE	.0007
LENGTH OF ENGAGEMENT	4.18

*ECCENTRICITY BETWEEN THESE DIAMETERS MUST BE ABSORED WITHIN THE LIMITS OF MAJOR DIAMETER AND EFFECTIVE TOOTH THICKNESS.

IDENTIFICATION OF MATING SPLINE:
CAT* ---- DRG* 565G191 MK 1

(D) (E) SPLINE DIMENSIONS GIVEN ARE FINISHED DIMENSIONS "AFTER" INDUCTION HARDENING "NO ALLOWANCE FOR SHRINKAGE"

FLAT ROOT SIDE FIT SPLINE B

INDUCTION HARDEN HEAT TREAT NOTES

SPECIFY AREA TO BE HEAT TREATED: SPLINE TEETH
REFER TO DETAIL/MK 001 .

* PRIOR HEAT TREATMENT (H.T.)

FULL ANNEAL YES/NO NO
NORMALIZE YES/NO NO
QUENCH & TEMPER NO BHN

* IF PRIOR H.T. IS SPECIFIED ON ANY OTHER DRAWING REFERENCE THE DRAWG. NO. 565G174 MK-3 AND DO NOT FILL OUT THE ABOVE SPECIFICATIONS

INDUCTION HARDEN TO A SURFACE HARDNESS OF 52-56 HRC
AND EFFECTIVE CASE DEPTH 1/16 INCH AT 45 HRC.
** 1/16 PENETRATION BELOW MINOR DIA.
SIGNATURE:

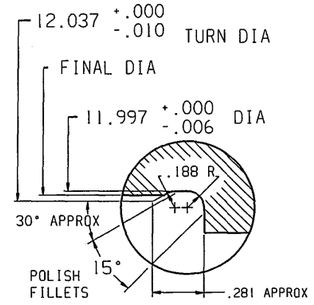
DRAWING NUMBER	SHEET
565G174	2 OF 3

DBT AMERICA
PO BOX 1879, COLUMBUS, OHIO 43216

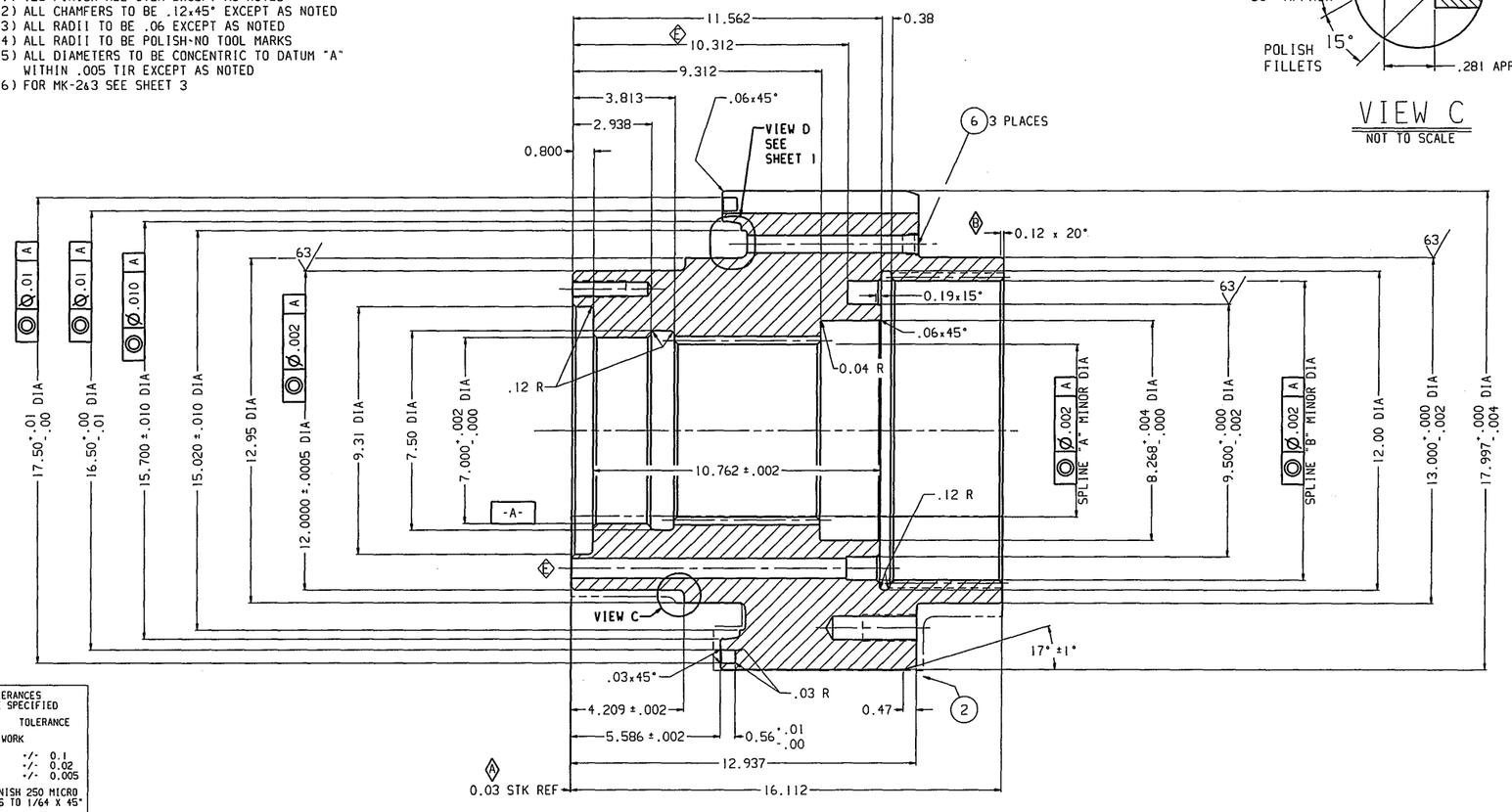
CUTTING HEAD
INTERMEDIATE DRIVE HUB
30MB

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED			
SCALE 1:2	DO NOT SCALE DRAWING		
DRAWN COLE DATE 11-20-01	DIRECTED ZYCH	CUSTOMER	
CHECKED COLE DATE 11-20-01	APPROVED	ORDER NO	

NOTE:
1) 125 FINISH ALL OVER EXCEPT AS NOTED
2) ALL CHAMFERS TO BE .12x45° EXCEPT AS NOTED
3) ALL RADII TO BE .06 EXCEPT AS NOTED
4) ALL RADII TO BE POLISH-NO TOOL MARKS
5) ALL DIAMETERS TO BE CONCENTRIC TO DATUM "A" WITHIN .005 TIR EXCEPT AS NOTED
6) FOR MK-2&3 SEE SHEET 3



VIEW C
NOT TO SCALE



SECTION A-A
FROM SHEET 1

DIMENSION TOLERANCES
UNLESS OTHERWISE SPECIFIED

DIMENSIONS	TOLERANCE
MACHINING WORK	
1 PLACE DECIMAL	+/- 0.1
2 PLACE DECIMAL	+/- 0.02
3 PLACE DECIMAL	+/- 0.005
STANDARD SURFACE FINISH 250 MICRO BREAK ALL SHARP EDGES TO 1/64 X 45°	
WELDING WORK	
UNDER 30" LONG	+/- 1/16
30" TO UNDER 60" LONG	+/- 1/8
60" LONG AND OVER	+/- 3/16

FLAME CUTTING	UNDER 6 FEET	6 FEET AND OVER
3/16" TO 1" THK	+/- 1/16	+/- 3/32
1" TO 4" THK	+/- 3/32	+/- 1/8
4" THK & OVER	+/- 1/8	+/- 3/16

FOR REFERENCE ONLY SEE DRAWING	SIZE	CODE IDENT NO	STANDARD	SPECIAL	SECTION	DRAWING NUMBER	SHEET
564G409	A	12			B	565G174	2 OF 3

260126

REVISIONS		
LTR	DESCRIPTION (ZONE-WAS-BY-DATE)	
A	AFFECTS SHEETS 1&2	
	ADDED KEYWAYS	
	FRITZ COLE 6-3-02	
B	SH.2.L-13 NEW SEAL	
	GROOVE DESIGNED.	
	DETAIL B VIEW CORRECTED	
	SH.2.B-11 WAS: 2.184	
	SH.2.E-12 WAS: 11.75	
	SH.2.E-13 WAS:12.418	
	SH.2.E-13 WAS:13.000	
	SH.2.E-14 WAS:13.875	
	SH.1.B-14 & L-3 WAS:	
	LH FINISHED DRIVE DRUM	
	K-3 WAS: 60°	
	ROLFE 3-18-03	

DIMENSION TOLERANCES
UNLESS OTHERWISE SPECIFIED

DIMENSIONS	TOLERANCE
MACHINING WORK	
1 PLACE DECIMAL	+/- 0.1
2 PLACE DECIMAL	+/- 0.02
3 PLACE DECIMAL	+/- 0.005
STANDARD SURFACE FINISH 250 MICRO BREAK ALL SHARP EDGES TO 1/64 X 45°	
WELDING WORK	
UNDER 30" LONG	+/- 1/16
30" TO UNDER 60" LONG	+/- 1/8
60" LONG AND OVER	+/- 3/16

FLAME CUTTING	UNDER 6 FEET	6 FEET AND OVER
3/16" TO 1" THK	+/- 1/16	+/- 3/32
1" TO 4" THK	+/- 3/32	+/- 1/8
4" THK & OVER	+/- 1/8	+/- 3/16

NOTE:
1) "IMPORTANT"
ALL BURNING AND WELDING MUST BE COMPLETED BEFORE FINAL MACHINING
(SEE ORDER-UNIT 240-CUTTING ELEMENTS)
2) MILLED SLOTS REQUIRED FOR CLEARANCE FOR FILL.LEVEL&DRAIN PLUGS
(SEE ORDER-UNIT 240-DRUM MODIFICATION)
3) MK-3 HAS ALREADY BEEN HEAT TREATED TO 302/341 BHN
4) 125 FINISH ALL OVER EXCEPT AS NOTED
5) ALL RADII TO BE POLISHED-NO TOOL MARKS
6) ALL DIAMETERS TO BE CONCERTRIC TO DATUM "A" WITHIN .005 TIR EXCEPT AS NOTED
7) WEIGHT REFLECTS MACHINING REMOVAL ONLY
(NO BIT BLOCKS)

DRAWING NUMBER 565G201 | SHEET 1 of 2

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MATERIAL	FIRST USED	CLASS	MACHINE
	565B982	30MB	MINER

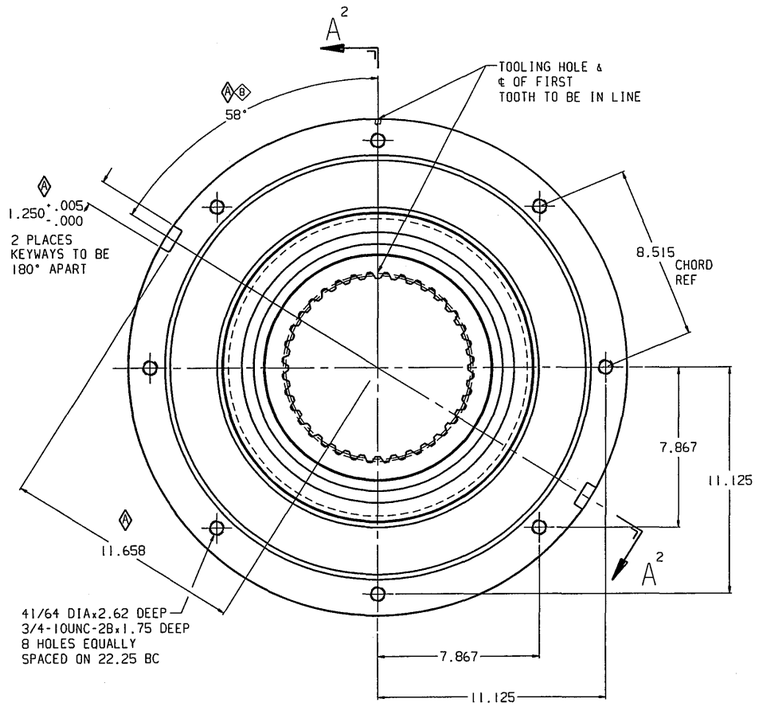
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED
SCALE 3:8 DO NOT SCALE DRAWING

DRAWN COLE DATE 4/16/02 | DIRECTED ZYCH | CUSTOMER
CHECKED COLE DATE 4/16/02 | APPROVED | ORDER NO

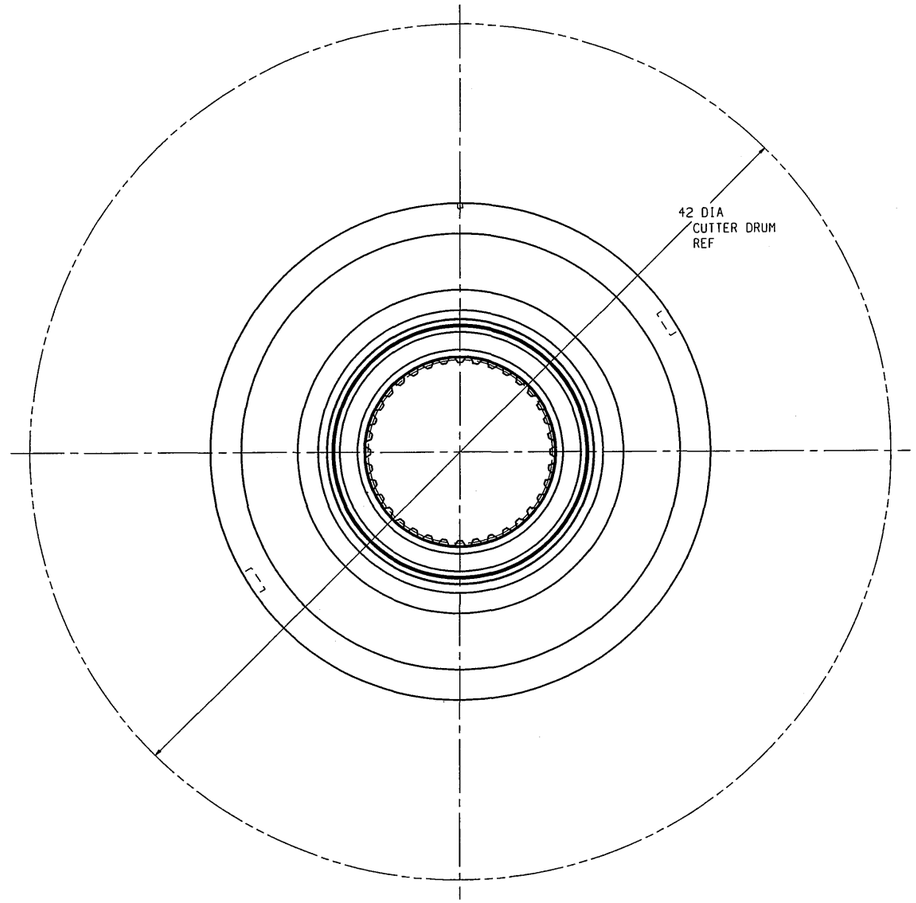
QUANT	MATERIAL	MK		DESCRIPTION	CAT NO	DRIG DRG	MK
	X		1	FINISHED DRIVE DRUM			
			2				
	I		3	WELDMENT.DRIVE DRUM		565G199	2
			4				
			5				

DBT AMERICA
PO BOX 1879. COLUMBUS. OHIO 43216

4.8M CH PULL-IN FINISHED DRIVE DRUM 30MB



MK-1 FINISHED DRIVE DRUM
1233 LBS



VIEW C-C
FROM SHEET 2

FOR METHODS CHECK SEE DRAWING 565G202 | DISP CODE STANDARD SPECIAL | SECTION B | DRAWING NUMBER 565G201 | SHEET 1 of 2

257439

REVISIONS		
REV	DESCRIPTION (ZONE-WAS-BY-DATE)	
A	AFFECTS SHTS 1&2	
	FRITZ COLE 4-10-02	
B	SHT 1.G-6 WAS:	
	SPLINE TEETH SPACE IN	
	LINE WITH TOOLING HOLE	
	ROLFE 5-29-02	
C	SHT 1.G-5 WAS: VIEW	
	CORRECTED ON SPLINE "A".	
	SPLINE TOOTH SPACE	
	ROLFE 10-1-02	
D	SHT 1.G-5 WAS: VIEW	
	SHT 1.C-2 & C-6 NOTES	
	CHANGED. SEE REVISION	
	SHEET	
	SHT 2. L-2 VIEW C.	
	REMOVED "O"RING GROOVE	
	& DIMS.	
	SHT 2.H-10 WAS: 30.310	
	SHT 2.B-13 WAS: 4.500	
	SHT 2.B-13 WAS: 3.56	
	SHT 2.C-13 WAS: 3.31	
	SHT 2.C-13 WAS: 1.81	
	SHT 2.D-13 WAS: 1.62	
	SHT 2.D-13 REMOVED: 0.62	
	SHT 2.F-15 WAS: 9.504	
	ROLFE 2-6-03	

EXTERNAL SPLINE (INVOLUTE, FLAT ROOT SIDE FIT)

25° APPROX 0.0410 0.0270

CIRCULAR TOOTH THICKNESS { MAX. EFFECTIVE 0.3927; MIN. EFFECTIVE 0.3909 (REF); MAX. ACTUAL 0.3901 (REF); MIN. ACTUAL 0.3882

8.7320 FORM DIA
8.6730
8.6130 MINOR DIA
9.0000 PITCH DIA (REF)
9.2000 SPECIAL MAJOR DIA
9.1850

NUMBER OF TEETH	36
PITCH	4/8
PRESSURE ANGLE	30
BASE DIAMETER	7.7942 (REF)
MEASUREMENT OVER PINS	9.7443
	9.7413
PIN DIAMETER	0.4800
PROFILE TOLERANCE	0.0005 (REF)
(ZERO AT PITCH DIAMETER)	-0.0008 (REF)
TOTAL INDEX TOLERANCE	0.0025 (REF)
LEAD TOLERANCE	0.0011
LENGTH OF ENGAGEMENT	7.56

*ECCENTRICITY BETWEEN THESE DIAMETERS MUST BE ABSORBED WITHIN THE LIMITS OF MAJOR DIAMETER AND EFFECTIVE TOOTH THICKNESS.

IDENTIFICATION OF MATING SPLINE: CAT* ---- DRG* 565G202 MK |

◇ SPLINE DIMENSIONS GIVEN ARE FINISHED
◇ DIMENSIONS "AFTER" INDUCTION HARDENING "NO ALLOWANCE FOR SHRINKAGE"

FLAT ROOT SIDE FIT SPLINE A

EXTERNAL SPLINE (INVOLUTE, FLAT ROOT SIDE FIT)

25° APPROX 0.0410 0.0270

CIRCULAR TOOTH THICKNESS { MAX. EFFECTIVE 0.3927; MIN. EFFECTIVE 0.3907 (REF); MAX. ACTUAL 0.3898 (REF); MIN. ACTUAL 0.3879

11.2300 FORM DIA
11.1717
11.1417 MINOR DIA
11.5000 PITCH DIA (REF)
11.7500 MAJOR DIA
11.6850

NUMBER OF TEETH	46
PITCH	4/8
PRESSURE ANGLE	30
BASE DIAMETER	9.9939 (REF)
MEASUREMENT OVER PINS	12.2460
	12.2428
PIN DIAMETER	0.4800
PROFILE TOLERANCE	0.0005 (REF)
(ZERO AT PITCH DIAMETER)	-0.0008 (REF)
TOTAL INDEX TOLERANCE	0.0027 (REF)
LEAD TOLERANCE	0.0007
LENGTH OF ENGAGEMENT	4.18

*ECCENTRICITY BETWEEN THESE DIAMETERS MUST BE ABSORBED WITHIN THE LIMITS OF MAJOR DIAMETER AND EFFECTIVE TOOTH THICKNESS.

IDENTIFICATION OF MATING SPLINE: CAT* ---- DRG* 565G174 MK |

◇ SPLINE DIMENSIONS GIVEN ARE FINISHED
◇ DIMENSIONS "AFTER" INDUCTION HARDENING "NO ALLOWANCE FOR SHRINKAGE"

FLAT ROOT SIDE FIT SPLINE B

DRAWING NUMBER 565G191 SHEET 1 of 2

INDUCTION HARDEN HEAT TREAT NOTES

SPECIFY AREA TO BE HEAT TREATED: SPLINES** A AND B

REFER TO DETAIL/MK -001 FOR PATTERN.

* PRIOR HEAT TREATMENT (H.T.)
FULL ANNEAL YES/NO -
NORMALIZE YES/NO -
QUENCH & TEMPER 321/363 BHN. ◇
* IF PRIOR H.T.IS SPECIFIED ON ANY OTHER DRAWING REFERENCE THE DRAWG. NO. 565G192 MK-3 AND DO NOT FILL OUT THE ABOVE SPECIFICATIONS

INDUCTION HARDEN TO A SURFACE HARDNESS OF 52/56 HRC AND EFFECTIVE CASE DEPTH 1/16 INCH.AT 45 HRC.
** 1/16 PENETRATION BELOW MINOR DIA.
SIGNATURE:

DBT AMERICA
PO BOX 1879, COLUMBUS, OHIO 43216

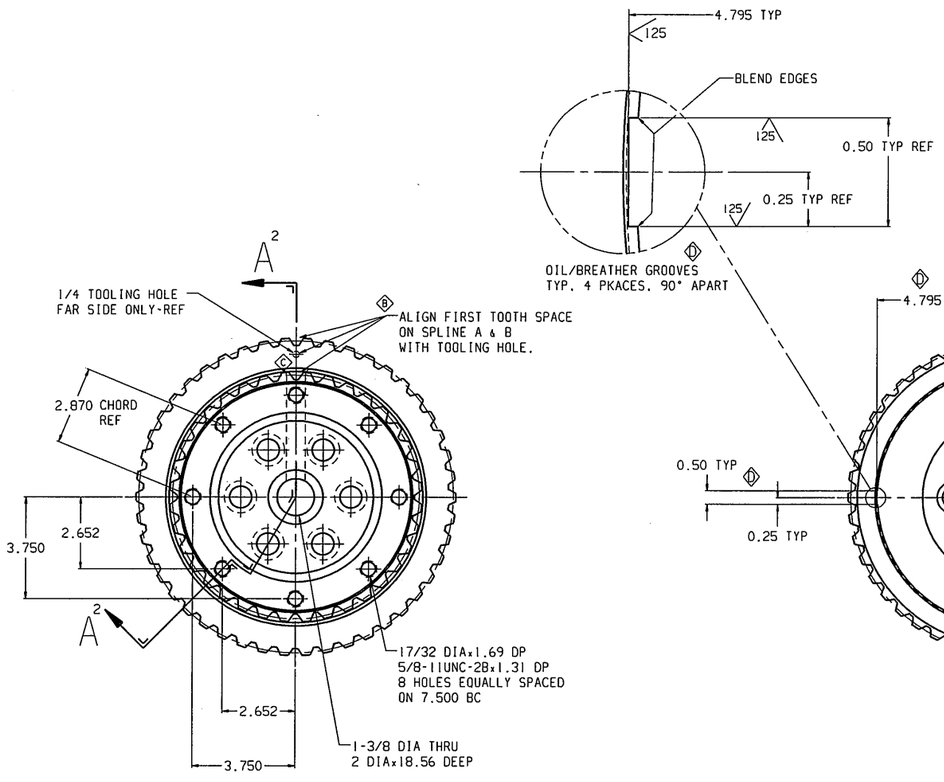
5.0M CH PULL-IN SHAFT 30MB

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED
SCALE 1:2 DO NOT SCALE DRAWING

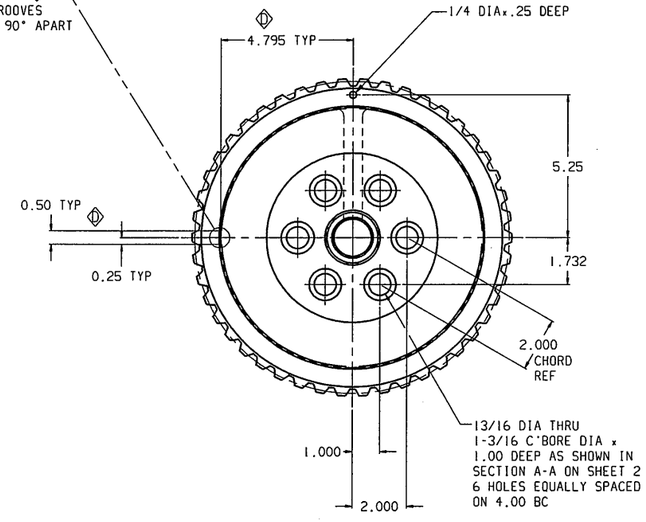
DRAWN	COLE	DATE 1/8/01	DIRECTED ZYCH	CUSTOMER
CHECKED	COLE	DATE 1/8/01	APPROVED	ORDER NO

QUANT	MATERIAL	MK	DESCRIPTION	CAT NO	ORIG DRG	MK
X		1	SHAFT			
1	4140	2	FORGING,SHAFT		565G192	3
		3				
		4				
		5				

NOTE:
1) 125 FINISH ALL OVER EXCEPT AS NOTED
2) ALL RADII TO BE POLISHED-NO TOOL MARKS
3) ALL DIAMETERS TO BE CONCENTRIC TO DATUM "A" WITHIN .002 TIR UNLESS NOTED



MK-1 SHAFT
720 LBS



VIEW D-D
FROM SHEET 2

DIMENSION TOLERANCES UNLESS OTHERWISE SPECIFIED		
DIMENSIONS	TOLERANCE	
MACHINING WORK		
1 PLACE DECIMAL	+/-	0.1
2 PLACE DECIMAL	+/-	0.02
3 PLACE DECIMAL	+/-	0.005
STANDARD SURFACE FINISH 250 MICRO BREAK ALL SHARP EDGES TO 1/64 X 45°		
WELDING WORK		
UNDER 30" LONG	+/-	1/16
30" TO UNDER 60" LONG	+/-	1/8
60" LONG AND OVER	+/-	3/16

FLAME CUTTING	UNDER 6 FEET	6 FEET AND OVER
3/16" TO 1" THK	+/- 1/16	+/- 3/32
1" TO 4" THK	+/- 3/32	+/- 1/8
4" THK & OVER	+/- 1/8	+/- 3/16

FOR METRICS CHECK SEE DRAWING	SYSTEM CODE SEE STD 110.100	STANDARD	SPECIAL	SECTION	DRAWING NUMBER	SHEET
- - -		A	1 2	B	565G191	1 of 2

204093

REVISIONS		
REV	DESCRIPTION (ZONE-WAS-BY-DATE)	
A	G-1 WAS: 6.408	
	J-6 WAS: 1.560	
	J-7 WAS: 1.555	
	J-8 WAS: 0.735	
	G-12 WAS:4.53	
	G-10 WAS:3.483	
	K-7 WAS:8.497	
	ROLFE 4-25-91	
B	C-12 REMOVED:	
	EVERY 60 DEG.	
	ON A 2.000 B.C.	
	C-12,D-12,E-14	
	& E-15 ADDED DIMS	
	H-14 ADDED	
	DETAIL 1	
	ROLFE 5-25-91	
C	B-7: .661	
	ROLFE 6-18-91	
D	B-7: .271	
	D-3 REMOVED: 2.061	
	+.004-.004 TURN DIA	
	E-14 ADDED TAP	
	HOLE NOTE	
	A-8 ADDED NOTE	
	ROLFE 7-25-91	
E	E-11 WAS 1/2-13	
	RPZ 9/4/91	
F	B-7 WAS 11	
	E-3 WAS 9.983	
	G-1 WAS 6.979	
	G-2 WAS .233	
	G-3 WAS 2.0010	
	+.0005/-.0000	
	H-5 WAS 9.3732	
	J-5 ADDED 10.177	
	+.002/-.002	
	J-8 WAS .804	
	H-12 WAS .06 X 45 CHAM.	
G	G-7 WAS 3.9395	
	+.0000/-.0020	
	A-8 REMOVED NOTE	
	RSS 1/20/92	
G	H-12 WAS .03X45° CHAM. D-3 WAS 2 PLC'S	
	SKC, 10-16-92	
H	A-8 WAS .012/.016	
	SKC, 11-2-92	
J	C-12 ADD SPEC TAP	
	GEO 8/25/93	

EXTERNAL SPLINE (INVOLUTE, FLAT ROOT, MAJOR DIAMETER FIT)

25° APPROX. 0.0340 / 0.0220

CIRCULAR TOOTH THICKNESS * MAX. EFFECTIVE 0.3043; MIN. EFFECTIVE 0.3010 (REF); MAX. ACTUAL 0.3021 (REF); MIN. ACTUAL 0.2988

3.3943 / 3.344 FORM DIA / 3.319 * MINOR DIA / 3.6000 PITCH DIA (REF) / 3.7900 / 3.7870 * MAJOR DIA

NUMBER OF TEETH	18
PITCH	5/10
PRESSURE ANGLE	30
BASE DIAMETER	3.1177 (REF)
MEASUREMENT OVER PINS	* 4.1730 / * 4.1685
PIN DIAMETER	0.3840
PROFILE TOLERANCE	+0.0006 (REF)
(ZERO AT PITCH DIAMETER)	-0.0008 (REF)
TOTAL INDEX TOLERANCE	0.0020 (REF)
LEAD TOLERANCE	0.0002
LENGTH OF ENGAGEMENT	2.65

IDENTIFICATION OF MATING SPLINE:
CAT* 486553 DRG* 549F356 MK 1

* THESE DIMENSIONS ARE MODIFIED FOR EXTRA LOOSE FIT.

1. TYPE OF GEAR	STRAIGHT BEVEL
2. SHAFT ANGLE	90°
3. NUMBER OF TEETH	13
4. DIAMETRAL PITCH	2.25
5. PRESSURE ANGLE	20°
6. TOOL EDGE RADIUS	.107
7. ADDENDUM (THEORETICAL)	.630
8. WHOLE DEPTH (THEORETICAL)	.974
9. CIRCULAR TOOTH THICKNES (REF)	.867
10. CHORDOL ADDENDUM	.661
11. CHORDAL THICKNESS (after backlash is cut)	.857
12. BACKLASH (with control gear)	.0127/.020 — AT TIGHTEST POINT OF MESH
13. CIRCULAR THICKNESS FACTOR (gleason k factor)	.075
14. AGMA QUALITY NUMBER	8
15. IDENIFICATION OF MATING GEAR: CAT. 486555 DWG. 549F362	43 TEETH MK 1

note: these dimensions are for reference in developing the pair of mating gears, they do not include allowance for cantilaving, developed dimensions may be obtained from the factory set up sheet. the control gear is cut with backlash.

this is the preferred contact pattern on a completed gear run on a test machine, under light load, with a control gear.

CARBURIZE CASE HEAT TREAT SPECIFICATIONS

SPECIFY AREA TO BE HEAT TREATED: BEVEL PINION AND SPLINE

REFER TO DETAIL/MK 001 FOR PATTERN.

CARBURIZE TO EFFECTIVE CASE DEPTH OF .055-.070 INCH AT 50 HRC.
NO DECACBURIZATION.
QUENCH & TEMPER (HARDEN) TO SURFACE HARDNESSS OF 60-64 HRC AND CORE HARDNESS 34-42 HRC.
COLD TREAT & RE-TEMPER YES/NO YES

SIGNATURE:

NOTES
1. NO FINISHING OF TOOTH PROFILE AFTER HEAT TREAT

DRAWING NO. 549F361 SHEET X

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DRESSER Construction & Mining Equipment

JEFFREY DIVISION, Mining Machinery
Post Office Box 1879 Columbus, Ohio 43216

TITLE
13T 2.25P PINION
1026 HH MINER

5-29-08	1026	CLASS	FIRST USED		
	MINER	GSR MACHINE			
SCALE 1:1	DO NOT SCALE DRAWING				
DRAWN K.M.Cramer DATE 10-10-90		DIRECTED ALLEN JINKENS		CUST.	
CHECKED BY K.M.C. DATE 2-22-91		APPROVED [illegible] 2/25/91		ORDER NO. 5907	

QUANT.	MATERIAL	MK	DESCRIPTION	CAT. NO.	DRIG. DRG.	MK
X		1	13T PINION	486554		
1	4820H	2	PINION FORGING •98543		549F363	1
		3				
		4				
		5				

27/64 DIA. DRILL
2.40-2.50 DEEP THEN
9/16 DIA. DRILL
.75-.87 DEEP THEN
.505-13 UNC 2B TAP
X 2.00-2.12 DEEP
(SPECIAL TAP FOR HT SHRINKAGE) ◇

.218 APPROX.
15°
30° APPROX.
.12 R
1.990 +.000 -.006 DIA.
2.030 DIA. REF.
POLISH FILLETS BEFORE HEAT TREATMENT IF NOT PROFILED ON NC LATHE

50 TOOTH FACE
125 ROOT AREA (MUST BE FREE FROM NOTCHES OR STEPS)
BREAK EDGES AND REMOVE ALL BURRS ON GEAR TEETH. 1/64 MIN. TO 1/16 MAX.

0.500 / 1.000 / 1.000 / 0.500

STAMP DATE CODE AND STEEL GRADE HERE.

17/32 DIA. DRILL, 2.62-2.68 DP. ◇
5/8-11 UNC 2B TAP, 1.50-1.56 DP.

0.866 / 0.866

STAMP "J" TRADEMARK AND CAT. NO. 486554 HERE.

VIEW A-A

.005 TO .010 R.
3.435 +.006 -.006 DIA
.120 +.005 -.000

DETAIL 1
SCALE NONE

⌀.002 A — 3.960 BEFORE H.T. — 3.940 BEFORE CARB.
0.03 X 45° CHAMFER ◇
3.202 FULL SPLINE SEE SPLINE DATA
// .002 B
SEE DETAIL 1
3.500
3.277
9.983 REF ◇
⌀.003 A
20° 54' 40"
16° 49' 16"
14° 51' 29"
2.030⌀ +.0010 -.0000 BEFORE CARB. 2.0015 +.0000 -.0010 GRIND AFTER HARDENING
3.875 +.000 -.002 ⌀
3.9390 +.0000 -.0010 ⌀ GRIND AFTER HARDENING
3.6000 P.D.
3.7900 +.0000 -.0030 ⌀
4.610⌀
6.237⌀
6.979 +.005 -.000 ⌀ ◇
2.60
0.2334 REF ◇
5.7777 P.D.
63
125
32
0.18 X 15° CHAMFER
0.25 R
0.06 R
0.25 R
0.13 X 15° CHAMFER ◇
1.50 R
1.420
0.970
0.804 +.002 -.002 ◇
1.783
9.3732 REF ◇
1.46
4.636
10.177 +.002 -.002 ◇
3.981
6.628
12.73 REF
0.060 X 15° CHAMFER. STONE & POLISH EDGE AFTER GRINDING ◇

MK-1
43 LBS

FINISH 250 MICRO-INCHES ALL OVER UNLESS OTHERWISE SPECIFIED

CHARACTERISTIC	SYMBOL	CHARACTERISTIC	SYMBOL
FOR SINGLE FEATURE: •FLATNESS		FOR RELATED FEATURES: •PARALLELISM	//
•STRAIGHTNESS	—	•PERPENDICULARITY (•SQUARENESS)	⊥
•ROUNDNESS (CIRCULARITY)	○	•ANGULARITY	∠
•CYLINDRICITY	⌭	•RUNOUT	↗
•PROFILE OF ANY LINE	⌒	POSITIONAL TOLERANCE: TRUE POSITION	⌖
•PROFILE OF ANY SURFACE	⌓	CONCENTRICITY	◎
• GEOMETRIC FORM TOLERANCES		SYMMETRY	⌯

DIMENSION TOLERANCES UNLESS OTHERWISE SPECIFIED

MACHINE WORK

DIMENSIONS	TOLERANCE
1 PLACE DECIMAL	+/- .1
2 PLACE DECIMAL	+/- .02
3 PLACE DECIMAL	+/- .005

WELDMENTS		MACHINING ROUGHNESS
UNDER 30 LG	+/- 1/16	
30 TO UNDER 60 LG	+/- 1/8	250 MICRO
60 LG AND OVER	+/- 3/16	

FLAME CUTTING	UNDER 6 FT	6 FT & OVER
.18 TO .99 THK	+/- 1/16	+/- 3/32
1.00 TO 3.99 THK	+/- 3/32	+/- 1/8
4.00 & OVER THK	+/- 1/8	+/- 3/16

BREAK ALL SHARP EDGES TO 1/64 X 45°

FOR METHODS CHECK-SEE DRG 175F446 | DISTR. CODE SEE STD FTO.118 A | STD: | SPECIAL: | ENG. SECT. DRAWING NUMBER B 549F361 X | NEXT ASY

180800

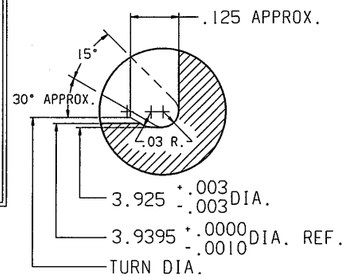
REVISIONS	
REV	DESCRIPTION (ZONE-WAS-BY-DATE)
A	

CARBURIZE CASE HEAT TREAT SPECIFICATIONS
SPECIFY AREA TO BE HEAT TREATED: GEAR TEETH

REFER TO DETAIL/MK 001 FOR PATTERN.

CARBURIZE TO EFFECTIVE CASE DEPTH OF
.035-.050 INCH AT 50 HRC.
NO DECARBURIZATION.
QUENCH & TEMPER (HARDEN) TO SURFACE HARDNESSS
OF 60-64 HRC AND CORE HARDNESS 34-42 HRC.
COLD TREAT & RE-TEMPER YES/NO YES

SIGNATURE:



DETAIL A
POLISH FILLETS BEFORE HEAT TREATMENT
IF NOT PROFILED ON NC LATHE

INSPECTION DATA (AFTER HEAT TREATMENT)

SPAN MEASUREMENT OF 3 TEETH (ALLOWABLE VARIATION ON ANY ONE GEAR 0.001 MAX)	1.5675 +0.0000 -0.0039
CHORDAL ADDENDUM	0.2811
CHORDAL THICKNESS	0.3761 +0.0000 -0.0039
MEASUREMENT OVER 0.3840 DIAMETER PINS	3.8965 / 3.8902
ROLL ANGLE TO START OF ACTIVE PROFILE	18.2333
CENTER DISTANCE WITH N/A TOOTH	
MASTER GEAR N/A	
AGMA CLASS #8 GEAR PER AGMA 309.03 JAN 1973	
AGMA CLASS #6 FOR LEAD TOLERANCE ONLY	
RUNOUT TOLERANCE	0.0035
PITCH TOLERANCE	0.0009
TOOTH PROFILE TOLERANCE	0.0013
LEAD TOLERANCE	0.0017
TOOTH TO TOOTH COMPOSITE TOLERANCE	0.0018
TOTAL COMPOSITE TOLERANCE	0.0054

TYPE OF GEAR	EXTERNAL SPUR INVOLUTE
NO. OF TEETH	16 DIAMETRAL PITCH 5
PITCH DIAMETER	3.2000
TYPE OF TEETH	FULL DEPTH
TYPE OF ROOT	FULL FILLET
PRESSURE ANGLE	25° HOB POSITION .0700
ADDENDUM	.2700 WHOLE DEPTH (APPROX.) 0.4500
OUTSIDE DIAMETER (SPECAIL? NO)	3.7400
BASE CIRCLE DIAMETER	2.9002
TOOTH THICKNESS REDUCTION FOR BACKLASH	0.0024
IDENTIFICATION OF MATING GEAR	
CAT. NO. 487972 DRG. NO 554F042 MK. 1	
CENTER DISTANCE	5.4490

NOTES
1. NO FINISHING OF TOOTH PROFILE AFTER HEAT TREAT

DRAWING NO. 554F041

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DIMENSIONS ARE IN INCHES
UNLESS SPECIFIED OTHERWISE

DRESSER
Construction & Mining Equipment
JEFFREY DIVISION, Mining Machinery
Post Office Box 1879 Columbus, Ohio 43216

TITLE
16T 5P PINION

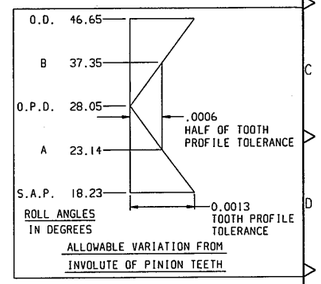
1026 HH MINER

SCALE 1:1 DO NOT SCALE DRAWING

SHEET		549B109	1026	CLASS	FIRST USED		
		MINER					
(3)	(2)	CAM MACHINE					

DRAWN JINNENS DATE 6/19/92 DIRECTED O'KEEFE CUST.
CHECKED BY HAJ DATE 6/19/92 APPROVED O'KEEFE ORDER NO. 5907

QUANT.	MATERIAL	MK	DESCRIPTION	CAT. NO.	ORIG. DRG.	MK
X		1	16T 5P PINION	487971		
1	4820H	2	PINION FORGING #98550		549F398	3
		3				
		4				
		5				



DETAIL B
POLISH FILLETS BEFORE HEAT TREATMENT
IF NOT PROFILED ON NC LATHE

DIMENSION TOLERANCES
UNLESS OTHERWISE SPECIFIED

MACHINE WORK

DIMENSIONS	TOLERANCE
1 PLACE DECIMAL	+/- .1
2 PLACE DECIMAL	+/- .02
3 PLACE DECIMAL	+/- .005

WELDMENTS		MACHINING ROUGHNESS
UNDER 30 LG	+/- 1/16	
30 TO UNDER 60 LG	+/- 1/8	250 MICRO
60 LG AND OVER	+/- 3/16	

FLAME CUTTING	UNDER 6 FT	6 FT & OVER
.18 TO .99 THK	+/- 1/16	+/- 3/32
1.00 TO 3.99 THK	+/- 3/32	+/- 1/8
4.00 & OVER THK	+/- 1/8	+/- 3/16

BREAK ALL SHARP EDGES TO 1/64 X 45°

	CHARACTERISTIC	SYMBOL		CHARACTERISTIC	SYMBOL
FOR SINGLE FEATURE	•FLATNESS	▱	FOR RELATED FEATURES	•PARALLELISM	//
	•STRAIGHTNESS	—		•PERPENDICULARITY •SQUARENESS	⊥
	•ROUNDNESS (CIRCULARITY)	○		•ANGULARITY	∠
	•CYLINDRICITY	⌭		•RUNOUT	↗
	•PROFILE OF ANY LINE	⌒	POSITIONAL TOLERANCE	TRUE POSITION	⌖
	•PROFILE OF ANY SURFACE	⌓		CONCENTRICITY	◎
•	GEOMETRIC FORM TOLERANCES			SYMMETRY	⌯

MK-1
67#

FINISH 250 MICRO-INCHES
ALL OVER UNLESS
OTHERWISE SPECIFIED

FOR METHODS CHECK-SEE DRG	DISTR. CODE SEE STD 110.116	STD:	SPECIAL:	UNC. SECT	DRAWING NUMBER	ASSY NO.
549F399	A			B	554F041	

180767

REVISIONS		
REV	DESCRIPTION (ZONE-WAS-BY-DATE)	
A	H-4, H-13 MOT. BOLTS VIEW	
	CHANGE, MOTOR PROFILE VIEW	
	CHANGE, REH 06/03/03	

DRAWING NUMBER 567G548 | SHEET

DBT AMERICA
PO BOX 1879, COLUMBUS, OHIO 43216

GATHERING HEAD LUBE ASSEMBLY 30M2

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED
SCALE 3:16 | DO NOT SCALE DRAWING

DRAWN	REH	DATE 03/17/03	DIRECTED	ZYCH	CUSTOMER
CHECKED	RPZ	DATE 03/17/03	APPROVED		ORDER NO

CRITICAL NOTES!!!

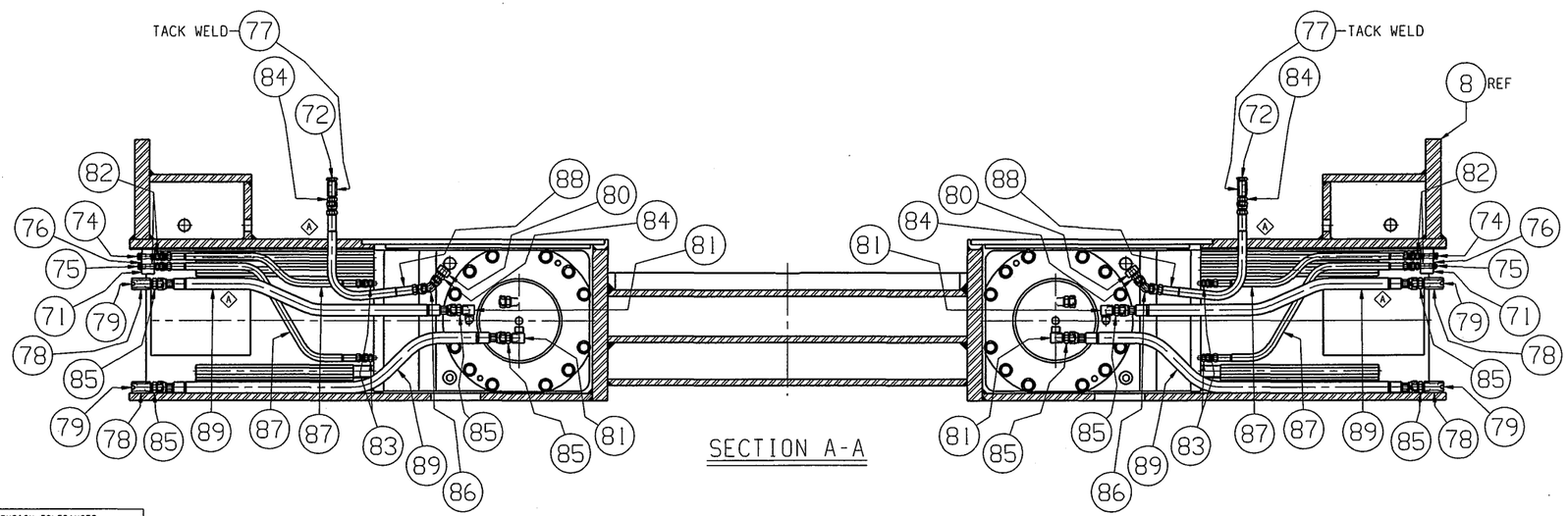
ALL MOTOR LUBE HOSES AND VENT HOSES ARE TO BE FILLED WITH HIGH TEMPERATURE ELECTRIC MOTOR GREASE BEFORE ASSEMBLING THEM TO THE ELECTRIC MOTOR. THE INTENT OF THIS IS TO INSURE THAT THERE ARE NO AIR GAPS BETWEEN THE GREASE NIPPLE AND THE POINT WHERE THE GREASE IS FLUSHED OUT TO THE ATMOSPHERE.

CRITICAL NOTE!!! BEFORE WELDING MK-78 PIPE COUPLING IN PLACE, MAKE SURE MOTOR CAN BE REMOVED. SEE ZONE J-2 AND J-15.

NOTE: ELECTRIC MOTOR GREASE MUST BE: NLGI 2 W/LITHIUM COMPLEX THICKENER AND 500°F (260°C) MIN.DROP POINT

NOTES:

1. SEE DRAWING 567B510 FOR IDENTIFICATION OF MK. NUMBERS.
2. FOR LOCATION OF SECTION A-A SEE DRAWING 567G547.
3. FOR ASSEMBLY INSTRUCTIONS SEE DRAWING 567G543.
4. USE THIS DRAWING IN CONJUNCTION WITH DRAWINGS 567G542, 567G543, 567G544, 567G545, 567G546 AND 567G547.



SECTION A-A

MK-1 GATHERING HEAD CLA ASSEMBLY
17000 lbs

DIMENSION TOLERANCES UNLESS OTHERWISE SPECIFIED

DIMENSIONS	TOLERANCE
MACHINING WORK	
1 PLACE DECIMAL	+/- 0.1
2 PLACE DECIMAL	+/- 0.02
3 PLACE DECIMAL	+/- 0.005
STANDARD SURFACE FINISH 250 MICRO BREAK ALL SHARP EDGES TO 1/64 X 45°	
WELDING WORK	
UNDER 30" LONG	+/- 1/16
30" TO UNDER 60" LONG	+/- 1/8
60" LONG AND OVER	+/- 3/16

FLAME CUTTING	UNDER 6 FEET	6 FEET AND OVER
3/16" TO 1" THK	+/- 1/16	+/- 3/32
1" TO 4" THK	+/- 3/32	+/- 1/8
4" THK & OVER	+/- 1/8	+/- 3/16

FOR METHODS CHECK SEE DRAWING 565G886 | DISER CODE SEE 610.1181 A | STANDARD | SPECIAL 12 | SECTION B | DRAWING NUMBER 567G548 | SHEET

REVISIONS		
REV	DESCRIPTION (ZONE-WAS-BY-DATE)	
A	F.G-6 REMV'D UNDERCUT ADD.37 CHAMF ADD 1.50 R NIENHAUS 8-19-91	

EXTERNAL SPLINE (INVOLUTE, FLAT ROOT, MAJOR DIAMETER FIT)

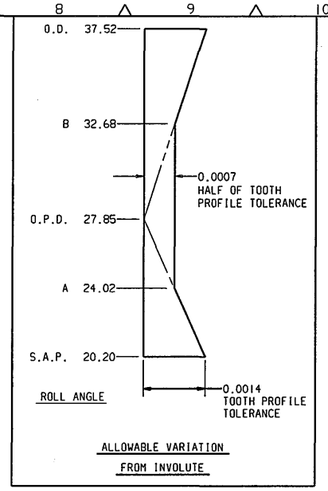
25° APPROX .0410 .0270

CIRCULAR TOOTH THICKNESS — MAX. EFFECTIVE .3908; MIN. EFFECTIVE .3891 (REF); MAX. ACTUAL .3885 (REF); MIN. ACTUAL .3868

5.2390 / 5.1749 MINOR DIA / 5.1449 FORM DIA / 5.5000 PITCH DIA (REF) / 5.7500 / 5.7486 MAJOR DIA

NUMBER OF TEETH	22
PITCH	4/8
PRESSURE ANGLE	30°
BASE DIAMETER	4.7631 (REF)
MEASUREMENT OVER PINS	6.2361 / 6.2336
PIN DIAMETER	.4800
PROFILE TOLERANCE	.0006 (REF)
(ZERO AT PITCH DIAMETER)	-.0008 (REF)
TOTAL INDEX TOLERANCE	.0020 (REF)
LEAD TOLERANCE	.0007
LENGTH OF ENGAGEMENT	4.0000

IDENTIFICATION OF MATING SPLINE:
CAT# 484004 DRG# 540F604 MK 1



ALLOWABLE VARIATION FROM INVOLUTE

CARBURIZE CASE HEAT TREAT SPECIFICATIONS

SPECIFY AREA TO BE HEAT TREATED: ALL OVER EXCEPT SPLINED AREA WHERE NOTED
REFER TO DETAIL/MK 002 FOR PATTERN.

CARBURIZE TO EFFECTIVE CASE DEPTH OF .045-.055 INCH AT 50 HRC.
NO DECACBURIZATION.
QUENCH & TEMPER (HARDEN) TO SURFACE HARDNESSS OF 60-64 HRC AND CORE HARDNESS 30/42 HRC.
COLD TREAT & RE-TEMPER YES/NO YES

SIGNATURE:

DRAWING NO. 551F805 SHEET

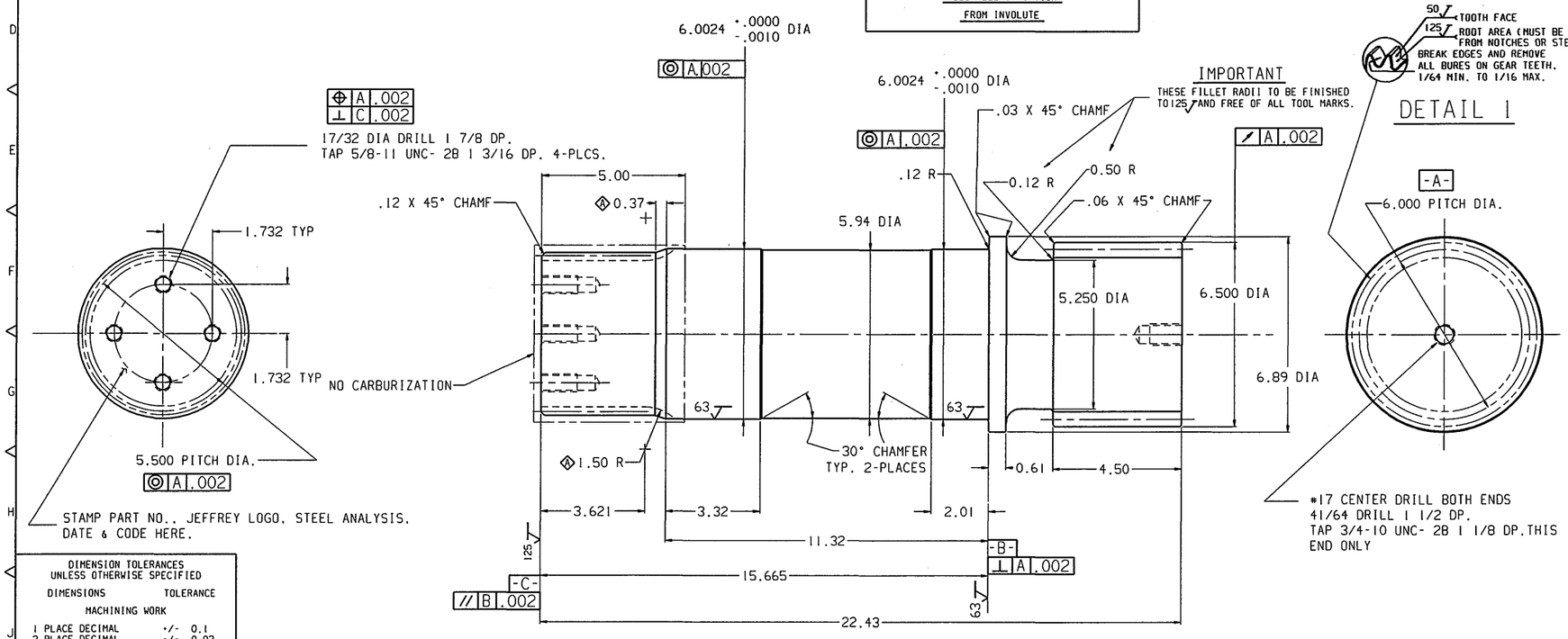
DRESSER Construction & Mining Equipment
JEFFREY DIVISION, Mining Machinery
Post Office Box 1879 Columbus, Ohio 43216

TITLE: SUN GEAR MACH
1060 MINER

SCALE HALF	DO NOT SCALE DRAWING	MACHINE 1060 MINER	CLASS	FIRST USED	
DRAWN NIENHAUS DATE 8-1-91		DIRECTED O'KEEFE		CUST. CPL	
CHECKED BY	DATE	APPROVED		ORDER NO. L-03899I	

QUANT.	MATERIAL	MARK	DESCRIPTION	CAT. NO.	ORIG. DRG.	MARK
		1	SUN GEAR MACHINING	487541		
1	4820H	2	FORGING PAT.# 98316		540F603	2
		3				
		4				
		5				
		6				
		7				
		8				
		9				
		10				

TYPE OF GEAR EXTERNAL SPUR INVOLUTE
NO. OF TEETH 30 DIAMETRAL PITCH 5
TYPE OF TEETH FULL DEPTH
TYPE OF ROOT FULL FILLET
PRESSURE ANGLE 25° HOB POSITION +.05
ADDENDUM .2500 WHOLE DEPTH (APPROX.) .4500
OUTSIDE DIAMETER (SPECIAL? NO) 6.5000
BASE CIRCLE DIAMETER 5.4378
TOOTH THICKNESS REDUCTION FOR BACKLASH .0037
IDENTIFICATION OF MATING GEAR 35T PLANET GEAR
CAT. NO. 484000 DRG.NO. 540F569 MK. 1
CENTER DISTANCE
CAT. NO. DRG.NO. MK.
CENTER DISTANCE
INSPECTION DATA (AFTER HEAT TREATMENT)
SPAN MEASUREMENT OF 5 TEETH (ALLOWABLE VARIATION
ON ANY ONE GEAR 0.001 MAX.) 2.7644 +.0000 -.0039
CHORDAL ADDENDUM .2553
CHORDAL THICKNESS 0.3568 +.0000 -.0039
MEASUREMENT OVER .3456 DIAMETER PINS 6.5647
6.5574
ROLL ANGLE TO START ACTIVE PROFILE 20.2008
CENTER DISTANCE WITH TOOTH
MASTER GEAR
AGMA CLASS #8 GEAR.PER AGMA 390.03 JAN.1973
AGMA CLASS #6 FOR LEAD TOLERANCE ONLY
RUNOUT TOLERANCE .0041
PITCH TOLERANCE .0010
TOOTH PROFILE TOLERANCE .0014
LEAD TOLERANCE .0023
TOOTH TO TOOTH COMPOSITE TOLERANCE .0017
TOTAL COMPOSITE TOLERANCE .0057



DIMENSION TOLERANCES UNLESS OTHERWISE SPECIFIED	
DIMENSIONS	TOLERANCE
MACHINING WORK	
1 PLACE DECIMAL	+/- 0.1
2 PLACE DECIMAL	+/- 0.02
3 PLACE DECIMAL	+/- 0.005
STANDARD SURFACE FINISH 250 MICRO BREAK ALL SHARP EDGES TO 1/64 X 45°	
WELDING WORK	
UNDER 30" LONG	+/- 1/16
30" TO UNDER 60" LONG	+/- 1/8
60" LONG AND OVER	+/- 3/16

FLAME CUTTING	UNDER 6 FEET	6 FEET AND OVER
3/16" TO 1" THK	+/- 1/16	+/- 3/32
1" TO 4" THK	+/- 3/32	+/- 1/8
4" THK & OVER	+/- 1/8	+/- 3/16

FOR METHODS CHECK-SEE DRG 540F605 | DISTR. CODE SEE STD FIG. 1181 | STD: A | SPECIAL: | ENG. SECT. B | DRAWING NUMBER 551F805 | REV. NO.

167982

DRAWING NO. 551B836 | SHEET NO. 1

DRESSER Construction & Mining Equipment

JEFFREY DIVISION, Mining Machinery
Post Office Box 1879 Columbus, Ohio 43216

REVISIONS	FIRST USED ON	MACHINE	CLASS
GIVE MK.-INITALS-DATE	ORDER	1060	MINER
A MKS-9,10 WAS QTY OF 8 ADDED MK-13	ORDER	1060	MINER
B MK-7 WAS CAT 66986	ORDER	1060	MINER
MK-26 WAS CAT 67142	ORDER	1060	MINER
NIENHAUS 12-5-91	ORDER	1060	MINER
MK-18 WAS 10 REQ'D	ORDER	1060	MINER
MK-31 WAS 2 REQ'D	ORDER	1060	MINER
MK-34 WAS 4 REQ'D	ORDER	1060	MINER
MK-36 WAS 4 REQ'D	ORDER	1060	MINER
NIENHAUS 10-9-92	ORDER	1060	MINER

DRAWN NIENHAUS DATE 9-23-91 | DIRECTED O'KEEFE | FOR METHODS CHECK-SEE DWGS: 547B615

CHECKED DATE | APPROVED

QUANT. 9	8	7	6	5	4	3	2	1	GR.	MAT'L.	MK.	DESCRIPTION	CAT. NO.	ORIG.- DRW.	MK.
							2	2			1	PLANETARY PISTON		546F301	7
							2	2			2	1/4" X 16-1/2" "O"-RING	069027	531.462	P.7
							24	24			3	1-1/4 - 7 X 5" LG. HEX.HD. CAP SCR.	68148	561.321	P.5
							24	24			4	1-1/4 HARD STL. WASHER	67008	561.716	
							-	-			5	CRAWLER PLANETARY ASSEMBLY			
							10	10			6	1 HARD STL. WASHER	67000	561.716	
							4	4		GR.5	7	1 - 8 X 4-1/2 HEX. HD. CAP SCR.	68138	561.321	P.5
							-	-			8	CRAWLER DRIVE INPUT CASE ASSEMBLY			
							4	4		GR.5	9	7/8-9 X 2-1/2 HEX. HD. CAP SCR.	68123	561.321	
							4	4			10	7/8 HARD STL. WASHER	67006	561.716	
							-	-			11	TRAM MOTOR			
							6	6		GR.5	12	1 - 8 X 2-1/2 HEX. HD. CAP SCR.	67315	561.321	
							4	4			13	TAPERED PIN	487800	551G856	1
							1	1			14	MOTOR BRACKET R.H.	487719	551F835	4
							1	1			15	MOTOR BRACKET L.H.	487718	551F835	2
							10	10		GR.8	16	3/4-10 X 2-3/8 HEX.HD CAP SCR.	66794	561.321	P.7
							10	10			17	25/32 I.D. 2 O.D.X 3/8 THK.SPC.STL.WASHER	25906	C-25906	
							22	22			18	3/4 HARD STL. WASHER	66982	561.716	
							18	18		GR.5	19	5/8-11 X 2-1/4 HEX. HD. CAP SCR.	66919	561.321	
							34	34			20	5/8 HARD STL. WASHER	66993	561.716	
							2	2			21	43T SPUR GEAR	487534	551G803	1
							2	2			22	GEAR RETAINER	487676	551G825	3
							16	16		GR.5	23	5/8-11 X 2 HEX. HD. CAP SCR.	68857	561.320	
							2	2			24	TRAM CASE ASM	487708	551G828	1
							5	5			25	TRAM CASE SHIM	487690	551G827	4
							12	12		GR.5	26	3/4-10 X 4 HEX. HD. CAP SCR.	67375	561.321	
							4	4			27	3/16" X 18-3/8" "O"-RING	70852	531.462	P.7
											28				
							2	2			29	TRAM CASE OUTPUT COVER	487661	551G823	1
							24	24			30	1/2-13 X 1 SOC. HD. CAP SCR.	61419	561.327	
							4	4			31	3/8"MAGNETIC DRAIN PLUG	70590	553.471	P.3
							1	1		#46STL.	32	1/16" X 48"LG. LOCKWIRE			
							2	2			33	3/4 PIPE PLUG	63146	553.471	
							2	2			34	3/4"MAGNETIC DRAIN PLUG	70592	553.471	P.3
							2	2			35	2 PIPE PLUG	66354	553.471	
							2	2			36	3/4"x 3/8"HEX.HD.FORGED STEEL PIPE BUSHING	27228	553.461	
							6	6			37	3/8" VENT PLUG	485743	546F488	3
							2	2			38	3/4"PIPE NIPPLE X SCHED.#80 X 2 1/2"LG	27796	553.482	
							2	2			39	3/4"STRAIGHT COUPLING	26924	553.411	
							2	2			40	3/4"PIPE NIPPLE X SCHED.#80 X 6"LG	27802	553.482	

DISTR. CODE SEE STD. 110.118 | STD: A | SPECIAL: | ENG. SEC. B | ORDER NO. L-038991

TITLE: CRAWLER DRIVE ASSEMBLY

SHOW TOTAL NUMBER OF SHEETS ON SHEET 1 ONLY

DRAWING NO. 551B836 | SHEET NO. 1 | OF 2 SHEETS

DRAWING NO. 551B836 | SHEET NO. 2

DRESSER Construction & Mining Equipment

JEFFREY DIVISION, Mining Machinery
Post Office Box 1879 Columbus, Ohio 43216

REVISIONS	FIRST USED ON	MACHINE	CLASS
GIVE MK.-INITALS-DATE	ORDER	1060	MINER
A MK-50 WAS QTY 1 J.N. 12-5-91	ORDER	1060	MINER
B ADDED MK-55 J.N. 11-2-94	ORDER	1060	MINER
C MKS-48,49 & 56 J.N. 11-2-94	ORDER	1060	MINER

DRAWN NIENHAUS DATE 9-23-91 | DIRECTED O'KEEFE | FOR METHODS CHECK-SEE DWGS: 547B615

CHECKED DATE | APPROVED

QUANT. 9	8	7	6	5	4	3	2	1	GR.	MAT'L.	MK.	DESCRIPTION	CAT. NO.	ORIG. DRW.	MK.
							2	2			41	3/4"45°2000 LB FORGED STEEL PIPE ELBOW	27060	553.431	
											42				
											43				
								2			44	BRAKE MOUNT	486213	548F174	2
								8			45	3/4-10 X 4-1/2 12 POINT CAP SCR.	70755	561.327	P.4
								2		GR.5	46	5/8-11 X 1-1/2 HEX. HD. CAP SCR.	67795	561.321	
								2			47	BRAKE DISC	486212	548F175	1
								2			48	3/8 X 3/8 X 1 1/2 LG. KEY	63317	561.610	P.3
											49				
								2			50	BRAKE CALIPER	485988	547F612	1
							1	1		DRG	51	LOCKWIRE PROCEDURE DRG.		511A060	
							1	1		DRG	52	CRAWLER DRIVE CHAIN ASSEMBLY		551G837	
								X			53	CRAWLER DRIVE ASSEMBLY WITH BRAKE			
							X				54	CRAWLER DRIVE ASSEMBLY WITHOUT BRAKE			
							2	2			55	SPLINED COUPLING	467491	510F580	1
							2	2			56	RETAINING RING	173644	527.712	1
											57				
											58				
											59				
											60				
											61				
											62				
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DISTR. CODE SEE STD. 110.118 | STD: A | SPECIAL: | ENG. SEC. B | ORDER NO. L-038991

TITLE: CRAWLER DRIVE ASSEMBLY

SHOW TOTAL NUMBER OF SHEETS ON SHEET 1 ONLY

DRAWING NO. 551B836 | SHEET NO. 2 | OF 2 SHEETS

REVISIONS		
REV	DESCRIPTION (ZONE-WAS-BY-DATE)	
A	B-3:ADDED HEAT TREAT NOTES	
	C-4:ADDED NOTE TO SPLINE NOTES	
	H-4,H-9:DIM WAS 2.7525/2.7515	
	D-14:DIM WAS 1.65	
	C.MOODY 9-11-91	

INDUCTION HARDEN HEAT TREAT NOTE

SPECIFY AREA TO BE HEAT TREATED: SPLINES ONLY
REFER TO DETAIL/MK ___1___ FOR PATTERN

* PRIOR HEAT TREATMENT (H.T.)

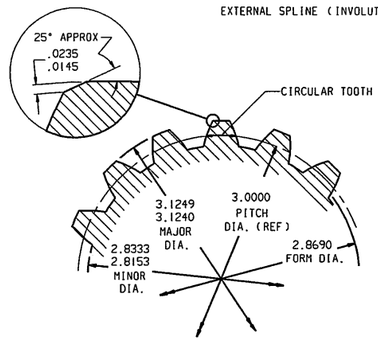
NORMALIZE YES/NO NO
NORMALIZE & TEMPER NO BHN
QUENCH & TEMPER 321-363 BHN
* IF "PRIOR H.T." IS SPECIFIED ON ANY OTHER DRAWING REFERENCE THE DRAWING NO. _____
AND DO NOT FILL OUT THE ABOVE SPECIFICATIONS

INDUCTION HARDEN TO A SURFACE HARDNESS OF 52/56 HRC
AND EFFECTIVE CASE DEPTH TO 1/16 INCH AT 45 HRC

SIGNATURE _____

Ⓐ

EXTERNAL SPLINE (INVOLUTE,FLAT ROOT, MAJOR DIAMETER FIT)



CIRCULAR TOOTH THICKNESS
- MAX EFFECTIVE .1947
- MIN EFFECTIVE .1932 (REF)
- MAX ACTUAL .1927 (REF)
- MIN ACTUAL .1913

NUMBER OF TEETH	24
PITCH	8/16
PRESSURE ANGLE	30°
BASE DIAMETER	2.598 (REF)
** MEASUREMENT OVER TWO PINS	3.3663 / 3.3640
PIN DIAMETER	.2400
PROFILE TOLERANCE	+.0005 (REF)
(ZERO AT PITCH DIAMETER)	-.0007 (REF)
TOTAL INDEX TOLERANCE-MAX.	.0018 (REF)
LEAD TOLERANCE	.0009
LENGTH OF ENGAGEMENT	5.50

IDENTIFICATION OF MATING SPLINE:
CAT. 487063 DRG. 550F437 MK 1
CAT. 487070 DRG. 550F444 MK 1

Ⓐ

** CUT SPLINES TO 3.3640 +0.000/-0.001 TO ALLOW FOR GROWTH AFTER INDUCTION HARDENING
MAJOR DIA. SHOULD BE GROUND AFTER INDUCTION HARDENING TO BE MAINTAINED 3.1249/3.1240.

NOTES:
1. BREAK ALL SHARP EDGES.
2. FINISH ALL OVER 125 UNLESS OTHERWISE SPECIFIED.

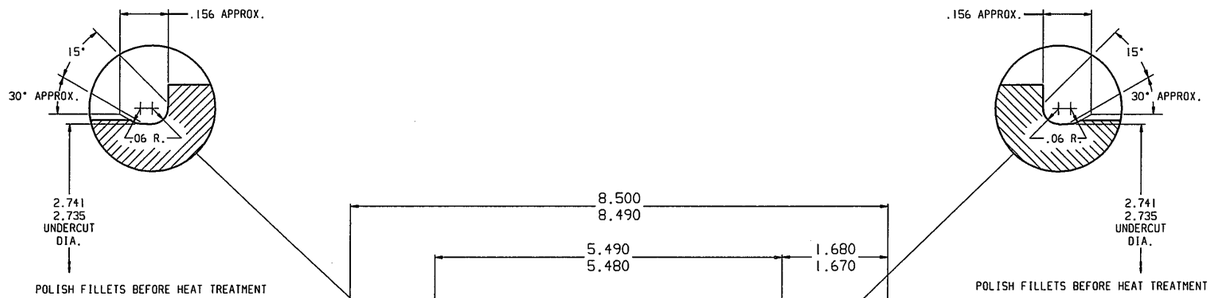
DRAWING NO. 550F443 SHEET

DRESSER
Construction & Mining Equipment
JEFFREY DIVISION, Mining Machinery
Post Office Box 1879 Columbus, Ohio 43216

TITLE
INTERMEDIATE SHAFT
1060 MINER

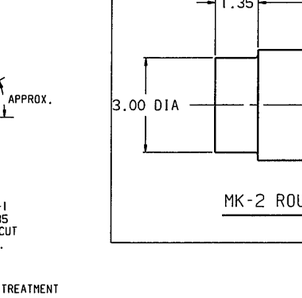
				550B429	FIRST USED
				1060	CLASS
				MINER	MACHINE
				GR	
SCALE 12"=1'-0" DO NOT SCALE DRAWING					
DRAWN: B. BOND DATE: 3/14/91			DIRECTED LEVENSTEIN		CUST.
CHECKED BY: DATE:			APPROVED		ORDER NO.

QUANT.	MATERIAL	MK	DESCRIPTION	CAT.NO.	ORIG. ORG.	MK
		1	INTERMEDIATE SHAFT	487069		
	4340H	2	SHAFT FORGING-ROUGH-TURNED	98597		



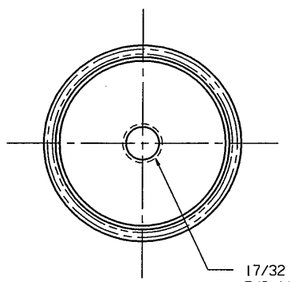
POLISH FILLETS BEFORE HEAT TREATMENT

MK-1



POLISH FILLETS BEFORE HEAT TREATMENT

MK-2 ROUGH-TURNED FORGING
SCALE:6"=1'-0"



FOR METHODS CHECK-SEE DRG	DISTR. CODE	STD:	SPECIAL:	ENG. SECT.	DRAWING NUMBER	SHEET NO.
540F737	SEE SHT 1 FOR LTR	A		B	550F443	

~~180552~~
180746

DRAWING NO. 559B138 | SHEET NO. 1

JEFFREY

REVISIONS	GIVE MK.-INITALS-DATE	FIRST USED ON	MACHINE	CLASS	GR.
MK-38 WAS CAT 068203		L-040141	1060	MINER	1
MK-5 WAS DRG 551G853					
NIENHAUS 7-14-95					
A MK-23.25.29 31 DESC					
B GEO 3/11/97					

DRAWN NIENHAUS DATE 3-29-95 | DIRECTED O'KEEFE | FOR METHODS CHECK-SEE DWGS: 552B995

CHECKED DATE | APPROVED

QUANT.	MAT'L.	MK.	DESCRIPTION	CAT. NO.	ORIG. DRW.	MK.
X		1	CUTTING HEAD GEARCASE ASM 300/350 HP/NYLOS	491649		
1	NO MATL	2	CUTTING HEAD GEARCASE ASSENBLY DRG.		559G136	
1	NO MATL	3	CUTTING HEAD GEARCASE SECTION DRG.		559G137	
1		4	CUTTING HEAD MACHINING		559G128	4
2		5	48T IDLER GEAR ASSEMBLY		559G164	4
2		6	SPACER IDLER SHAFT	491658	559G134	1
2		7	IDLER SHAFT	487784	551G851	2
2		8	17T 3P PINION	491653	559G129	1
2		9	46T 3P GEAR	487865	552F987	1
2		10	27T 2.5P PINION	491655	559G131	1
2		11	SPLINED SHAFT	491654	559G130	1
2		12	SPACER	491656	559G132	1
2		13	OPEN BEARING CARRIER	491657	559G133	1
2		14	BEARING CARRIER	487871	552F992	1
1		15	LOWER COVER FINISHED		552G981	1
1		16	TOP COVER FINISHED		552G981	5
2		17	TIMKEN CONE NO JHH221436	70969	521.710	P.7
2		18	TIMKEN CUP NO JHH221413	70970	521.710	P.7
2		19	TIMKEN CONE NO JHM522649	68909	521.710	P.7
2		20	TIMKEN CUP NO JHM522610	68910	521.710	P.7
4		21	TIMKEN CONE NO 896	69296	521.710	P.8
4		22	TIMKEN CUP NO 892	181223	521.710	P.8
4		23	.005 SHIM	484704	540F862	1
6		24	.007 SHIM	484705	540F862	2
6		25	.020 SHIM	484706	540F862	3
2		26	.005 SHIM	491660	559G139	1
6		27	.007 SHIM	491661	559G139	2
6		28	.020 SHIM	491662	559G139	3
2		29	.005 SHIM	484710	540F862	7
6		30	.007 SHIM	484711	540F862	8
6		31	.020 SHIM	484712	540F862	9
44	GRADE 8	32	5/8 - 11 X 1" LG. SOCKET HD.CAP SCREW	66841	561.327	P.1
4		33	1" SOCKET HEAD PIPE PLUG	63147	553.471	P.1
12	GRADE 5	34	5/8 - 11 X 1 1/4 LG. HEX. HD.CAP SCREW	68837	C-68837	1
12		35	5/8" HARDENED STEEL WASHER	66993	561.716	P.1
2		36	1/8" X 4 3/4 "O" RING PARKER NO. 2-248	188093	531.462	P.5
2		37	3/16 X 11.475 "O" RING PARKER NO. 2-380	484583	C-484583	1
2		38	1/8" X 8" "O" RING PARKER NO. 2-265	166356	531.462	P.5
1		39	COVER PLATE IDLER SHAFT R.H.		540F808	1
1		40	COVER PLATE IDLER SHAFT L.H.		540F808	2

DISTR. CODE SEE STD. 110.118 | STD: A | SPECIAL: 1 | ENG. SEC. B | ORDER NO. L-040141

TITLE: CUTTING HEAD GEARCASE ASSEMBLY

SHOW TOTAL NUMBER OF SHEETS ON SHEET 1 ONLY

DRAWING NO. 559B138 | SHEET NO. 1 | OF 2 SHEETS

DRAWING NO. 559B138 | SHEET NO. 2

DRESSER Construction & Mining Equipment

JEFFREY DIVISION, Mining Machinery
Post Office Box 1879 Columbus, Ohio 43216

REVISIONS	GIVE MK.-INITALS-DATE	FIRST USED ON	MACHINE	CLASS	GR.
		L-040141	1060	MINER	1

DRAWN NIENHAUS DATE 3-29-95 | DIRECTED O'KEEFE | FOR METHODS CHECK-SEE DWGS: 552B995

CHECKED DATE | APPROVED

QUANT.	MAT'L.	MK.	DESCRIPTION	CAT. NO.	ORIG. DRW.	MK.
2		41	NYLOS SEAL #JHH221436/JHH221413 AV		559G135	1
2		42	NYLOS SEAL #JHM522649/JHM522610 AV		559G135	3
2		43	NYLOS SEAL #JHM522649/JHM522610 JV		559G135	6
4		44	NYLOS SEAL #896/892 AV		559G135	2
2		45	NYLOS SEAL #622 AV		559G135	4
2		46	NYLOS SEAL #622 AV MODIFIED		559G135	5
1	#46 STL.	47	1/16" X 6' LG. LOCKWIRE			
1	DRG.	48	LOCKWIRE PROCEDURE DRG.		511A060	
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DISTR. CODE SEE STD. 110.118 | STD: A | SPECIAL: 3 | ENG. SEC. B | ORDER NO. L-040141

TITLE: CUTTING HEAD GEARCASE ASSEMBLY

SHOW TOTAL NUMBER OF SHEETS ON SHEET 1 ONLY

DRAWING NO. 559B138 | SHEET NO. 2 | OF 2 SHEETS

DRAWING NO. 540 B 885 | SHEET NO. 1

JEFFREY DRESSER

JEFFREY MINING MACHINERY DIVISION
DRESSER INDUSTRIES, INC. • COLUMBUS, OHIO 43216 U.S.A.

ORDER | FIRST USED ON
1060 | MACHINE
MINER | CLASS
GR 9 8 7 6 5 4 3 2 1

REVISIONS — GIVE MK. - INITIALS - DATE
A

DRAWN NIENHAUS DATE 10/1/87 | DIRECTED HESS | FOR METHODS CHECK — SEE DRGS.
CHECKED DATE | APPROVED 10/2/87 | 519B321

QUAN.	MAT'L.	MK.	DESCRIPTION	CAT. NO.	ORIG. DRG. MK.	
1	NO MTL	1	GATH HD GEAR CASE ASSY DRG		540F887	
2		2	13T BEVEL PINION	447983	175F161	2
1		3	SUPPORT SHAFT 97664	448000	175F159	2
1		4	DISK CRANK	448030	175F186	2
1		5	BEARING RETAINER	448148	175E162	1
1		6	COVER 97659	447980	175E163	1
1		7	COVER 97658	447981	175F165	1
3		8	DOWEL	448147	1750164	1
1		9	GASKET	448146	175E193	2
2		10	BEARING KEEPER 97656	483993	540F884	2
2		11	SEAL CARRIER	447986	175E167	1
6		12	SHIM .005 (FOR MK 10)	448081	175F192	7
6		13	SHIM .007 (FOR MK 10)	448082	175F192	8
2		14	SHIM .020 (FOR MK 10)	448083	175F192	9
3		15	SHIM .005 (FOR MK 5)	448078	175F192	4
3		16	SHIM .007 (FOR MK 5)	448079	175F192	5
1		17	SHIM .020 (FOR MK 5)	448080	175F192	6
1		18	GASKET (FOR MK 7)	448145	175E193	1
3		19	SHIM .005 (FOR MK 3)	448075	175F192	1
3		20	SHIM .007 (FOR MK 3)	448076	175F192	2
1		21	SHIM .020 (FOR MK 3)	448077	175F192	3
2		22	DUO CONE SEAL (CATERPILLER 455001)	440063	C440063	1
1		23	DUO CONE SEAL (CATERPILLER 4D4510)	447962	C447962	1
1		24	GEAR CASE FINISHED	448074	175E228	2
1		25	TIMKEN CONE #JHM 522649	68909	521.710	
1		26	TIMKEN CUP #JHM 522610	68910	521.710	
		27				
1		28	POLYOIL BEARING SET (SKF)	70609	C70609	
2		29	TIMKEN CONE #56425	172177	521.710	
2		30	TIMKEN CUP #56650	171501	521.710	
2		31	TIMKEN CONE #529X	68994	521.710	
2		32	TIMKEN CUP #522	158211	521.710	
2		33	SNAP RING	64081	527.712	
2		34	"O" RING 1/8 X 3 7/8 O.D.	185377	531.462	
8	GR 5	35	5/8-11 HEX HD CAP SCREW 1 1/4 LG	68837	C68837	
20	GR 5	36	5/8-11 HEX HD CAP SCREW 1 1/2 LG	67795	561.321	
4	GR 5	37	3/4-10 HEX HD CAP SCREW 2 1/2 LG	67326	561.321	
8	GR 5	38	1-8 HEX HD CAP SCREW 3 1/2 LG	67993	561.321	
20		39	5/8 SPRING LOCK WASHER	23356	561.731	
1	#46	40	1/16 DIA. SOFT IRON WIRE 7'-0" LG			

DISTR. CODE SEE DRG. 199A333 | STD: SPECIAL: A - | ENG. SEC. B | PRINT LOCATION 1060 | ORDER NO L038633

TITLE
R.H. GATHERING HEAD GEAR CASE ASM
1060 MINER

SHOW TOTAL NUMBER OF SHEETS ON SHEET 1 ONLY
DRAWING NO. 540 B 885 | SHEET NO. 1 | OF 2 SHEETS