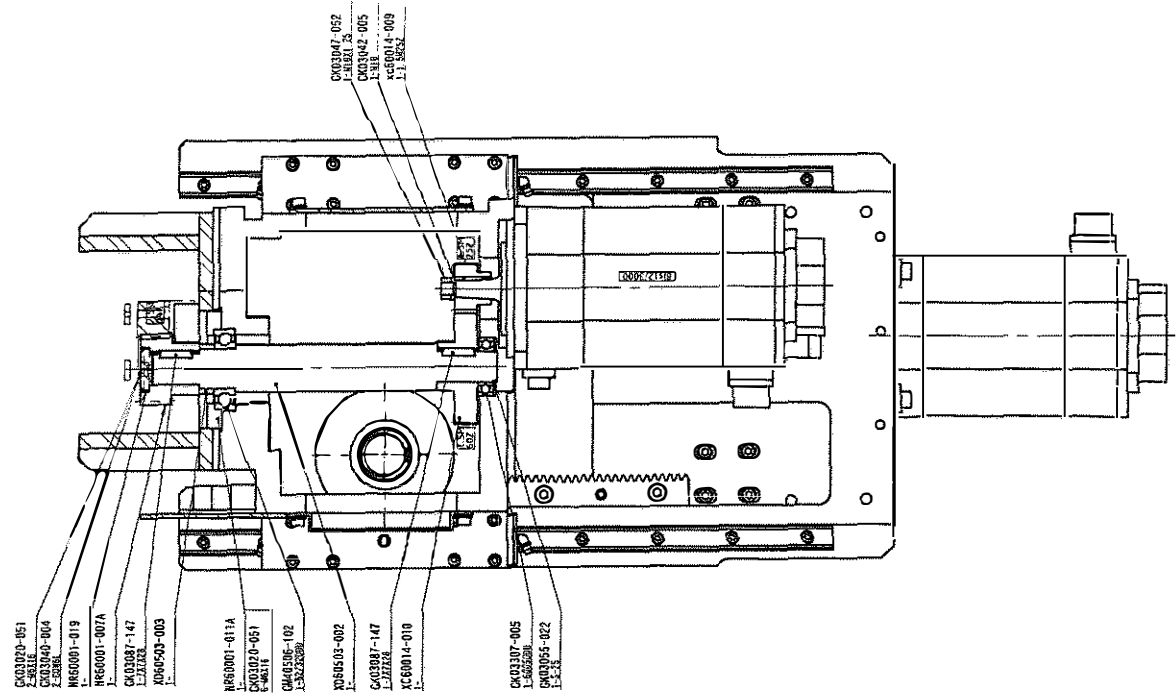
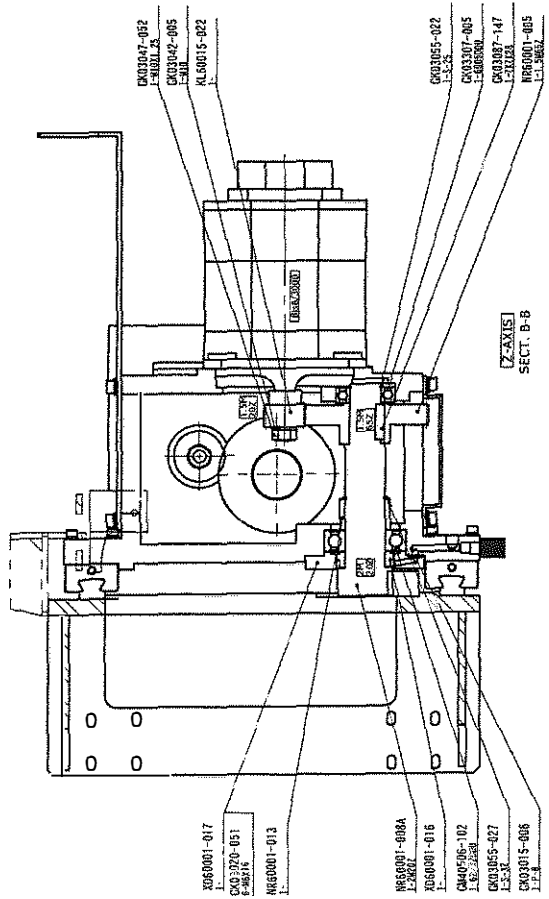
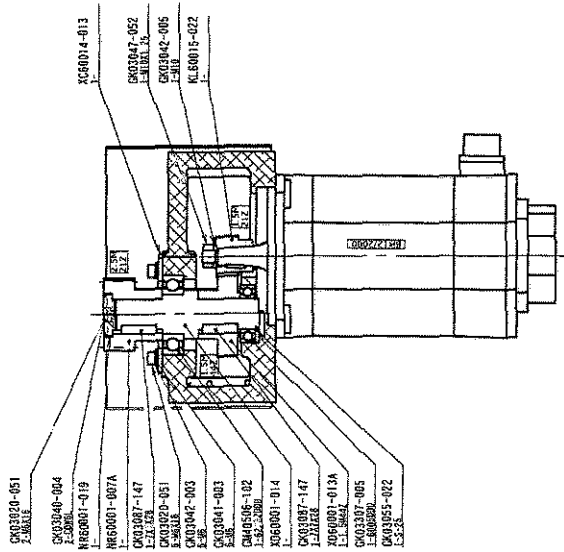




[Y-Z] SECT. D-D



[Z-X] SECT. B-B

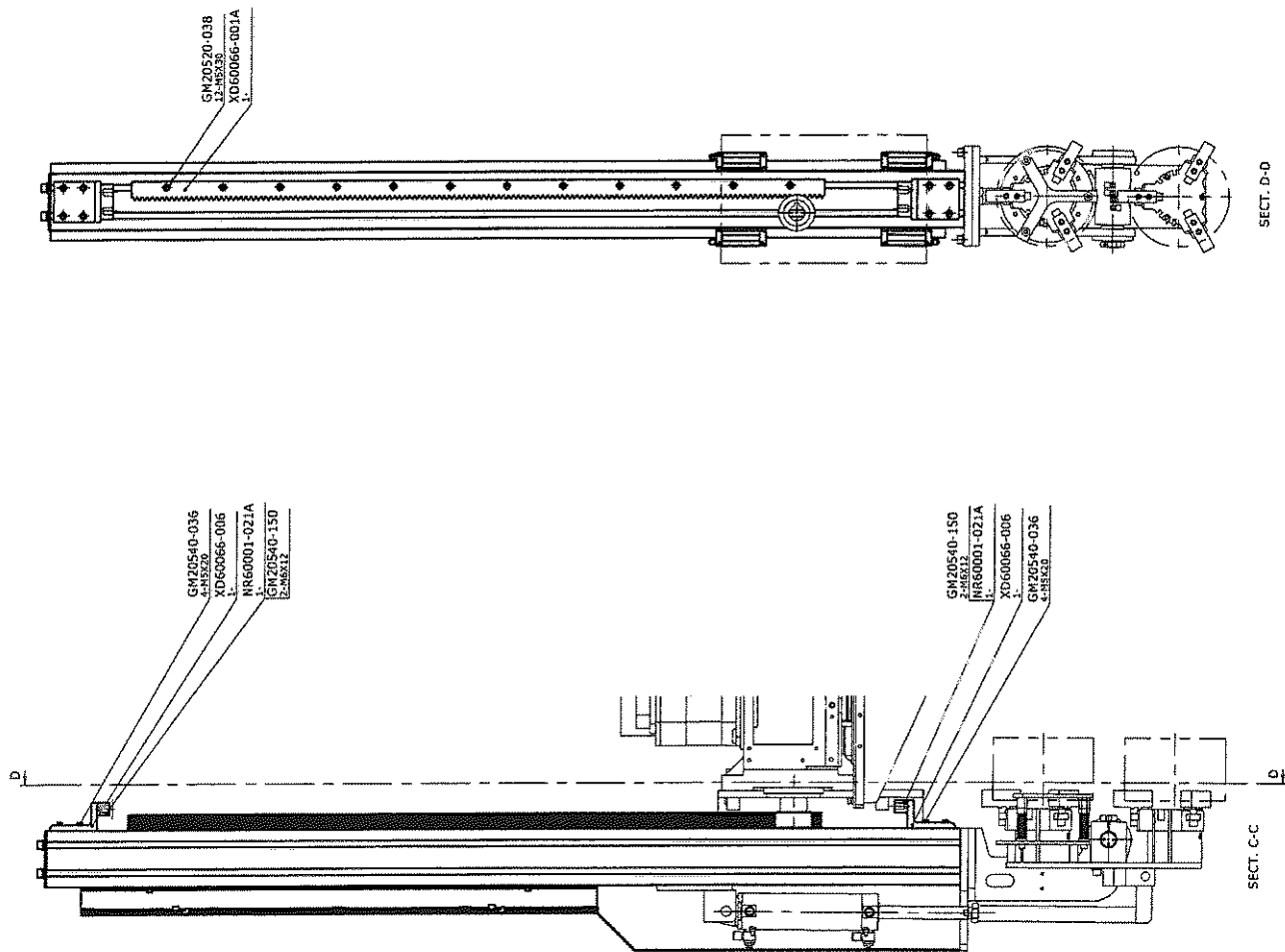


[X-Y] SECT. C-C

TAKISAWA		206035-000	
Y-T-2580		LOADER	
206035-000		2/2	

LOADER (8")
XD60065-000D

PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
GK03015-006	O-RING	(NOK)	P-8
GK03020-035	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X16
GK03020-038	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X30
GK03020-051	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X16
GK03020-067	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X16
GK03020-069	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X25
GK03020-070	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X30
GK03020-087	HEX. SOCKET HEAD CAP SCREW	(KKT)	M10X35
GK03020-150	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X12
GK03020-330	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X18
GK03040-004	CONE SPRING	(SANKO)	CDW6L
GK03041-002	PLAIN WASHER	(JIS STD)	M5
GK03041-003	PLAIN WASHER	(JIS STD)	M6
GK03042-002	SPRING WASHER	(JIS STD)	M5
GK03042-003	SPRING WASHER	(JIS STD)	M6
GK03042-005	SPRING WASHER	(JIS STD)	M10
GK03047-052	HEX. NUT	(JIS STD)	M10X1. 25 (3)
GK03055-022	STOP RING (S)	(OGURA SP)	S-25
GK03055-027	STOP RING (S)	(OGURA SP)	S-32
GK03065-006	ROLL PIN		8X36
GK03087-147	KEY (BOTH ARC END)	(JIS STD)	7X7X28
GK03307-005	BALL BEARING (NSK)	(NSK)	6005DDU
GM20006-217	SCREW	(NISSAN N)	M5X10
GM20540-035	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M5X16
GM40506-102	BALL BEARING (NSK)	(NSK)	62/32DDU
GM46994-005	LM GUIDE	(THK)	SSR20XW2SS+520L
KL60015-022	GEAR	SCM435	1. 5M20Z
NR60001-005	GEAR	SCM435	1. 5M65Z
NR60001-007A	GEAR	SCM415	2. 5M21Z
NR60001-008A	GEAR	SCM415	2M20Z
NR60001-011A	FLANGE	S45C	
NR60001-013	COLLAR	S45C	
NR60001-019	COLLAR	S45C	
NR60001-020A	BRACKET	SS400	
NR60001-021 A	BLOCK	URETHANE	
NR60001-022	BLOCK	URETHANE	
XC60014-009	GEAR	SCM435	1. 5M25Z
XC60014-010	GEAR	SCM435	1. 5M60Z
XC60014-013	PLATE	SPCC	
XD60001-003B	BOX	AC	
XD60001-011A	BRACKET	SPCC	
XD60001-013A	GEAR	SCM435	1. 5M44Z
XD60001-014	SHAFT	S45C	
XD60001-016	LABYRINTH	S45C	
XD60001-017	FLANGE	S45C	
XD60001-018	COVER	SPCC	
XD60017-004A	RACK	S45C	L320
XD60052-004A	BLOCK	SPHC	
XD60057-002	BRACKET	SPHC	
XD60057-003	PLATE	SPCC	
XD60065-001C	BOX	AC	
XD60065-002	BRACKET	SPHC	
XD60503-002	SHAFT	S45C	
XD60503-003	COLLAR	S45C	



品名	部品名	数量	単位	備考
TT-2600	TT-2600	1	台	
Loader	Loader	1	台	
XT60066-008	XT60066-008	1	台	
2/2				

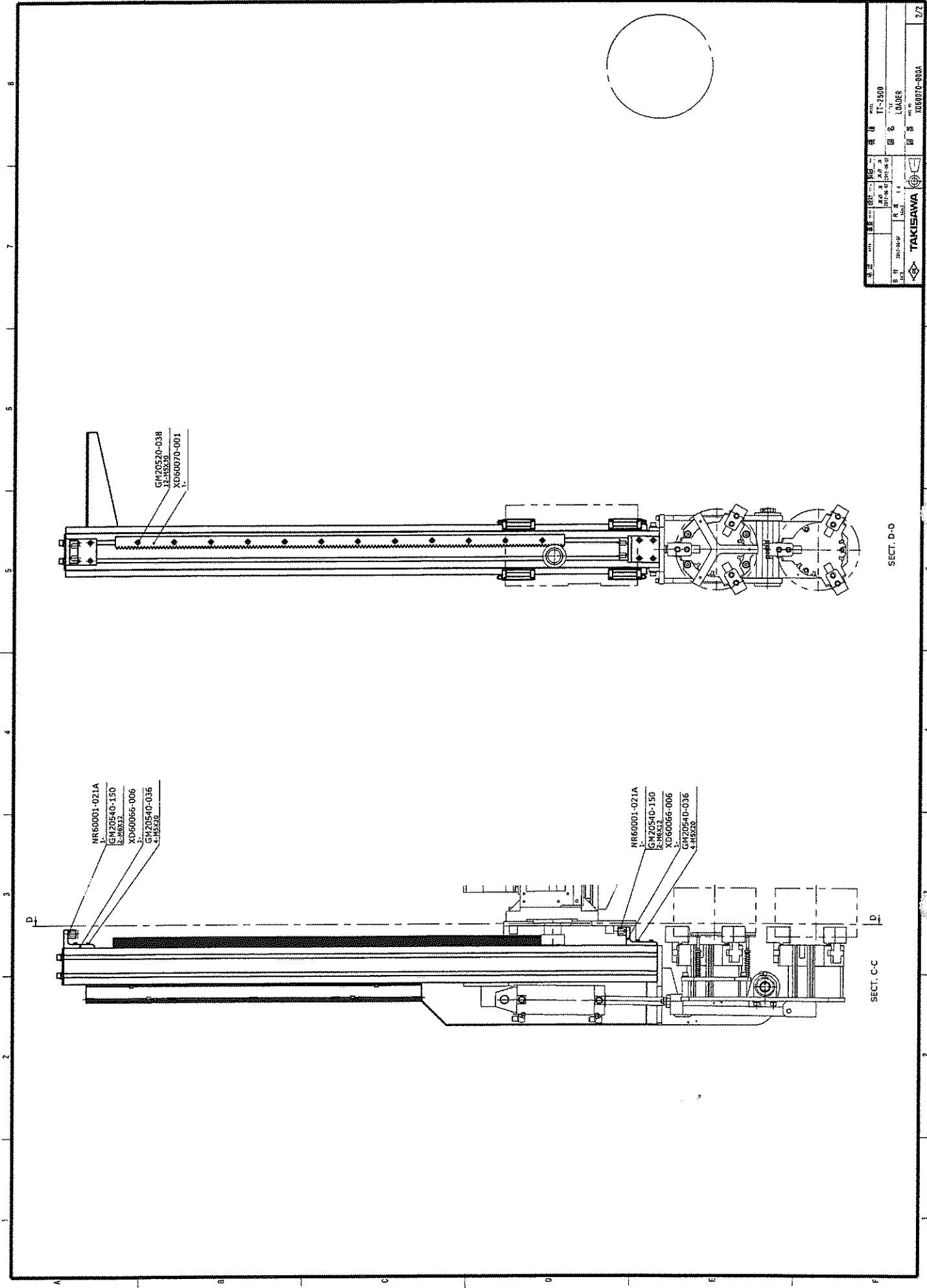
LOADER (8")
XD60066-000B

PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
GM20010-227	ROUND HEAD MACHINE SCREW	(SANKO)	M5X0.8X16
GM20520-038	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M5X30
GM20540-036	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M5X20
GM20540-069	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M8X25
GM20540-150	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M6X12
GM20540-322	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M5X15
GM21211-102	WASHER	(JIS STD)	M5
GM21211-104	WASHER	(JIS STD)	M8
GM21211-167	SPRING WASHER	(JIS STD)	M5
GM21211-170	SPLING WASHER	(JIS STD)	M8
GM24024-501	ALUMINUM FRAME	(SUS)	SFF-H94 L=1450 TL
GM24024-511	COVER	(SUS)	CY3-106F L=820
GM24024-523	NUT	(SUS)	SFB-PN22 (M5)
GM24024-531	CABLE RETAINER	(SUS)	CY3-002A
GM24024-541	DUCT COVER CLAMP	(SUS)	CY3-101A
GM24024-551	DUCT	(SUS)	CY3 SC93580 (N66189-0)
GM46300-903	CAP	(THK)	C5
GM46994-009	LM GUIDE	(THK)	SHS20V2SS+1420L
NR60001-021A	BLOCK	URETHANE	
XD60066-001A	RACK	S45C	L1100 M2.5
XD60066-002	COVER	SPCC	
XD60066-004	PLATE	SPHC	
XD60066-005	PLATE	SPHC	
XD60066-006	BRACKET	SS400	
XD60066-007	BRACKET	SPHC	
XD60502-003	PLATE	SPHC	



LOADER (10")
XD60069-000D

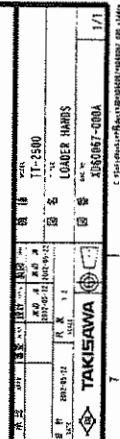
PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
GK03015-006	O-RING	(NOK)	P-8
GK03020-035	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X16
GK03020-038	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X30
GK03020-051	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X16
GK03020-067	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X16
GK03020-069	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X25
GK03020-070	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X30
GK03020-087	HEX. SOCKET HEAD CAP SCREW	(KKT)	M10X35
GK03020-150	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X12
GK03020-330	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X18
GK03040-004	CONE SPRING	(SANKO)	CDW6L
GK03041-002	PLAIN WASHER	(JIS STD)	M5
GK03041-003	PLAIN WASHER	(JIS STD)	M6
GK03042-002	SPRING WASHER	(JIS STD)	M5
GK03042-003	SPRING WASHER	(JIS STD)	M6
GK03042-005	SPRING WASHER	(JIS STD)	M10
GK03047-052	HEX. NUT	(JIS STD)	M10X1.25(3)
GK03055-022	STOP RING (S)	(OGURA SP)	S-25
GK03055-027	STOP RING (S)	(OGURA SP)	S-32
GK03065-006	ROLL PIN		8X36
GK03087-147	KEY (BOTH ARC END)	(JIS STD)	7X7X28
GK03307-005	BALL BEARING (NSK)	(NSK)	6005DDU
GM20006-217	SCREW	(NISSAN N)	M5X10
GM20540-035	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M5X16
GM40506-102	BALL BEARING (NSK)	(NSK)	62/32DDU
GM46994-005	LM GUIDE	(THK)	SSR20XW2SS+520L
KL60015-022	GEAR	SCM435	1. 5M20Z
NR60001-005	GEAR	SCM435	1. 5M65Z
NR60001-007A	GEAR	SCM415	2. 5M21Z
NR60001-008A	GEAR	SCM415	2M20Z
NR60001-011A	FLANGE	S45C	
NR60001-013	COLLAR	S45C	
NR60001-019	COLLAR	S45C	
NR60001-020A	BRACKET	SS400	
NR60001-021A	BLOCK	URETHANE	
NR60001-022	BLOCK	URETHANE	
XC60014-011	BLOCK	SPHC	
XC60014-013	PLATE	SPCC	
XD60001-003B	BOX	AC	
XD60001-011A	BRACKET	SPCC	
XD60001-013A	GEAR	SCM435	1. 5M44Z
XD60001-014	SHAFT	S45C	
XD60001-016	LABYRINTH	S45C	
XD60001-017	FLANGE	S45C	
XD60001-018	COVER	SPCC	
XD60017-004A	RACK	S45C	L320
XD60057-002	BRACKET	SPHC	
XD60057-003	PLATE	SPCC	
XD60069-001C	BOX	AC	
XD60069-002	BRACKET	SPHC	
XD60503-002	SHAFT	S45C	
XD60503-003	COLLAR	S45C	



品名	部品名	数量	単位	備考
TT-2600	TT-2600	1	台	
LAUER	LAUER	1	台	
XTS070-90A	XTS070-90A	1	台	
272				

LOADER (10")
XD60070-000A

PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
GM20010-227	ROUND HEAD MACHINE SCREW	(SANKO)	M5X0.8X16
GM20520-038	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M5X30
GM20540-036	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M5X20
GM20540-069	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M8X25
GM20540-150	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M6X12
GM20540-322	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M5X15
GM21211-102	WASHER	(JIS STD)	M5
GM21211-104	WASHER	(JIS STD)	M8
GM21211-167	SPRING WASHER	(JIS STD)	M5
GM21211-170	SPLING WASHER	(JIS STD)	M8
GM24024-501	ALUMINUM FRAME	(SUS)	SFF-H94 L=1450 TL
GM24024-511	COVER	(SUS)	CY3-106F L=820
GM24024-523	NUT	(SUS)	SFB-PN22 (M5)
GM24024-531	CABLE RETAINER	(SUS)	CY3-002A
GM24024-541	DUCT COVER CLAMP	(SUS)	CY3-101A
GM24024-551	DUCT	(SUS)	CY3 SC93580 (N66189-0)
GM46300-903	CAP	(THK)	C5
GM46994-009	LM GUIDE	(THK)	SHS20V2SS+1420L
NR60001-021A	BLOCK	URETHANE	
XD60066-006	BRACKET	SS400	
XD60066-007	BRACKET	SPHC	
XD60070-001	BRACKET	SPHC	
XD60070-002	PLATE	SPHC	
XD60070-003	PLATE	SPHC	
XD60502-003	PLATE	SPHC	
XD60502-006A	COVER	SPCC	



LOADER HAND (8")

XD60067-000A

PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
GK03015-019	O-RING (P)	(NOK)	P-21
GK03020-053	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X25
GK03020-069	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X25
GK03020-071	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X35
GK03020-150	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X12
GK03025-000	HEX. SOCKET SET SCREW	(KKT)	M5X6
GK03041-004	PLAIN WASHER	(JIS STD)	M8
GK03042-004	SPRING WASHER	(JIS STD)	M8
GK03055-014	STOP RING (S)	(OGURA SP)	S-16
GK03060-062	STRAIGHT PIN	(JIS STD)	6X16 (M6)
GK03307-005	BALL BEARING (NSK)	(NSK)	6005DDU
GK05677-318	HOSE ELBOW	(SMC)	M-5HL-6
GM20051-013	ADJUST SCREW	(MISUMI)	ANB8-30
GM24015-022	STOP PIN	(MISUMI)	STEHN7
GM24024-521	NUT	(SUS)	SFB-PN24 (M8)
GM53009-837	AIR CYLINDER	(SMC)	CDG1DA50-125-M9BL
GM54007-305	SPEED CONTROLLER	(SMC)	AS2201F-02-06S
NR60003-005	BLOCK	DENSE BAR	
NR60003-006	SHAFT	S45C	
NR60003-008	FLANGE	S45C	
NR60003-010	PIN	S45C-D	
XB60004-008	BLOCK	SS400	
XD60008-003	ROD	SS400-D	
XD60008-004A	BRACKET	SS400	
XD60067-001	PLATE	SPHC	
XD60067-002	PLATE	SPHC	
XD60067-003	PLATE	SPHC	
XD60067-004	BRACKET	SS400	
XD60067-005	SHAFT	S45C-D	
XD60067-006	COLLAR	S45C	
XD60067-007	PLATE	SPHC	



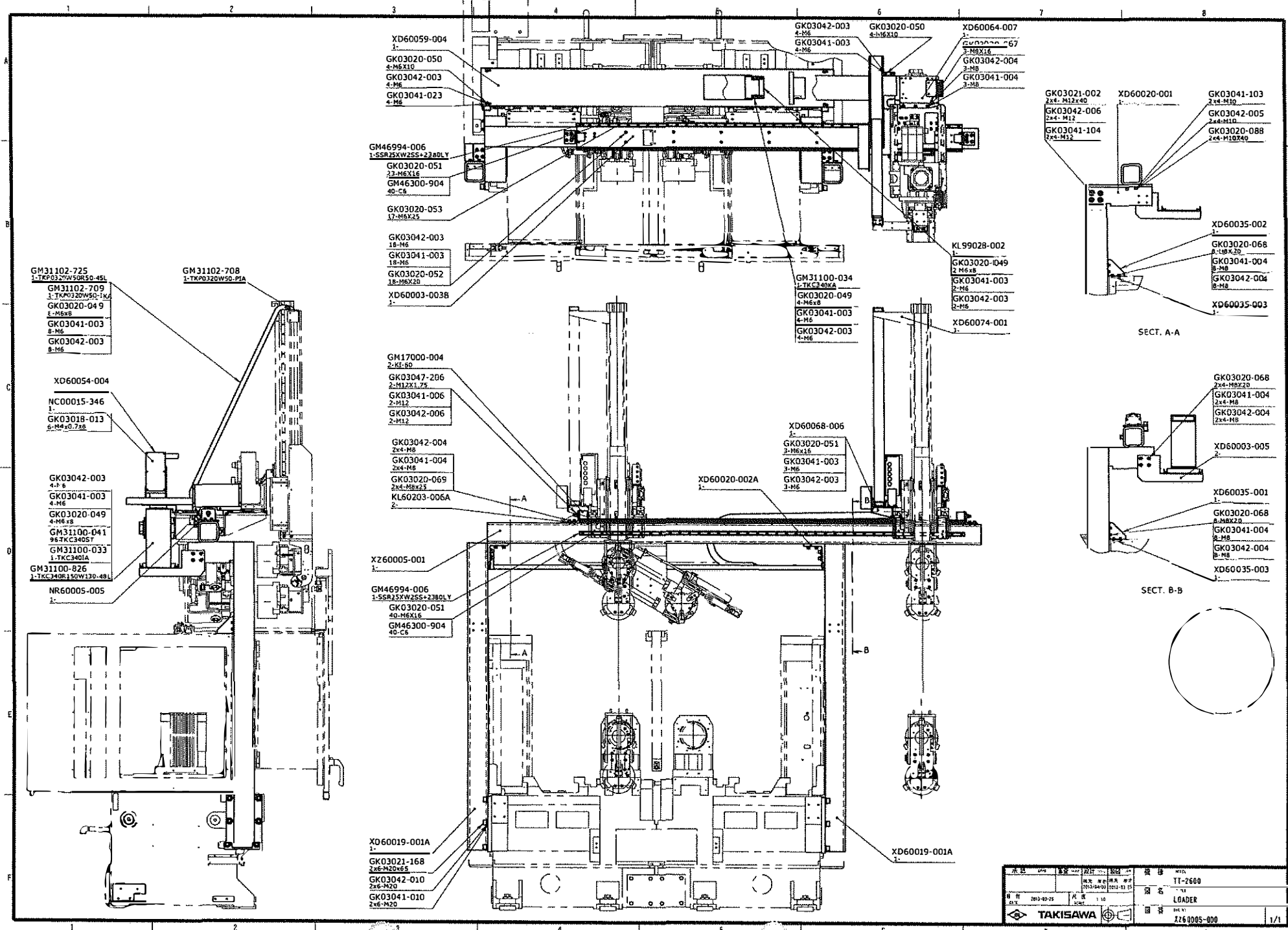
LOADER HAND (10") * 396
XD60071-000A

PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
GK03015-019	O-RING (P)	(NOK)	P-21
GK03020-036	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X20
GK03020-051	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X16
GK03020-053	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X25
GK03020-056	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X40
GK03020-069	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X25
GK03020-071	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X35
GK03020-150	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X12
GK03020-334	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X22
GK03025-000	HEX. SOCKET SET SCREW	(KKT)	M5X6
GK03041-002	PLAIN WASHER	(JIS STD)	M5
GK03041-003	PLAIN WASHER	(JIS STD)	M6
GK03041-004	PLAIN WASHER	(JIS STD)	M8
GK03042-002	SPRING WASHER	(JIS STD)	M5
GK03042-003	SPRING WASHER	(JIS STD)	M6
GK03042-004	SPRING WASHER	(JIS STD)	M8
GK03055-016	STOP-RING (S)	(OGURA SP)	S-18
GK03060-062	STRAIGHT PIN	(JIS STD)	6X16 (M6)
GK03307-005	BALL BEARING (NSK)	(NSK)	6005DDU
GK05677-318	HOSE ELBOW	(SMC)	M-5HL-6
GM20051-013	ADJUST SCREW	(MISUMI)	ANB8-30
GM24015-022	STOP PIN	(MISUMI)	STEHN7
GM24024-521	NUT	(SUS)	SFB-PN24 (M8)
GM53007-181	AIR CYLINDER	(SMC)	CDG1DA63-125Z-M9BAZ
GM63513-175	ELBOW	(SMC)	KQ2VS06-02S
XB60004-008	BLOCK	SS400	
XB60004-011	FLANGE	S45C	
XD60023-004	ROD	SS400-D	
XD60023-005	BRACKET	SS400	
XD60071-001	PLATE	SPHC	
XD60071-002	PLATE	SPHC	
XD60071-003	PLATE	SPHC	
XD60504-004	PLATE	SS400	
XD60504-005	BRACKET	SS400	
XD60504-006	SHAFT	S45C-D	
XD60504-007	COLLAR	S45C	
XF60008-007	PIN	S45C	
XF60008-008	BLOCK	DENSE BAR	
XF60008-009	SHAFT	S45C	



LOADER (8", TYPE A)
XZ60001-000

PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
GK03018-013	ROUND HEAD MACHINE SCREW (+)	(JIS STD)	M4X8
GK03020-049	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X8
GK03020-050	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X10
GK03020-051	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X16
GK03020-052	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X20
GK03020-053	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X25
GK03020-067	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X16
GK03020-068	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X20
GK03020-069	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X25
GK03020-070	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X30
GK03020-088	HEX. SOCKET HEAD CAP SCREW	(KKT)	M10X40
GK03021-002	HEX. SOCKET HEAD CAP SCREW	(KKT)	M12X40
GK03021-168	HEX. SOCKET HEAD CAP SCREW	(KKT)	M20X65
GK03024-029	HEX. SOCKET SET SCREW	(KKT)	M8X40
GK03041-003	PLAIN WASHER	(JIS STD)	M6
GK03041-004	PLAIN WASHER	(JIS STD)	M8
GK03041-006	PLAIN WASHER	(JIS STD)	M12
GK03041-010	PLAIN WASHER	(JIS STD)	M20
GK03041-023	PLAIN WASHER	(SANKO)	M6
GK03041-103	PLAIN WASHER	(JIS STD)	M10
GK03041-104	PLAIN WASHER	(JIS STD)	M12
GK03042-003	SPRING WASHER	(JIS STD)	M6
GK03042-004	SPRING WASHER	(JIS STD)	M8
GK03042-005	SPRING WASHER	(JIS STD)	M10
GK03042-006	SPRING WASHER	(JIS STD)	M12
GK03042-010	SPRING WASHER	(JIS STD)	M20
GK03047-204	HEX. NUT	(JIS STD)	M8X1.25 (1)
GK03047-206	HEX. NUT	(JIS STD)	M12X1.75 (1)
GM17000-004	STOPPER	(KURASHIKI)	K1-60
GM31100-033	METAL FITTING	(TSUBAKI C)	TKC340IA
GM31100-034	METAL FITTING	(TSUBAKI C)	TKC340KA
GM31100-041	DIAPHRAGM	(TSUBAKI C)	TKC340ST
GM31100-821	CABLEVEYOR	(TSUBAKI C)	TKC340R150W130-46L
GM31102-708	METAL FITTING	(TSUBAKI C)	TKP0320W50-PIA
GM31102-709	METAL FITTING	(TSUBAKI C)	TKP0320W50-PKA
GM31102-725	CABLEVEYOR	(TSUBAKI C)	TKP0320W50R50-45L
GM46300-904	CAP	(THK)	C6
GM46994-006	LM GUIDE	(THK)	SSR25XW2SS+2380LY
KL60203-006A	BRACKET	SS400	
KL99028-002	PLATE	SPCC	
NC00015-346	PLATE	SPCC	BOX PL 118X233
NR60005-005	RACK	S45C	
XD60003-001A	BRACKET	SS400	
XD60003-005	BRACKET	SPCC	
XD60003-006B	BRACKET	SPCC	
XD60005-001	BRACKET	SS400	
XD60005-002A	BRACKET	SS400	
XD60035-001	BRACKET	SPCC	
XD60035-002	BRACKET	SS400	
XD60035-003	PLATE	SS400	
XD60048-002A	PLATE	SS400-D	
XD60054-004	BOX	SPCC	
XD60054-006	BRACKET	SPCC	
XD60068-002	BRACKET	SPCC	
XD60068-006	BRACKET	SPCC	
XZ60001-001	PIPE	SS400	

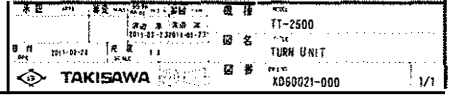


LOADER (10', TYPE A)
XZ60005-000

PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
GK03018-013	ROUND HEAD MACHINE SCREW (+)	(JIS STD)	M4X8
GK03020-049	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X8
GK03020-050	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X10
GK03020-051	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X16
GK03020-052	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X20
GK03020-053	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X25
GK03020-067	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X16
GK03020-068	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X20
GK03020-069	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X25
GK03020-088	HEX. SOCKET HEAD CAP SCREW	(KKT)	M10X40
GK03021-002	HEX. SOCKET HEAD CAP SCREW	(KKT)	M12X40
GK03021-168	HEX. SOCKET HEAD CAP SCREW	(KKT)	M20X65
GK03041-003	PLAIN WASHER	(JIS STD)	M6
GK03041-004	PLAIN WASHER	(JIS STD)	M8
GK03041-006	PLAIN WASHER	(JIS STD)	M12
GK03041-010	PLAIN WASHER	(JIS STD)	M20
GK03041-023	PLAIN WASHER	(SANKO)	M6
GK03041-103	PLAIN WASHER	(JIS STD)	M10
GK03041-104	PLAIN WASHER	(JIS STD)	M12
GK03042-003	SPRING WASHER	(JIS STD)	M6
GK03042-004	SPRING WASHER	(JIS STD)	M8
GK03042-005	SPRING WASHER	(JIS STD)	M10
GK03042-006	SPRING WASHER	(JIS STD)	M12
GK03042-010	SPRING WASHER	(JIS STD)	M20
GK03047-206	HEX. NUT	(JIS STD)	M12X1.75 (1)
GM17000-004	STOPPER	(KURASHIKI)	KI-60
GM31100-033	METAL FITTING	(TSUBAKI C)	TKC340IA
GM31100-034	METAL FITTING	(TSUBAKI C)	TKC340KA
GM31100-041	DIAPHRAGM	(TSUBAKI C)	TKC340ST
GM31100-826	CABLEVEYOR	(TSUBAKI C)	TKC340R150W130-48L
GM31102-708	METAL FITTING	(TSUBAKI C)	TKP0320W50-PIA
GM31102-709	METAL FITTING	(TSUBAKI C)	TKP0320W50-PA
GM31102-725	CABLEVEYOR	(TSUBAKI C)	TKP0320W50R50-45L
GM46300-904	CAP	(THK)	C6
GM46994-006	LM GUIDE	(THK)	SSR25XW2SS+2380LY
KL60203-006A	BRACKET	SS400	
KL99028-002	PLATE	SPCC	
NC00015-346	PLATE	SPCC	BOXPL 118X233
NR60005-005	RACK	S45C	
XD60003-003B	PLATE	SS400-D	
XD60003-005	BRACKET	SPCC	
XD60019-001A	BRACKET	SS400	
XD60020-001	BRACKET	SS400	
XD60020-002A	BRACKET	SS400	
XD60035-001	BRACKET	SPCC	
XD60035-002	BRACKET	SS400	
XD60035-003	PLATE	SS400	
XD60054-004	BOX	SPCC	
XD60059-004	BRACKET	SPCC	
XD60064-007	BRACKET	SPCC	
XD60068-006	BRACKET	SPCC	
XD60074-001	BRACKET	SPCC	
XZ60005-001	PIPE	SS400	

PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
GE15100-124	PROXIMITY SWITCH	(YAMATAKE)	FL7M-2J6HD-L5
GK03020-021	HEX. SOCKET HEAD CAP SCREW	(KKT)	M4X25
GK03020-034	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X10
GK03020-049	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X8
GK03020-051	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X16
GK03020-052	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X20
GK03020-053	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X25
GK03020-069	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X25
GK03020-073	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X45
GK03020-150	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X12
GK03020-152	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X75
GK03024-025	HEX. SOCKET SET SCREW	(KKT)	M8X20
GK03038-659	HEX. HEAD BOLT	(KKT)	M10X140
GK03041-001	PLAIN WASHER	(JIS STD)	M4
GK03041-002	PLAIN WASHER	(JIS STD)	M5
GK03041-003	PLAIN WASHER	(JIS STD)	M6
GK03041-004	PLAIN WASHER	(JIS STD)	M8
GK03041-005	PLAIN WASHER	(JIS STD)	M10
GK03042-001	SPRING WASHER	(JIS STD)	M4
GK03042-002	SPRING WASHER	(JIS STD)	M5
GK03042-003	SPRING WASHER	(JIS STD)	M6
GK03042-004	SPRING WASHER	(JIS STD)	M8
GK03042-005	SPRING WASHER	(JIS STD)	M10
GK03047-204	HEX. NUT	(JIS STD)	M8X1.25 (1)
GK03047-205	HEX. NUT	(JIS STD)	M10X1.5 (1)
GK03054-008	STOP RING (E)	(OGURA SP)	
GK03055-015	STOP RING	(OGURA SP)	S-17
GK03060-103	STRAIGHT PIN	(JIS STD)	10X20 (M6)
GK03316-227	BALL BEARING	(NSK)	6003DDUNR
GK05677-120	PLUG	(SMC)	M-5P
GK05677-317	HOSE ELBOW	(SMC)	M-5HL-4
GK05677-318	HOSE ELBOW	(SMC)	M-5HL-6
GM46302-810	LINEAR BUSH	(THK)	SH20UU
GM46303-023	LM SHAFT	(THK)	SF20G6-400L
GM46303-104	SHAFT SUPPORT	(THK)	SK20
GM53000-384	AIR CYLINDER	(SMC)	COM2E25-50A-C73L
GM53009-838	AIR CYLINDER	(SMC)	CDG1BA25-275-H7BALS
GM53100-622	AIR CHUCK	(SMC)	MHSL3-63D-Y7BAS
GM54007-112	SPEED CONTROLLER	(SMC)	AS1201F-M5-06
GM54007-304	SPEED CONTROLLER	(SMC)	AS2201F-01-06S
GM54030-269	MANIFOLD	(MISUMI)	BMGN6-55N
GM55021-080	KNUCKLE	(SMC)	Y-032B
GM63511-934	HALF UNION	(SMC)	KQS06-M5
NR60006-004C	BRACKET	SS400	
NR60006-005B	BRACKET	SS400	
NR60006-007A	SHAFT	S45C	
NR60006-008	COLLAR	S45C	
NR60006-009	PLATE	SS400-D	
NR60006-010	PLATE	SS400-D	
NR60006-011A	SHAFT	S45C	
NR60006-014	PLATE	URETHANE	
NR60006-015	BLOCK	SS400-D	
NR60006-016	SHAFT	S45C	
NR60006-018A	BLOCK	S45C	
NR60006-019A	BLOCK	S45C	
NR60006-020A	BLOCK	SS400-D	
NR60020-007A	BRACKET	SS400	

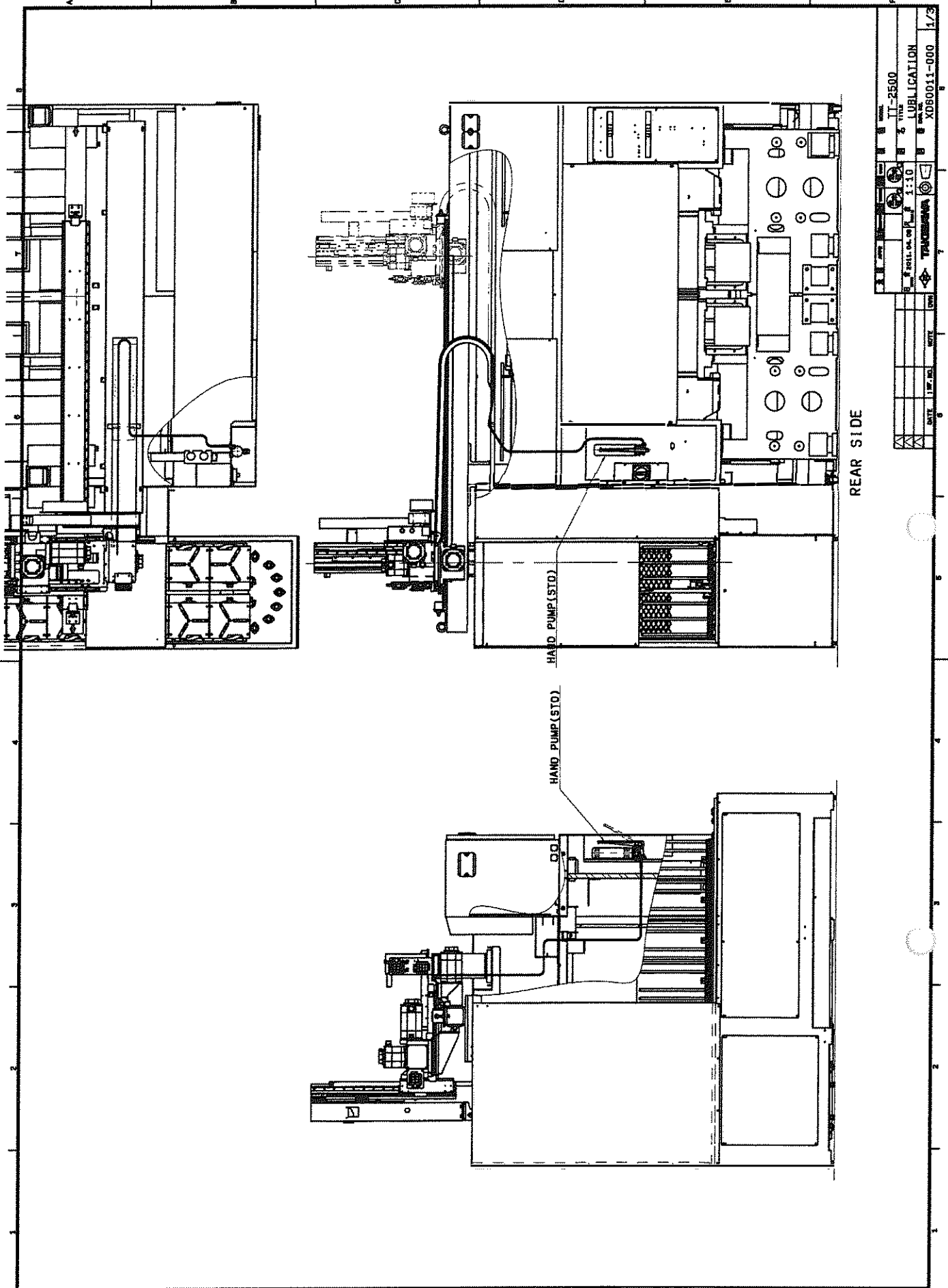
NR60020-009	BLOCK	S45C
NR60020-012	BLOCK	SS400-D
XD60006-002	BLOCK	SS400
XD60043-002A	BRACKET	SPCC
XD60044-001	BRACKET	SPHC
XD60055-001	PLATE	SS400
XD60055-002	BRACKET	SPCC

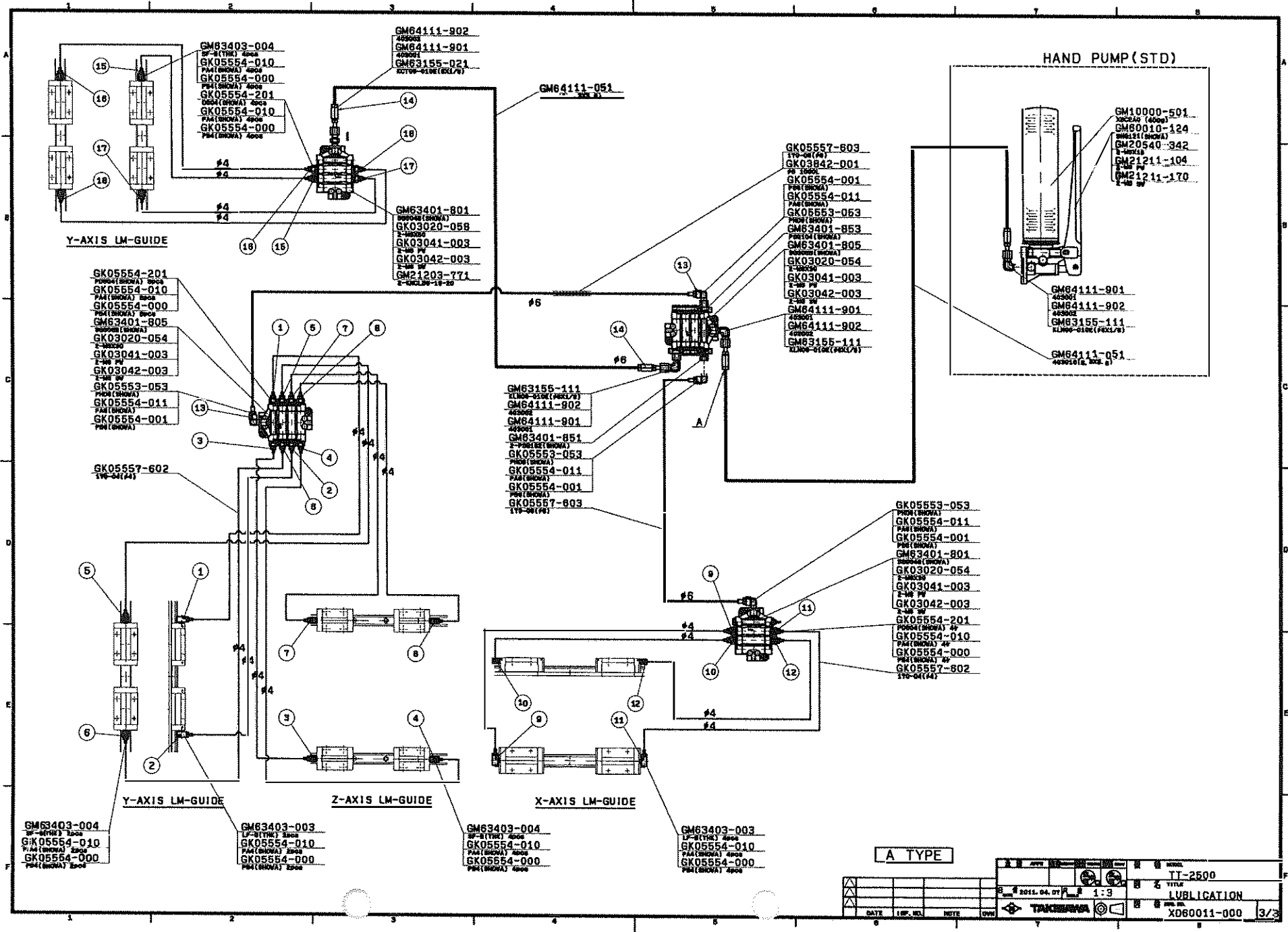


TURN UNIT
XD60021-000

PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
GE15100-124	PROXIMITY SWITCH	(YAMATAKE)	FL7M-2J6HD-L5
GK03020-020	HEX. SOCKET HEAD CAP SCREW	(KKT)	M4X20
GK03020-035	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X16
GK03020-050	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X10
GK03020-051	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X16
GK03020-053	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X25
GK03020-067	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X16
GK03020-068	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X20
GK03020-069	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X25
GK03020-070	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X30
GK03020-080	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X110
GK03020-134	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X12
GK03038-505	HEX. HEAD SCREW	(KKT)	M8X35
GK03038-520	HEX. HEAD BOLT	(KKT)	M8X100
GK03038-613	HEX. HEAD BOLT	(KKT)	M8X55
GK03038-624	HEX. HEAD BOLT	(KKT)	M8X125
GK03038-699	HEX. HEAD BOLT	(KKT)	M12X180
GK03041-002	PLAIN WASHER	(JIS STD)	M5
GK03041-003	PLAIN WASHER	(JIS STD)	M6
GK03041-004	PLAIN WASHER	(JIS STD)	M8
GK03042-002	SPRING WASHER	(JIS STD)	M5
GK03042-003	SPRING WASHER	(JIS STD)	M6
GK03042-004	SPRING WASHER	(JIS STD)	M8
GK03047-204	HEX. NUT	(JIS STD)	M8X1. 25 (1)
GK03047-206	HEX. NUT	(JIS STD)	M12X1. 75 (1)
GK03060-103	STRAIGHT PIN	(JIS STD)	10X20 (M6)
GK05677-120	PLUG	(SMC)	M-5P
GK05677-318	HOSE ELBOW	(SMC)	M-5HL-6
GM20540-069	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M8X25
GM20540-086	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M10X30
GM21010-203	U-NUT	(FUJI SEI)	FU02SC (M15X1)
GM21211-104	WASHER	(JIS STD)	M8
GM21211-105	WASHER	(JIS STD)	M10
GM21211-170	SPLING WASHER	(JIS STD)	M8
GM21211-171	SPLING WASHER	(JIS STD)	M10
GM46302-848	LINEAR BUSH	(THK)	SC25UU
GM46303-020	LM SHAFT	(THK)	SF25G6-385L
GM46303-105	SHAFT SUPPORT	(THK)	SK25
GM48000-002	BEARING UNIT	(NTN)	ASPFL202
GM48000-005	BEARING UNIT	(NTN)	ASPFL205
GM53001-674	AIR CYLINDER	(SMC)	CDM2E32-100A-M9BL
GM53009-811	AIR CYLINDER	(SMC)	CDG1BA32-250-C73LS
GM53103-621	AIR CHUCK	(SMC)	MHSL3-100D-M9BALS
GM54007-304	SPEED CONTROLLER	(SMC)	AS2201F-01-06S
GM54030-269	MANIFOLD	(MISUMI)	BMGN6-55N
GM55021-080	KNUCKLE	(SMC)	Y-032B
GM55021-087	JOINT	(SMC)	CM-E032B
GM63511-934	HALF UNION	(SMC)	KQS06-M5
GM63512-881	ELBOW UNION	(SMC)	KQ2L06-02S
NR60006-014	PLATE	URETHANE	
NR60006-015	BLOCK	SS400-D	
XD60021-001	PLATE	SS400	
XD60021-002	BRACKET	SPHC	
XD60021-003	BRACKET	SPHC	
XD60021-004A	BRACKET	SPHC	
XD60021-005	PLATE	SS400	
XD60021-006	BRACKET	SPHC	

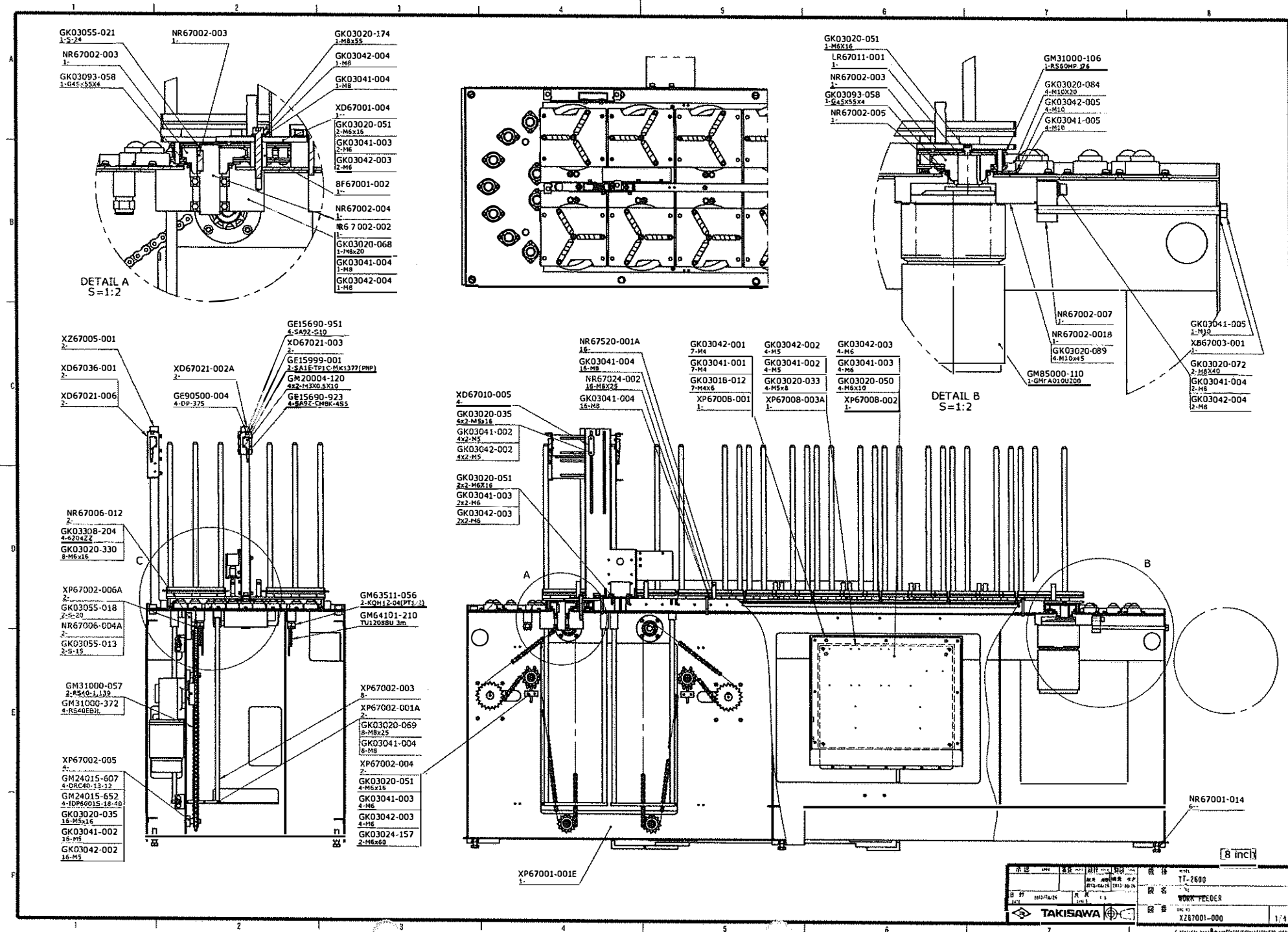
XD60021-007A	BRACKET	SPHC
XD60021-008	BRACKET	SPHC
XD60021-009	BLOCK	S45C
XD60021-010	COLLAR	SGP
XD60021-011A	SHAFT	S45C
XD60021-012	SHAFT	S45C
XD60021-013	COLLAR	S45C
XD60022-001A	BRACKET	SPHC

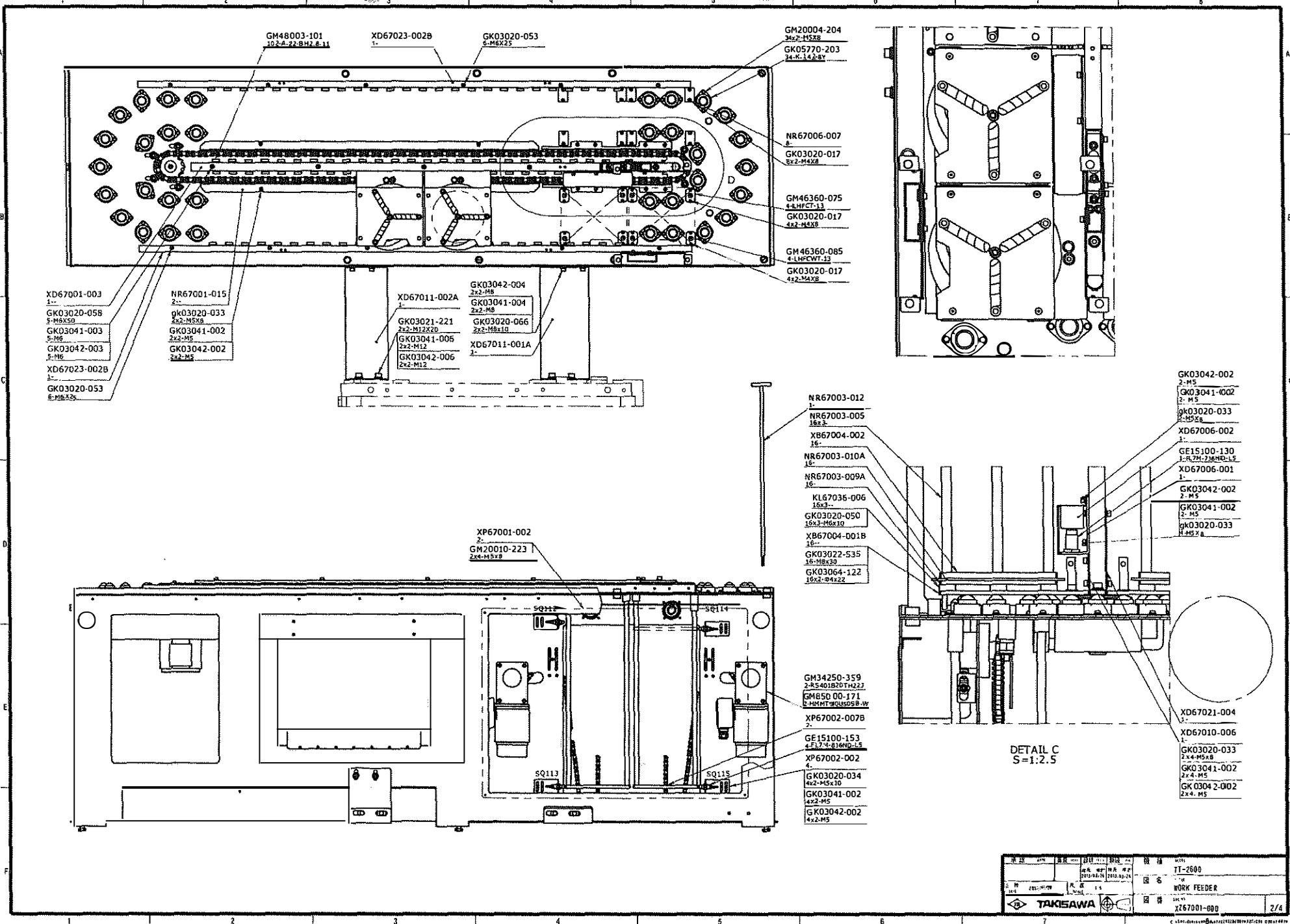


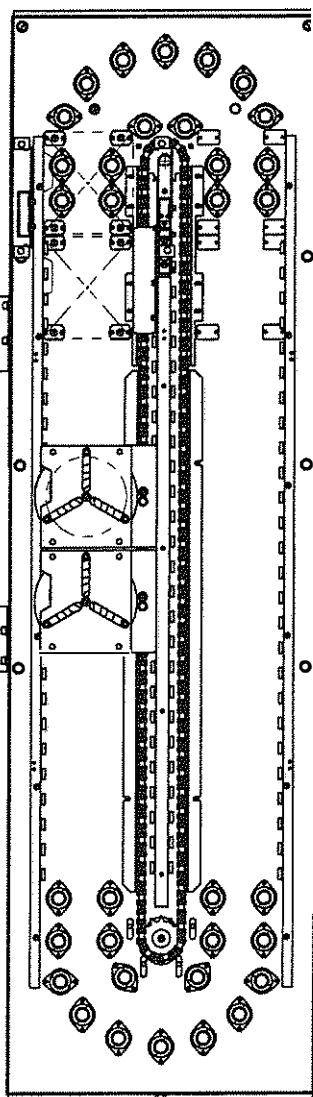
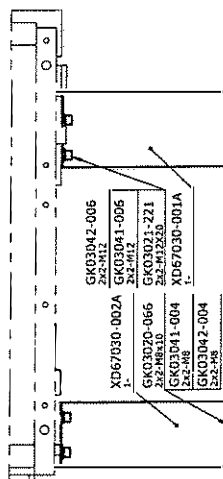
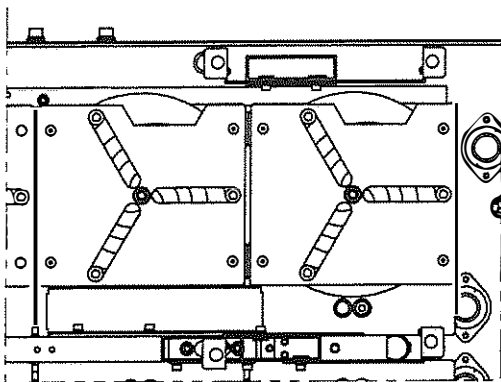


LUBRICATION (TYPE A)
XD60011-000

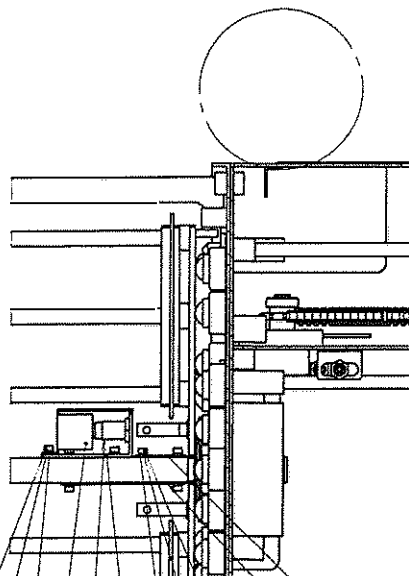
PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
BD60008-001A	BRACKET	SPCC	
BD60008-002A	PLATE	SPCC	
GK03020-054	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X30
GK03020-058	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X50
GK03020-074	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X50
GK03020-150	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X12
GK03041-003	PLAIN WASHER	(JIS STD)	M6
GK03041-004	PLAIN WASHER	(JIS STD)	M8
GK03042-003	SPRING WASHER	(JIS STD)	M6
GK03042-004	SPRING WASHER	(JIS STD)	M8
GK03842-001	GUARD SPRING	(SHOWA)	φ 6X1000L
GK05553-053	ELBOW (LUBRICATION)	(SHOWA)	PHD6 (φ 6, PT1/8, M10X1)
GK05554-000	SLEEVE (LUBRICATION)	(SHOWA)	PB4 (φ 4)
GK05554-001	SLEEVE (LUBRICATION)	(SHOWA)	PB6 (φ 6)
GK05554-010	CLAMP PLUG (LUBRICATION)	(SHOWA)	PA4 (φ 4, M8X1)
GK05554-011	CLAMP PLUG (LUBRICATION)	(SHOWA)	PA6 (φ 6, M10X1)
GK05554-201	REDUCER	(SHOWA)	PD-604 (φ 4)
GK05557-602	TUBE	(JYUNKOSHA)	170-04 (φ 4)
GK05557-603	TUBE	(JYUNKOSHA)	170-06 (φ 6)
GM10000-501	GREASE	(JIS STD)	MP-0
GM20540-342	HEX. SOCKET HEAD CAP SCREW	(JIS STD)	M8X15
GM21203-771	COLLAR	(MISUMI)	KNCLB6-16-20
GM21211-104	WASHER	(JIS STD)	M8
GM21211-170	SPLING WASHER	(JIS STD)	M8
GM60010-124	PUMP	(SHOWA)	SHG121
GM60010-131	PUMP	(SHOWA)	MHG41C
GM63155-021	PIPE FITTING	(IHARA)	KCT06-010E (φ 6X1/8)
GM63155-111	PIPE FITTING	(IHARA)	KLNO6-010E (φ 6X1/8)
GM63401-801	VALVE	(SHOWA)	SG604B
GM63401-805	VALVE	(SHOWA)	SG608B
GM63401-851	VALVE	(SHOWA)	PSG102
GM63401-853	VALVE	(SHOWA)	PSG104
GM63403-003	JOINT	(THK)	LF-B
GM63403-004	JOINT	(THK)	SF-B
GM63900-401	SADDLE	(SHOWA)	PZA14 (φ 4X1)
GM63900-402	SADDLE	(SHOWA)	PZA24 (φ 4X2)
GM64111-051	FLEXIBLE HOSE	(LUBE)	403010 (φ 8. 3X φ 3. 6)
GM64111-901	SLEEVE	(LUBE)	403001
GM64111-902	STUD	(LUBE)	403002







- | | |
|-------------|-----------------|
| GK03020-033 | 2-MS38 |
| GK03042-002 | 2-MS |
| GK03041-002 | 2-MS |
| XD67026-002 | 2-MS |
| GE15100-130 | 1-5175-23802-43 |
| XD67026-001 | 2-MS |
| GK03041-002 | 4-MS |
| GK03042-002 | 4-MS |
| GK03020-033 | 4-MS38 |
| XD67021-004 | 2-MS |
| XD67010-006 | 2-MS |
| GK03020-033 | 2-MS38 |
| GK03041-002 | 2-MS |
| GK03042-002 | 2-MS |

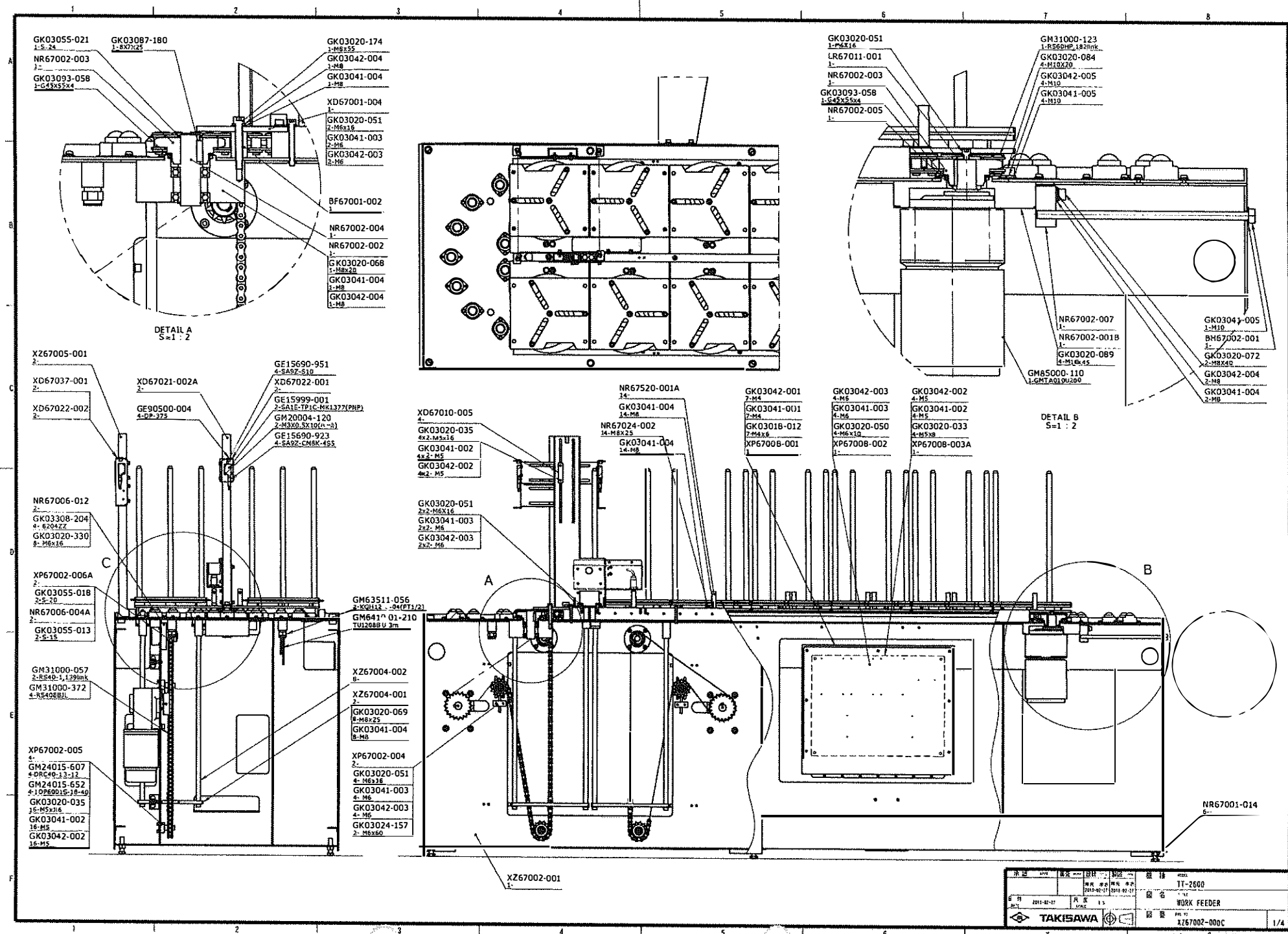


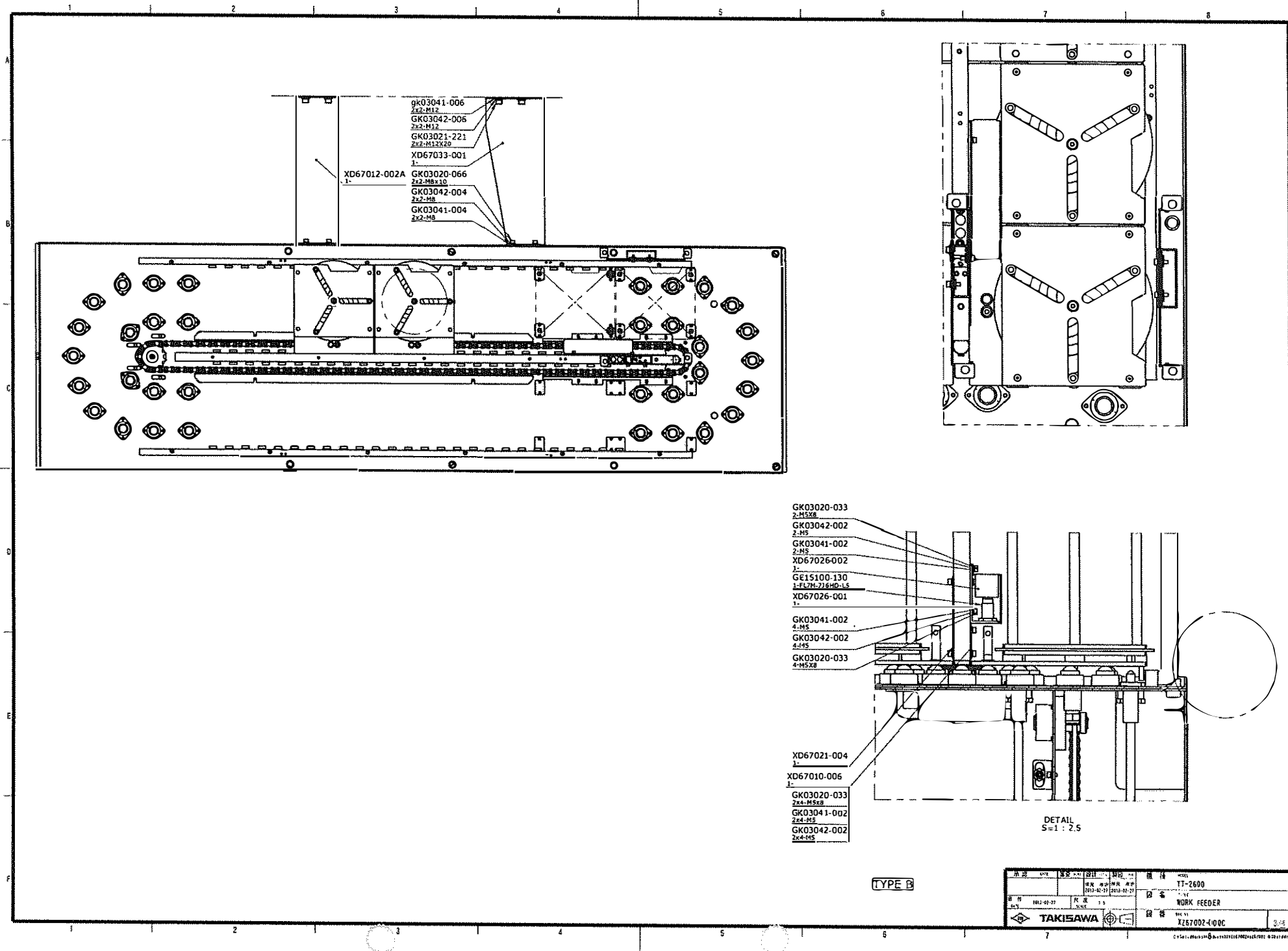
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JAPAN		MODEL FEEDER	
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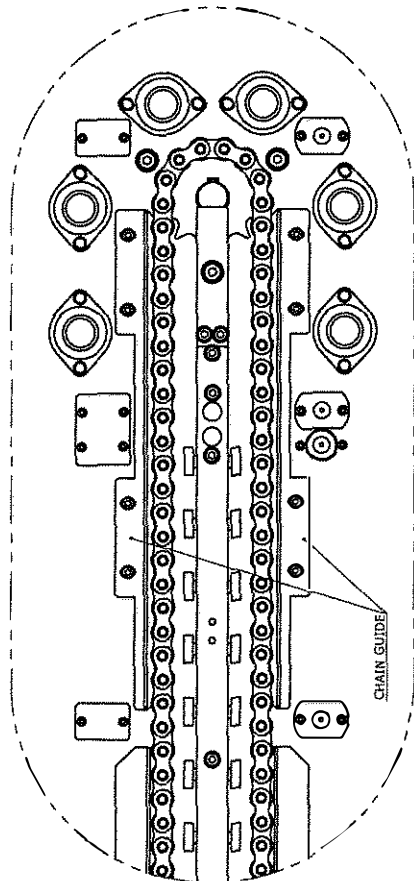
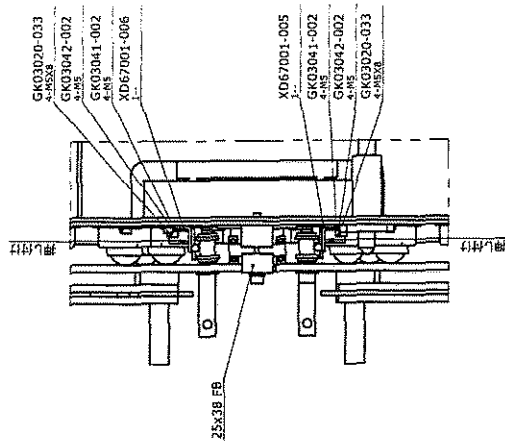
WORK FEEDER (8")
XZ67001-000

PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
BF67001-002	COLLAR	S45C	
GE15100-130	PROXIMITY SWITCH	(YAMATAKE)	FL7M-7J6HD-L5
GE15100-153	PROXIMITY SWITCH	(YAMATAKE)	FL7M-8J6ND-L5
GE15690-923	CONNECTOR CABLE	(IDEC)	SA9Z-CM8K-4S5
GE15690-951	SLIT	(IDEC)	SA9Z-S10
GE15999-001	PHOTO SWITCH	(IDEC)	SA1E-TP1C-MK1377 (PNP)
GE90500-004	COVER	(HEIKO)	DP-375
GK03018-012	ROUND HEAD MACHINE SCREW (+)	(JIS STD)	M4X6
GK03020-017	HEX. SOCKET HEAD CAP SCREW	(KKT)	M4X8
GK03020-033	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X8
GK03020-034	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X10
GK03020-035	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X16
GK03020-050	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X10
GK03020-051	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X16
GK03020-053	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X25
GK03020-058	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X50
GK03020-066	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X10
GK03020-068	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X20
GK03020-069	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X25
GK03020-072	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X40
GK03020-084	HEX. SOCKET HEAD CAP SCREW	(KKT)	M10X20
GK03020-089	HEX. SOCKET HEAD CAP SCREW	(KKT)	M10X45
GK03020-174	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X55
GK03020-330	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X18
GK03021-221	HEX. SOCKET HEAD CAP SCREW	(KKT)	M12X20
GK03022-535	HEX. SOCKET BUTTON SCREW	(KKT)	M8X30
GK03024-157	HEX. SOCKET SET SCREW	(KKT)	M6X60
GK03041-001	PLAIN WASHER	(JIS STD)	M4
GK03041-002	PLAIN WASHER	(JIS STD)	M5
GK03041-003	PLAIN WASHER	(JIS STD)	M6
GK03041-004	PLAIN WASHER	(JIS STD)	M8
GK03041-005	PLAIN WASHER	(JIS STD)	M10
GK03041-006	PLAIN WASHER	(JIS STD)	M12
GK03042-001	SPRING WASHER	(JIS STD)	M4
GK03042-002	SPRING WASHER	(JIS STD)	M5
GK03042-003	SPRING WASHER	(JIS STD)	M6
GK03042-004	SPRING WASHER	(JIS STD)	M8
GK03042-005	SPRING WASHER	(JIS STD)	M10
GK03042-006	SPRING WASHER	(JIS STD)	M12
GK03055-013	STOP RING (S)	(OGURA SP)	S-15
GK03055-018	STOP RING (S)	(OGURA SP)	S-20
GK03055-021	STOP RING (S)	(OGURA SP)	S-24
GK03064-122	ROLL PIN	(JIS STD)	4X22
GK03093-058	OIL SEAL (G)	(NTN)	G45X55X4
GK03308-204	BALL BEARING	(NSK)	6204ZZ
GK05770-203	BALL CASTER	(TAKIGEN)	K-142-8Y
GM20004-120	ROUND HEAD MACHINE SCREW	(JIS STD)	M3X0.5X10
GM20004-204	ROUND HEAD MACHINE SCREW	(JIS STD)	M5X8
GM20010-223	ROUND HEAD MACHINE SCREW	(SANKO)	M5X0.8X8
GM24015-607	IDLER SPROCKET	(MISUMI)	DRC40-13-12
GM24015-652	IDLER PIN	(MISUMI)	IDP6001S-18-40
GM31000-057	CHAIN	(TSUBAKI C)	RS40-1, 139L
GM31000-106	CHAIN	(TSUBAKI C)	RS60HP, 176L
GM31000-372	JOINT LINK	(TSUBAKI C)	RS40EBJL
GM34250-359	SPROCKET	(TSUBAKI C)	RS401B20TH22J
GM46360-075	LINEAR BUSH	(TSK)	LHFCT-13
GM46360-085	LINEAR BUSH	(TSK)	LHFCWT-13

GM48003-101	BEARING	(TOK)	A-22-BH2.8-11
GM63511-056	HALF UNION	(SMC)	KQH12-04 (PT1/2)
GM64101-210	TUBE (POLYURETHANE)	(SMC)	TU1208BU
GM85000-110	GEAR MOTOR	(TSUBAKI C	GMTA010U200
GM85000-171	GEAR MOTOR	(TSUBAKI C	HMMT90U50SB-W
KL67036-006	COLLAR	S45C	
LR67011-001	WASHER	SPCC	
NR67001-014	HEX. HEAD BOLT	(KKT)	M12X45
NR67001-015	ANGLE	SPCC	
NR67002-001B	FLANGE	S45C	S45C ϕ 190X45
NR67002-002	FLANGE	S45C	S45C ϕ 140X63
NR67002-003	SPROCKET	S38C	
NR67002-004	SHAFT	S45C	
NR67002-005	COLLAR	S45C	
NR67002-007	BLOCK	SS400	
NR67003-005	BAR	SS400D	
NR67003-009A	GUIDE	SS400D	
NR67003-010A	GUIDE	SS400D	
NR67003-012	WRENCH	SS400D	
NR67006-004A	SPROCKET	S38C	
NR67006-007	COVER	SPCC	
NR67006-012	FLANGE	S45C	
NR67024-002	PIN	SCM435	M8X25
NR67520-001A	PIN	S45C	
XB67003-001	BOLT	S45C	
XB67004-001B	BASE	SS400	
XB67004-002	PLATE	SS400D	
XD67001-003	GUIDE	SS400D	
XD67001-004	GUIDE	SS400D	
XD67001-005	GUIDE	SPCC	
XD67001-006	GUIDE	SPCC	
XD67006-001	BRACKET	SPCC	
XD67006-002	COVER	SPCC	
XD67010-005	PLATE	SPCC	
XD67010-006	COVER	SPCC	
XD67011-001A	BRACKET	SPCC	
XD67011-002A	BRACKET	SPCC	
XD67021-002A	BRACKET	SPCC	
XD67021-003	BRACKET	SPCC	
XD67021-004	COVER	SPCC	
XD67021-006	BRACKET	SPCC	
XD67023-002B	GUIDE	SS400D	
XD67026-001	BRACKET	SPCC	
XD67026-002	COVER	SPCC	
XD67030-001A	BRACKET	SPCC	
XD67030-002A	BRACKET	SPCC	
XD67036-001	BRACKET	SPCC	
XP67001-001E	FRAME	SPCC	
XP67001-002	COVER	SPCC	
XP67002-001A	PLATE	SS400	
XP67002-002	BRACKET	SPCC	
XP67002-003	SHAFT	SIJ2	
XP67002-004	BLOCK	SS400	
XP67002-005	BLOCK	SS400	
XP67002-006A	SHAFT	S45C	
XP67002-007B	ROD	SCM435	
XP67008-001	BOX	SPCC	
XP67008-002	BRACKET	SPCC	
XP67008-003A	PLATE	SPCC	
XZ67005-001	BRACKET	SPCC	







DETAIL D
S=1:2

TAKISAWA		TAKISAWA	
品名	品番	図番	図名
TT-2600	2267802-000C	13	WORK FEEDER
材料		材料	
JIS-S45C		JIS-S45C	
数量		数量	
1		1	
単位		単位	
個		個	
備考		備考	

WORK FEEDER (10")
XZ67002-000C

PART No.	PART NAME	(MAKER) MATERIAL	DIMENSION
BF67001-002	COLLAR	S45C	
BH67002-001	BOLT	S45C	
BH67003-001A	BASE	SS400D	
BH67003-002	PLATE	SS400D	
BH67003-003	PLATE	SS400D	
BH67003-004B	GUIDE	SS400D	
BH67003-005	COLLAR	S45C	
BH67003-006	BAR	SS400D	
GE15100-130	PROXIMITY SWITCH	(YAMATAKE)	FL7M-7J6HD-L5
GE15100-153	PROXIMITY SWITCH	(YAMATAKE)	FL7M-8J6ND-L5
GE15690-923	CONNECTOR CABLE	(IDEC)	SA9Z-CM8K-4S5
GE15690-951	SLIT	(IDEC)	SA9Z-S10
GE15999-001	PHOTO SWITCH	(IDEC)	SA1E-TP1C-MK1377 (PNP)
GE90500-004	COVER	(HEIKO)	DP-375
GK03018-012	ROUND HEAD MACHINE SCREW (+)	(JIS STD)	M4X6
GK03020-017	HEX. SOCKET HEAD CAP SCREW	(KKT)	M4X8
GK03020-033	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X8
GK03020-034	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X10
GK03020-035	HEX. SOCKET HEAD CAP SCREW	(KKT)	M5X16
GK03020-050	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X10
GK03020-051	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X16
GK03020-053	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X25
GK03020-058	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X50
GK03020-066	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X10
GK03020-068	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X20
GK03020-069	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X25
GK03020-072	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X40
GK03020-084	HEX. SOCKET HEAD CAP SCREW	(KKT)	M10X20
GK03020-089	HEX. SOCKET HEAD CAP SCREW	(KKT)	M10X45
GK03020-118	HEX. SOCKET HEAD CAP SCREW	(KKT)	M4X12
GK03020-174	HEX. SOCKET HEAD CAP SCREW	(KKT)	M8X55
GK03020-330	HEX. SOCKET HEAD CAP SCREW	(KKT)	M6X18
GK03021-221	HEX. SOCKET HEAD CAP SCREW	(KKT)	M12X20
GK03022-535	HEX. SOCKET BUTTON SCREW	(KKT)	M8X30
GK03024-157	HEX. SOCKET SET SCREW	(KKT)	M6X60
GK03041-001	PLAIN WASHER	(JIS STD)	M4
GK03041-002	PLAIN WASHER	(JIS STD)	M5
GK03041-003	PLAIN WASHER	(JIS STD)	M6
GK03041-004	PLAIN WASHER	(JIS STD)	M8
GK03041-005	PLAIN WASHER	(JIS STD)	M10
GK03041-006	PLAIN WASHER	(JIS STD)	M12
GK03042-001	SPRING WASHER	(JIS STD)	M4
GK03042-002	SPRING WASHER	(JIS STD)	M5
GK03042-003	SPRING WASHER	(JIS STD)	M6
GK03042-004	SPRING WASHER	(JIS STD)	M8
GK03042-005	SPRING WASHER	(JIS STD)	M10
GK03042-006	SPRING WASHER	(JIS STD)	M12
GK03055-013	STOP RING (S)	(OGURA SP)	S-15
GK03055-018	STOP RING (S)	(OGURA SP)	S-20
GK03055-021	STOP RING(S)	(OGURA SP)	S-24
GK03064-122	ROLL PIN	(JIS STD)	4X22
GK03087-180	KEY (BOTH ARC END)	(JIS STD)	8X7X25
GK03093-058	OIL SEAL (G)	(NTN)	G45X55X4
GK03308-204	BALL BEARING	(NSK)	6204ZZ
GK05770-203	BALL CASTER	(TAKIGEN)	K-142-8Y
GM20004-120	ROUND HEAD MACHINE SCREW	(JIS STD)	M3X0.5X10
GM20004-204	ROUND HEAD MACHINE SCREW	(JIS STD)	M5X8

GM20010-223	ROUND HEAD MACHINE SCREW	(SANKO)	M5X0.8X8
GM24015-607	IDLER SPROCKET	(MISUMI)	DRC40-13-12
GM24015-652	IDLER PIN	(MISUMI)	IDP6001S-18-40
GM31000-057	CHAIN	(TSUBAKI C	RS40-1, 139L
GM31000-123	CHAIN	(TSUBAKI C	RS60HP, 182L
GM31000-372	JOINT LINK	(TSUBAKI C	RS40EBJL
GM34250-359	SPROCKET	(TSUBAKI C	RS401B20TH22J
GM46360-075	LINEAR BUSH	(TSK)	LHFCT-13
GM46360-085	LINEAR BUSH	(TSK)	LHFCWT-13
GM48003-101	BEARING	(TOK)	A-22-BH2.8-11
GM63511-056	HALF UNION	(SMC)	KQH12-04 (PT1/2)
GM64101-210	TUBE (POLYURETHANE)	(SMC)	TU1208BU
GM85000-110	GEAR MOTOR	(TSUBAKI C	GMTA010U200
GM85000-172	GEAR MOTOR	(TSUBAKI C	HMMT90U100SB-W
LR67011-001	WASHER	SPCC	
NR67001-014	HEX. HEAD BOLT	(KKT)	M12X45
NR67001-015	ANGLE	SPCC	
NR67002-001B	FLANGE	S45C	S45C ϕ 190X45
NR67002-002	FLANGE	S45C	S45C ϕ 140X63
NR67002-003	SPROCKET	S38C	
NR67002-004	SHAFT	S45C	
NR67002-005	COLLAR	S45C	
NR67002-007	BLOCK	SS400	
NR67003-012	WRENCH	SS400D	
NR67006-004A	SPROCKET	S38C	
NR67006-007	COVER	SPCC	
NR67006-012	FLANGE	S45C	
NR67024-002	PIN	SCM435	M8X25
NR67520-001A	PIN	S45C	
XD67001-004	GUIDE	SS400D	
XD67001-005	GUIDE	SPCC	
XD67001-006	GUIDE	SPCC	
XD67006-001	BRACKET	SPCC	
XD67006-002	COVER	SPCC	
XD67008-001	PLATE	SPCC	
XD67008-002	COVER	SPCC	
XD67010-005	PLATE	SPCC	
XD67010-006	COVER	SPCC	
XD67012-001A	BRACKET	SPCC	
XD67012-002A	BRACKET	SPCC	
XD67021-004	COVER	SPCC	
XD67022-001	BRACKET	SPCC	
XD67022-002	BRACKET	SPCC	
XD67023-002B	GUIDE	SS400D	
XD67024-002	GUIDE	SS400-D	
XD67026-001	BRACKET	SPCC	
XD67026-002	COVER	SPCC	
XD67033-001	BRACKET	SPCC	
XD67037-001	BRACKET	SPCC	
XD67501-001	BLOCK	SS400	
XP67002-002	BRACKET	SPCC	
XP67002-004	BLOCK	SS400	
XP67002-005	BLOCK	SS400	
XP67002-006A	SHAFT	S45C	
XP67008-001	BOX	SPCC	
XP67008-002	BRACKET	SPCC	
XP67008-003A	PLATE	SPCC	
XZ67002-001	FRAME	SPCC	
XZ67002-002	COVER	SPCC	
XZ67004-001	PLATE	SS400	
XZ67004-002	SHAFT	SUJ2	
XZ67004-003	ROD	SCM435	
XZ67005-001	BRACKET	SPCC	

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RAKURAKU MONITOR 3

NS18003-550J

PLEASE READ EACH INSTRUCTION
MANUAL CAREFULLY BEFORE OPERATING
YOUR MACHINE AND UNDERSTAND
CONTENTS SUFFICIENTLY. ALSO, SAVE
EACH MANUAL HANDY SO AS TO READ
ANY TIME.

**MACHINE TOOLS
TAKISAWA**

IMPORTANT

Be sure to read each instruction manual before operating the machine.

- Observe the safety precautions in instruction manuals and the contents written on warning labels pasted on the machine. If not observed, serious accident and machine damage will be caused.
- There are many operations that "CANNOT or IMPOSSIBLE" or "MUST NOT DO" for the machine. Consider as "CANNOT or IMPOSSIBLE" unless described as "CAN or POSSIBLE" in the instruction manuals.
- This manual for your machine is created for persons who have a basic knowledge of machine tool.
Takisawa disclaims about accidents or defects that occur because persons who have not the knowledge about the machine tool or sufficient training have performed machine operation, maintenance, programming.
- Any parts of illustrations in the instruction manuals are drawn with covers, doors, etc., removed to explain detailed parts. Take care since it is necessary to mount them on actual operation for safety.
- Save instruction manuals handy so that they can be read when required.
- When reordering any manual, please inform your agent a machine number (or machine name, manual name).
- This machine may be provided as the strategic material specified in "Foreign Exchange and Foreign Trade Management Regulations" in Japan.
When exporting or importing this machine, check that it is the controlled item before performing transactions by advising to your agent or Takisawa in addition to your government.

GENERAL WARNING AND CAUTION

Refer to the following precautions to ensure data protection when the RAKURAKU MONITOR 3 is used.



WARNING

Check that the data are correctly inputted on the screen before proceeding next operation.

If the machine is operated with incorrect data, the tool interferes with the work or the machine, as a result, the tool or machine may be damaged and there is a danger of human accident.

When using the tool compensation function, check the compensation direction and compensation value without fail, and also check that the tool does not interfere with the work or the equipment before starting the machine.

If the tool interferes with the work or the equipment, there is the danger of human accident.

Set required parameters and data surely before starting the RAKURAKU MONITOR 3.

If the incorrect cutting condition is set for the work, the tool may be broken or human accident may occur.

When the operating program is created with the RAKURAKU MONITOR 3, don't start the operating quickly with its program.

Check that the created program is correct step by step, and also check that all tool path and operating motion are also correct and the tool does not interfere with the work or the equipment.

Operate the machine under no load with the work removed before starting actual machining operation and check that the tool does not interfere with the work or equipment.

If the tool interferes with the work or the equipment, there is the danger of human accident.



CAUTION

After pressing a power-on button, don't touch any key on the keyboard until the screen appears.

Since there are keys which are used for maintenance or special operation, an unexpected motion may be caused.

The instruction manual of RAKURAKU MONITOR 3 does not explain the function and operation of CNC unit.

For the functions and operations of actual CNC unit, refer to each instruction manual of CNC unit.

In the RAKURAKU MONITOR 3, there is any machine which cannot operate as described in the manual.

For details, check precautions or limited items in the manual.

The data (wear compensation value, tool life, group registration, parameters, etc.,) used by the RAKURAKU MONITOR 3 are registered into a FLASH ROM. Usually, their data will not be deleted by power ON/OFF motions. However, back up various data in advance to recover the system quickly if an unexpected situation occurs.

BE SURE TO READ BEFORE OPERATING

The following describes the points that must be attentive when the functions of RAKURAKU MONITOR 3 will be used.

Be sure to read before using the RAKURAKU MONITOR 3.



CAUTION

About restriction when RAKURAKU MONITOR 3 is used.

- Don't command the tool function (T codes) and the RAKURAKU MONITOR 3'S own setting function (G codes) • miscellaneous function (M code) in the same block of NC program since any command may be ignored.

The following codes cannot be combined with tool function (T codes).

Setting function (G codes)

G901 ~ G916

Miscellaneous function (M codes)

M12, M13

When T code is combined with G codes and M codes other than above codes, it can be commanded in the same block.

Three M codes can be commanded in the same block.

- System variable # 3001 of the custom macro (millisecond timer) is used by "RAKURAKU MONITOR".

Please do not use #3001.

- 88 and 99 of the offset numbers cannot be used.

These numbers are used by the group call.



CAUTION

About processing of a "RAKURAKU MONITOR"

Processing of a RAKURAKU MONITOR becomes slow during processing.
Processing becomes slow while displaying the screen of a MEASURING MONITOR or a RAKURAKU MONITOR.



IMPORTANT

About tool offset/wear screen

The wear offset value of FANUC CNC tool offset/wear screen is the same as that of the RAKURAKU MONITOR 3.

Even if which value is set, the same value is displayed.

When the wear offset value set on FANUC CNC tool offset/wear screen exceeds the number of digits displayed on the RAKURAKU MONITOR 3, the offset value may be incorrectly displayed. (± 10.0)



IMPORTANT

About using with "RAKURAKU TURN" together

In "RAKURAKU TURN", the tool number and the correction number are the same numbers.

Therefore, the group call of "RAKURAKU MONITOR" cannot be done with the program of "RAKURAKU TURN".



IMPORTANT

About using with "RAKURAKU LOADER4" together

In using with "RAKURAKU LOADER 4" together, neither M code list nor the machine diagnosis screen are displayed.

These can be confirmed on the screen of "RAKURAKU LOADER 4".

CHAPTER CONTENTS

PREFACE

A. FUNCTION

B. PROGRAMMING

C. SCREEN CHANGE

D. SCREEN OPERATION

Z. APPENDIX

PREFACE

The RAKURAKU MONITOR 3 is the software which can perform tool management, load monitor, and operation information.

Here, the RAKURAKU MONITOR 3 is explained briefly.

1 BASIC OPERATION AND BASIC SPECIFICATION

1-1 BASIC OPERATION

A push on the  key of a standard keyboard displays the RAKURAKU MONITOR 3 screen.

(When a key is pushed first, "GENERAL" screen is displayed. The screen currently displayed last time from next time is displayed.)

The RAKURAKU MONITOR 3 screen change is performed on a soft key or a SCREEN CHANGE BUTTON.

(Please refer to "C. SCREEN CHANGE" for details.)

A setup is performed and a change is made in the screen.

If the [(OPRT)] key displayed on a soft key is pushed, cursor will be displayed and a setup and change will be attained.

In the case of a tool life end, a message is displayed.

When checking the message, press the alarm reset button  on the operation panel. The message is deleted.

(Please refer to "Z. APPENDIX 7 MESSAGE" for details.)

1-2 BASIC SPECIFICATION

The RAKURAKU MONITOR 3 tool management, the load monitor are performed on the basis of the tool number.

When ordered by the program in a tool number, the number of times counts.

2 LET'S USE THE RAKURAKU MONITOR 3

2-1 SCREEN DISPLAY

A push on the  key of a standard keyboard displays the RAKURAKU MONITOR 3 screen.

When a key is pushed first, "GENERAL" screen is displayed.

500/1000 16:32		05000 N00000	
GENERAL LIST		T03 W03	
T W	X WEAR	Z WEAR	LIFE COUNT
0101 ↓	0.000	0.000	3000 1500
0202 ↓	0.000	0.000	3000 0
0303 ←	0.000	0.000	3000 1500
0404 →	0.000	0.000	3000 0
0505 ↑	0.000	0.000	5000 1500
0606 ↖	-0.040	0.000	1000 500
0707 ↗	0.000	0.000	1000 500
0808 ↘	0.000	0.000	6000 3000
0909 ↙	0.000	0.000	6000 3000
1010 ⊞	0.000	0.000	8000 4500
EDIT **** ** *			
14:52:10		M/C	
LIST	WEAR	LIFE	CHANGE (OPRT) +

A GENERAL screen displays OFFSET/WEAR value and a LIFE value.

If the [WEAR] of a soft key is pushed, it will become GENERAL [WEAR] screen.

If the [LIFE] of a soft key is pushed, it will become GENERAL [TOOL LIFE] screen.

(Please refer to a "D. SCREEN OPERATION 2 GENERAL MENU" for details.)

2-2 INPUT OF OFFSET/WEAR VALUE

If [(OPRT)] of a soft key is pushed on a GENERAL screen, cursor will be displayed and a soft key will switch.

500/1000 16:32		05000 N00000			
GENERAL LIST			T03 W03		
T W		X WEAR	Z WEAR	LIFE	COUNT
0101	↓	0.000	0.000	3000	1500
0202	↓	0.000	0.000	3000	0
0303	↑	0.000	0.000	3000	1500
0404	↑	0.000	0.000	3000	0
0505	↓	0.000	0.000	5000	1500
0606	↔	-0.040	0.000	1000	500
0707	↔	0.000	0.000	1000	500
0808	↔	0.000	0.000	6000	3000
0909	↔	0.000	0.000	6000	3000
1010	↔	0.000	0.000	8000	4500
EDIT **** ** *					
			14:52:10	M/C	
(←)	LIST	WEAR	LIFE	CHANGE	(OPRT) (+)

0.010 will be set up, if 10 is inputted and the  key is pushed by the MDI keyboard.

Refer to the "D. SCREEN OPERATION 2 GENERAL MENU" for the operation method.

When the value exceeding ± 0.500 is set up, a wear limit message is displayed.

When changing a wear limit value, it carries out on the "WEAR" of the "GENERAL".

In order to turn OFF a wear limit, a wear limit value is set as "0."

For details, please refer to "D. SCREEN OPERATION 3 TOOL MENU."

2-3 TOOL LIFE MANAGEMENT IS USED.

If [(OPRT)] of a soft key is pushed on a GENERAL screen, cursor will be displayed.
The direction key [->] of a MDI keyboard is pushed and cursor is moved to a life.
A soft key switches according to cursor.

500/1000 16:32		05000 N00000			
GENERAL LIST		T03 W03			
T W		X WEAR	Z WEAR	LIFE	COUNT
0101	↓	0.000	0.000	3000	1500
0202	↓	0.000	0.000	3000	0
0303	←	0.000	0.000	3000	1500
0404	←	0.000	0.000	3000	0
0505	↑	0.000	0.000	5000	1500
0606	↖	-0.040	0.000	1000	500
0707	↖	0.000	0.000	1000	500
0808	↖	0.000	0.000	6000	3000
0909	↖	0.000	0.000	6000	3000
1010	↖	0.000	0.000	8000	4500
EDIT**** ** *					
		14:52:10		M/C	
←	LIST	WEAR	LIFE	CHANGE	(OPRT) +

100 will be set up, if 100 is inputted and the  key is pushed by the MDI keyboard. Refer to the "D. SCREEN OPERATION 2 GENERAL MENU" for the operation method.

THE NUMBER OF TIMES IS COUNTED BY THE PROGRAM.

A life value is set up in the screen. (It will not count, if a life value is "0".)
It checks being ordered in the tool number and compensation number in a program.

It is made MEM mode (SINGLE BLOCK, MACHINE LOCK, and DRY RUN are turned off), and a program is performed.

It checks after an end that the one number of times has counted.

Please refer to "Z. APPENDIX 1 TOOL" about a count.

MACHINE ACTION AT THE TIME OF A LIFE END

It is set as the "ACT LIFE END" item of TOOL SETTING screen.

For details, please refer to "D. SCREEN OPERATION 3 TOOL MENU."

Please refer to a "Z. APPENDIX 6 MACHINE ACTION SIGNAL" about machine action.

2-4 CUTTING LOAD MONITOR IS USED.

In order to perform cutting load monitor, it is necessary to set up a warning value and an abnormal value. (It will not be detected if a warning value and an abnormal value are "0".)

If the left end of a soft key is pushed several times, [LOAD] is chosen and a [SETTING] is pushed, a WARN & ABNO SETTING screen will be displayed.

A push on [(OPRT)] of a soft key displays cursor.

50 will be set up, if 50 is inputted and the  key is pushed by the MDI keyboard.

A setup of a value should set up by making maximum reference.

If a sampling is used, a warning value and an abnormal value will be set up after next cutting.

Refer to the "D. SCREEN OPERATION 4 LOAD MENU" for the operation method.

CUTTING LOAD MONITOR IS USED

A warning value and an abnormal value are set up in the screen.

It checks being ordered in the tool number and offset number in a program.

It is made MEM mode (SINGLE BLOCK, MACHINE LOCK, and DRY RUN are turned off), and a program is performed.

If a load value exceeds warning and an abnormal value 5 times continuously, a message will occur.

Please refer to "Z. APPENDIX 3 LOAD MONITOR" about LOAD MONITOR.

2-5 TOOL GROUP MANAGEMENT IS USED.

A tool is classified into a group and tool group management is performed.
The following tool registered into the same group from the tool life end is chosen.
If the left end of a soft key is pushed several times, [GROUP] is chosen and
[GPLIST] is pushed, GROUP LIST screen will be displayed. A push on [DETAIL]
displays GROUP DETAILS screen. A push on [(OPRT)] of a soft key displays cursor.

000/1000 10 30		05000 N00000		000/1000 10 30		05000 N00000	
GROUP [LIST]				GROUP [DETAILS]			
103 W03				GP01 103 W03			
No	GP01	GP02	GP03	GP04	GP05	GP06	
01	0101	0303					
02	0202	0404					
03							
04							
05							
06							
07							
08							
09							
10							
EDIT**** *** **				EDIT**** *** **			
14:58:37 M/C				14:58:58 M/C			
[GPLIST]		[DETAIL]		[GPLIST]		[DETAIL]	
		[OPRT]				[OPRT]	

It will be set up, if a tool number is inputted and the  key is pushed by the MDI keyboard.

A maximum of ten can be registered into one group.

Refer to the "D. SCREEN OPERATION 5 GROUP MENU" for the operation method.

TOOL GROUP MANAGEMENT IS USED

A life value is set up. A life value is set up for every tool.

Please refer to "3-3 TOOL LIFE MANAGEMENT IS USED."

Two or more tools are registered into a group 1.

Please be sure to tool nose setting the registered tool.

The T code instructions in a program are changed into T0199.

It is made MEM mode (SINGLE BLOCK, MACHINE LOCK, and DRY RUN are turned off), and a program is performed.

When the last tool is a life end, a group life end message occurs.

For details, please refer to "Z. APPENDIX 4 GROUP MANAGEMENT."

When a group tool is exchanged, please be sure to push the [ALLCPL] soft key of GROUP LIST or GROUP DETAILS screen.

2-6 PART COUNTER IS COUNTED.

In order to count a parts counter, it is ordered M12 in a program.

It is made MEM mode (SINGLE BLOCK, MACHINE LOCK, and DRY RUN are turned off), and a program is performed.

If the left end of a soft key is pushed several times, [RUN] is chosen and [MC RUN] is pushed, an operation list screen will be displayed.

It checks that the parts counter has counted.

500/1000 16:39		05000 N00000	
MACHINE RUN [LIST]		T03 W03	
REQUIRED	1000	DAY P-ON	1:30'19
PARTS CT	500	OPRT	7'12
TOTAL CT	12508	MON P-ON	1:30'19
DAY COUNT	8	OPRT	7'12
MON COUNT	130008		
PROGRAM	START	FINISH	CYCLE
5000	14:51:04	14:51:16	12
5000	14:47:46	14:48:54	1'07
5000	14:32:59	14:34:07	1'07
5000	14:31:48	14:32:55	1'07
5000	14:30:35	14:31:43	1'07
EDIT **** *** ***			
14:59:22		M/C	
[<]	LIST	PARTS	COUNT
TIME		[OPRT] +	

A push on [(OPRT)] of a soft key displays cursor.

Refer to the "D. SCREEN OPERATION 6 RUN MENU" for the operation method.

PARTS COMPLETION

The number of parts required value is set up.

When the parts count reaches the parts required value, the message is displayed.

A free counter is the same as a parts counter.

It counts by M13.

2-7 TOOL NAME AND TOOL MARK IS SET UP.

If the left end of a soft key is pushed several times, [TOOL] is chosen and [TL EDT] is pushed, TOOL SETTING screen will be displayed.

A push on [(OPRT)] of a soft key displays cursor.

500/1000 16:34
05000 N00000

TOOL SETTING 「TOOL」
PAGE:1/5
T03 W03

TOOL NO.
T01 W01

KIND
↓ GENERL

TOOL KIND
TOOL THROUGH COOLANT

↓ GENERL
OFF

EDIT ****

14:54:36

M/C

<
TL REG
TL EDT

W. HIS
(OPRT)

The kind and the mark of the tool are selected with a soft key.

2-8 ABOUT OTHER SCREENS AND FUNCTIONS

Please refer to a screen, a function, therefore "D. SCREEN OPERATION."

Please refer to "Z. APPENDIX" before using it.

A. FUNCTION

The following explains about each function.

The RAKURAKU MONITOR 3 tool management, the load monitor, and the compensation management are performed on the basis of the tool number and compensation number.

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1 TOOL MANAGEMENT

1-1 TOOL LIFE MANAGEMENT

Tool life management is performed by setting a tool life value and forecast value.
(Message in front of life value)

The tool-usable frequency reaches the set tool life value or the forecast value, a signal or message is outputted to inform any operator that the tool change is required.

The counter counts the used tool frequency within 1 process from the cycle start of machining program to machining finish by M02 or M30.

(Only 1 is added to the tool used frequency.)

The counter shows only 1 even if the same tool is commanded in 1 process several times.

(It can be added to every order on the system screen, too.)

When the tool life value is set to zero (0), the counter does not count the tool-used frequency.

(The counter can count by the parameter on the system screen even if the tool life value is zero (0). However, in this case, the tool life management is invalid.

That's all the counter counts.)

The counter does not count the tool-used frequency under the single block and dry run machine lock operations.

The tool management at the cutting time is made.

The tool life end can be set as the tool change conditions.

1-2 TOOL GROUP MANAGEMENT

The tool is divided into maximum 12 groups on the group screen to manage the tool group.

If the tool life is worn out on the tool life management, the load warning value • load abnormal value are detected on the tool life management and the tool cannot be used on the measuring monitor function (option), next usable tool stored in the same group is selected.

When the final tool in one group reaches the life value and forecast value with on the tool life management, the signal and the message are outputted to inform the operator that the tool change is required.

When a new tool is selected in the group, a new tool select signal and message can be outputted.

It is used for checking the compensation value of new tool.

When performing the tool group management, set each tool nose to the same position in advance before using it.

The tool change condition (SHIFT), search mode (forward direction, research) and the output of new tool select signal can be set every group.

2 LOAD MONITOR

2-1 CUTTING LOAD MONITOR

Cutting loads are measured and monitored every tool.

The axis of the cutting load management is different in every machine.

(Maximum 6 axis)

When the load-measured value reaches the set load warning value or load abnormal value, the signal or message is outputted to inform the operator.

When a load warning value or load abnormal value are set on the screen , each cutting load is monitored.

When a load warning value and load abnormal value is set to zero (0), cutting load isn't monitored.

The warning value and abnormal value can be automatically calculated and set by sampling.

In case of sampling, the load maximum value in cutting of its tool is calculated during automatic operation and it is set to the load warning value and the load abnormal value after multiplying the load warning sampling factor and the load abnormal sampling factor (%) set to the system screen for its load maximum value.

(In case of sampling, take care since the cutting load monitor function is not processed.)

The cutting load function is monitored when cutting feed is commanded (All cutting feed).

Load value indicates load torque value with 0 - 255.

The load warning and the load abnormal can be set as the tool change conditions.

The cutting load function and the sampling are not measured under the single block, dry run and machine lock operations.

The cutting load monitoring is processed at about 16ms interval.

3 COMPENSATION MANAGEMENT

3-1 OFFSET INPUT

Tool nose wear is compensated with a offset value.

Input and editing are made in the X offset value, the Z offset value, the R offset value.

Value beyond ± 10.0 can't be set.

(Set it up on offset screen.)

The amount of fixed quantity offset can be added with the [+VALUE] [-VALUE] softkey.

3-2 WEAR LIMIT

X • Z offset values are compared with X • Z wear limit values by setting the X • Z wear limit values.

If the X • Z offset values exceeds the X • Z wear limit values, the signal or message is outputted to inform the operator.

When the wear limit value is zero (0), the offset value is not compared with the wear limit value and the message is not also displayed.

Initial value: ± 0.500

3-3 CYCLIC OFFSET ADDITION

This function can add the offset value every constant period.

Thus, it adds a specified offset value when a tool counter reaches a cyclic value. After adding the offset value, the tool counter is set to zero (0) and the counter counts from beginning newly.

The number of times (number of times of addition) adding the amount of offset is also counted.

When the counter reaches an addition limit value, the message is displayed to inform the operator.

After the counter reaches the addition limit value, this function does not add a cyclic offset (It does not count a tool usage frequency).

When the counter is zero (0), the offset value is added every cycle.

Though the tool counter is counted by the same method as a tool life

management, the counter is separately mounted.

(When [RPLCPL] [ALLCPL] softkeys are pressed the tool counter of tool life management and the tool counter of cyclic offset addition are reset to zero (0)).

3-4 OFFSET (WEAR) UNDO FUNCTION

INPUT • EDIT operations can be canceled once for only operations on the RAKURAKU MONITOR 3 screen

(Wear offset value is returned to the value before inputting and editing the wear offset value.)

When a wear offset value is edited,[UNDO] and [UNDO C] are displayed on softkey.

If the [UNDO] key is pushed when the wrong value is inputted, it will return to the value before edit.

A push on the [UNDO C] key eliminates the value before the edit currently recorded.

4 MACHINE RUN INFORMATION

4-1 PARTS COUNTER

When M code set in the count up M code (M12) is commanded, the counter counts the parts count and the parts total.

When the parts count reaches the parts required value, the signal and the message are outputted to inform the operator.

When the parts required value is zero (0), though the signal and the message are not outputted, the counter counts the parts and the parts total.

4-2 FREE COUNTER

When M code set in the count up M code (M13) is commanded, the counter counts the free count and the free total.

When the free count reaches the free required value, the signal and the message are outputted to inform the operator.

When the free required value is zero (0), though the signal and the message are not outputted, the counter counts the free count and the free total.

4-3 RUN TIME

There are two kinds of run time, lapsed time and total time.

POWER ON TIME : Machine power on time

OPERATION TIME : Machine operation time of from cycle start until cycle end.

CUTTING TIME : Time cut by G01, G02, and G03.

4-4 MACHINED RESULTS

For machined results, machining program No., start time, finish time and cycle time are displayed.

The machined results of past 10 times are displayed.

In the single block operation, it isn't displayed as the machined result.

4-5 RUN PROGRAM COUNTER

When the program number is set on the run program screen and its program number is executed as the main program, the count of program execution and the cycle time are recorded.

5 OTHERS FUNCTION

5-1 STOPWATCH

Time can be measured on the stopwatch screen.

The time can be manually measured and the time in the machining program can also be measured by M code.

M100: TIMER START

M101: TIMER STOP

M102: TIMER RESET

M103: LAP

5-2 CP (Calculation of process capacity index)

The process capacity index (Cp, Cpk) and the machine capacity index (Cm, Cmk) can be calculated on Cp screen.

There is a Cp calculation for two heads.

They can be calculated for maximum 60 data.

Data are manually inputted and tolerance is also manually set.

5-3 MEMORY CARD INPUT AND OUTPUT

A memory card can do input and output of the RAKURAKU MONITOR 3 data.

1. OUTPUT (PUNCH) ITEM

They are the setup data of every tool, system data, machine run data, Cp data.

2. INPUT (READ) ITEM

They are the setup data of every tool, system data.

5-4 PROGRAM OUTPUT

The data of RAKURAKU MONITOR 3 can be outputted to the program memory.

1. OUTPUT (PUNCH) ITEM

They are the setup data of every tool, system data.

The machining program can be easily changed by commanding each setting value into the machining program with setting function (G code) without changing it on the screen.

2. MACHINING PROGRAM

The outputted set program can be read again by executing its program similarly with the machining program.

5-5 COUNT OF CUTTING TIME

The cutting time of every tool are counted.

Cutting time is the addition values of the time cut by command of G01, G02, and G03.

Cutting time can be used by tool life management.

B. PROGRAMMING

The following describes about points that must be attentive on programming when the RAKURAKU MONITOR 3 will be used.

Be sure to read before creating the operating program.

For detailed programming, refer to the instruction manual of machine.

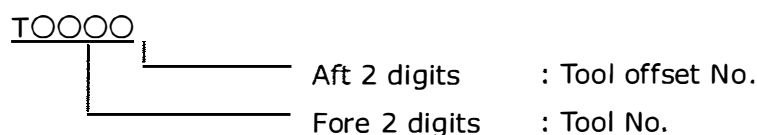
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1 T CODE

1-1 TOOL SELECT

This is the number that follows T code and it commands tool selection mode.
Next number may be used for the offset number that specifies the compensation value of tool position offset.



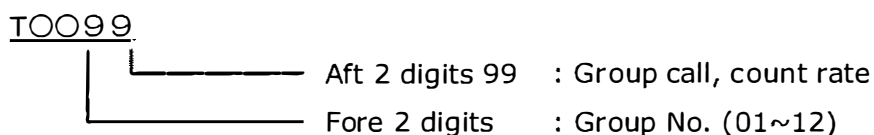
Example)

T0101

Tool No. T01 is commanded and tool OFFSET No. W01 is used.

1-2 GROUP TOOL SELECT

This is the number that follows T code and it commands group tool selection mode.



When T0088 is specified to aft 2 digits, though the tool group is called, the compensation number isn't commanded.

When you order it a compensation number after choosing a group tool by T0088, please order it T0099.

Example)

GROUP No. 1 T0101、 T0202

GROUP No. 1 T0303、 T0404

T0199 ; T0101 is commanded.

...

T0288 ; T0300 is commanded. (No compensation number)

G0 ...

T0299 ; T0303 is commanded.



CAUTION

88 and 99 of the offset numbers cannot be used.

These numbers are used by the group call.

2 M CODE

The miscellaneous function (M codes) commanding spindle START • STOP or program end, etc, has RAKURAKU MONITOR 3 special-purpose M codes and limited M codes.

2-1 COUNT UP M CODE

The count up M code is for counting the parts counter and free counter.

The count up M code commands the number set to the count up M code items on the counter screen.

The count up M code of parts counter : M12.

The count up M code of free counter : M13.

2-2 STOPWATCH M CODE

The timer on the stopwatch screen can be controlled by M codes.

M100: TIMER START

M101: TIMER STOP

M102: TIMER RESET

M103: LAP

Don't command M103 (Lap) at rapid interval since the time may not be lapped.

3 G CODE

Setting data of RAKURAKU MINITOR 2 can be set with G codes (G900~G916).

3-1 G900 : CHANGE OF LOAD WARNING VALUE, LOAD ABNORMAL VALUE

Code of G900 can change the warning value, abnormal value used with the cutting load monitor function and machine action temporarily.

The value commanded with G900 is effective until T-code is commanded or G900 is newly commanded.

When the load warning value and load abnormal value set with the RAKURAKU MONITOR 3 are rewritten, use G904 (Setting of load warning value • abnormal value).

1. G900 : COMMAND FORMAT

COMMAND FORMAT	G900 A_ B_ C_ D_ E_ F_ H_ I_ J_ K_ L_ M_ Q_ ;	
Symbol	Meaning	Setting value
A__	No.1 axis warning	0. ~ 255.
B__	No.2 axis warning	0. ~ 255.
C__	No.3 axis warning	0. ~ 255.
D__	No.4 axis warning	0. ~ 255.
E__	No.5 axis warning	0. ~ 255.
F__	No.6 axis warning	0. ~ 255.
H__	No.1 axis abnormal	0. ~ 255.
I__	No.2 axis abnormal	0. ~ 255.
J__	No.3 axis abnormal	0. ~ 255.
K__	No.4 axis abnormal	0. ~ 255.
L__	No.5 axis abnormal	0. ~ 255.
M__	No.6 axis abnormal	0. ~ 255.
Q__	Action at load abnormal	0, 1, 2, 4

Machine action (0:NONE 1:FEED HOLD 2:CAN'T START 4:CYCLE STOP)

2. PROGRAM EXAMPLE

When the warning value and abnormal value of T01W01 set with the RAKURAKU MONITOR 3 are temporarily changed, setting values are as follows:

[Table 1]

RAKURAKU MONITOR 3 Setting value		
Axis	Warning	abnormal
X (No.1)	5	10
Z (No.2)	5	10
SP(No.4)	50	80

[Table 2]

Change of load warning value, load abnormal value		
Axis	Warning	abnormal
X (No.1)	10	20
Z (No.2)	10	20
SP(No.4)	80	100

Machine action: FEED HOLD

PROGRAM (Change of load warning value, load abnormal value)

```
O900 ;
M22 ;
...
T0101 ;
G900 A10. B10. D80. H20. I20. K100. ;
G01 U-10. W-10. ;
T0 ;
...
M30 ;
```

->The value of the table 1 is established.

->It is changed to the value of the table 2.

->0 reset.



IMPORTANT

Be sure to command G900 at an interval between the T-command and the cutting command.

The value changed with G900 is rewritten with the T-command.

When T0, the value is reset to zero (0).

3-2 G901: SETUP OF TOOL

G901 can set the tool kind and the through coolant.

The same operation as the editing operation on the "TOOL SETTING [TOOL]" screen can be performed.

1. G901: COMMAND FORMAT

COMMAND FORMAT	G901 D_ F_. M_ C_ ;	
Symbol	Meaning	Setting value
D_	Data No.	1. ~ 100
F_.	Function number	1.
M_	Tool kind mark No.	0. ~ 5008.
C_	Through coolant	0. or 1.

3-3 G902: SETUP OF WEAR LIMIT VALUE

Wear limit value can be set by using G902.

1. G902: COMMAND FORMAT

COMMAND FORMAT	G902 D_ X_ Z_ R_ Q_ ;	
Symbol	Meaning	Setting value
D_	Data No.	1. ~ 100
X_	X Wear limit value	-10.0<value<+10.0
Z_	Z Wear limit value	-10.0<value<+10.0
R_	R Wear limit value	-10.0<value<+10.0
Q_	Action at wear limit	0, 1, 2, 4

Machine action (0:NONE 1:FEED HOLD 2:CAN'T START 4:CYCLE STOP)

3-4 G903: SETUP OF TOOL MANAGEMENT DATA

Tool management data can be set by using G903.

1. G903: COMMAND FORMAT

COMMAND FORMAT	G903 D_ L_ F_ C_ I_ J_ K_ Q_ ;	
Symbol	Meaning	Setting value
D_	Data No.	1. ~ 100
L_	Tool life value	0. ~ 999999.
F_	Tool change forecast value	0. ~ 999999.
C_	Tool usage times	0. ~ 999999.
I_	Cutting time Tool life value	0. ~ 999999.
J_	Cutting time Tool change forecast value	0. ~ 999999.
K_	Cutting time Tool usage times	0. ~ 999999.
Q_	Action at life end	0, 1, 2, 4

Machine action (0:NONE 1:FEED HOLD 2:CAN'T START 4:CYCLE STOP)

3-5 G904: SETUP OF LOAD MONITOR DATA

Load monitor data can be set by using G904.

1. G904: COMMAND FORMAT

COMMAND FORMAT	G904 N_ A_ B_ C_ D_ E_ F_ H_ I_ J_ K_ L_ M_ Q_ ;	
Symbol	Meaning	Setting value
N_	Data No.	1. ~ 100
A_	No.1 axis warning	0. ~ 255. (999.)
B_	No.2 axis warning	
C_	No.3 axis warning	
D_	No.4 axis warning	
E_	No.5 axis warning	
F_	No.6 axis warning	
H_	No.1 axis abnormal	
I_	No.2 axis abnormal	
J_	No.3 axis abnormal	
K_	No.4 axis abnormal	
L_	No.5 axis abnormal	
M_	No.6 axis abnormal	
Q_	Action at load abnormal	0, 1, 2, 4

(999): SAMPLE

Machine action (0:NONE 1:FEED HOLD 2:CAN'T START 4:CYCLE STOP)

3-6 G905: SETUP OF CYCLIC OFFSET ADDITION

Cyclic offset addition data can be set by using G905.

1. G905: COMMAND FORMAT

COMMAND FORMAT	G905 D_ S_ C_ X_ Z_ A_ L_ P_ Q_ ;	
Symbol	Meaning	Setting value
D_	Data No.	1. ~ 100.
S_	Cycle value	0. ~ 9999.
C_	Tool usage times	0. ~ 9999.
X_	X wear addition	-10.0<value<+10.0
Z_	Z wear addition	-10.0<value<+10.0
A_	Addition number of times	0. ~ 9999.
L_	Addition limit	0. ~ 9999.
P_	Action at power on	0:None, 1:0 Clear
Q_	Action at addition limit	0, 1, 2, 4

Machine action (0:NONE 1:FEED HOLD 2:CAN'T START 4:CYCLE STOP)

3-7 G906: SETUP OF SYSTEM DATA

System data can be set by using G906.

1. G906: COMMAND FORMAT

COMMAND FORMAT	G906 N_ D_ ;	
Symbol	Meaning	Setting value
N_	System item No.	1. ~ 40.
D_	Setting data	It varies in the item.

The details of the system item

Item	Meaning	D_ Setting value
N1	LOAD WARN. SAMPLE. COEF.(%)	1. ~ 200.
N2	LOAD ABNO. SAMPLE. COEF.(%)	1. ~ 200.
N3	LOAD WARN. NOTIFY. COUNTER	1. ~ 99.
N4	LOAD ABNO. NOTIFY. COUNTER	1. ~ 99.
N5	LOAD MONITOR SETTING 1 (X)	0:Off, 1:On
N6	LOAD MONITOR SETTING 2 (Z)	0:Off, 1:On
N7	LOAD MONITOR SETTING 3 (Y)	0:Off, 1:On
N8	LOAD MONITOR SETTING 4 (SP)	0:Off, 1:On
N9	LOAD MONITOR SETTING 5 (MLG)	0:Off, 1:On
N10	LOAD MONITOR SETTING 6 (SP2)	0:Off, 1:On
N11	LIFE MANAGEMENT METHOD	0:T+W No. 1:T No. 2:W No.
N12	TOOL COUNT AT LIFE VALUE 0	0:None, 1:Count
N13	TOOL COUNT METHOD	0:Process, 1:T-Order
N14	COUNT OF LIFE EXTENSIONS	0. ~ 9999.
N15	TIME OF LIFE EXTENSIONS	0. ~ 9999.
N16	[±VALUE] COMPENSATION VALUE	0<value< 10.
N17	[±VALUE] PARTS COUNT VALUE	0. ~ 9999.
N18	NUMBER OF GROUP CONTROL	0. ~ 12.
N19	AUTO DISPLAY SWITCH TO MSG	0:None, 1:Msg 2:ResDsp
N20	FUNCTION MODE MEM	0:Off, 1:On
N21	[ALLCPL] OF TOOL LIFE	0:Off, 1:ON

N22	INITIALIZATION (POWER ON)	0:OFF, 1:ON
N23	T-CODE BLOCK BUFFERING M92	0:OFF, 1:ON
N24	TOOL LIFE FUNCTION	0:OFF, 1:ON
N25	LOAD MONITOR FUNCTION	0:OFF, 1:ON
N26	GROUP FUNCTION	0:OFF, 1:ON
N27	WEAR LIMIT FUNCTION	0:OFF, 1:ON
N28	CYCLE ADDITION FUNCTION	0:OFF, 1:ON
N29	EDIT OF TOOL REGISTRATION	0:OFF, 1:ON
N30	LIFE VAL LOCK PROTECT KEY	0:OFF, 1:ON
N31	GROUP INFORMATION DATA #NO.	0. ~ 999.
N32	GROUP NEW TOOL DATA #NO.	0. ~ 999.
N33	T-CODE MODAL DATA #NO.	0. ~ 999.
N34	TOOL NOSE SETTING(W.SHIFT)	0:OFF, 1:ON
N35	TOOL EXCHANGE CALC. TIME(M)	0. ~ 1440.
N36	TOOL EXCHANGE SETUP. TIME(M)	0. ~ 59.
N37	VAL WITHOUT DECIMAL POINT	0:DECIMAL 1:INTEGER
N38	MSG DISP WHEN OFFSET +INPUT	0:NO MSG 1:NC PARAM
N39	EDIT MSG CHECK WHEN ALMRST	0:OFF, 1:ON
N40	FUNC SKIP IN CUTTING BLOCK	0:OFF, 1:ON
N41-N50	Reserve	



WARNING

The VALID and INVLD of the load monitor setting vary by the machine types.

When this set value is changed, the load is inadequately monitored.

Therefore, never change the set value.

3-8 G907: ALL EXCHANGES OF GROUP TOOLS

All exchanges of the group tools can be done by using G907.

1. G907: COMMAND FORMAT

COMMAND FORMAT	G907 A_ N_ ;	
Symbol	Meaning	Setting value
A_	Group No.	1. ~ 12.
N_	All exchanges	Only 99.

3-9 G910: GROUP SELECTION TOOL NUMBER

The tool number chosen into the group now is set as a custom-macro variable.
A tool number is set up for 4 figures of higher ranks, and the value of a offset number is set up for 3 figures of low ranks.

1. G910: COMMAND FORMAT

COMMAND FORMAT	G910 P_ Q_ ;	
Symbol	Meaning	Setting value
P_	Group No.	1. ~ 12.
Q_	custom-macro variable	100. ~ 999.

3-10 G911: TOOL INFORMATION

The data of a tool number is set as a custom-macro variable.
Data changes with N numbers.

1. G911: COMMAND FORMAT

COMMAND FORMAT	G911 D_ N_ Q_ (L_) ;	
Symbol	Meaning	Setting value
D_	Data No.	1. ~ 100.
N_	Item No.	0. ~ 50.

Q_	custom-macro variable	100. ~ 999.
L_	Input-and-output flag	An abbreviation or L1 is specified. Abbreviation: Tool information is set as a custom macro variable. L1: The value of custom macro variables is set as tool information.

The details of the data no.

Item No.	Meaning	Item No.	Meaning
N0	Tool state	N1	Tool No.
N2	Offset No.	N3	Group No.
N4	Tool kind	N5	Through coolant
N10	Tool life	N11	Tool exchange forecast
N12	Tool count	N14	Cutting time life
N15	Cutting time forecast	N16	Cutting time total
N18	Action at life end	N25	X wear limit value
N26	Z wear limit value	N27	R wear limit value
N28	Action at wear limit	N30	Load 1 warning / abnormal
N31	Load 2 warning / abnormal	N32	Load 3 warning / abnormal
N33	Load 4 warning / abnormal	N34	Load 5 warning / abnormal
N35	Load 6 warning / abnormal	N36	Load 1/2 Load max value
N37	Load 3/4 Load max value	N38	Load 5/6 Load max value
N39	Action at load abno	N40	Cycle addition Cycle
N41	Cycle addition	N42	Cycle addition

	Tool count		X wear addition
N43	Cycle addition Z wear addition	N44	Cycle addition Addition times
N45	Cycle addition Addition limit	N46	Cycle addition Action at power on
N47	Cycle addition Action at wear limit		

3-11 G912: GROUP INFORMATION

The data of a group is set as a custom-macro variable.

Data changes with N numbers.

1. G912: COMMAND FORMAT

COMMAND FORMAT	G912 D_ N_ Q_ ;	
Symbol	Meaning	Setting value
D_	Group No.	1. ~ 12.
N_	Item No.	0. ~ 19.
Q_	custom-macro variable	100. ~ 999.

The details of the item no.

Item No.	Meaning	Data No.	Meaning
N0	Selection number	N1	Registration number
N2	Tool usage times	N3	This time offset number
N4	Last offset number	N5	Tool shift
N6	Tool search mode	N7	New tool signal
N8	Action at group life end	N9	Link group no.
N10	Tool 1	N11	Tool 2
N12	Tool 3	N13	Tool 4
N14	Tool 5	N15	Tool 6
N16	Tool 7	N17	Tool 8
N18	Tool 9	N19	Tool 10

3-12 G913: READING OF PMC DATA

The value of D address of PMC or R address is read, and it is set as a custom-macro variable.

1. G913: COMMAND FORMAT

COMMAND FORMAT	G913 D_/R_ L_ Q_ ;	
Symbol	Meaning	Setting value
D_/R_	Address No.	1. ~ 9999.
L_	Data size	1, 2, 4
Q_	custom-macro variable	100. ~ 999.

3-13 G915: DATA NO.

The data number is obtained from the combination of the tool number and the offset number.

The data number is set to D address of "G901, G902, G903, G904, G905, and G911".

1. G915: COMMAND FORMAT

COMMAND FORMAT	G915 I_ J_ Q_ ;	
Symbol	Meaning	Setting value
I_	Tool No.	1. ~ Tool number
J_	Offset No.	1. ~ Offset number
Q_	custom-macro variable	100. ~ 999.

3-14 G916: RESET OF TOOL COUNT FLAG

The count flag of the number of times of tool use is reset.

1. G916: COMMAND FORMAT

COMMAND FORMAT	G916 ;
-------------------	--------

In the case of bar feeder specification, it is used.

4 CAUTION

Be careful of the following items.



CAUTION

When commanding G900~G916, be sure to command the code independently.

When the other G codes or M codes are commanded in the same block, the program does not operate correctly.



CAUTION

When a program alarm occurs for any reason after executing the program that uses codes G901~G916, the program for setting finishes on the way.

Be sure to remove the cause that alarm occurs before executing the program again.



CAUTION

When the count values for tool counter and addition counter are commanded in the machining program, the counter does not count up.



IMPORTANT

After executing the program using G901~G907, be sure to check the set value on the screen.

C. SCREEN CHANGE

The following explains about the screen change of the RAKURAKU MONITOR 3.

CONTENTS

1 SCREEN OF RAKURAKU MONITOR 3	C-3
1-1 [CUSTOM] or [CUSTOM GRAPH] KEY	C-3
2 SOFTKEY	C-4
2-1 MENU -> ITEM -> OPERATION	C-4
2-2 MENU <- ITEM <- OPERATION	C-4
3 SOFTKEY OPERATION	C-5
3-1 MENU SOFTKEY	C-5
3-2 ITEM SOFTKEY	C-5
3-3 OPERATION SOFTKEY	C-5

1 SCREEN OF RAKURAKU MONITOR 3

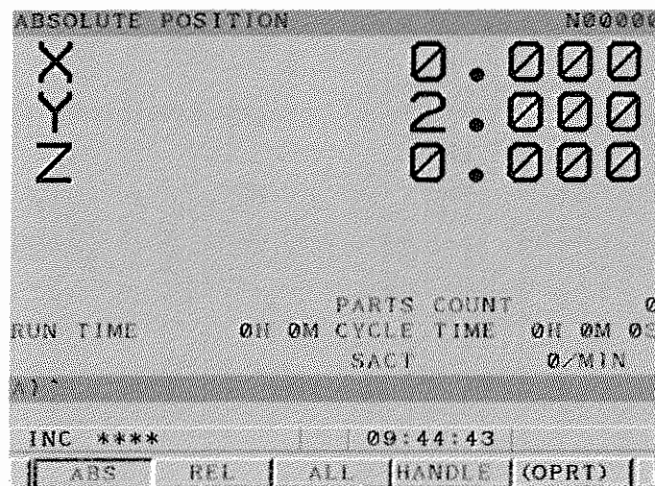
1-1 [CUSTOM] or [CUSTOM GRAPH] KEY

A push on  key of a MDI keyboard displays the RAKURAKU MONITOR 3 screen.

When a key is pushed first, "LIST OF GENERAL" screen is displayed.

The screen currently displayed last time from next time is displayed.

Screen of NC (POSITION)



ABSOLUTE POSITION N00000

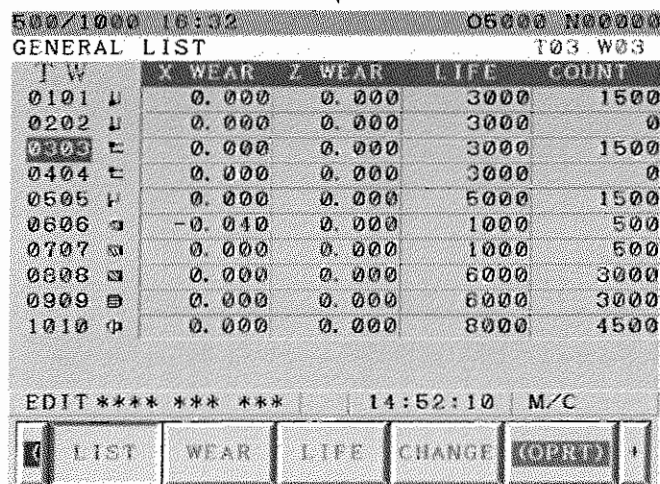
X 0.000
Y 2.000
Z 0.000

RUN TIME 0H 0M 0S PARTS COUNT 0
CYCLE TIME 0H 0M 0S
SACT 0/MIN

INC **** 09:44:43

ABS REL ALL HANDLE (OPRT)

CUSTOM



500/1000 16:32 05000 N00000

GENERAL LIST T03.W03

T W	X WEAR	Z WEAR	LIFE	COUNT
0101	0.000	0.000	3000	1500
0202	0.000	0.000	3000	0
0303	0.000	0.000	3000	1500
0404	0.000	0.000	3000	0
0505	0.000	0.000	5000	1500
0606	-0.040	0.000	1000	500
0707	0.000	0.000	1000	500
0808	0.000	0.000	6000	3000
0909	0.000	0.000	6000	3000
1010	0.000	0.000	8000	4500

EDIT **** ** * 14:52:10 M/C

LIST WEAR LIFE CHANGE (OPRT)

2 SOFTKEY

The softkey displayed on the bottom of a screen has the following composition.

2-1 MENU -> ITEM -> OPERATION

If "MENU SOFTKEY" is chosen, it will switch to the screen and softkey corresponding to a menu.

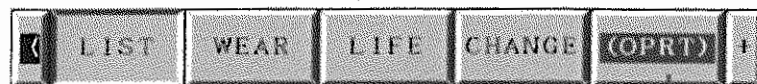
If the [(OPRT)] key is pushed when the [(OPRT)] key is displayed on the right end of "ITEM SOFTKEY", cursor will be displayed on a screen and it will switch to "OPERATION SOFTKEY".

MENU SOFTKEY



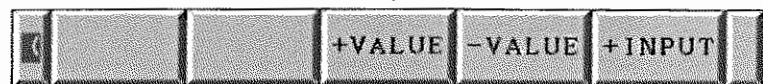
[GENERL] is chosen.

ITEM SOFTKEY



[(OPRT)] is chosen.

OPERATION SOFTKRY



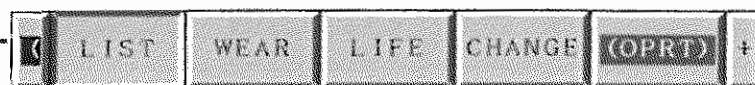
2-2 MENU <- ITEM <- OPERATION

If the left end key of "SOFTKEY" is pushed several times, it will switch to "MENU SOFTKEY".

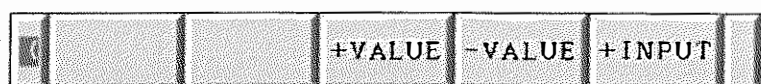
MENU SOFTKEY



ITEM SOFTKEY



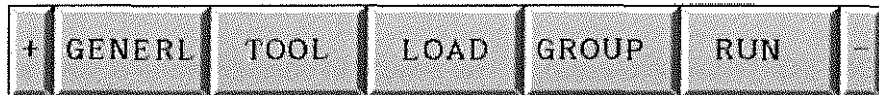
OPERATION SOFTKRY



3 SOFTKEY OPERATION

3-1 MENU SOFTKEY

"MENU SOFTKEY" is as follows.



When pressing "MENU SOFTKEY", each key is changed to the "ITEM SOFTKEY".



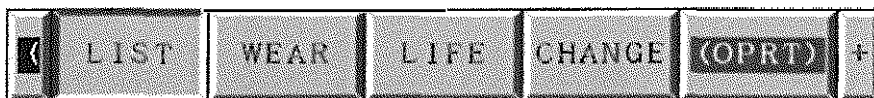
IMPORTANT

When a function is added, "MENU SOFTKEY" may increase.

3-2 ITEM SOFTKEY

The "ITEM SOFTKEY" corresponding to a menu is displayed.

In the case of a [GENERL] menu



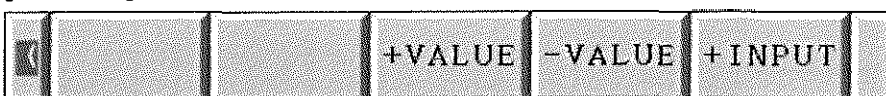
If an "ITEM SOFTKEY" is chosen, a screen will switch.

If [(OPRT)] key is pushed when [(OPRT)] key is displayed by the item soft key, cursor will be displayed on a screen and it will switch to an operation soft key.

3-3 OPERATION SOFTKEY

The "OPERATION SOFTKEY" corresponding to a cursor position is displayed.

When a cursor position is a wear offset input on [LIST] screen of a menu [GENERL].



If cursor is moved, the "OPERATION SOFTKEY" corresponding to a cursor position will be displayed automatically.

D. SCREEN OPERATION

The following explains about the display items • operation method on each screen of the RAKURAKU MONITOR 3.

Data displayed on the screen are processed at the level lower than CNC operation process. Consequently, there is a possibility that the data displayed on the screen is slowly processed during CNC operation.

CONTENTS

1 OPERATION	D-4
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2-1 GENERAL [LIST] SCREEN	D-5
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2-3 GENERAL [TOOL LIFE] SCREEN	D-10
2-4 GENERAL [CUTTING TIME] SCREEN	D-12
2-5 GENERAL [CYCLE ADDITION] SCREEN	D-14
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3-1 TOOL [REGISTRATION] SCREEN	D-17
3-2 TOOL SETTING [TOOL] SCREEN	D-19
3-3 TOOL SETTING [LIFE] SCREEN	D-21
3-4 TOOL SETTING [WEAR] SCREEN	D-24
3-5 TOOL SETTING [LOAD] SCREEN	D-26
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6-1 MACHINE RUN [LIST] SCREEN	D-45
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6-3 MACHINE RUN [COUNTER] SCREEN	D-51
6-4 MACHINE RUN [TIME] SCREEN	D-55
6-5 MACHINE RUN [PROGRAM COUNTER] SCREEN	D-57
6-6 MACHINE RUN [PROGRAM REGISTRATION] SCREEN	D-59
7 OTHER FUNCTIONS MENU	D-61
7-1 STOPWATCH SCREEN	D-61
7-2 CP CALC. & DATA SCREEN	D-63
7-3 OFFSET MEMORY COPY SCREEN (10.4 INCH)	D-67

8 IN/OUT MENU	D-71
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9 MESSAGE MENU	D-75
9-1 MESSAGE [LIST] SCREEN	D-75
9-2 MESSAGE [HISTORY] SCREEN	D-76
10 SYSTEM MENU	D-77
10-1 SYSTEM [LOAD] SCREEN	D-77
10-2 SYSTEM [OPERATE] SCREEN	D-79
10-3 SYSTEM [CHECK] SCREEN.....	D-84
11 TOOL NOSE SETTING MENU	D-85
11-1 TOOL NOSE SETTING MENU SCREEN	D-85
11-2 WORK SHIFT SCREEN.....	D-86
11-3 TOOL NOSE SETTING OF STANDARD OUTER DIAMETER TOOL	D-89
11-4 TOOL NOSE SETTING OF STANDARD INNER DIAMETER TOOL	D-92
11-5 TOOL NOSE SETTING OF OUTER DIAMETER TOOL.....	D-95
11-6 TOOL NOSE SETTING OF INNER DIAMETER TOOL.....	D-98
12 GM CODE MENU	D-101
12-1 G-CODE LIST SCREEN	D-101
12-2 M-CODE LIST SCREEN	D-102
13 MACHINE DIAGNOSIS MENU	D-103
13-1 MACHINE ALARM MESSAGE SCREEN.....	D-103
13-2 MACHINE DIAGNOSIS SCREEN	D-104
13-3 MACHINE ALARM MESSAGE SEARCH SCREEN	D-105

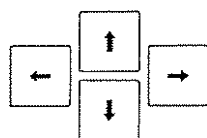
1 OPERATION

1. [(OPRT)]KEY (Editing operation)

When the [(OPRT)] key is displayed on the soft key, the screen is a screen which can perform edit operation.

If the [(OPRT)] key is pushed, cursor will be displayed, and the operation soft key corresponding to a cursor position is displayed.

2. CURSOR KEY



The cursor can be moved.

3. PAGE KEY



Page is changed.

4. INPUT KEY



The key is used when setting up a value.



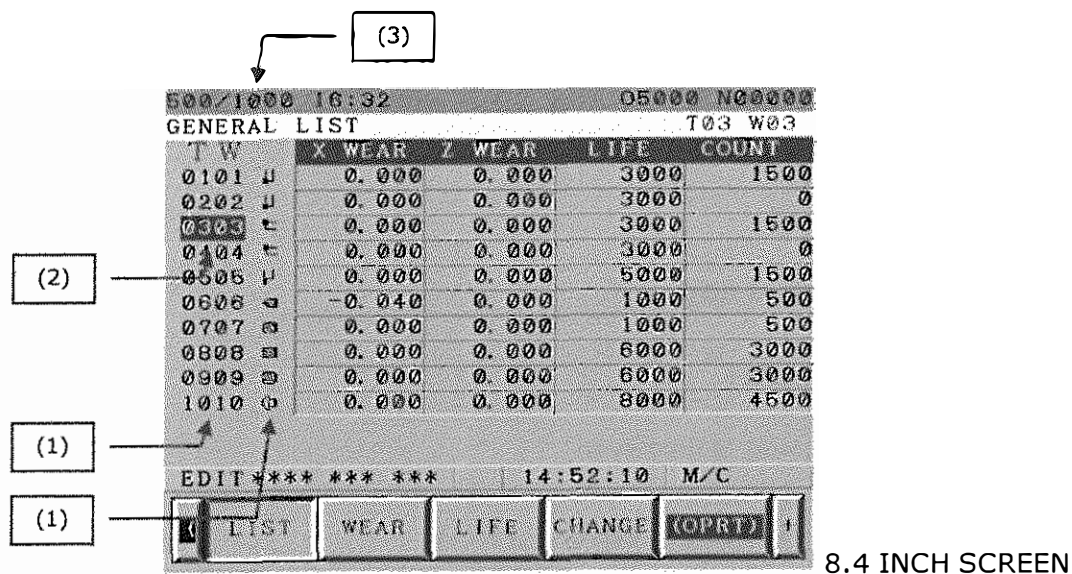
IMPORTANT

There is a possibility that each key cannot be used by any NC mode.
The protection key secures the operation of system menu.
When the system menu is operated, release the protection key.

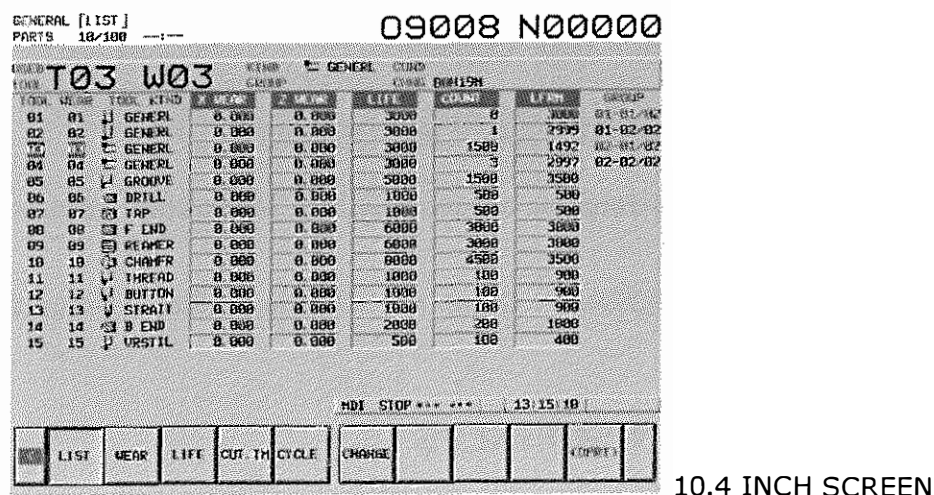
2 GENERAL MENU

2-1 GENERAL [LIST] SCREEN

1. DISPLAY EXPLANATION



8.4 INCH SCREEN



10.4 INCH SCREEN

(1) TOOL NUMBER

The tool No. and the compensation No. are displayed.

The tool state is displayed on the left of tool number displayed.

(2) SELECTED TOOL NUMBER

Selected tool number is displayed in reverse state.

(3) PARTS COUNTER

The parts count value and the parts required value set on "PARTS COUNTER" screen are displayed.

DISPLAY FORMAT : count / required Completion schedule time

(4) TOOL KIND

A tool kind is displayed.

(5) X, Z WEAR OFFSET

X-axis wear offset value and Z-axis wear offset value are displayed.

(6) TOOL LIFE

The tool life is displayed.

(7) TOOL COUNT

The tool count is displayed.

(8) TOOL LIFE REMAINING (LFRM)

The tool life remaining value is displayed.

(TOOL LIFE – TOOL COUNT)

(9) GROUP REGISTRATION POSITION

When registered as a group tool, the registration position of a group is displayed.

DISPLAY FORMAT : Group No. – Group position / Group tool number

2. OPERATION SOFTKEYS

(1) X·Z WEAR COMPENSATION SOFTKEY

10 + 2 SOFTKEY

<<	UNDO	UNDO C				+VALUE	-VALUE			+INPUT	
----	------	--------	--	--	--	--------	--------	--	--	--------	--

5 + 2 SOFTKEY

<	UNDO	UNDO C	+VALUE	-VALUE	+INPUT	
---	------	--------	--------	--------	--------	--

[+VALUE]

Quantitative offset value is added (plus) to the current