ALLISON OFF-HIGHWAY TRANSMISSIONS SALES TECH DATA BOOK

CYCLING

Detroit Diesel Allison

Detroit Diesel Allison
Division of General Motors Corporation

August, 1984

TO: ALLISON OFF-HIGHWAY TRANSMISSIONS
CYCLING SALES TECH DATA BOOK HOLDERS

SUBJECT: REVISION NO. 3 TO SA 1862 DATA BOOK

Enclosed are updates to the subject data book occurring since Revision No. 2 dated March 1984. Please insert the material provided in the applicable section.

While it is our general practice to update data books on an annual basis, new information on the TT 3421 makes this update necessary.

In order to make viable information available to you in a timely manner, updates are occasionally made on an as-needed basis. Should your updates arrive out of sequence, please contact us, as you will have missed a required update.

If changes should be made in name or address of recipient of this package, please advise:

Sales Development J5
Detroit Diesel Allison
General Motors Corporation
P. O. Box 894
Indianapolis, IN 46206

Phone A/C 317/242-3582
GM Network 8/252-3582

We'd also appreciate notification, should you no longer require updates.

For technical information, please contact our Off-Highway Sales Department, J4, Phone A/C 317/242-2325. GM Network 8/252-2325.

SALES DEVELOPMENT
DETROIT DIESEL ALLISON

Enclosures

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As revisions to this book become necessary, you will now automatically receive them. Information in the individual product Sales Briefs will be immediately updated as changes in the product and ratings occur. Therefore, if there are minor discrepancies in ratings listed in different pieces of literature, the Sales Brief will be the most current.

Detroit Diesel Allison
Division of General Motors Corporation
Indianapolis, Indiana 46206

Name_____

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Check each number of each supplement mailing as received and insert the pages in your SALES TECH Data Book at once.

ORIGINAL ISSUE 1/82

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Revised Date 3/84 No. 42

FLUID RECOMMENDATIONS FOR ALLISON COMMERCIAL TRANSMISSIONS AND TORQUE CONVERTERS

1. FLUID RECOMMENDATIONS FOR ON-HIGHWAY TRANSMISSION MODELS.

	Fluid Specifications	
Model Numbers	**Primary Recommendation**	**Alternate**
AT 540/543/545:	DEXRON II® /DEXRON®	Type C-3
MT 30/40 and MT 643/644/653DR/654CR:	DEXRON II® /DEXRON®	Type C-3
HT 70 and HT 740D/740FS/754CR/ HT 750DR/750DR(DB):	DEXRON II® /DEXRON®	Type C-3
V 730, VH, VS:	DEXRON II® /DEXRON®	Type C-3

1.1 Prior to the use of a C-3 fluid, the vehicle manufacturer should be consulted concerning the compatibility of tubes, hoses, external filters, etc.

1.2 It is suggested that SAE 10W or SAE 30 C-3 fluids be used where optimum shift smoothness is required.

1.3 There is no published list of DEXRON II® and DEXRON® suppliers. These fluids may be identified by the General Motors Corporation DEXRON II® and DEXRON® trademarks on the fluid container.

1.4 Ford Motor Company specification fluids M2C33-F, M2C138-CJ, and M2C166-H may be used in model AT, MT, and HT transmissions. These fluids and DEXRON II® may be intermixed.

1.5 Type C-3 fluid is the only fluid recommended for model AT, MT, and HT transmissions used exclusively in OFF-HIGHWAY APPLICATIONS.

1.6 COLD WEATHER OPERATION OF ON-HIGHWAY APPLICATIONS:

DEXRON II® and DEXRON® at ambient temperatures BELOW −35°C (−30°F). Do not operate the transmission until the transmission fluid temperature has been preheated to ABOVE −35°C (−30°F). Alternately, warm up the transmission in NEUTRAL for 20 minutes to permit main pressure buildup.

TYPE C-3 FLUIDS: Refer to chart on Page 2 for PREHEAT REQUIREMENTS for the various SAE viscosity grade fluids.

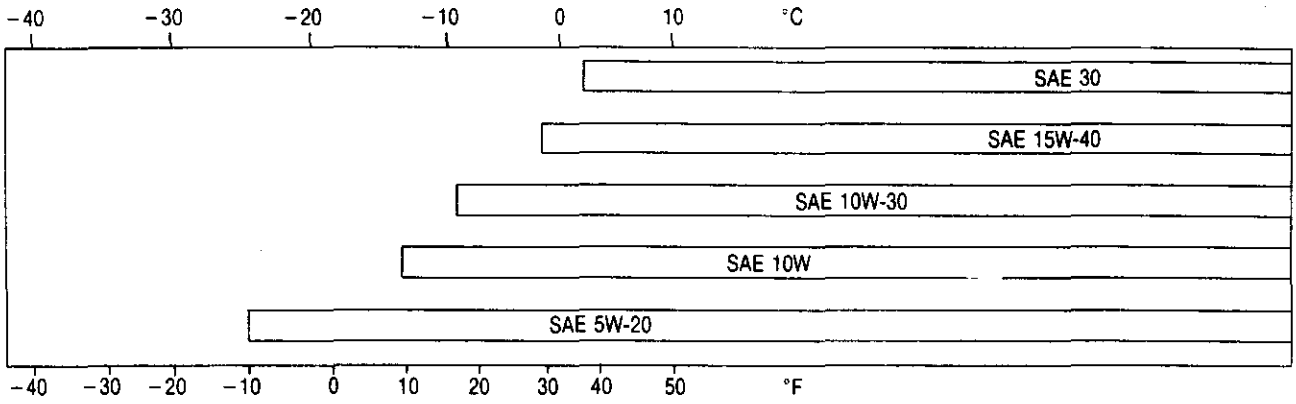
2. FLUID RECOMMENDATIONS FOR OFF-HIGHWAY TRANSMISSIONS, GEAR BOXES, AND TORQUE CONVERTERS.

Model Numbers	**Recommended Fluid Specification**
TT 2221-1, 3420, 4720, 4721, TRT 2221-1, 2221-3, 3420, 4820, 4821, TTB 2221-1, CRT 5633, 5643:	Type C-3
CLT/CLBT 750, 750DB: 754, 754DB	Type C-3
CRT 3321, 3331, 3531, 3630:	Type C-3
CLT/CLBT 5860, 5861, 5960, 5961, 6061:	Type C-3
DP 8961:	Type C-3
CLBT 9680, 9686, 9880:	Type C-3
TORQUE CONVERTERS: TC 300, 400, 500, 800, 900:	Type C-3
MARINE GEAR:	Refer to DDA
TG GEAR BOX:	Engine Oil Spec 7SE 270

2.1 COLD WEATHER OPERATION OF OFF-HIGHWAY TRANSMISSIONS.

This section contains recommendations for cold weather startup procedure for ALLISON OFF-HIGHWAY TRANSMISSIONS. Failure to observe these procedures may result in transmission malfunction or reduced transmission life. Either one of the two following procedures may be used to preheat the transmission fluid:

2.1.1 **TYPE C-3 FLUIDS PREHEAT REQUIREMENTS FOR THE VARIOUS SAE VISCOSITY GRADE FLUIDS. PREHEAT THE TRANSMISSION FLUID TO THE INDICATED MINIMUM TEMPERATURE BEFORE OPERATING THE TRANSMISSION:**



2.2.2 **TYPE C-3 FLUID ALTERNATE WARMUP PROCEDURE:**

If preheating equipment is not available, operate the transmission in NEUTRAL for a minimum of 20 minutes prior to operating the transmission in forward or reverse ranges.

3. **DDA LISTING OF AVAILABLE TYPE C-3 FLUIDS:**

A current (see date) listing of Type C-3 fluids available commercially is attached. Commercial universal farm tractor fluids that meet Type C-3 specifications except for viscosity (viscosity is between C-3 grade 10W and 30) are shown at the end of the listing.

Publication of the oil listing is not to be construed as a specific endorsement of these fluids by Detroit Diesel Allison Division of General Motors Corporation.

THE FOLLOWING OILS CONFORM TO DETROIT DIESEL ALLISON SPECIFICATIONS FOR C-3 GRADE 10W AND GRADE 30 OILS

INDICATED AS FOLLOWS:

GRADE 10W *
GRADE 30 ***
APRIL 13, 1982

MARKETER		TRADE NAME
AGIP PETROLI S.P.A.	*	AGIP ROTRA ATF
	*	AGIP DIESEL SIGMA S SAE 10W
	*	AGIP DIESEL GAMMA SAE 10W
	***	AGIP DIESEL SIGMA S SAE 30
AMALIE REFINING COMPANY	*	AMALIE XLO SAE 10W
DIVISION OF WITCO CHEMICAL CORPORATION	***	AMALIE XLO SAE 30
	***	AMALIE XLO SAE 15W-40
AMERICAN PETROFINA CO. OF TEXAS	*	FINA ALLISON TRANSMISSION FLUID TYPE C-2/C-3
AMOCO AUSTRALIA LIMITED	***	AMOCO TRANSHYDRAULIC FLUID
	*	AMOCO 300 MOTOR OIL SAE 10
	***	AMOCO 300 MOTOR OIL SAE 30
AMOCO OIL COMPANY	*	AMOCO C-3 FLUID
	*	AMOCO 300 MOTOR OIL SAE 10W
	***	AMOCO 300 MOTOR OIL SAE 30
	***	AMOCO 300 MOTOR OIL SAE 15W-40
AMPOL PETROLEUM LIMITED	*	AMPOL HYDRAULIC TRANSMISSION FLUID TYPE C-3, SAE 10W
	*	DEULUBE 10W S3
	***	DEULUBE 30 S3

MARKETER		TRADE NAME
AMS/OIL INC.	***	AMSOIL 50/100 DIESEL OIL
	***	AMSOIL GAS & DIESEL OIL
ANTAR S. A. ET COMPAGNIE	*	MILANTAR 3C 10W
	*	TRANSANTAR C-3
ARAL AG, BOCHUM	*	ARAL GETRIEBEOL ATF-C3
ARCO PERTOLEUM PRODUCTS COMPANY DIV. OF ATLANTIC RICHFIELD COMPANY	***	ARCO TRACTOR FLUID
	*	ARCOFLEET S 3 PLUS SAE 10
	***	ARCOFLEET S 3 PLUS SAE 30
	***	ARCOFLEET S 3 PLUS SAE 15W-40
	*	ARCO C-3 FLUID
ARKLA CHEMICAL CORPORATION	*	ARKLA TC-252
AVIA MINERALOL AG	*	AVIA FLUID ATF 66 M
BENZ OIL INC.	*	BENZ C-3 TRANSMISSION FLUID
	*	EDL MULTI-SERVICE MOTOR OIL SAE 10-10W
	***	EDL MULTI-SERVICE MOTOR OIL SAE 30
BODIE-HOOVER PETROLEUM CORPORATION	*	PENNSTATE C-3 FLUID
BORON OIL CO	*	FACTO 10W
	***	FACTO 30
	*	CANFIELD SUPER MP SAE 10W
	***	CANFIELD SUPER MP SAE 30
	***	CANFIELD MG 15W-40
	***	VANELLUS MG 15W-40
BP AUSTRALIA LIMITED	*	BP AUTRAN C-3
	***	VANELLUS C-3 MULTIGRADE
BP OIL INC.	*	VANELLUS MCS-3 10W
	***	VANELLUS MCS-3 30
	***	VANELLUS MG 15W-40
	*	BP HYDRAULIC TF-C3
BP OIL LIMITED	*	BP VANELLUS C3 EXTRA SAE 10W
	*	BP VANELLUS MCS-3
BP SOUTHERN AFRICA (PTY) LTD.	*	BP HYDRAULIC TF-C3-10
	***	BP HYDRAULIC TF-C3-30
BP OIL INTERNATIONAL LIMITED	*	BP VANELLUS C3 SAE 10W
	***	BP VANELLUS C3 SAE 30
	*	BP AUTRAN GM-MP
	*	BP AUTRAN C3
	***	BP AUTRAN C3
	*	BP TRANSFLEET 810
	***	BP TRANSFLEET 830
	*	BP TRANSPORT FLEET OIL SAE 10W
	***	BP TRANSPORT FLEET OIL SAE 30
	*	BP TRANSFLEET SAE 10W
	***	BP TRANSFLEET SAE 30
	***	BP TERRAC
BRUGAROLAS	*	TRANSMISSION FLUID
CALTEX PETROLEUM CORPORATION	*	CALTEX RPM DELO 200 OIL SAE 10W
	***	CALTEX RPM DELO 200 OIL SAE 30
	*	CALTEX RPM DELO 300 OIL SAE 10W
	***	CALTEX RPM DELO 300 OIL SAE 30
	*	CALTEX RPM DELO 400 OIL SAE 10W
	***	CALTEX RPM DELO 400 OIL SAE 30
	***	CALTEX RPM DELO 400 OIL SAE 15W-40
	*	CALTEX RPM TORQUE FLUID NO. 5

MARKETER		TRADE NAME
J. I. CASE COMPANY	*	CASE TCH FLUID
CASTROL AUSTRALIA PTY., LTD.	*	CASTROL TFC 310
	*	CASTROL RX SUPER 10W
	***	CASTROL RX SUPER 30
	***	CASTROL RX SUPER 15W-40
CASTROL LTD., ASSOCIATE COMPANIES AND AGENCIES	*	CASTROL/DEUSOL TFC 310
	***	CASTROL/DEUSOL TFC 330
	***	CASTROL/DEUSOL RX SUPER 15W-40
	***	CASTROL/DEUSOL MULTIPLANT
CASTROL SOUTH AFRICA PTY., LTD.	*	CASTROL/DEUSOL TFC 310
	*	CASTROL TRANSMISSION FLUID C-3
	***	CASTROL/DEUSOL RX SUPER 15W-40
CATO OIL AND GREASE CO.	*	CATO C-3 TRANSDRAULIC FLUID FOR ALLISON, GRADE 10W
	*	MYSTIK JT-8 MOTOR OIL SAE 10W
	***	MYSTIK JT-8 MOTOR OIL SAE 30
CENEX	*	CENEX C-3 FLUID
CENTURY HULBURT, INC.	*	TORQUE FLUID C-3/10
	***	TORQUE FLUID C-3/30
CHAMPLIN PETROLEUM COMPANY	*	CHAMPLIN S-3 PLUS MOTOR OIL (SAE 10W)
	***	CHAMPLIN S-3 PLUS MOTOR OIL (SAE 30W)
	***	CHAMPLIN S-3 PLUS MOTOR OIL (SAE 15W-40)
CHEVRON CANADA, LTD.	*	CHEVRON DELO 400 MOTOR OIL SAE 10W
	***	CHEVRON DELO 400 MOTOR OIL SAE 30
	***	CHEVRON DELO 400 MOTOR OIL SAE 15W-40
	*	CHEVRON TORQUE FLUID 5
CHEVRON OIL EUROPE, INC.	*	CHEVRON TORQUE FLUID 5
CHEVRON U.S.A. INC. (CHEVRON OIL CO.)	*	CHEVRON DELO 400 MOTOR OIL SAE 10W
	***	CHEVRON DELO 400 MOTOR OIL SAE 30
	***	CHEVRON DELO 400 MOTOR OIL SAE 15W-40
	*	CHEVRON TORQUE FLUID 5
CHINA GULF OIL CO.	*	GULF H.T. FLUID C-3
CITIES SERVICE COMPANY	*	CITGO TORQUE CONVERTER FLUID 250
	*	CITGO AUTOMATIC TRANSMISSION FLUID, TYPE F
	*	CITGO C-500 MOTOR OIL SAE 10W
	***	CITGO C-500 MOTOR OIL SAE 30
	***	CITGO C-500 MOTOR OIL SAE 15W-40
COMPANHIA ATLANTIC DE PETROLEO S/A	*	"HT FLUID"—TYPE C-3
COMPANIA ESPANOLA DE PETROLEOS, S.A.	***	CEPSA SUPER SERIE 3
COMPANIA PETROLERA CHEVRON	*	CHEVRON DELO 400 MOTOR OIL SAE 10W
	***	CHEVRON DELO 400 MOTOR OIL SAE 30
	***	CHEVRON DELO 400 MOTOR OIL SAE 15W-40
	*	CHEVRON TORQUE FLUID 5
COMPANIA PETROLERA CHEVRON, INC.	*	CHEVRON DELO 400 MOTOR OIL SAE 10W
	***	CHEVRON DELO 400 MOTOR OIL SAE 30
	***	CHEVRON DELO 400 MOTOR OIL SAE 15W-40
	*	CHEVRON TORQUE FLUID 5

MARKETER		TRADE NAME
COMPANIA PETROLERA CHEVRON, LTD.	*	CHEVRON DELO 400 MOTOR OIL SAE 10W
	***	CHEVRON DELO 400 MOTOR OIL SAE 30
	***	CHEVRON DELO 400 MOTOR OIL SAE 15W-40
	*	CHEVRON TORQUE FLUID 5
CONOCO, INC.	*	CONOCO DN-600 SYNTHETIC MOTOR OIL
	*	CONOCO HYDRAULIC TRANSMISSION FLUID, TYPE C-3
	*	CONOCO FLEET MOTOR OIL SAE 10W
	***	CONOCO FLEET MOTOR OIL SAE 30
	***	CONOCO FLEET SUPREME MOTOR OIL SAE 15W-40
D-A LUBRICANT COMPANY, INC.	*	D-A TORQUE FLUID
	*	D-A ALL-SEASONS DIESELGUARD SAE 10W
	***	D-A ALL-SEASONS DIESELGUARD SAE 10W-30
	***	D-A ALL SEASONS DIESELGUARD SAE 30
	***	D-A ALL SEASONS DIESELGUARD SAE 15W-40
	*	D-A DIESEL OIL SAE 10W
	***	D-A DIESEL OIL SAE 30
DALTON & CO. LTD.	*	SILKOLENE ALLISON C-3 FLUID 1657
DAVIS-HOWLAND OIL CORP.	*	DSL TORQUE FLUID C-3
DB CORPORATION	*	D-B TORQUE FLUID TYPE C-3
	***	D-B TORQUE FLUID TYPE C-3
DELTA PETROLEUM CO., INC.	*	FIVE STAR ALLISON C-3
DETROIT OIL CO.	*	ROAD KING TRANSMATIC FLUID TYPE C-3
	*	ENDURO TYPE C-3 TRANS FLUID
DEUTSCHE BP AKTIENGESELLSCHAFT	*	BP AUTOMATIC TRANSMISSION FLUID
DRYDEN OIL COMPANY, INC.	*	TORQUE FLUID C-3 (1204)
	*	TORQUE FLUID C-3 (DEXRON TYPE) (1906)
	*	DRYDEN SUPREME XHD-10
	***	DRYDEN SUPREME XHD MULTI-VIS 15W-40
ALEXANDER DUCKHAM & COMPANY, LTD.	*	DUCKHAMS FLEETOL 3/10
	***	DUCKHAMS FLEETOL 3/30
	***	DUCKHAMS FLEETMASTER SAE 15W-40
	***	MULTIFLEET 3
DUROL OIL CO. (PTY) LTD.	***	DUROL HDXV SUPER 15W-40
ELF UNION	*	PERFORMANCE 3C-SAE 10W
	*	TRANS-O-MATIC
EMERY INDUSTRIES, INC.	***	EMGARD UNIVERSAL SF-CD
	*	FRIGID-GO SAE 0W-20 MULTI-PURPOSE ARCTIC LUBRICANT
ENPETROL, S.A.	*	ENPETROL "CS TELEX AC-3E"
	*	ENPETROL "REPSOL HYDRAULIC C-3 EP"
ESSO AUSTRALIA LTD.	*	ESSO TORQUE FLUID 47
	*	ESSOLUBE XD-3 10W
	***	ESSOLUBE XD-3 30
	***	ESSOLUBE XD-3 15W-40
ESSO BRASILEIRA DE PETROLEO S.A.	*	ESSO TORQUE FLUID 47
ESSO CHILE S.A. PETROLERA	*	ESSO TORQUE FLUID 47
	*	ESSOLUBE XD-3 SAE 10W
	***	ESSOLUBE XD-3 SAE 30

MARKETER		TRADE NAME
ESSO EUROPE INC. AFFILIATES	*	ESSO TORQUE FLUID 47
ESSO STANDARD OIL S.A., LTD. (ESSO CARIBBEAN)	*	ESSO TORQUE FLUID 47
	***	ESSOLUBE XD-3 EXTRA
ESSO STANDARD SOUTH AFRICA (PTY) LTD.	*	ESSOLUBE XD-3 10W
EXEL OIL COMPANY	*	POLYGUARD 300 SAE 10W
	***	POLYGUARD 300 SAE 30
EXPLOSIVOS RIO TINTO	*	HIDRAULICO 46C ESPECIAL
EXXON COMPANY U.S.A.	*	TORQUE FLUID 47
	*	XD-3, SAE 10W
	***	XD-3, SAE 30
FARMLAND INDUSTRIES, INC.	*	CO-OP DIESEL ENGINE OIL, SAE 10W
	*	CO-OP C-3 TORQUE FLUID
FIAT LUBRIFICANTI S.P.A.	*	OLIOFIAT GI/M
FILMITE OIL CORPORATION	*	FILMITE C-3 FLUID SAE 10W
	***	FILMITE C-3 FLUID SAE 30
FINA SA	*	FINAMATIC C-3
FISKE BROTHERS REFINING CO.	***	LUBRIPLATE UTF C-3
FS SERVICES, INC.	*	FS SUPER LUBE SAE 10-10W
	***	FS SUPER LUBE 15W-40
GETTY REFINING AND MARKETING CO.	***	TAGOLENE 303 FLUID
GOLDEN BEAR DIVISION OF WITCO CHEMICAL CORPORATION	*	GOLDEN BEAR "CODE 510"
	***	GOLDEN BEAR "CODE 513"
	*	400 SUPREME SAE 10W
GOLDEN FLEECE	*	AUTOFLOW C3 10
	***	AUTOFLOW C3 30
	*	AUTOFLOW AA
	*	GOLDEN FLEECE SUPERFLEET
	***	GOLDEN FLEECE SUPERFLEET
GULF CANADA LIMITED	*	GULF XHD MOTOR OIL 5W-20
	*	GULF XHD MOTOR OIL 10W
	*	GULF SUPER PLUS ARCTIC MOTOR OIL 5W-30
	*	GULF DEXRON II D21127
	*	GULF SUPER PLUS MOTOR OIL 10W
	***	GULF SUPER PLUS MOTOR OIL 10W-30
	***	GULF SUPER PLUS MOTOR OIL 30
	***	GULF SUPER PLUS MOTOR OIL 15W-40
	***	GULF SUPER PLUS EO-K MOTOR OIL 15W-40
	***	GULF DURATRAN FLUID
GULF OIL COMPANY INTERNATIONAL	*	GULF AUTOMATIC TRANSMISSION FLUID DEXRON B-11102
GULF OIL CORPORATION	*	GULF HT FLUID C-3
	*	GULF SUPER DUTY MOTOR OIL 10W
	***	GULF SUPER DUTY MOTOR OIL 30
	***	GULF SUPER DUTY MOTOR OIL 15W-40
	***	GULF SUPER DUTY PLUS SAE 15W-40
HINDUSTAN PETROLEUM CORPORATION LTD., BOMBAY (INDIA)	*	POWERGLIDE C 310
	***	POWERGLIDE C 330
HISPANO QUIMICA S.A.	*	BENDOL C-3

MARKETER		TRADE NAME
HUSKY OIL COMPANY	*	HUSKY HEAVY DUTY SPECIAL SAE 10W
	***	HUSKY HEAVY DUTY SPECIAL SAE 30
	***	HUSKY HEAVY DUTY SPECIAL SAE 15W-40
	***	HUSKY C-3 FLUID
HYDROTEX INDUSTRIES	*	DELUXE 753 HT FLUID TYPE C-2/C-3
	***	HY-TORQUE FLUID
IDEMITSU DOSAN CO., LTD.	*	APOLLOIL DIESELMOTIVE S-310
IMPERIAL OIL LIMITED	*	ESSOLUBE HDX PLUS 10W
	*	ESSOLUBE HDX PLUS 5W-20
	*	ESSOLUBE XD-3 5W-20
	*	ESSOLUBE XD-3 10W
	***	ESSOLUBE XD-3 10W-30
	***	ESSOLUBE XD-3 30
	***	ESSOLUBE XD-3 15W-40
	*	ESSO HYDRAULIC OIL XD-3 10W
	*	HYDRAUL 50
	*	ESSO AUTOMATIC TRANSMISSION FLUID
INDIAN OIL CORPORATION LTD.	*	SERVO TRANSMISSION C-3 SAE 10
	***	SERVO TRANSMISSION C-3 SAE 30
INDUSTRIAL LUBRICANTS COMPANY	***	GENUINE SL-3 UNIVERASL MOTOR OIL SAE 30
	***	GENUINE SL-3 UNIVERSAL MOTOR OIL SAE 15W40
INTERSTATE OIL CO., INC.	*	TYPE C-3 (C-2) TORQUE CONVERTER FLUID
IP (INDUSTRIA ITALIANA PETROLI)	*	IP AXIA OIL
JENKIN-GUERIN INC.	*	ANCHOR C-3 TORQUE CONVERTER FLUID
KENDALL REFINING CO. DIVISION OF WITCO CHEMICAL CORPORATION	*	KENDALL SUPER-D III SAE 10W
	***	KENDALL SUPER-D III SAE 30
	***	KENDALL SUPER-D III SAE 15W-40
KERR McGEE REFINING CORPORATION	*	C-3 TRANSDRAULIC FLUID FOR ALLISON
LEAHY-WOLF CO.	*	TORQUE MASTER 310
LUBRICATION ENGINEERS, INC	*	7500 MONOLEC POWER FLUID
LUBRICATING SPECIALTIES COMPANY	*	GOLD MEDAL ALLISON C-3 SAE 10W
	***	GOLD MEDAL ALLISON C-3 SAE 30
MARATHON OIL COMPANY	*	MULTIPOWER-3 MOTOR OIL SAE 10W
	***	MULTIPOWER-3 MOTOR OIL SAE 30
	*	MARATHON MARAFLUID SUPER HT
McCOLLISTER & COMPANY	*	TRANSDRAULIC 3150 C-3 FLUID
MID-AMERICAN CHEMICAL CO., INC.	*	MID-AMERICAN C-2/C-3 OIL
MID-STATES DISTRIBUTING CO.	*	C-3 TRANSDRAULIC FLUID FOR ALLISON
MITSUBISHI OIL CO., LTD.	*	10W DIAMOND TORQUE FLUID C-3
	***	30 DIAMOND TORQUE FLUID C-3
	*	10W DIAMOND HDS-3 ENGINE OIL
	***	30W DIAMOND HDS-3 ENGINE OIL
MOBIL OIL CORPORATION INTERNATIONAL DIVISION	***	MOBIL DELVAC 1230
	*	MOBIL DELVAC 1310
	***	MOBIL DELVAC 1330
	***	MOBIL DELVAC SUPER 15W-40
	*	MOBILFLUID 423
	***	MOBILFLUID 423
	*	MOBIL ATF 200
	***	MOBILAND SUPER UNIVERSAL

MARKETER		TRADE NAME
MOBIL OIL CORPORATION U.S. DIVISION (U.S. AND CANADA)	*	MOBIL DELVAC 1210
	***	MOBIL DELVAC 1230
	*	MOBIL DELVAC 1310
	***	MOBIL DELVAC 1330
	***	MOBIL DELVAC SUPER 15W-40
	*	POWER FLUID C-3
	*	MOBILFLUID 423
	***	MOBILFLUID 423
MOLYBOND LABORATORIES	*	MOLYBOND OIL D20-02
MORRIS & COMPANY (SHREWSBURY) LTD.	*	GOLDEN FILM LIQUIMATIC C-3
MOTUL S.A.	*	MOTUL SUPERIOR HP 3C
NAFTAGAS—RAFINERIJA NAFTE BEOGRAD	*	GALAXMATIC-TA C-3
NIPPON MINING COMPANY	*	KYOSEKI HTF C-3 10W
	***	KYOSEKI HTF C-3 30
NIPPON OIL COMPANY	*	PANTORQUE C-3 10
	***	PANTORQUE C-3 30
NORTHLAND PRODUCTS CO.	*	NORTHLAND TYPE C-2/C-3
NYCO LUBRICANTS COMPANY	*	NYCO C-2/C-3
AB NYNAS-PETROLEUM, STOCKHOLM, SWEDEN	*	NYNAS HTF C3
	*	NYNAS ATF A-52
	*	NYNAS AJCOL SDS 10W
	***	NYNAS AJCOL SDS 15W/40
PACER LUBRICANTS, INC.	*	PACER ALLISON C-2, C-3 FLUID
	***	PACER C-2/C-3 FLUID SAE 30
PENNZOIL COMPANY	*	PENNZOIL C-3 FLUID
	*	PENNZOIL MULTI-DUTY MOTOR OIL SAE 10W
	***	PENNZOIL MULTI-DUTY MOTOR OIL SAE 30
PENTALUBE OIL, INC.	*	PENTA TORQUE CONVERTER OIL TYPE C-3
PETROFINA S.A., BRUSSELS & AFFILIATED COMPANIES	*	FINA TRANSMISSION OIL C-3
PETROL OFISI	***	UNIVERSAL MOTOR YAGI D SAE 30
PETROLEO BRASILLEIRO, S.A. PETROBRAS	*	LUBRAX MD-300 SAE 10W
	***	LUBRAX MD-300 SAE 30
PETROLEUM MARKETERS (RED RAM) LTD.	*	RED RAM TYPE "A" FLUID
PETROLEUM PACKERS, INC.	*	#611-01 TORQUE FLUID TYPE C-3 GRADE 10
	*	GOOF PROOF MOTOR OIL SAE 10W
	***	GOOF PROOF MOTOR OIL SAE 30
PETROLEOS DEL PERU	*	PETROTORQUE 47
PHILLIPS PETROLEUM COMPANY	*	TYPE C-2/C-3 FLUID
	*	SUPER HD MOTOR OIL SAE 10W
	***	SUPER HD MOTOR OIL SAE 30
	*	SUPER HD II MOTOR OIL SAE 10W
	***	SUPER HD II MOTOR OIL SAE 30
	***	SUPER HD II MOTOR OIL SAE 15W-40
PRIMROSE OIL COMPANY	*	PRIMROSE #253 C-2/C-3 HYDRAULIC TRANSMISSION FLUID
	***	#252 UNIVERSAL TORQUE FLUID
PRODUCTOS DELTA, S.A.	*	ALBRIOL ATF-38 C-3

MARKETER		TRADE NAME
PRODUCTOS TAMOSA	*	MAQUIFLUID 375
QUAKER STATE OIL REFINING CORP.	*	QUAKER STATE HDX UNIVERSAL FLEET MOTOR OIL
	***	QUAKER STATE HDX UNIVERSAL FLEET MOTOR OIL
	***	QUAKER STATE TRACTOR HYDRAULIC TRANSMISSION FLUID
RAFINERIJA ULJA MODRICA	*	TCF C-3 FLUID
ROSEMEAD OIL PRODUCTS, INC.	***	SUPER DELUXE CORONATION MOTOR OIL SAE 30
	***	SUPER DELUXE CORONATION MOTOR OIL SAE 15W-40
SHAEFFER MFG. CO.	*	HYDRAULIC TORQUE FLUID 606
SHELL BRASIL S.A. (PETROLEO)	*	SHELL TRANSMIFLUIDO
SHELL CANADA LIMITED	*	SHELL SYNARCTIC MOTOR OIL 5W20
	*	SHELL RIMULA CT OIL 10W
	*	SHELL ROTELLA T MOTOR OIL 10W
	*	SHELL DONAX TA
	*	SHELL DONAX TG
SHELL CO. OF AUSTRALIA LTD.	***	SHELL ROTELLA TX OIL 730
	***	SHELL ENGINE OIL HPD30
SHELL CO. (PACIFIC ISLANDS) LTD.	***	SHELL ROTELLA TX OIL 730
SHELL FRANCAISE	*	SHELL RIMULA CT 10W
SHELL INTERNATIONAL PETROLEUM COMPANY LIMITED	*	SHELL DONAX TM
	*	SHELL DONAX TD
	*	SHELL RIMULA CT OIL 10W
	***	SHELL RIMULA CT OIL 30
	*	SHELL RIMULA X 10W
	***	SHELL RIMULA X OIL 10W/30
	***	SHELL RIMULA X 15W/40
	*	SHELL ROTELLA X OIL 10W
	***	SHELL ROTELLA X OIL 30
	*	SHELL AGROMA OIL 10W/30
	***	SHELL AGROMA OIL 15W/30
	***	SHELL AGROMA OIL 20W/30
SHELL OIL COMPANY	*	DONAX TA, CODE 53005
	*	SHELL HYDRAULIC FLUID C-3, CODE 53105
	*	RIMULA 10W, CODE 54801
	***	RIMULA 30, CODE 54803
	*	SHELL ROTELLA T 10W
	***	SHELL ROTELLA T 30
	***	SHELL ROTELLA T 15W-40
SHELL SOUTH AFRICA (PTY) LTD.	*	DYNASHELL MARK II 10W
	***	DYNASHELL MARK II 30
RALPH SHRADER, INC.	*	SHRADERMATIC HD TRANSMISSION LUBE
	*	AUTOCARE HD TRANSMISSION LUBE
SOLENE LUBRICANTS, INC.	*	SOLENE C-2 FLUID
	*	SOLENE C-3
SOUTH COAST TERMINALS, INC.	*	SCT C-2/C-3 FLUID 10W20
SOUTHWEST PETRO-CHEM DIV. OF WITCO	*	HYDRAULIC TRANSMISSION FLUID C-3
	*	MOTOR OIL SAE 10W SE-CD
SOUTHWEST PETROLEUM CORP.	*	SWEPCO 714 TYPE C-2/C-3 AUTOMATIC TRANSMISSION FLUID

MARKETER		TRADE NAME
STANDARD OIL CO. (OHIO)	*	FACTO 10W
	***	FACTO 30
	***	VANELLUS MG 15W-40
STAUFFER CHEMICAL COMPANY	***	SDL-1
STP CORPORATION, INDUSTRIAL DIV.	*	STP UNIVERSAL POWER TRANSMISSION FLUID
J.D. STREETT & CO., INC.	*	ZEPHYR SUPER HEAVY SAE 10-10W
	***	ZEPHYR SUPER HEAVY DUTY
SUN PETROLEUM PRODUCTS COMPANY	*	SUNFLEET C-2/C-3
	***	SUNFILL C2 30
	***	SUNFILL C-2/C-3-30
	*	SUNFLEET HP 10W
	*	SUNOCO TRANSMATIC FLUID TYPE F
	*	SUNFLEET SUPER C 10W
	***	SUNFLEET SUPER C 30
	***	SUNFLEET SUPER C 15W-40
SUN OIL COMPANY (BELGIUM) NV	*	SUNOCO TRANSMATIC FLUID TYPE A SUFFIX A
SUNOCO INCORPORATED	*	SUNOCO TRANSMISSION FLUID C-2/C-3
	*	SUNFLEET C-2/C-3 FLUID
	***	SUNFLEET SUPER C SAE 15W-40
TEXACO BRAZIL S.A.	*	TORQUE FLUID C-3
TEXACO, INC.	*	TORQUE FLUID C-3
	*	TRANSHYDRAL FLUID
	*	URSA SUPER PLUS 10W
	***	URSA SUPER PLUS 15W-40
	***	URSA SUPER PLUS SAE 30
	*	URSA OIL SUPER 3 SAE 10W
	***	URSA OIL SUPER 3
TEXACO SERVICES (EUROPE) LTD.	*	URSA OIL S-3 SAE 10W
TEXAS LUBRICANT CO.	*	ALLISON C-2/C-3 FLUID
TEXAS REFINERY CORP.	*	TRC ALLISON C-3 FLUID SAE 10W
TEXOIL CORPORATION	*	TEXOIL C-2, C-3 FLUID
TIDE WATER OIL CO. (INDIA) LTD.	*	TIDEWATER TRANSGEAR C3
TOMACO INDUSTRIES INC.	*	A-23 ALLISON C-2/C-3 FLUID
TOTAL	*	TOTAL FLUIDE CC
	*	TOTAL RUBIA S 10W
	***	TOTAL RUBIA S 30
TOTAL OIL GREAT BRITAIN LTD.	*	TOTAL HTF TYPE C-3
TROCO OIL CO.	*	TROCO TORQUE FLUID C-3/C-2
TURBO MANUFACTURING	*	TURBO AUTOMATIC TRANSMISSION FLUID TYPE A
	*	TURBO C-3 FLUID
	*	AUTOMATIC TRANSMISSION FLUID DEXRON II
UNION EXPLOSIVOS RIO TINTO, S.A. (E.R.T.)	*	ERTOIL OILTRAN C-3-46 E.P.
	*	ERTOIL OILTRAN C-3-46
UNION INTERNATIONALE D'INDUSTRIELS ET IMPORTATEURS EN LUBRIFIANTS (UNIL)	*	UNIL-MATIC C3
UNION OIL COMPANY OF CALIFORNIA	*	UNION C-3 FLUID
	***	UNION C-3 FLUID

MARKETER		TRADE NAME
UNITED OIL COMPANY, INC.	*	DURALENE TYPE C-3
UNITED REFINING CO.	*	EMBLEM C-3
UNIVERSAL MOTOR OILS CO., INC.	*	UNIVERSAL TYPE C-2, C-3 FLUID
VALVOLINE OIL COMPANY	*	VAL-TORQUE C-3
	*	VALVOLINE ALL-FLEET MOTOR OIL SAE 10W
	***	VALVOLINE ALL-FLEET MOTOR OIL SAE 30
	***	VALVOLINE ALL-FLEET MOTOR OIL SAE 15W-40
	*	ASHLAND HDT SAE 10W
	***	ASHLAND HDT SAE 30
	***	ASHLAND HDT SAE 15W-40
	*	ASHLAND 400M SAE 10W
	***	ASHLAND 400M SAE 30
	***	ASHLAND 400M SAE 15W-40
	***	VALVOLINE UNITRAC FLUID
VALVOLINE (AUSTRALIA) PTY, LIMITED	*	VAL-TORQUE C-3
VEEDOL FRANCE	***	VEEDOL INTEGRAL
VISCOSITY OIL COMPANY	*	INTERNATIONAL HARVESTER IH NO. 1 ENGINE OIL SAE 10W
WARREN OIL CO.	*	GOLD BOND TYPE C-2/C-3 TORQUE CONVERTER FLUID
WESTLAND OIL COMPANY	*	WESTLAND DURA C-3 TRANS FLUID
	*	DURA-TORQUE AHT FLUID SAE 10W
	***	DURA-TORQUE AHT FLUID SAE 30
WM. PENN DIV., BP OIL INC.	*	WM. PENN SPECIAL MOTOR OIL 10W
	*	WM. PENN SPECIAL MOTOR OIL 30
	***	WM. PENN SUPREME MOTOR OIL 15W-40
WOLF'S HEAD OIL REFINING CO.	*	WOLF'S HEAD AUTOMATIC TRANSMISSION FLUID C-3
	*	WOLF'S HEAD SPECIAL DUTY OIL 10W
	***	WOLF'S HEAD SPECIAL DUTY OIL 30
WRIGHT OIL CO.	*	WRIGHT TORQUE FLUID C-3/C-2
YACIMIENTOS PETROLIFEROS FISCALES (Y.P.F.)	***	DIESEL MOVIL

INTERMEDIATE VISCOSITY FLUIDS

Certain commercial universal farm tractor fluids meet all of the requirements for hydraulic transmission fluid, Type C-3, but do not fall within the defined viscosity limits for Grade 10W or Grade 30. Such lubricants will perform satisfactorily in Detroit Diesel Allison off-highway transmissions when used above −12°C (+10°F).

MARKETER	TRADE NAME
AMALIE REFINING CO., DIV. OF WITCO CHEMICAL CORP.	AMALIE ALL TRAC
AMOCO OIL COMPANY	AMOCO TRACTOR FLUID 7926 AMOCO 1000 FLUID
THE BELCHER COMPANY OF TENNESSEE	UNILUBE MULTI-TRAC HYDRAULIC FLUID
BORON OIL COMPANY	ELDORAN UTH
BP OIL INC.	ELDORAN UTH
CALTEX OIL (AUSTRALIA) PTY.	RPM TRACTOR HYDRAULIC FLUID
CENEX	QWIKLIFT UNIVERSAL FLUID
CHAMPLIN PETROLEUM COMPANY	404 FLUID
CHEVRON CANADA, LIMITED	CHEVRON TRACTOR HYDRAULIC FLUID
CHEVRON U.S.A. INC. (CHEVRON OIL COMPANY)	CHEVRON TRACTOR HYDRAULIC FLUID
CITIES SERVICE COMPANY	CITGO TRACTOR HYDRAULIC FLUID
COMPANIA PETROLERA CHEVRON	CHEVRON TRACTOR HYDRAULIC FLUID
COMPANIA PETROLERA CHEVRON, INC.	CHEVRON TRACTOR HYDRAULIC FLUID
COMPANIA PETROLERA CHEVRON, LTD.	CHEVRON TRACTOR HYDRAULIC FLUID
CONOCO INC.	CONOCO POWER-TRAIN II FLUID
D-A LUBRICANT COMPANY, INC.	D-A HYDRATRANS 135
DELTA PETROLEUM CO, INC.	FIVE STAR UNIVERSAL TRACTOR FLUID
DRYDEN OIL COMPANY, INC.	DRYDENE UNIVERSAL TRACTOR AND HYDRASTATIC FLUID
EXXON COMPANY USA	TORQUE FLUID 56
FARMLAND INDUSTRIES, INC.	CO-OP SUPER HTB
GULF CANADA LIMITED	GULF DURATRAN FLUID
HUSKY OIL COMPANY	HUSKY UNIVERSAL TRACTOR FLUID
IMPERIAL OIL LIMITED	HYDRAUL 56
KENDALL REFINING CO., DIV. OF WITCO CHEMICAL CORPORATION	KENDALL HYKEN 052
MIDLAND COOPERATIVES, INC.	CONVERTORQUE FLUID
AB NYNAS—PETROLEUM, STOCKHOLM, SWEDEN	AJCOL MTH-24
PHILLIPS PETROLEUM COMPANY	HG FLUID
SHELL CANADA	SHELL DONAX TD
SHELL OIL COMPANY	DONAX TD, CODE 53004
SOUTHWEST PETRO-CHEM DIV. OF WITCO CHEMICAL CORPORATION	C-2/C-3 FLUID CODE 2835
STANDARD OIL CO. (OHIO)	ELDORAN UTH

MARKETER	TRADE NAME
SUN PETROLEUM PRODUCTS COMPANY	SUNFLEET TH FLUID
TENNECO INC.	J. I. CASE COMPANY SPEC. MS 1206 TENNECO TRACTOR TRANS FLUID C-3
VEEDOL INTERNATIONAL	VEEDOL HYDRO TRANS 303
WM PENN DIV., BP OIL INC.	WM. PENN UNIVERSAL TRACTOR HYDRAULIC OIL

PREPARED AND DISTRIBUTED BY SALES DEVELOPMENT, J5, DETROIT DIESEL ALLISON, P.O. BOX 894, INDIANAPOLIS, IN 46206

Allison Transmissions

SALES BRIEF

CODE
TOTAL UPDATE

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Date 3/84 No. 58

2000 SERIES CYCLING TRANSMISSIONS

I. PRODUCT DESCRIPTION

The TT 2001 series powershift transmission is designed primarily for cycling applications using 130 kW (175 hp) net power.

The TT 2001 series incorporates a twin turbine converter, engine-driven PTO's, planetary gearing, hydraulic clutches, front and rear output, forward and reverse pressure taps, optional clutch cutoff or inching, and a provision for a neutral start switch. The TT 2001 series transmissions have smooth, full-power directional shifting capability (soft shift), and 2-phase, 4-element converter with an automatic phase transition that has been successful in numerous cycling vocations.

Applications for this series transmission are as varied as the number of cycling vehicles and vocations. Examples are wheel loaders, material handlers, self-propelled cranes, rail equipment, and winches.

Basic Models:

TT 2221-1	TTB 2221-1	TRT 2221-1
TT 2421-1	TTB 2421-1	TRT 2421-1
		TRT 2211-3
		TRT 2411-3
		TRT 2221-3
		TRT 2421-3

Definition of model designations is as follows:

TT 2221-1	Twin Turbine Converter
T**T** 2221-1	Transmission
TRT 2221-1	Equal Number of Forward & Reverse Ranges
TTB 2221-1	Internal Vehicle Service Brake
TT **2**221-1	Transmission Capacity
TT 2**2**21-1	Converter Capacity
TT 22**2**1-1	Number of Forward Ranges
TT 2221-**1**	Indicates Number of Major Changes
TT 2221-**1**	With Dropbox (Long Drop) 19 inches (483 mm)
TRT 2221-**3**	No Dropbox (Short Drop) 7 inches (118 mm)

RATINGS

Input Rating:

Maximum input speed	3000 rpm	
Maximum net input torque*	420 N·m	310 lb ft
Maximum net input power*	130 kW	175 hp

* Net as installed: inlet restriction, exhaust restriction, alternator, fan, idle steer pump, idle implement pump, and air compressor should be deducted when applicable.

Turbine Shaft Rating:

Applications	Maximum Turbine Torque N·m lb ft	
	.826:1 T_2 Ratio	1.211:1 T_2 Ratio
General and Loader:	2035 N·m 1501 lb ft	1390 N·m 1025 lb ft
Material Handler (straddle carrier, mobile crane, fork lift):	2189 N·m 1621 lb ft	1500 N·m 1106** lb ft
Heavy-duty Equipment (compactor, dozer):	1527 N·m 1126 lb ft	1043 N·m 769** lb ft

** Not currently released.

Rating Chart References:

TT 2001 with T_2 Ratio = .826:1	TC-7316 pg. 1
TT 2001 with T_2 Ratio = 1.211:1	TC-7316 pg. 2

Torque Converter

The TT 2001 Series transmission provides a 2-phase, 4-element, twin-turbine torque converter with automatic phase transition. The available converters and stall torque ratios are listed:

.826:1 T_r Ratio Converters: Note: To be used only with .826:1 T_r transmission gear ratios:

Converter Models	Absorption Chart No.	Stall Torque Ratio
TT 220	TC-9026	5.47:1
TT 240	TC-7100	5.44:1
TT 260	TC-7101	5.11:1
TT 270	TC-8858	6.97:1
TT 425	TC-8859	5.19:1
TT 444	TC-17710	6.79:1
TT 445	TC-8860	4.92:1
TT 465	TC-9062	4.67:1

1.211:1 T_r Ratio Converters: Note: To be used only with 1.211:1 T_r transmission gear ratios.

Converter Models	Absorption Chart No.	Stall Torque Ratio
(TT 242)	TC-11556	3.52:1
TT 252	TC-11557	5.09:1
TT 262	TC-11558	3.32:1
TT 272	TC-11559	4.81:1
TT 426	TC-11560	4.78:1
TT 427	TC-11561	3.40:1
TT 447	TC-11562	3.34:1
(TT 466)	TC-18918	4.40:1
(TT 467)	TC-18919	3.19:1

( ) Converter assembly is not in production but parts are available.

Control Valve Body Assembly

A mechanically-actuated, hydraulic control valve body is used to provide a soft, powershift, range selection according to operator requirements. All shifts are trimmed for a soft-shift capability. Optional valve bodies are available for inching control and hydraulic or pneumatic clutch cut-off.

Gearing

Gear Data:

range gearing	constant-mesh planetary
transfer gearing	constant-mesh in-line
gear type	spur

Gear Ratios:	.826:1 T_r		1.211:1 T_r	
	Low	High	Low	High
TT(B) 2221-1, 2421-1				
F:	2.663:1	.699:1	3.902:1	1.024:1
R:	1.964:1	—	2.878:1	—
F:	2.029:1	.699:1	2.973:1	1.024:1
R:	1.964:1	—	2.878:1	—
F:	2.153:1	.566:1	3.155:1*	.829:1
R:	1.588:1	—	2.327:1	—
F:	1.641:1*	.566:1	2.405:1*	.829:1
R:	1.588:1	—	2.327:1	—

Gear Ratios:	.826:1 T_2		1.211:1 T_2	
	Low	High	Low	High
TRT 2211-3, 2411-3				
F:	2.398:1	–	3.514:1*	–
R:	2.321:1	–	3.401:1	–
TRT 2221-1, 2421-1				
F:	2.029:1	.736:1	2.973:1	1.079:1
R:	1.964:1	.712:1	2.878:1	1.043:1
TRT 2221-3, 2421-3				
F:	6.612:1	2.398:1	9:689:1	3.514:1
R:	6.398:1	2.321:1	9.375:1	3.401:1
F:	2.398:1	.826:1	3.514:1*	1.211.1
R:	2.321:1	.799:1	3:401:1	1.171:1

NOTE: To obtain overall transmission torque ratios, multiply the application torque converter ratio times the overall gear ratio. Converter and transmission T_2 ratios must be the same.

* Transmissions with these ratios are not production released but parts are available.

Mounting

Direct

Front Adaptation: Modified SAE #3 converter housing with flexplate drive bolted to flywheel and converter hub piloted into flywheel.

Side Pads: The transmission is supported strictly by side pads. There are four 5/8-11 tapped holes in each pad.

Cradle mounting between transmission side pads and engine flywheel housing pads is recommended.

Remote

Input: The front of the transmission is unmounted and enclosed. An input flange for shaft and universal-joint coupling is required.

A limited-stroke, TORQMATIC ® coupling (torsional damper) is available.

Side Pads: The transmission is supported by side pads. The center of gravity of the transmission is located within the side pad bolt pattern.

Output Configuration

TRT 2000-3. The single output for this version is seven inches below its input. The output shaft rotation (as viewed from the input) is counter clockwise in forward ranges; the opposite of the input rotation.

TRT 2000-1, TTB 2000-1. These versions have two output locations available 19 inches below the input. The output shaft rotation is the same as the input rotation (as viewed from the input), clockwise. An optional disconnect is available for the front output.

Clutch Data

Type: Multidisk, hydraulically-actuated, spring-released, oil-cooled, and automatically wear compensating.

Speedometer Drive

Availability:	Optional on TT 2001-1 model only
Type:	SAE 5/32 heavy duty
Location:	Center of rear cover, see AS 22-015

Speedo-drive Ratio to Output:

	Transmission High Gear Ratio	
	.699 or 1.024	.566 or .829
Speedo Ratio:	.846	.684

NOTE: Speedometer-drive provision will be cancelled soon after magnetic speed-pickup provision is production available.

Magnetic Speed Pickup Provision

Availability:	Standard on TT 2001-1, TRT 2000-1, and TTB 2000-1
Location:	Tapped port on barrel of main case, (Ref: AS 22-003)
Thread Size:	.750-16UNF-3B inch series thread

System Specifications:	Transmission Forward High Gear Ratio		
	.699, .736, 1.024, 1.079	or	.566, .829
Calibration			
Ratio to Output:	.846		.684
No. of Gear Teeth:	52		57
Probe Length, millimeters (inches)	47.88 (1.885)		32.00 (1.260)

Parking Brake (Optional)

Applicable Transmissions	Parking Brake Description
TT 2001-1:	254 × 38 mm (10 × 1.5 in) expandable shoe, mechanically-applied with standard pressure plate.
	Burnished static rating: 3389 N·m (30,000 in lb) @ 6672 N (1500 lb) apply-lever force.*
TTB 2001-1:	254 × 38 mm (10 × 1.5 in) expandable shoe, mechanically-applied with pressure plate cut to clear TTB housing.
	Burnished static rating: Same as TT 2001-1.
TRT 2001-3:	340 × 51 mm (13.375 × 2 in) drum with standard pressure plate.
	Burnished static rating: 5084 N·m (45,000 in lb) @ 9341 N (2100 lb) apply-lever force.*

* Brake is supplied unburnished. Vendor indicates unburnished static rating may be 25% less.

Internal Service Brake (Optional on TTB models only)

Type:	Multidisk, hydraulically-applied, oil-cooled, and self-adjusting.
Rating:	4068 N·m (3000 lb ft) at transmission output shaft with 10,342 kPa (1500 psi) maximum brake-apply pressure.
Cooling:	Forced oil flow.
Hydraulic Brake	
Fluid:	SAE J70, type 70R1 or 70R3.

Special Operational Control Provisions

Neutral Start Provision. Provision for installation of a neutral start switch connected in series with the vehicle start system is standard on all models. Reference: Basic installation drawings and AS 00-052.

Forward and Reverse Pressure Taps. The transmission valve body has taps which supply either forward or reverse hydraulic pressure that can be used for special operational controls or indicators. Reference: Basic installation drawings.

Additional Major Features

- optional input and output flanges
- wet or dry direct engine mount adaptations
- converter-driven power take-off (TTB model only)
- wet or dry implement PTO splines

SPECIFICATIONS

Weight

Dry, approximate, depending on basic model and options:

TT 2001-1	345 kg (760 lb)	Remote Mount (add)	18 kg (40 lb)
TTB 2001-1	424 kg (935 lb)	2401 Model (add)	7 kg (15 lb)
TRT 2001-1	413 kg (910 lb)	TORQMATIC® coupling (add)	16.4 kg (36 lb)
TRT 2001-3	342 kg (755 lb)	Flange (add)	2.7 kg (6 lb)
TRT 2011-3	299 kg (660 lb)		

Oil System

Oil Capacity. Less external circuits: 32 liters (8.5 U.S. gallons), T(R)T 2000-1 models; 25 liters (6.5 U.S. gallons) T(R)T 2000-3 models, initial fill.

Oil Filter. Customer furnished, remote mounted from transmission. Reference AS22-009 for requirements.

Oil Type. Hydraulic transmission fluid, C-3.

Oil Pump. Input driven, positive displacement, gear type.

Main Pressure. At full throttle:

For wheel loader applications under 12701 kg (28000 lb):	930-1172 kPa (135-170 psi)*
For all other applications:	1103-1344 kPa (160-195 psi)*

* Main pressure in high range may be as much as 68.95 kPa (10 psi) lower than in other ranges. These pressures are established for a converter-out temperature range of 60-73.8°C (140-160°F). As converter-out temperature approaches 121°C (250°F), main pressure may drop as much as 103.4 kPa (15 psi).

Oil Temperature.

Maximum Converter-out temperature: 135°C (275°F) continuous.

Power Take-off Provisions

Implement pump drive. Pad at rear of oil pump.

Standard ratio:	.91 x engine speed
Optional ratio:	1.00 x engine speed
Rating:	
Maximum intermittent power, at 2000 to 3000 rpm:	82 kW 110 hp
Maximum continuous power, at 2000 to 3000 rpm:	67 kW 90 hp
Mounting pad*:	SAE C-2/4 bolt, or SAE B-2 bolt
Shaft splines:	SAE C, B (reducer) SAE BB available with 1:1 ratio only.

Accessory drive.

Standard ratio:	.91 x engine speed
Optional ratio:	1.00 x engine speed
Rating:	
Maximum continuous power, at 2000 to 3000 rpm:	22 kW 30 hp
Mounting pad*:	SAE A-2 bolt
Shaft splines:	SAE A or B

Emergency-steer PTO. Ground-driven, available on TT 2001-1 models only.

Speed ratios:	.846 x output speed or .684 x output speed, depending on transmission gear ratio.
Rating:	
Maximum continuous power, at 2000 to 3600 rpm:	22 kW 30 hp
Mounting pad*:	SAE A-2 bolt
Shaft splines:	SAE A

* Customer-supplied gasket required to seal lubricated spline drive.

Converter-driven PTO. Converter-driven PTO is available on TTB 2000-1 models only.

Standard Ratio:	1.211 × converter turbine speed
Optional Ratio:	.826 × converter turbine speed
Rating:	Full transmission input power
Flange Options:	Spicer 1410, Rockwell 4N plain

Selector Positions

Gear Ranges	TRT 2211-3 TRT 2411-3	TT 2221-1 TTB 2221-1 TT 2421-1 TTB 2421-1	TRT 2221-1 TRT 2221-3 TRT 2421-1 TRT 2421-3
Reverse High	–	–	R_2
Reverse Low	R	R	R_1
Neutral	N	N	N
Forward Low	F	F_1	F_1
Forward High	–	F_2	F_2

TRANSMISSION RATING CHARTS

Allison transmission ratings are compatible with net engine power corrected to the SAE J1349 Engine Test Code. Therefore, when examining Allison transmission ratings against engines rated at some standard other than SAE J1349, it is important to determine whether an engine power correction is required.

Domestic engines are typically rated at SAE baseline conditions. The current rating standard is described by SAE J1349 Engine Test Code outlined below:

SAE J1349 ENGINE TEST CODE BASELINE

Condition	Metric	U.S.
Pressure-Total	100 kPa	29.61 in hg
Temperature	25°C	77°F
Vapor Pressure	1.0 kPa	.2961 in hg
Dry Baro Pressure	99 kPa	29.31 in hg
Dry Air Density	1.157 kg/m^3	.0722 lb/ft^3
Fuel Temperature	40 ± 3°C	104 ± 5.4°F

The following information provides a guide for adjusting naturally aspirated 4-cycle diesel engines to the SAE J1349 baseline. These adjustment guidelines are not applicable to 2-cycle diesel or spark ignition engines. It is recommended the specific engine manufacturer be consulted for corrected performance data.

ENGINE ALTITUDE AND TEMPERATURE BASELINE

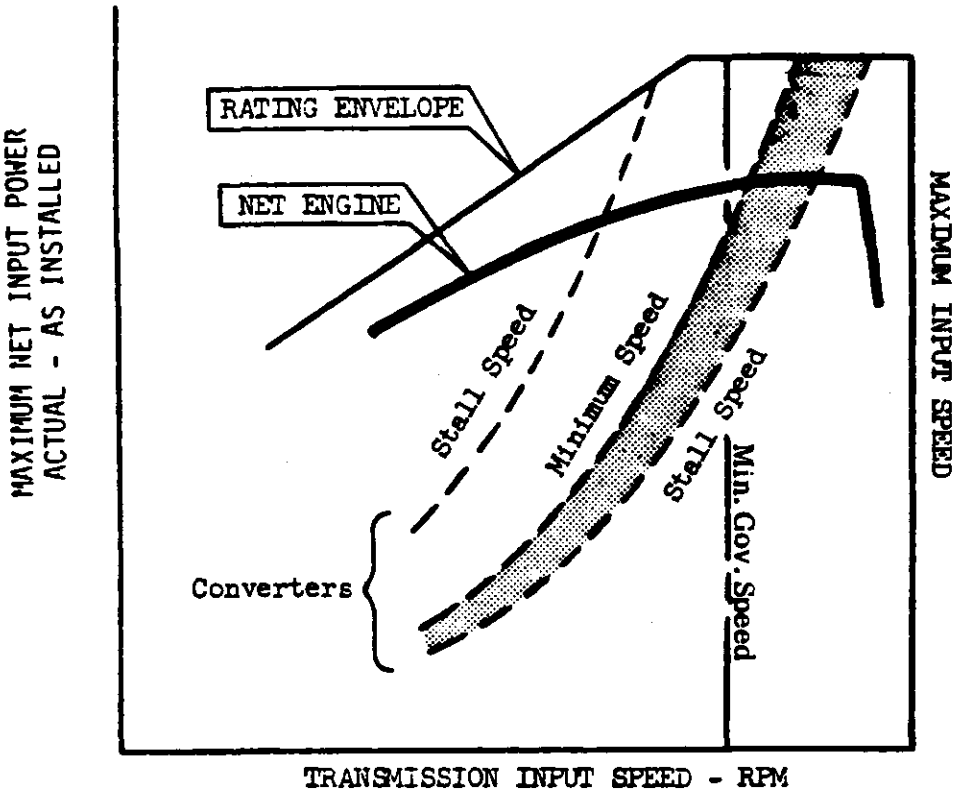
Rating Standard	Altitude Metre (Ft.)	Temperature °C (°F)	Power Modification for Adjusting Naturally Aspirated 4-Cycle Diesel Engines to SAE J1349
DIN 6270	305 (1000)	20.0 (68)	+0.5%
DIN 70020	Sea Level	20.0 (68)	-2.5%
BS AU141	Sea Level	20.0 (68)	-2.5%
BS 649	152 (500)	29.4 (85)	+1.0%
SMMT	152 (500)	20.0 (68)	-1.0%
Japanese Ind.	Sea Level	20.0 (68)	-2.5%
Gost-Russian	Sea Level	20.0 (68)	-2.5%

For performance at higher altitudes and temperature it is customary to derate engine power 3% for each 1000 ft elevation and 1% for each 10° F increase in temperature. Most advertised performance for Turbo-Charged Engines is depicted as being applicable up to a specific altitude and temperature. Therefore, these correction factors are to be used only when the engine operates at altitude or temperature that exceeds the maximum applicable limits.

Note: These 4-cycle diesel altitude and temperature power correction factors are to be used only in the absence of engine manufacturer supplied data.

TRANS. MODEL	CHART REF/DATE	REVISION
T(R)T and TTB 2200	TC-7316-1, 2-20-84	o ADDED TT250 CONVERTER o SPLIT INTO TWO CHARTS FOR 200 and 400 SERIES CONVERTERS o ADDED TT466 and TT467 CONVERTERS

TYPICAL RATING CHART



A typical rating chart consists of a solid line envelope expressed in terms of power and speed, and a series of dotted lines each representing the capacity characteristics of the converters used in the transmission. In some instances, because of the converter's speed characteristics, the converter is defined by a band shown by dual dotted curves in which case the first line of the band represents the minimum speed characteristics and the second line the stall speed.

All rating charts carry a maximum input (governed) speed rating, whereas only a few have a minimum governed speed limit. In these cases, the full load governed speed of the engine must fall on or above the minimum governed speed line but cannot exceed the maximum input speed rating.

To determine whether a given engine is within the rating of a converter and transmission, the net engine curve must be plotted on the rating chart as follows:

- Correct gross engine to SAE J1349 baseline and deduct engine accessories.
- Plot this net engine power curve (corrected power less accessories) on converter or transmission rating chart.
- Investigate converter and lockup operation in the following manner after selecting proper converter.

  CONVERTER OPERATION (All Transmissions)

  The net engine power curve must intersect the converter stall line within the envelope as defined by the solid line envelope.

  If the converter speed characteristics are represented by a band (shaded area), the power curve of the engine must intersect both lines of the converter within the rating envelope.

  LOCKUP OPERATION (Transmissions with Lockup)

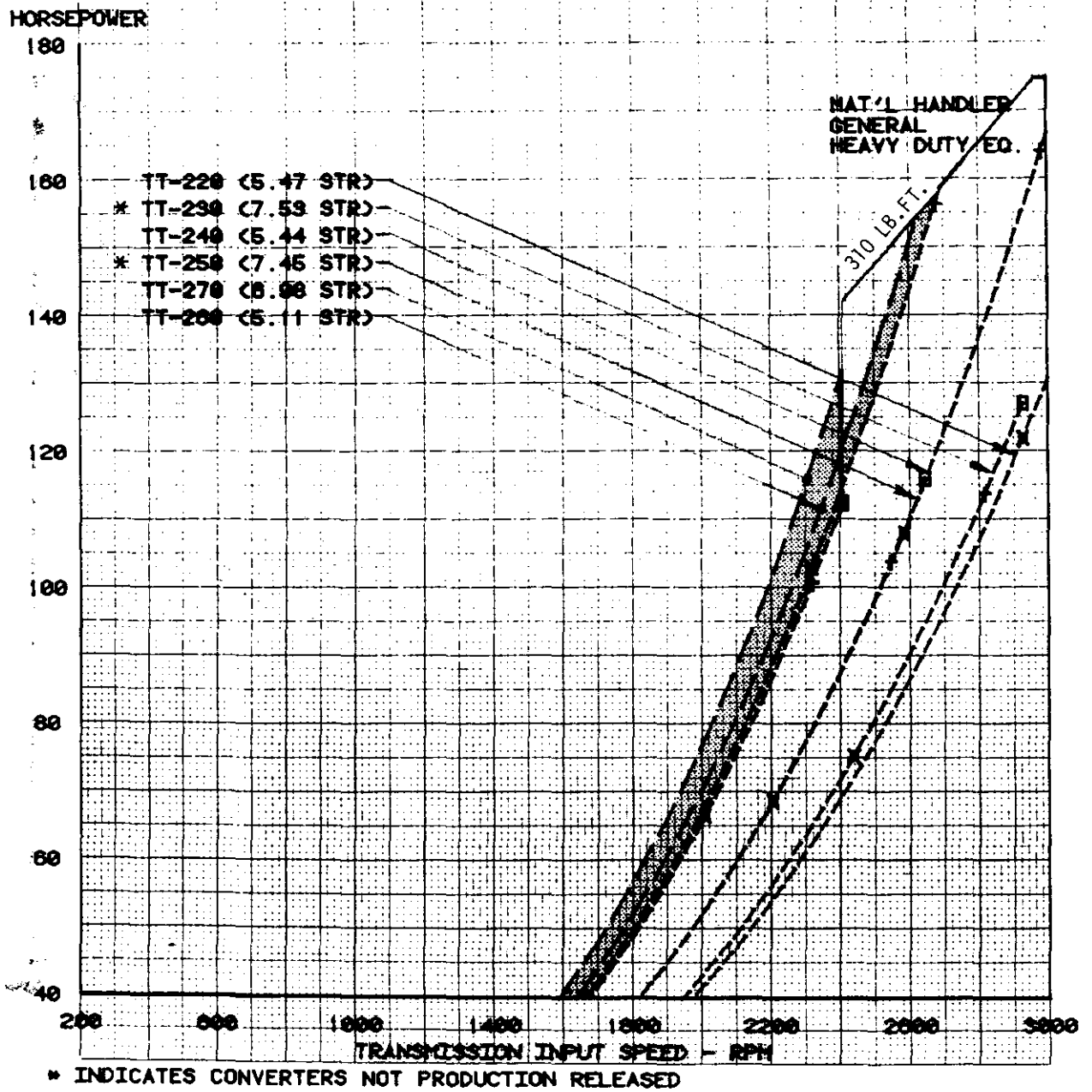
  The engine power curve must fall below the solid-line envelope for all speeds defined by the rating envelope.

REV. MCAHREN , 02-20-84

ALLISON TRANSMISSION T(R)T & TTB 2200 RATING CHART	ENGR	RAMSEY 07-06-82	APPR	0 7a 3-5-84	TC-7316 SHEET 1 of 4

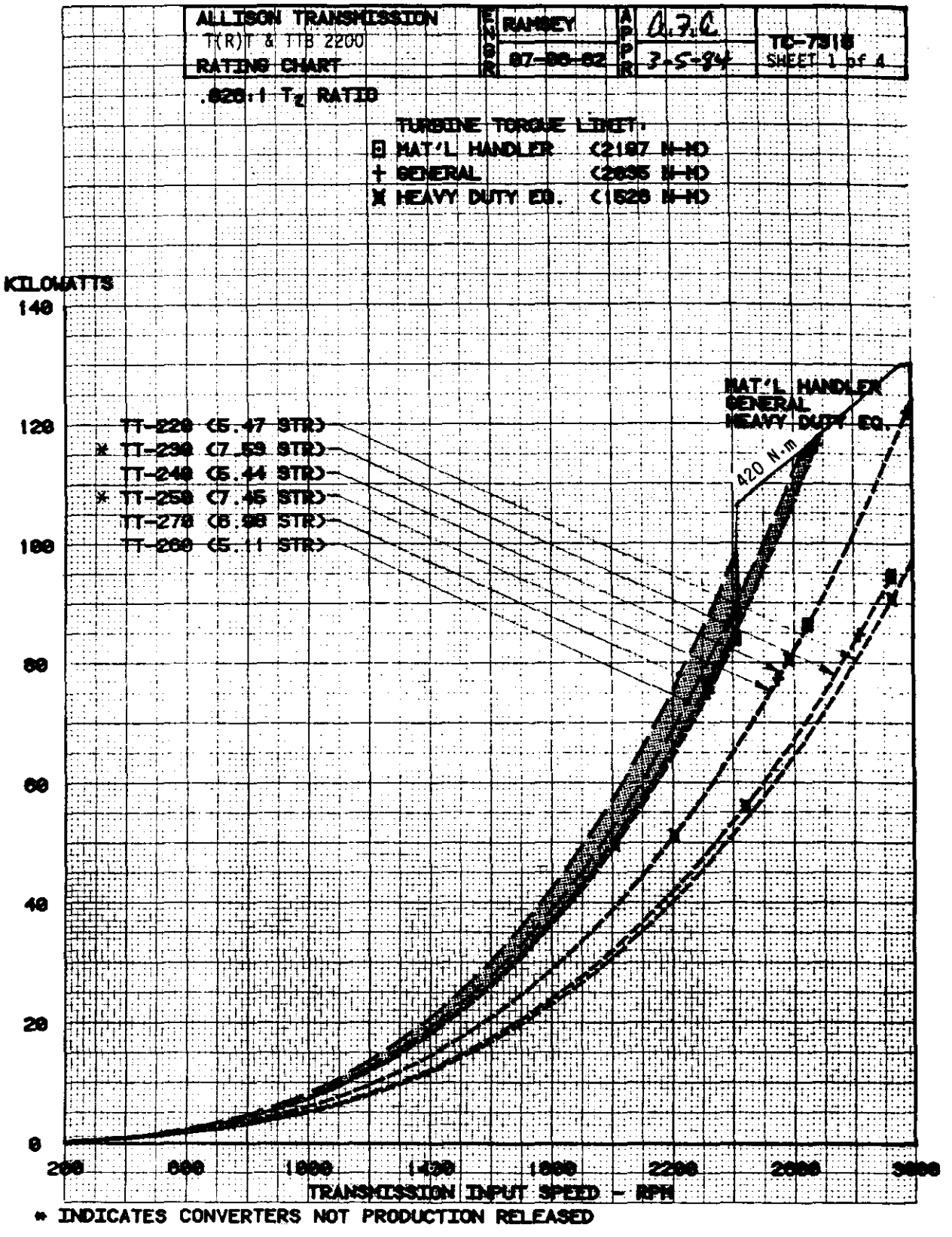
.826:1 T_2 RATIO

TURBINE TORQUE LIMIT:
- ⊡ MAT'L HANDLER (1621 LB.FT.)
- + GENERAL (1501 LB.FT.)
- ✖ HEAVY DUTY EQ. (1126 LB.FT.)



* INDICATES CONVERTERS NOT PRODUCTION RELEASED

REV. MCAHREN ,02-28-84



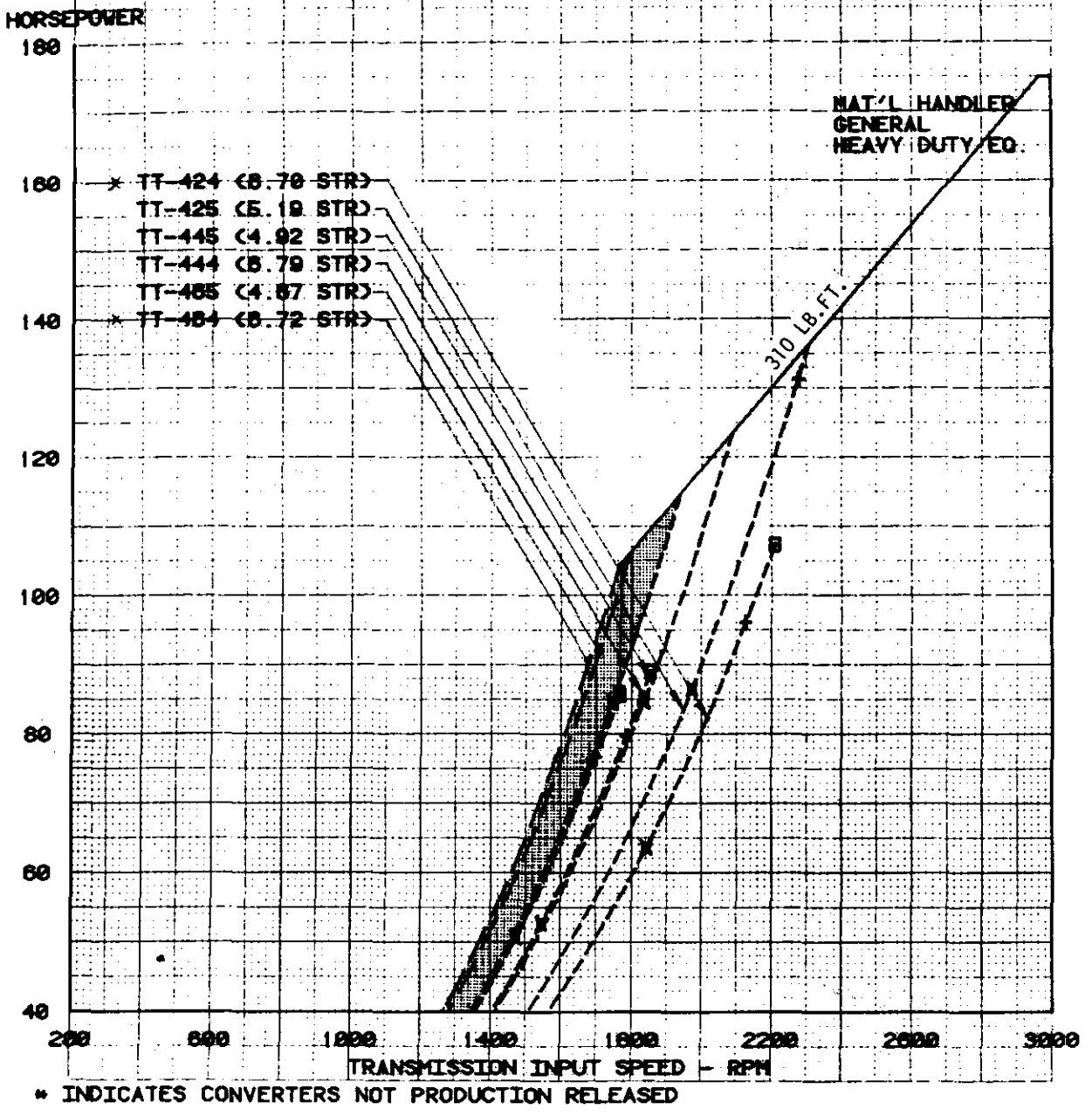
* INDICATES CONVERTERS NOT PRODUCTION RELEASED

REV. MCAHREN ,02-17-84

ALLISON TRANSMISSION	ENGR	RAMSEY	APPR	0.7.C	TC-7318
T(R)T & TTB 2400		07-26-82		3-5-84	SHEET 2 of 4
RATING CHART					

.826:1 T_2 RATIO

TURBINE TORQUE LIMIT:
- ⊡ MAT'L HANDLER (621 LB.FT.)
- + GENERAL (501 LB.FT.)
- ⊠ HEAVY DUTY EQ. (425 LB.FT.)



* INDICATES CONVERTERS NOT PRODUCTION RELEASED

REV. MCAHREN ,02-17-84

ALLISON TRANSMISSION
T(R)T & TTB 2400
RATING CHART

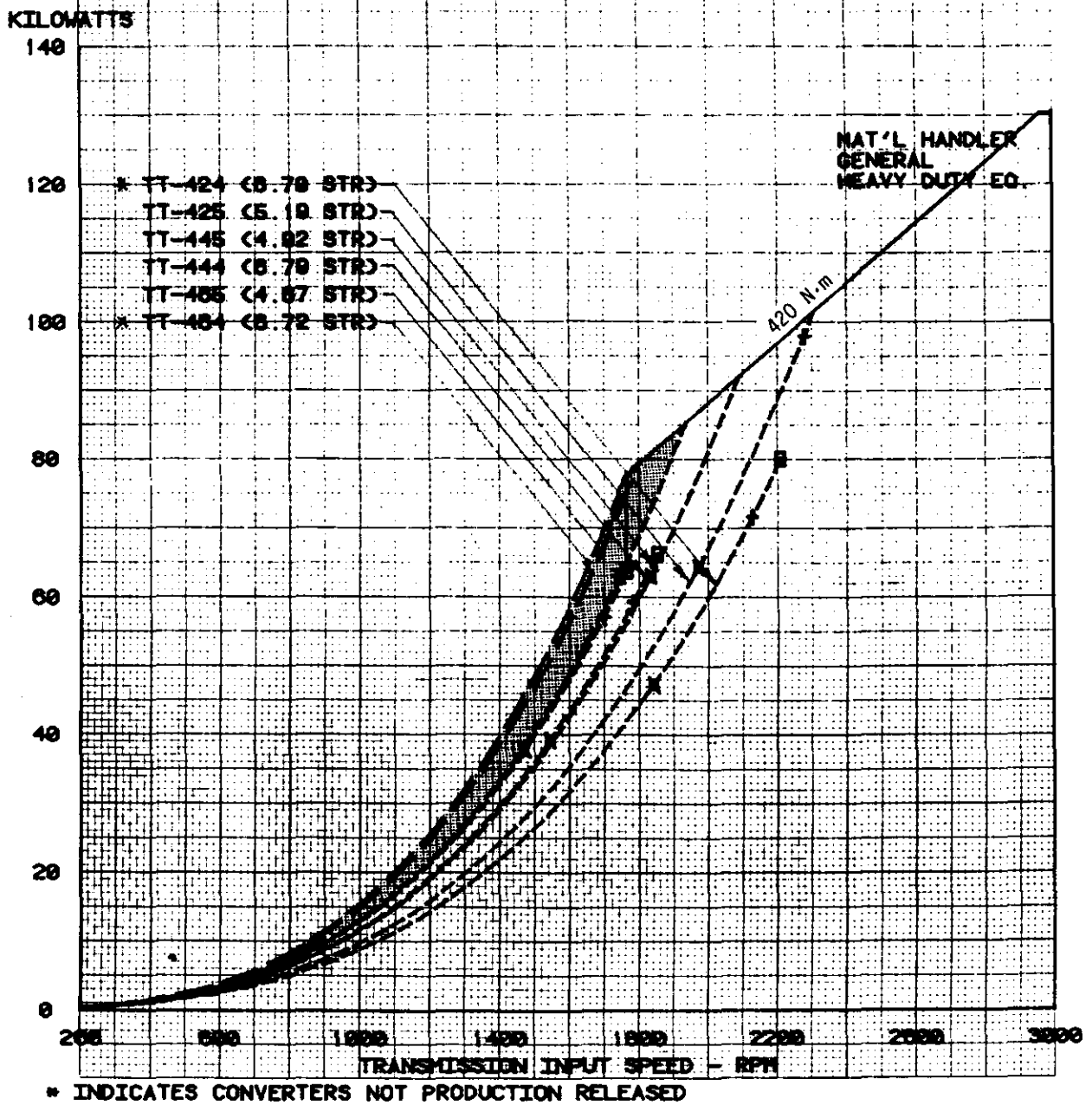
ENGR RAMSEY 07-26-82

APPR A.T.A. 3-5-84

TC-7318
SHEET 2 of 4

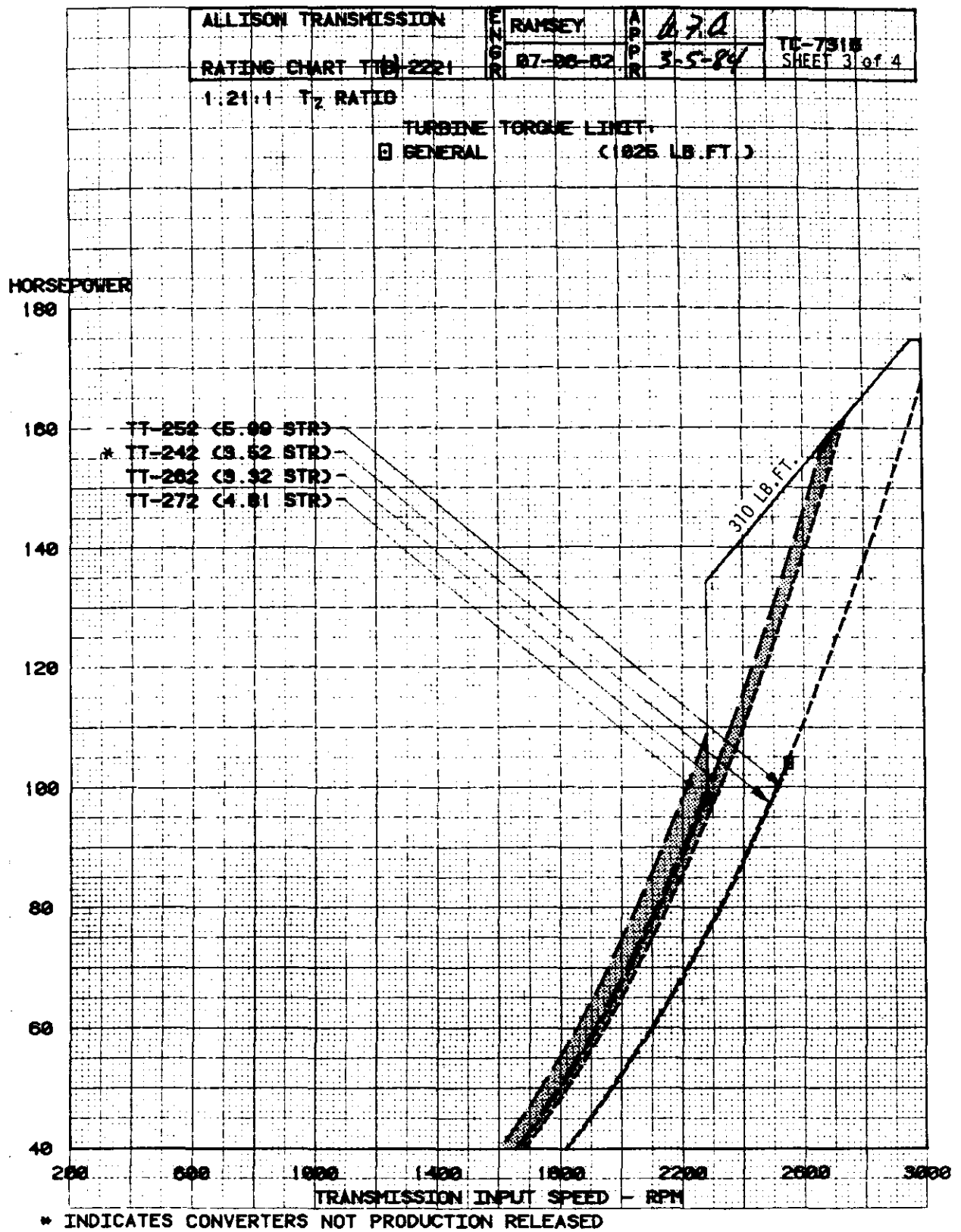
.828:1 T_2 RATIO

TURBINE TORQUE LIMIT:
- ⊡ MAT'L HANDLER (2197 N-M)
- + GENERAL (2035 N-M)
- ⊠ HEAVY DUTY EQ. (1528 N-M)



* INDICATES CONVERTERS NOT PRODUCTION RELEASED

REV. MCAHREN ,02-17-84



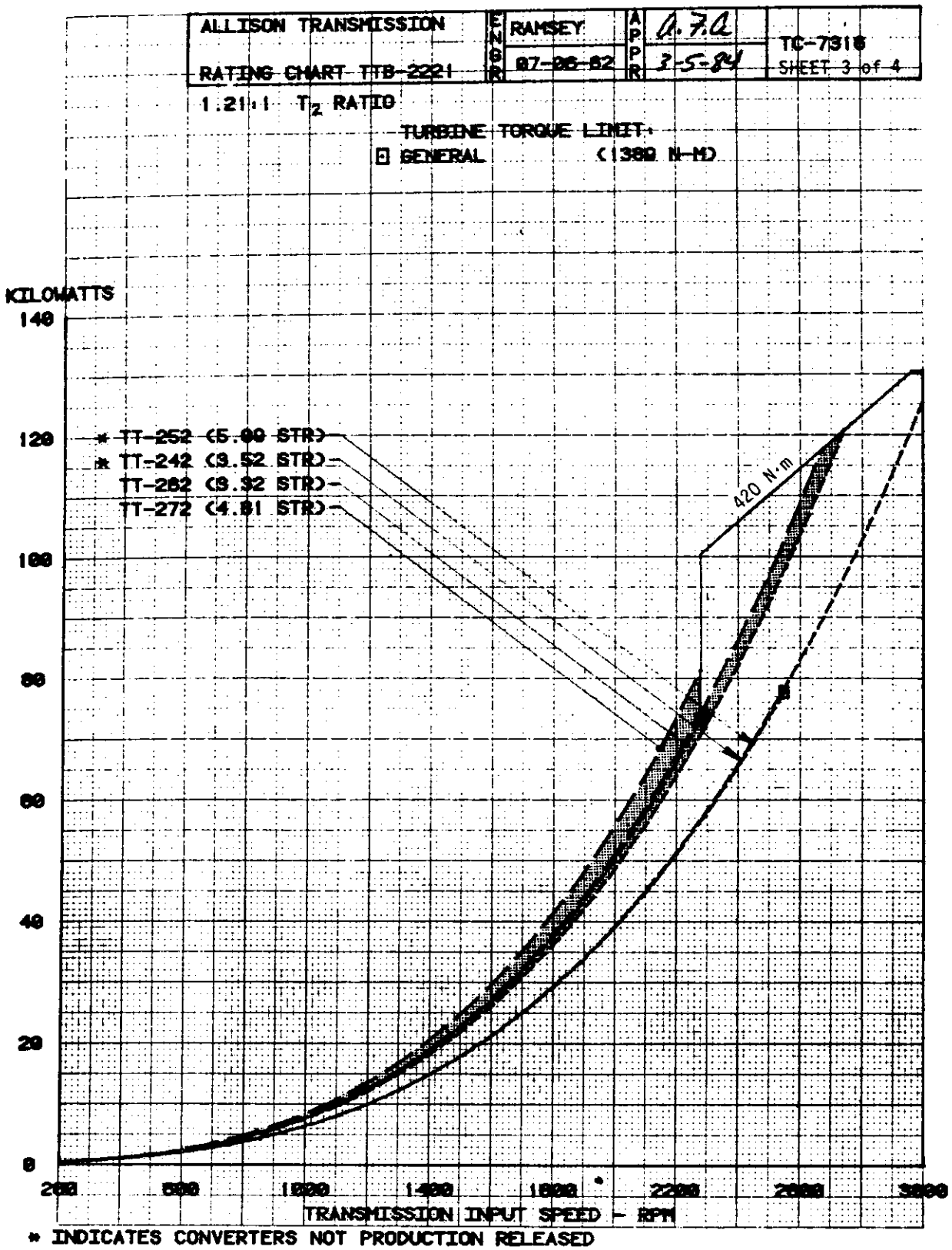
* INDICATES CONVERTERS NOT PRODUCTION RELEASED

REV. MCAHREN ,02-17-84

ALLISON TRANSMISSION	ENGR	RAMSEY	APPR	A.T.A	TC-7316
RATING CHART TTB-2221		07-26-82		3-5-84	SHEET 3 of 4

1.21:1 T_2 RATIO

TURBINE TORQUE LIMIT:
☐ GENERAL (1300 N-M)



* INDICATES CONVERTERS NOT PRODUCTION RELEASED

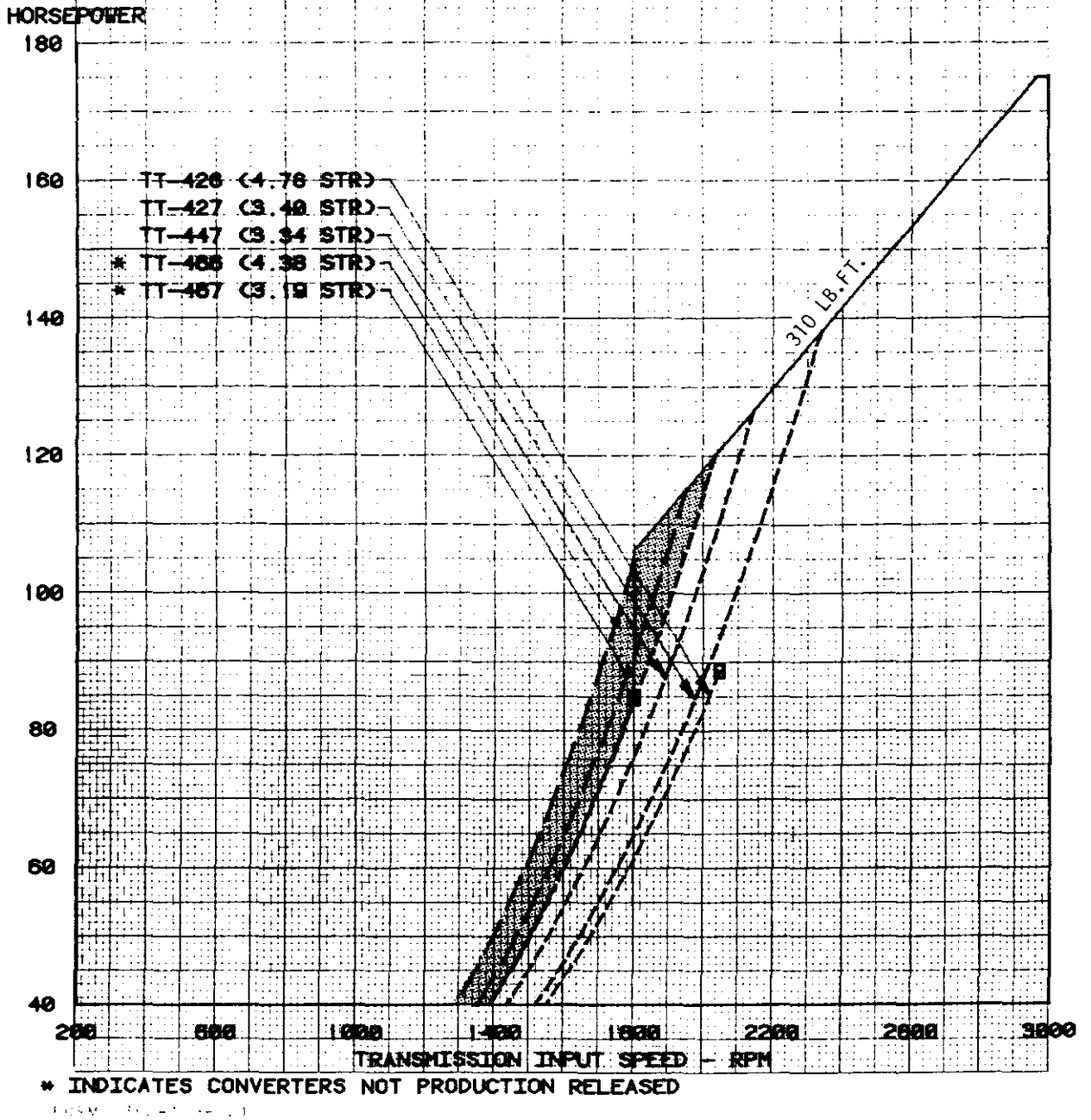
REV. MCAHREN ,02-17-84

ALLISON TRANSMISSION	ENGR	RAMSEY	APPR	A.F.A.	TC-7318
RATING CHART T(B)-2421		07-06-82		3-5-84	SHEET 4 of 4

1.21:1 T_2 RATIO

TURBINE TORQUE LIMIT

☐ GENERAL (1025 LB.FT.)



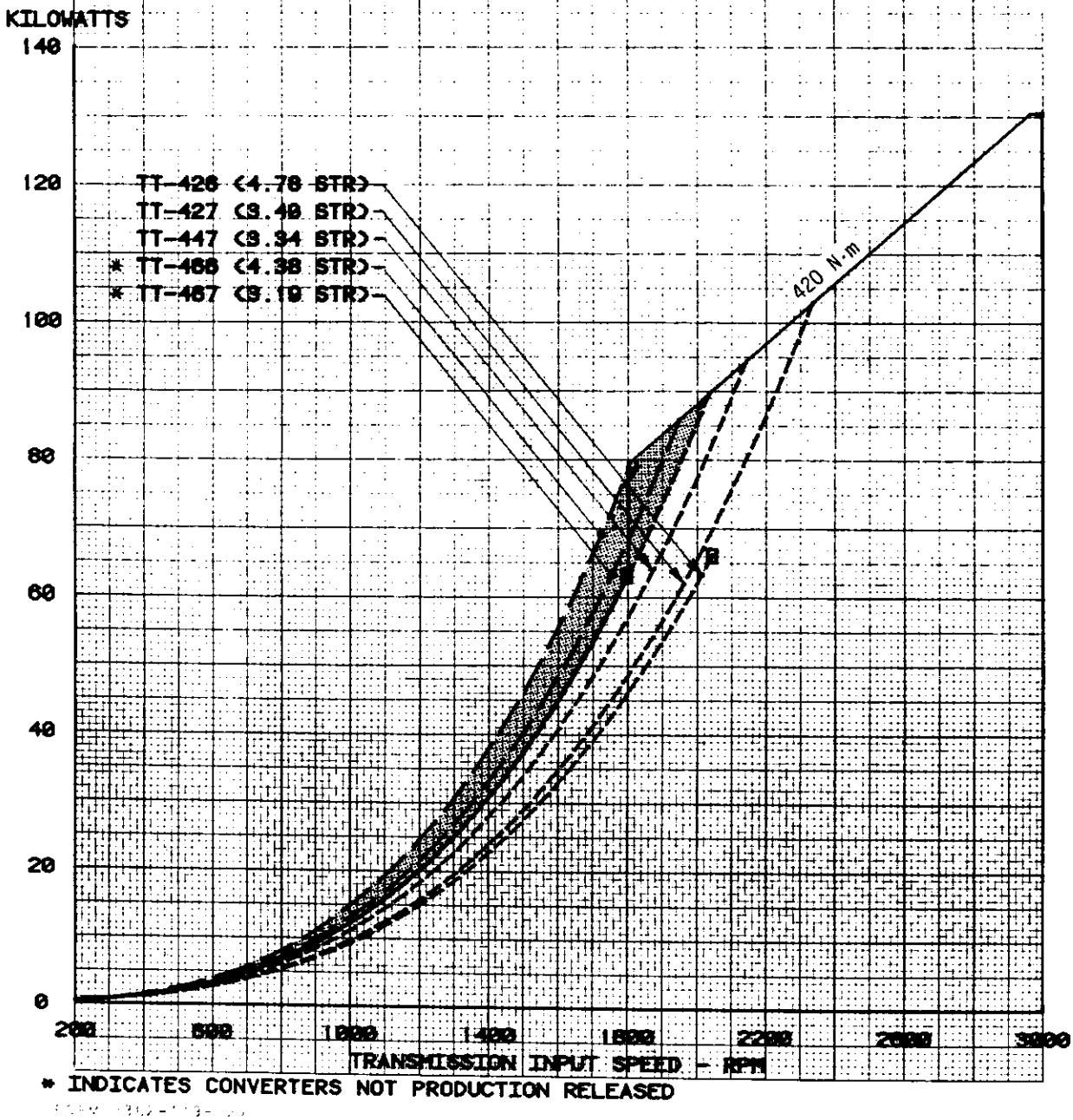
* INDICATES CONVERTERS NOT PRODUCTION RELEASED

REV. MCAHREN ,02-17-84

ALLISON TRANSMISSION	ENGR	RAMSEY	APPR	A.R.Q.	TC-7318,
RATING CHART TTB-2421		07-26-82		3-5-84	SHEET 4 of 4

1.21:1 T_2 RATIO

TURBINE TORQUE LIMIT:
☐ GENERAL (1389 N-M)



* INDICATES CONVERTERS NOT PRODUCTION RELEASED

III. SUPPORT EQUIPMENT

R This section describes the required support equipment for the cycling transmissions and lists the suppliers of these items. The reliability and warranty coverage of these components are the responsibility of the supplier. Components from sources other than DDA have been evaluated only for functional compatibility with the DDA product.

Engine Adaptation Pieces

DDA Adaptation Drawings describe the physical adaptations of our transmissions with the various engines manufactured.

Input and Output Yokes and Flanges: (Ref. AS 22-008, AS 22-034, AS 22-035)

Yokes and flanges can be purchased with the transmission as a specified option or directly from the flange manufacturer. Reference drawings for each of the following series of our transmissions and flange manufacturers are listed below:

Borg Warner
Mechanics Division
2020 Harrison Avenue
Rockford, IL 61101
Phone: (815) 398-3000

Twin Disc, Inc.
1340 Racine Street
Racine, WI 53403
Phone: (414) 634-1981

Dana Corporation
Heavy Duty Marketing Division
P.O. Box 321
Toledo, OH 43691
Phone: (419) 866-1841

Shift Controls: (Ref. AS 22-003, AS 22-016, AS 22-017, AS 22-021, AS 22-026)

Bennett Enterprises, Inc.
2649 Manana Drive
Dallas, TX 75220
Phone: (214) 351-9991

Weatherhead Company
Williams Air Control Division
14100 S.W. 72nd Avenue
Portland, OR 97223
Phone: (503) 639-3151

American Standard
Wabco Fluid Power Division
1953 Mercer Road
Lexington, KY 40505
Phone: (606) 254-8031

Clutch Cut-off Controls: (Ref. AS 00-027)

An air-actuated clutch cut-off feature is available as an option. A small air actuator is required to control the clutch cut-off feature.

Air Mite Devices, Inc.
4739 W. Montrose Avenue
Chicago, IL 60641
Phone: (312) 286-3393

Speedometer Drive: (Ref. AS 22-015)

Cycling transmissions use an SAE 5/32 heavy-duty drive.

Temperature and Pressure Gages: (Ref. AS 00-045)

Temperature and pressure gages are available with properly identified operating bands as shown on AS 00-045. The temperature gage is a capillary type with three different capillary lengths available. These gages may be ordered from DDA Service Parts:

R

Temperature Gage Part No.	Capillary Length
23010422	3.20-3.35 m 10'6"–11'0"
23010423	1.83–1.98 m 6'0"–6'6"
23010424	1.22–1.37 m 4'0"–4'6"

Pressure Gage: See AS 00-045

Neutral Start Switch: (Ref. AS 00-052)

These switches may be ordered from:

Part No.	Source
92102	Cole Hersee Company 22 Old Colony Avenue Boston, MA 02127 (617) 268-2100
21-380	Joseph Pollack Corporation 195 Freeport Street Boston, MA 02122 (617) 282-9550

The twin turbine transmissions have incorporated a provision for O.E.M. supplied neutral start switches since 1971. This provision is located on the control valve body on the end of the selector valve opposite the clevis connection, as shown on drawing AS 00-052. The selector valve has a raised land which lines up with the neutral start switch hole centerline to actuate the switch when in neutral position.

A design change has been made to this raised land on the selector valve that may affect the O.E.M. switch installation. The change as shown on the referenced drawing results in a larger "switch on" dimension (from .641 - .668 in. to .656 -.694 in.) which, depending on switch installation, may result in some switches not contacting in the neutral position. This is notification for all users of this provision to check their switch installation.

This change was made to reduce the "switch on" valve stroke range to assure clutch pressure will not be obtained with an activated switch. This condition can only occur with the valve out of detent due to stiff, worn or misadjusted linkage and is not possible with the valve in the detent position.

Effectivity of this change will be determined by the Transmission Sales department. The transmission effective serial number will be provided upon implementation.

Directional Signal Switch: (Ref. AS 22-003, AS 22-016, AS 22-017, AS 22-021, AS 22-026)

Sources:

Description	Vendor Part No.	Source
Transmission-mounted	S-1733-1500	Fasco Industries P.O. Box 2250 Shelby, NC 28150 Phone: (704) 482-9582

Connection parts, directional signal switch to vehicle wiring:

(1) shell	5297887	Packard Electric, GM P.O. Box 431 Warren, OH 44486 Phone: (216) 399-3020
(2) sleeves	5297052	
(2) clips	2965638	

Power Take-offs: (Ref. AS 22-003, AS 22-016, AS 22-017, AS 22-021, AS 22-026)

Dana Corporation
Power Equipment Division
P.O. Box 550
Chelsea, MI 48118
Phone: (313) 475-8641

Sperry Vickers Corporation
Tulsa Products Division
P.O. Box 6
Tulsa, OK 74115
Phone: (918) 836-3771

Heat Exchangers: (Ref. AS 00-051)

Heat exchanger manufacturers.

Oil to Water

American Standard
Heat Transfer Division
P.O. Box 1102
Buffalo, NY 14240
Phone: (716) 897-2800

Modine Manufacturing Co.
1500 DeKoven Avenue
Racine, WI 53401
Phone: (414) 633-2411

G & O Manufacturing Co.
138 Winchester Avenue
New Haven, CT 06508
Phone: (203) 562-5121

Perfex Group
500 W. Oklahoma
Milwaukee, WI 53207
Phone: (414) 744-1000

Sen-Dure Products, Inc.
Bay Shore, NY 11707
Phone: (516) 665-0689

Harrison Radiator Division, GM
200 Upper Mountain Road
Lockport, NY 14094
Phone: (716) 439-3066

Stewart-Warner Corporation
Southwind Division
1514 Drover Street
Indianapolis, IN 46221
Phone: (317) 682-8411

Heatex, Ltd.
2225 Lapierre St.
LaSalle 660, Quebec, Canada
Phone: (514) 365-6100

Young Radiator Co.
2825 Four Mile Road
Racine, WI 53404
Phone: (414) 639-1010

Oil to Air

Dunham Bush, Inc.
Riverside Division
1850 Massachusetts Avenue
Riverside, CA 92507
Phone: (714) 684-0991

Hayden, Inc.
1531 Pomona Road
Corona, CA 91720
Phone: (714) 735-4900

Karmazin
3776 Eleventh Street
Wyandotte, MI 48192
Phone: (313) 282-3776

External Main Circuit Oil Filters: (Ref. AS 22-004)

AC Spark Plug Division GM
1300 N. Dart Highway
Flint, MI 48556
Phone: (313) 766-5000

Schroeder Corporation
101 Nichol Avenue
McKees Rock, PA 15136
Phone: (412) 771-4810

Parking Brake: (Ref. AS 22-003, AS 22-016, AS 22-017, AS 22-021, AS 22-026)
A parking brake is available as an option with the transmission or may be purchased separately from the brake manufacturer.

Bendix
Automotive Controls Systems Group
401 North Bendix Drive
South Bend, IN 46634
Phone: (219) 237-2100

Rockwell International
Aftermarket Sales, Brakes
Troy, MI 48084
Phone: (313) 435-1382
(For nearest Rockwell Brake Distributor)

Auxiliary Heater
Auxiliary heaters can be adapted to the cycling transmissions.

Kim Hotstart Mfg. Co.
East 5724 Broadway, Box 42
Spokane, WA 99210
Phone: (509) 534-6171

General Electric (Calrod)
Industrial Heating Products
One Progress Road
Shelbyville, IN 46176
Attn: Sales Manager
Phone: (317) 398-4411

Phillips Manufacturing Co.
8200 Grand Avenue, South
Minneapolis, MN 55420
Phone: (612) 888-4105

Dipstick and Filltube: (Ref. AS 22-003, AS 22-016, AS 22-017, AS 22-021, AS 22-026)
Contacts for special dipstick and filltube designers are listed below:

Estan Manufacturing Company
32053 Howard
Madison Heights, MI 48071
Phone: (313) 588-1137

Moeller Manufacturing Company
Greenville, MS 38701
Phone: (601) 335-2326

IV. INSTALLATION DRAWINGS

The Detroit Diesel Allison APPLICATION SPECIFICATION (AS) drawings for the TT 2000 series transmissions have been revised and updated to include the latest available information.

The TT 2000 series transmissions are represented by a basic installation drawing for long, AS 22-003, and short, AS 22-021, dropbox versions. The various other models have installation drawings which reference one of these drawings in order to prevent duplication of information.

Figure 1 shows major differences of the various TT 2000 models and references the basic drawing numbers.

Table 1 is a numerical listing of all the TT 2000 Series AS Drawings. The title of the drawing and code for its applicable transmission model can be cross referenced.

New drawings are being created with SI METRIC units. English units were used in the past on AS drawings. However, these are being converted as drawings come up for revision in order to follow the trend toward universal measurement.

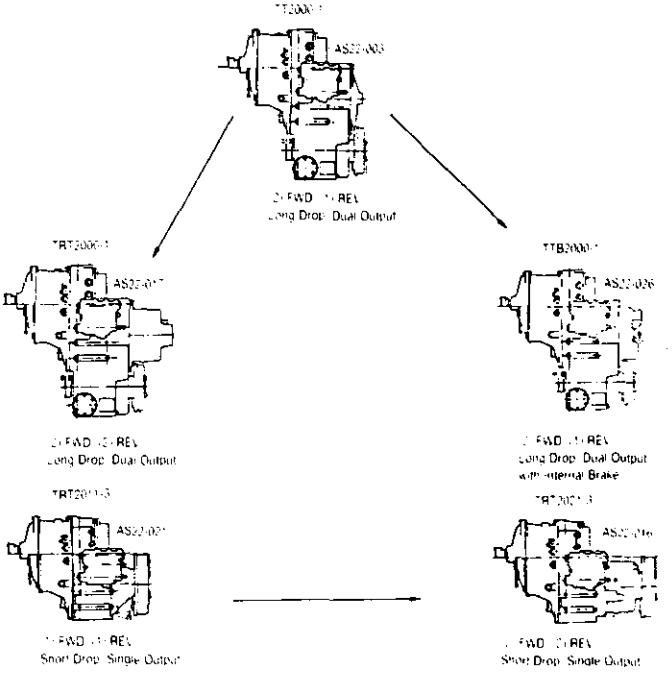


Figure 1 The TT2000 Series and Basic Drawings Reference

Table 1 TT 2000 Installation Drawings

Drawing Number	Drawing Title	Applicable Model Codes
		A = TT 2000-1 B = TRT 2000-1 C = TTB 2000-1 D = TRT 2021-3 E = TRT 2011-3
AS 00-004	Single Filter Installation Data:	A, B, C, D, E.
AS 00-016	Flexplate Drive Data:	A, B, C, D, E.
AS 00-026	Shift Tower Gating Patterns:	A, B, C, D, E.
AS 00-027	Air-actuated Clutch Cutoff:	A, B, C, D, E.
AS 00-028	Inching Control Valve Body:	A, B, C, D, E.
AS 00-036	Flexdrive Characteristics:	A, B, C, D, E.
AS 00-045	Off-highway Transmission Gages:	A, B, C, D, E.
AS 00-051	Cooler Oil Flow Data:	A, B, C, D, E.
AS 00-052	Neutral Start Switch Provision:	A, B, C, D, E.
AS 22-003	TT 2000-1 Basic Installation, Hydraulic Clutch Cutoff:	A.
AS 22-004	External Hydraulic Circuit Requirements:	A, B, C, D, E.
AS 22-008	Drive Flange Option:	A, B, C, D, E.
AS 22-015	TRT 2000-1 Speedometer Drive Option:	A.
AS 22-016	TRT 2021-3 Basic Installation:	D.
AS 22-017	TRT 2000-1 Basic Installation:	B.
AS 22-021	TRT 2011-3 Basic Installation:	E.
AS 22-026	TTB 2000-1 Converter-driven PTO and Service Brake	C.
AS 22-027	Inching Valve Characteristics:	A, B, C, D, E.
AS 22-028	T(R)T, TTB 2000-1 Implement and Steer Pump Clearance:	A, B, C.
AS 22-029	TRT 2000-3 Implement and Steer Pump Clearance:	D, E.
AS 22-030	Implement Pump Mounting Flange and Spline:	A, B, C, D, E.
AS 22-031	Steer Pump Mounting Flange and Spline:	A, B, C, D, E.
AS 22-034	T(R)T, TTB 2000-1 Drive Flange Recommendations:	A, B, C.
AS 22-035	TRT 2000-3 Drive Flange Recommendations:	D, E.
AS 22-036	Ground-driven PTO:	A.

REFERENCE

Manuals

SA 1277 TT, TTB 2000 Service Manual
SA 1248 TT, TRT, TTB 2000 Parts Catalog
SA 1280 TRT 2000 Service Manual
SA 1336 TT, TRT, TTB 2000 Operators Manual

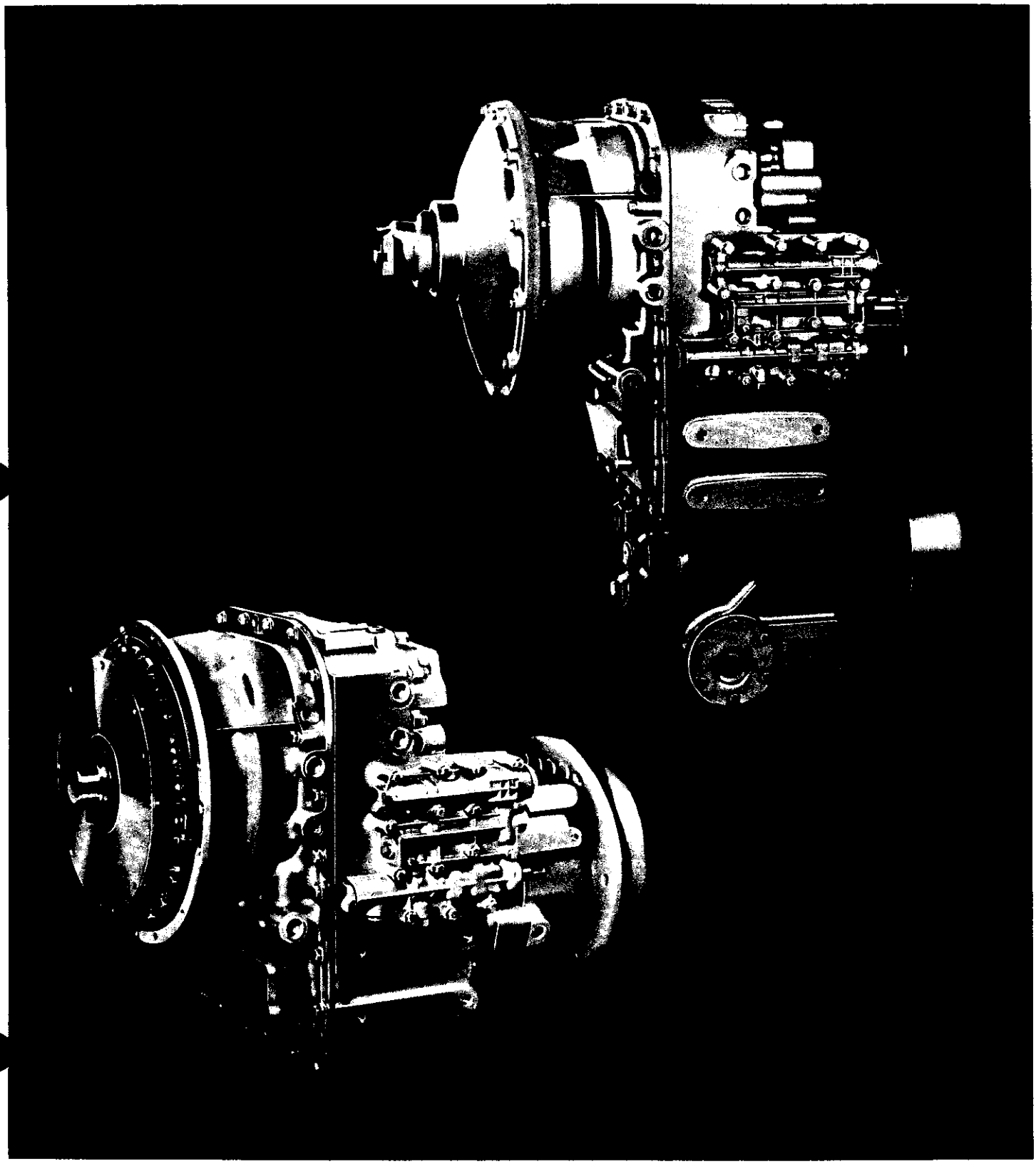
Prepared and distributed by Sales Development, J5, Detroit Diesel Allison, P.O. Box 894, Indianapolis, Indiana 46206.

Allison Transmissions

cycling models

TT, TRT, TTB 2000 Series

up to 175 NHP (130 kW)



specifications

rating

Input power, max. net	175 hp (130 kW)
Input torque, max. net	310 lb ft (420 N•m)
Input speed max.	3000 rpm

rotation

Input (viewed from input)	Right hand
Double Output (-1 model) (viewed from input)	Right hand (forward ranges)
Single Output (-3 model) (viewed from input)	Left hand (forward ranges)

speeds

	TT(B) 2221, 2421	TRT 2221, 2421	TRT 2211, 2411
Forward	4	4	2
Reverse	2	4	2

mounting

Direct	SAE #3 dry converter housing with flex plate drive; 2 side mounting pads & cradle mounting recommended
Remote	Input flange or Torqmatic® coupling, 2 side mounting pads

torque converter

Type: 2-phase, 4-element, twin turbine with automatic phase transition.

Stall torque ratios

Standard .826:1 T_2 Ratio	Optional 1.211:1 T_2 Ratio
TT 220-5.47:1	TT 252-5.09:1
TT 240-5.44:1	TT 262-3.32:1
TT 260-5.11:1	TT 272-4.81:1
TT 270-6.97:1	TT 426-4.78:1
TT 425-5.19:1	TT 427-3.40:1
TT 444-6.79:1	TT 447-3.34:1
TT 445-4.92:1	
TT 465-4.67:1	

gearing

Type:	
Range gears	Constant mesh, spur, planetary
Transfer gears	Constant mesh, spur, in-line

.826:1 T_2 Ratio*				Transmission Model	(1.211:1 T_2) Ratio*			
Forward		Reverse			Forward		Reverse	
Low	High	Low	High		Low	High	Low	High
2.663:1	.699:1	1.964:1	—	TT(B)-2221-1, 2421-1	3.902:1	1.024:1	2.878:1	—
2.029:1	.699:1	1.964:1	—	TT(B)-2221-1, 2421-1	2.973:1	1.024:1	2.878:1	—
2.153:1	.566:1	1.588:1	—	TT(B)-2221-1, 2421-1	—	—	—	—
2.398:1	—	2.321:1	—	TRT-2211-3, 2411-3	—	—	—	—
2.029:1	.736:1	1.964:1	.712:1	TRT-2221-1, 2421-1	2.973:1	1.079:1	2.878:1	1.043:1
6.612:1	2.398:1	6.398:1	2.321:1	TRT-2221-3, 2421-3	9.689:1	3.514:1	9.375:1	3.401:1
2.398:1	.826:1	2.321:1	.799:1	TRT-2221-3, 2421-3	—	—	—	—

*Does not include torque converter ratio

clutches

Hydraulically-actuated, spring-released, oil-cooled, multidisk and automatically wear compensating

internal service brake (optional TTB models)

Type	Hydraulically applied, multidisk, self-adjusting, oil cooled
Rating	3000 lb. ft. (4068 N•m) at transmission output shaft with 1500 psi (10,342 kPa) max. brake apply pressure
Cooling	Forced oil flow
Hydraulic brake fluid	SAE J70. type 70R1 or 70R3

parking brake (optional)

	(-1 models)
Type	Internal expandable shoe
Size	10 in x 1.5 in (254 x 38mm)
Rating	Max. intermittent, burnished 30,000 lb in (3389N•m) @ 1500 lbs (6672N) apply force. Brake supplied unburnished.
	(-3 models)
Type	Drum
Size	13.4 in x 2 in (340 x 51mm)
Rating	Max. intermittent, burnished 45,000 lb in (5084N•m) @ 2100 lbs (9341N) apply force. Brake supplied unburnished.

power takeoff

(TTB only)

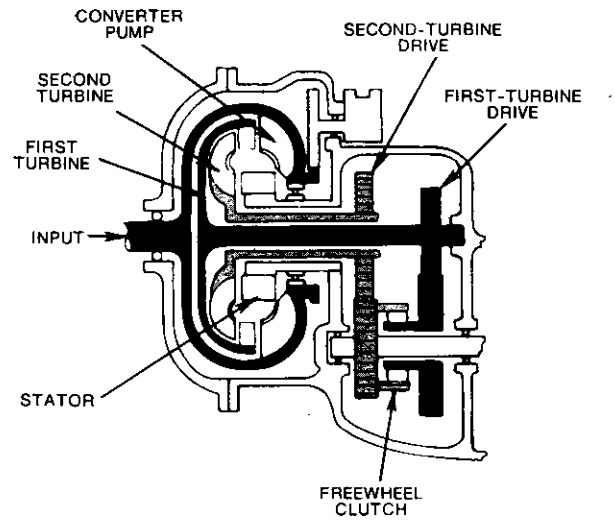
Implement pump drive	
Rating	110 hp (82 kW) max. intermittent power @ 2000 to 3000 rpm 90 hp (67 kW) max. continuous power @ 2000 to 3000 rpm
Mounting pads	SAE C 2/4 bolt; SAE B 2 bolt
Spline Size	SAE C, B (reducer), SAE BB (1:1 ratio only)
Ratios	.91 × engine speed (std.); 1.00 × engine speed (optional)
Accessory drive	
Rating	30 hp (22 kW) max. continuous power @ 2000 to 3000 rpm
Mounting pad	SAE A 2 bolt
Spline size	SAE A or B
Ratios	.91 × engine speed (std.); 1.00 × engine speed (optional)
Emergency steer PTO (TT only)	
Rating	30 hp (22 kW) max. continuous power @ 2000 to 3600 rpm
Mounting pad	SAE A 2 bolt
Spline size	SAE A
Ratios	.846 × output speed or .684 × output speed, depending on gear ratios of transmission
Converter-driven	
Rating	Continuous—full input hp
Speed	Same as range gear input
Coupling flange	Spicer 1410, Rockwell 4N plain
Ratios	1.211 x converter turbine speed (std) .826 x converter turbine speed (opt)

twin-turbine principle

The 2001 Series contain a twin-turbine torque converter. Essentially, this is a unit which has two turbines, one inside the other. Each turbine drives a different combining gear which drives the forward-reverse range gears.

When the load is started, oil flow within the converter causes the first turbine to turn, driving a low speed combining gear which, in turn, drives the range gears. As the load is reduced, due to increased vehicle movement, the higher velocity oil flow reaches the second turbine and causes it to turn. This drives the range gears through a higher speed combining gear. (The first turbine and its combining gear freewheel when the second turbine is operating at higher speeds.)

The result is automatic 2-speed performance from the torque converter. When this is combined with two speeds in the range gearing, you get 4-speed performance. Yet the operator only has two forward (and one or two reverse) shift lever positions to select.



'soft shift' system

Smooth shifting at full power while changing direction of travel is the direct benefit of the Soft Shift system—a standard feature with all cycling transmissions.

Soft Shift is a system of orifices and a trimmer in the main control valve body which modulates pressure to a new dual-area piston providing a progressive apply force on the clutch. The metered flow of oil controls the torque peak automatically during clutch engagement. With Soft Shift, there is no more slowing down to shift, no more dangerous stalls. Shift shock is reduced, because . . .

SOFT SHIFT CONTROLS THE POWER.

This twin-turbine transmission, together with Soft Shift, offers an impressive array of advantages, including: faster hydraulic action, increased torque capacity; longer brake life; reduced cycle time.

skidmatic for logging

A special TTB version, known as "Skidmatic" is designed specifically for skidding logs. Besides the internal service brake that is "wood's proof," it has an integral, converter-driven PTO for winching on the fly so that the winch line is protected hydraulically from shock and whip. The TTB 2001 transmission is particularly adaptable to cycling applications—such as front end loaders and fork lifts—where adverse operating conditions render the service brakes inoperable. The TTB 2001 series provides for two engine-driven accessory PTO's—supplying power takeoff for hydraulic pumps, for steer or dozer blade control, or for any other accessory. Most important is an integral, multi-disk hydraulic service brake, enclosed and protected by the transmission housing. It is self-adjusting and oil cooled during application. With the mechanical brake at the rear output, two independent braking systems assure maximum safety.

specifications (cont.)

control valve body	Types	Mechanical, hydraulic, pneumatic or inching control	
oil system	Oil type Capacity (less external circuits) Filter	Hydraulic transmission fluid, type C-3 6.5 U.S. gals (32 liters) (-1 model); 6.5 U.S. gals. (25 liters) (-3 model) Customer furnished, remote mounted	
size		Basic -1 model	Basic -3 model
	Length, max. approx		
	TTB Series	37.10 in (942 mm)	—
	TT Series	36.06 in (916 mm)	—
	TRT Series	39.69 in (1008 mm)	39.26 in(997 mm)
	Width, max. approx	19.36 in (492 mm)	19.36 in (492 mm)
	Height, max. approx	34.70 in (881 mm)	24.23 in (615 mm)
	Weight, max. approx	760 to 935 lbs (345 to 424 kg)	660 to 755 lbs (299 to 342 kg)

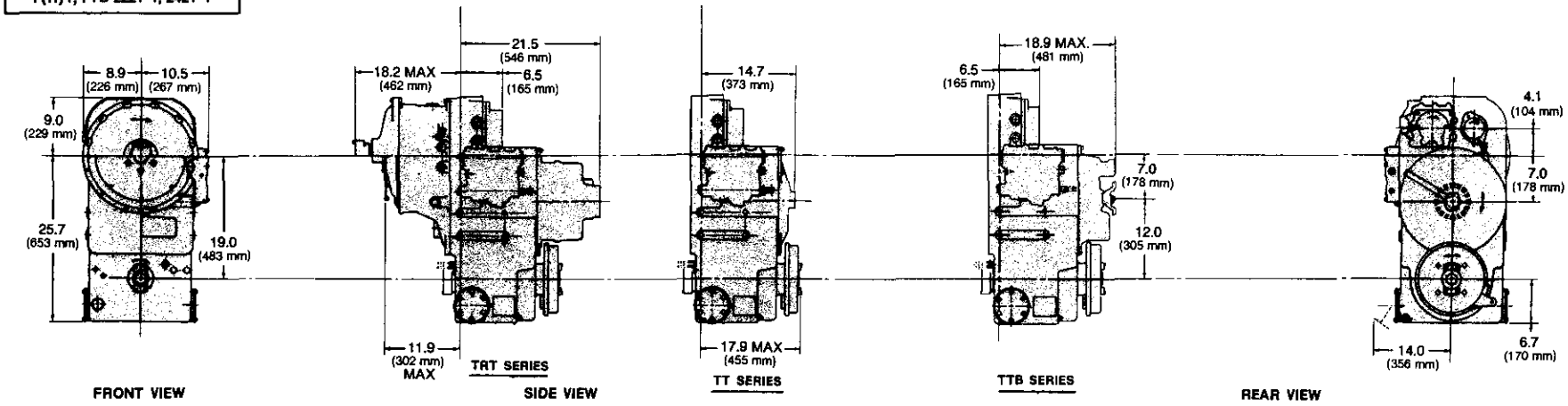
Note: All data and specifications subject to change without notice.

design features and options

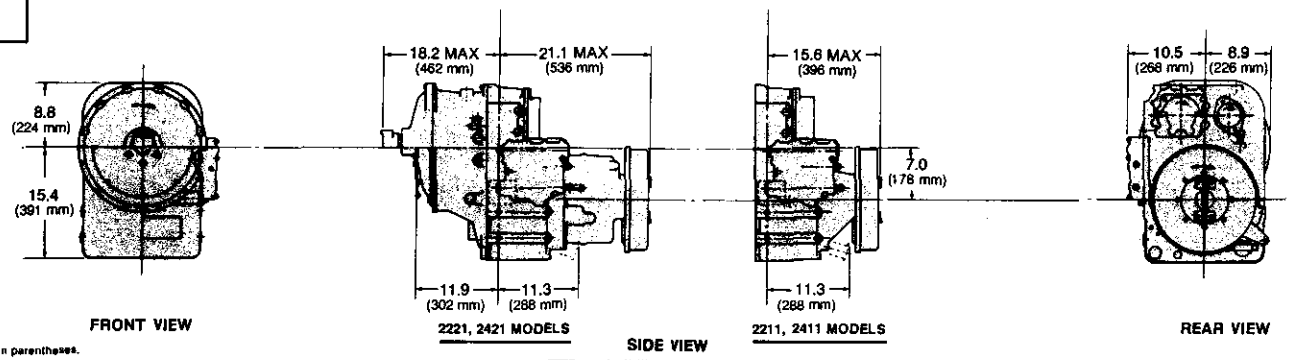
- Transmission direct or remote mounted
- Torqmatic® coupling
- Wet or dry direct engine mounting adaptations
- Choice of input and output flanges
- Internal service brake (TTB only)
- Log skidder converter driven PTO provision
- Front output disconnect
- Parking brake
- Wet or dry implement pump drive splines
- Choice of accessory drive splines
- Magnetic speed pickup provision
- Neutral start provision
- Forward and reverse pressure taps

mounting dimensions

T(R)T, TTB 2221-1, 2421-1



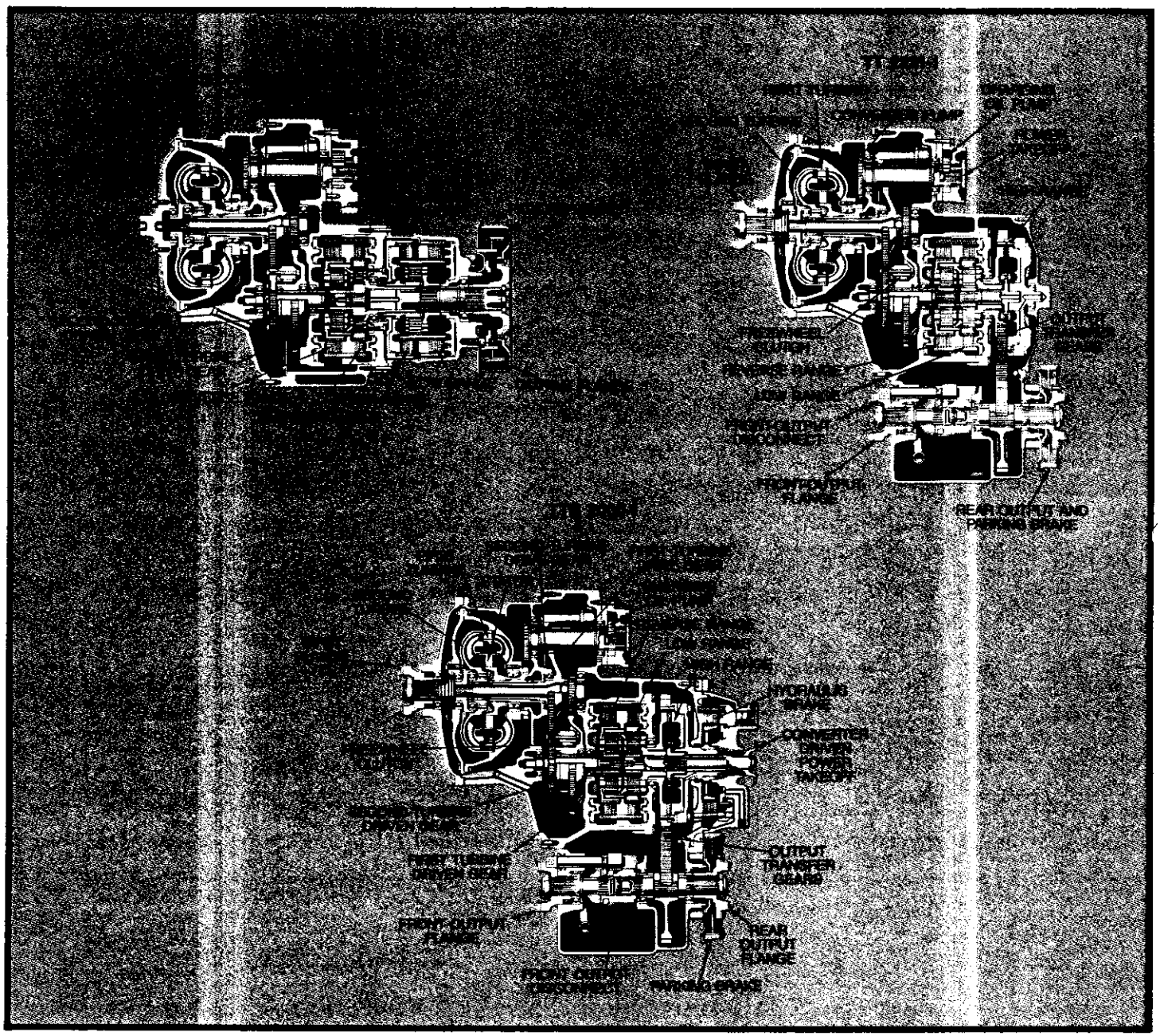
TRT 2211-3, 2411-3 2221-3, 2421-3



Note: Dimensions are given in inches with metric value in parentheses.

TT, TRT, TTB 2000 series cycling transmissions

Applications for this series transmission are as varied as the number of cycling vehicles and vocations. Typical applications include wheel loaders, material handlers, self-propelled cranes, rail equipment and winches.



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Detroit Diesel Allison

Detroit Diesel Allison
Division of General Motors
P.O. Box 894, Indianapolis, Indiana 46206
(317/242-5000)

SA 1610 10/82

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TOTAL UPDATE

Revised
Date 8/84 No. 77

3000 SERIES CYCLING TRANSMISSIONS

I. PRODUCT DESCRIPTION

The TT 3000 Series powershift transmission is designed primarily for cycling applications using up to 142 kW (190 hp) net power.

The TT 3000 Series was released to complement the existing twin turbine product line and better serve as a replacement for the CRT 3000 Series product line.

The TT 3000 Series incorporates a twin turbine converter, engine-driven PTO's, planetary gearing, hydraulic clutches, front and rear output, forward and reverse pressure taps, optional clutch cutoff or inching, and a provision for a neutral start switch. The TT 3000 Series has the same smooth, full-power directional shifting capability (soft shift), and the same 2-phase, 4-element converter with an automatic soft shift transition that has been successful in all other twin turbine transmissions.

Applications for this series of transmissions are as varied as the number of cycling vehicles and vocations. Examples are wheel loaders, material handlers, self-propelled cranes, rail equipment, and winches.

Basic Models:

T(R)T 3421-1

Model Designations and Definitions:

TRT 3421-1	Twin turbine converter
T**R**T 3421-1	Equal number of forward & reverse ranges
TR**T** 3421-1	Transmission
TRT **3**421-1	Transmission series
TRT 3**4**21-1	Converter capacity
TRT 34**2**1-1	Number of forward ranges
TRT 342**1**-1	Number of major changes since release
TRT 3421-**1**	With dropbox

RATINGS

Input Rating

T(R)T 3421-1:

Max. input speed	2800 rpm	
Max. net input torque*	508 N·m	(375 lb. ft.)
Max. net input power*	149 kW	(200 hp)

* Net, as installed: inlet restriction, exhaust restriction, alternator, fan, idle steer pump, idle implement pump, and air compressor to be deducted when applicable.

Turbine Shaft Rating:

T(R)T 3421 Applications:		Maximum Turbine Torque N·m (lb ft)	
Vocation	**SCAAN No.**	**.826:1 T, Ratio**	**1.21:1 T, Ratio**
General			
Wheel Loader	5110	2372 N·m (1750 lb ft)	1618 N·m (1194 lb ft)
Mine Haul	4040		
Tow Tractor	2400		
Forklift, (Rough terrain)	5220		
Log Handler	5230		
Skidder	5240		
Material Handler			
Forklift, (Hard surface)	5210	2561 N·m (1890 lb ft)	1748 N·m (1290 lb ft)
Mobile Crane	5600		
Heavy Duty			
Compactor, (Sanitary land fill)	5310	2073 N·m (1530 lb ft)	1423 N·m (1050 lb ft)

Rating Chart References:

T(R)T 3421 with T_2 Ratio = .826:1	TC-19094
T(R)T 3421 with T_2 Ratio = 1.21:1	TC-19094

PRODUCT DESCRIPTION

Torque Converter

The TT 3000 Series transmission provides a 2-phase, 4-element twin-turbine torque converter with automatic phase transition. The available converters and stall torque ratios are listed:

.826:1 T_2 Ratio Converters (to be used only with .826:1 T_2 transmission gear ratios):

Converter Model	Absorption Chart No.	Stall Torque Ratio
(TT 424)	TC-13870	6.70:1
TT 425	TC-8859	5.19:1
TT 444	TC-17710	6.79:1
TT 445	TC-8860	4.92:1
(TT 464)	TC-18854	6.72:1
TT 465	TC-9062	4.67:1

1.211:1 T_2 Ratio Converters (to be used only with 1.211:1 T_2 transmission gear ratios):

Converter Model	Absorption Chart No.	Stall Torque Ratio
(TT 426)	TC-11560	4.78:1
(TT 427)	TC-11561	3.40:1
TT 447	TC-11562	3.34:1
(TT 466)	TC-18918	4.40:1
TT 467	TC-18919	3.19:1

( ) indicates converter assembly is not production released, but parts are available.

Control Valve Body Assembly

A mechanically-actuated, hydraulic control valve body is used to provide a soft, powershift, range selection according to operator requirements. All shifts are modulated. Optional valve bodies are available for inching control and hydraulic or pneumatic clutch cut-off.

Gearing

Gear Data:

range gearing	constant-mesh planetary
transfer gearing	constant-mesh in-line
gear type	spur

Gear Ratios:

	.826:1 T_2		1.21:1 T_2	
	Low	High	Low	High
TT 3421-1				
F:	2.516:1	.699:1	3.687:1*	1.024:1
R:	2.320:1	–	3.398:1	–
F:	2:035:1	.565:1	2.982:1	.828:1
R:	1.876:1	–	2.748:1	–
F:	2.695:1*	.699:1	3.948:1*	1.024:1
R:	2.320:1	–	3.398:1	–
F:	2.179:1	.565:1	3.192:1	.828:1
R:	1.876:1	–	2.748:1	–

NOTE: To obtain overall transmission torque ratios, multiply the application torque converter ratio times the overall gear ratio. Converter T_2 and transmission T_2 gear ratios must be the same.

* Transmissions with these ratios are not production released, but parts are available.

Mounting

Direct.

Front Adaptation:	Modified SAE #3 converter housing with flexplate drive bolted to flywheel and converter hub piloted into flywheel.
Side Pads:	The transmission is supported strictly by side pads. There are eight 5/8-11 tapped holes in each pad corresponding to TT 3000 and TT 2000 mounting bolt hole locations. Cradle mounting between transmission side pads and engine flywheel housing pads is recommended.

Remote.

Input:	The front of the transmission is unmounted and enclosed. An input flange for shaft and universal coupling is required. A limited-stroke, TORQMATIC® coupling (torsional damper) is available.
Side Pads:	The transmission is supported by side pads. The center of gravity of the transmission is located within the side-pad bolt pattern.

Output Configuration

T(R)T 3000-1. This transmission series has two output locations available 482.6 mm (19 in.) below the input. The output shaft rotation is the same as the input rotation (as viewed from the input), clockwise. An optional disconnect is available for the front output.

Clutch Data

Type:	multidisk, hydraulically-actuated, spring-released, oil-cooled, and automatically wear compensating.

Speedometer Drive

Availability:	Optional on TT 3000-1 model only
Type:	SAE 5/32 heavy duty
Location:	Center of rear cover, see AS22-015

Speedo-drive Ratio to Output

	Transmission High Gear Ratio	
	.7 or 1.02	.57 or .83
Speedo Ratio:	.846	.684

Magnetic Speed Pickup Provision

Availability:	Standard on T(R)T 3000-1 models
Location:	Tapped port on barrel of main case (Ref. AS 32-001)
Thread Size:	.750-16NF3

System Specifications:

	Transmission Forward High Gear Ratio		
	.70, .91, 1.02,	or	.57, .83
Calibration, Ratio to Output:	.846		.684
No. of Gear Teeth:	52		57
Probe Length:	47.88 mm (1.885 in.)		32.00 mm (1.260 in.)

Parking Brake (optional)

	Description	Rating
TT 3421-1	254 x 38 mm (10 x 1.5 in.) expandable shoe, mechanichally applied.	3388 N·m (30,000 in. lb*) @ 6672 N (1500 lb) apply lever force
	254 x 76 mm (10 x 3 in.) DCM expandable shoe, mechanically applied.	5988 N·m (56,000 in. lb*) @ 6005 N (1350 lb) apply lever force, 165.1 mm (6.5 in.) lever.

*Burnished static rating. Brakes are supplied unburnished. Vendor indicates unburnished rating is 25% less than the burnished rating.

Special Operational Control Provisions

Neutral Start Provision. Provision for installation of a neutral start switch connected in series with the vehicle start system is standard on all models. Reference: Basic installation drawings and AS 00-052.

Forward and Reverse Pressure Taps. The transmission valve body has taps which supply either forward or reverse hydraulic pressure that can be used for special operational controls or indicators. Reference: Basic installation drawings.

Additional Major Features

- optional input and output flanges
- wet or dry implement PTO splines

SPECIFICATIONS

Weight Dry, approximate, depending on basic models and options:

Direct Mount, TT 3421-1	403 kg (888 lb)
Remote Mount (add)	18 kg (40 lb)
TRT Model (add)	65 kg (143 lb)
10 × 3" Parking Brake (add)	9 kg (20 lb)
10 × 1.5" Parking Brake (add)	4.5 kg (10 lb)
TORQMATIC® coupling (add)	16.5 kg (36 lb)
Drive Flange (add)	3 kg (7 lb)

Oil System

Oil Capacity. Less external circuits: 32 liters (8.5 U.S. gallons), initial fill.

Oil Filter. Customer furnished, remotely mounted from transmission. Reference AS 22-004 for filter circuit requirements.

Oil Type. Hydraulic transmission fluid, C-3.

Oil Pump. Input driven, positive displacement, gear type. No auxiliary lube feature limits vehicle weight to 19,090 kg (42,000 lb).

Main Pressure. At full throttle:

For wheel loader applications under 20,410 kg 45,000 lb:	930-1172 kPa 125-170 psi*
For all other applications:	1103-1344 kPa 160-195 psi*

*Main pressure in high range may be as much as 68.95 kPa (10 psi) lower than in other ranges. These pressures are established for a converter-out temperature range of 60-73.8°C (140-160°F). As converter-out temperature approaches 121°C (250°F), main pressure may drop as much as 103.4 kPa (15 psi).

Oil Temperature.

Max. Converter-out temperature:	135°C (275°F) continuous.

Power Take-off Provisions

Implement pump drive. Pad at rear of oil pump.

Standard ratio:	.909 × engine speed
Optional ratio:	1.000 × engine speed
Rating:	
Max. intermittent power, at 2000 to 2800 rpm:	90 kW (120 hp)
Max. continuous power, at 2000 to 2800 rpm:	67 kW (90 hp)
Mounting pad*:	SAE C-2/4 bolt
Shaft splines:	SAE C, B (reducer)

Accessory drive.

Standard ratio:	.909 × engine speed
Optional ratio:	1.000 × engine speed
Rating:	
Max. continuous power, at 2000 to 3000 rpm:	22 kW (30 hp)
Mounting pad*:	SAE B-2 bolt
Shaft splines:	SAE B

Emergency-steer PTO. Ground driven, available on TT 3000-1 models only:

Speed ratio:	.846 × output speed, or .684 × output speed, depending on transmission gear ratio.
Rating:	
Max. continuous power, at 2000 to 3600 rpm:	22 kW (30 hp)
Mounting pad*:	SAE A-2 bolt
Shaft splines	SAE A

*Customer-supplied gasket required to seal lubricated spline drive.

Selector Positions

TT 3000 Gear Ranges		TRT 3000 Gear Ranges
	Reverse High	R_2
R	Reverse Low	R_1
N	Neutral	N
F_1	Forward low	F_1
F_2	Forward high	F_2

TRANSMISSION RATING CHARTS

Allison transmission ratings are compatible with net engine power corrected to the SAE J1349 Engine Test Code. Therefore, when examining Allison transmission ratings against engines rated at some standard other than SAE J1349, it is important to determine whether an engine power correction is required.

Domestic engines are typically rated at SAE baseline conditions. The current rating standard is described by SAE J1349 Engine Test Code outlined below:

SAE J1349 ENGINE TEST CODE BASELINE

Condition	Metric	U.S.
Pressure-Total	100 kPa	29.61 in hg
Temperature	25°C	77°F
Vapor Pressure	1.0 kPa	.2961 in hg
Dry Baro Pressure	99 kPa	29.31 in hg
Dry Air Density	1.157 kg/m^3	.0722 lb/ft^3
Fuel Temperature	40 ± 3°C	104 ± 5.4°F

The following information provides a guide for adjusting naturally aspirated 4-cycle diesel engines to the SAE J1349 baseline. These adjustment guidelines are not applicable to 2-cycle diesel or spark ignition engines. It is recommended the specific engine manufacturer be consulted for corrected performance data.

ENGINE ALTITUDE AND TEMPERATURE BASELINE

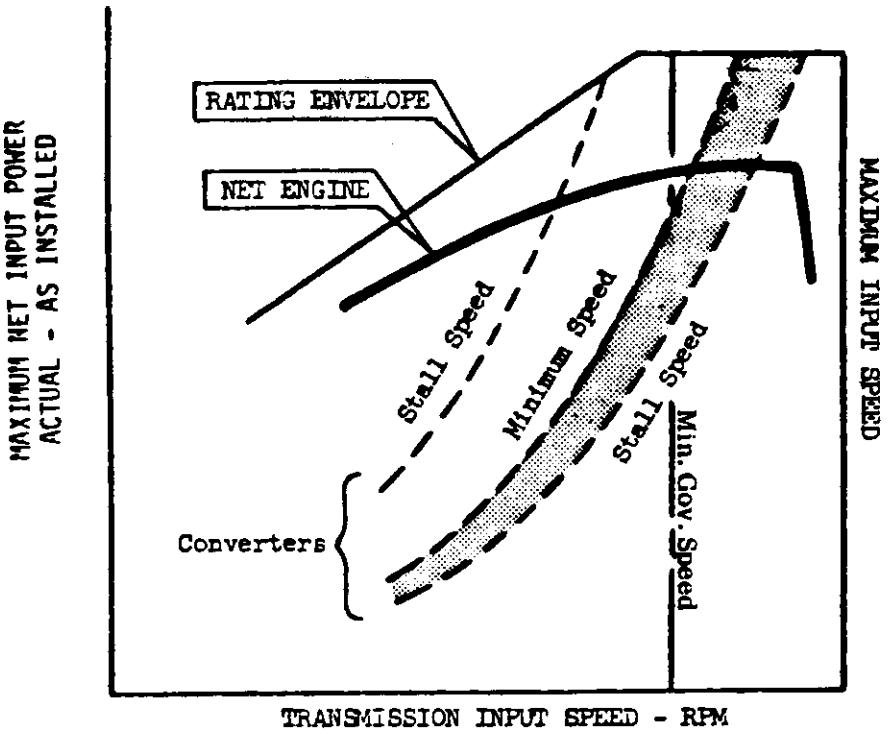
Rating Standard	Altitude Metre (Ft.)	Temperature °C (°F)	Power Modification for Adjusting Naturally Aspirated 4-Cycle Diesel Engines to SAE J1349
DIN 6270	305 (1000)	20.0 (68)	+0.5%
DIN 70020	Sea Level	20.0 (68)	-2.5%
BS AU141	Sea Level	20.0 (68)	-2.5%
BS 649	152 (500)	29.4 (85)	+1.0%
SMMT	152 (500)	20.0 (68)	-1.0%
Japanese Ind.	Sea Level	20.0 (68)	-2.5%
Gost-Russian	Sea Level	20.0 (68)	-2.5%

For performance at higher altitudes and temperature it is customary to derate engine power 3% for each 1000 ft elevation and 1% for each 10° F increase in temperature. Most advertised performance for Turbo-Charged Engines is depicted as being applicable up to a specific altitude and temperature. Therefore, these correction factors are to be used only when the engine operates at altitude or temperature that exceeds the maximum applicable limits.

Note: These 4-cycle diesel altitude and temperature power correction factors are to be used only in the absence of engine manufacturer supplied data.

TRANS. MODEL	CHART REF/DATE	REVISION
T(R)T-3220	TC-14902, 1-17-84	o REMOVED
T(R)T-3420	TC-14902, 2-17-84	o REMOVED
T(R)T-3421	TC-19094, 3-5-84	o ADDED NEW SHEET 1.21 T_2 RATIO

TYPICAL RATING CHART



A typical rating chart consists of a solid line envelope expressed in terms of power and speed, and a series of dotted lines each representing the capacity characteristics of the converters used in the transmission. In some instances, because of the converter's speed characteristics, the converter is defined by a band shown by dual dotted curves in which case the first line of the band represents the minimum speed characteristics and the second line the stall speed.

All rating charts carry a maximum input (governed) speed rating, whereas only a few have a minimum governed speed limit. In these cases, the full load governed speed of the engine must fall on or above the minimum governed speed line but cannot exceed the maximum input speed rating.

To determine whether a given engine is within the rating of a converter and transmission, the net engine curve must be plotted on the rating chart as follows:

- Correct gross engine to SAE J1349 baseline and deduct engine accessories.
- Plot this net engine power curve (corrected power less accessories) on converter or transmission rating chart.
- Investigate converter and lockup operation in the following manner after selecting proper converter.

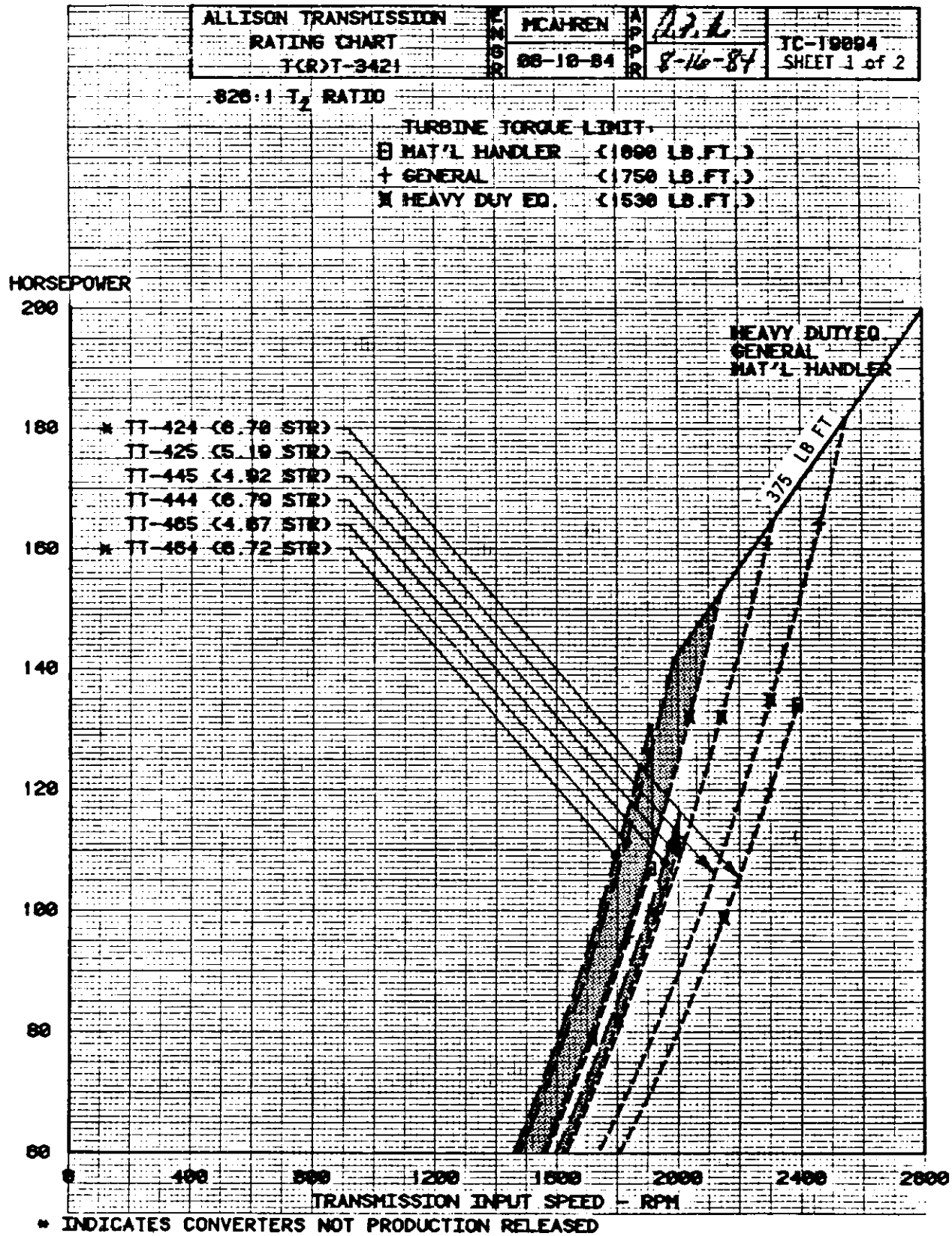
  CONVERTER OPERATION (All Transmissions)

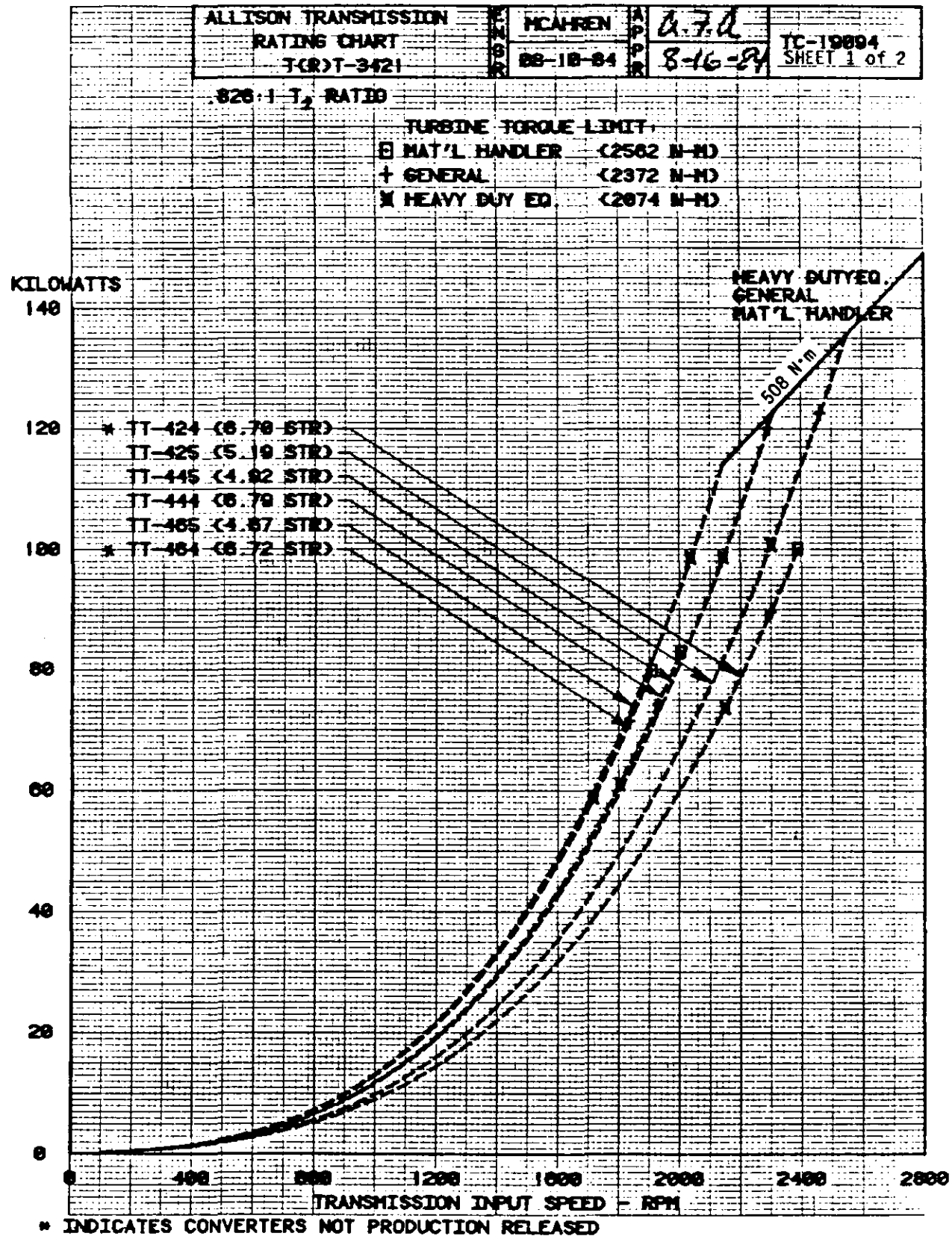
  The net engine power curve must intersect the converter stall line within the envelope as defined by the solid line envelope.

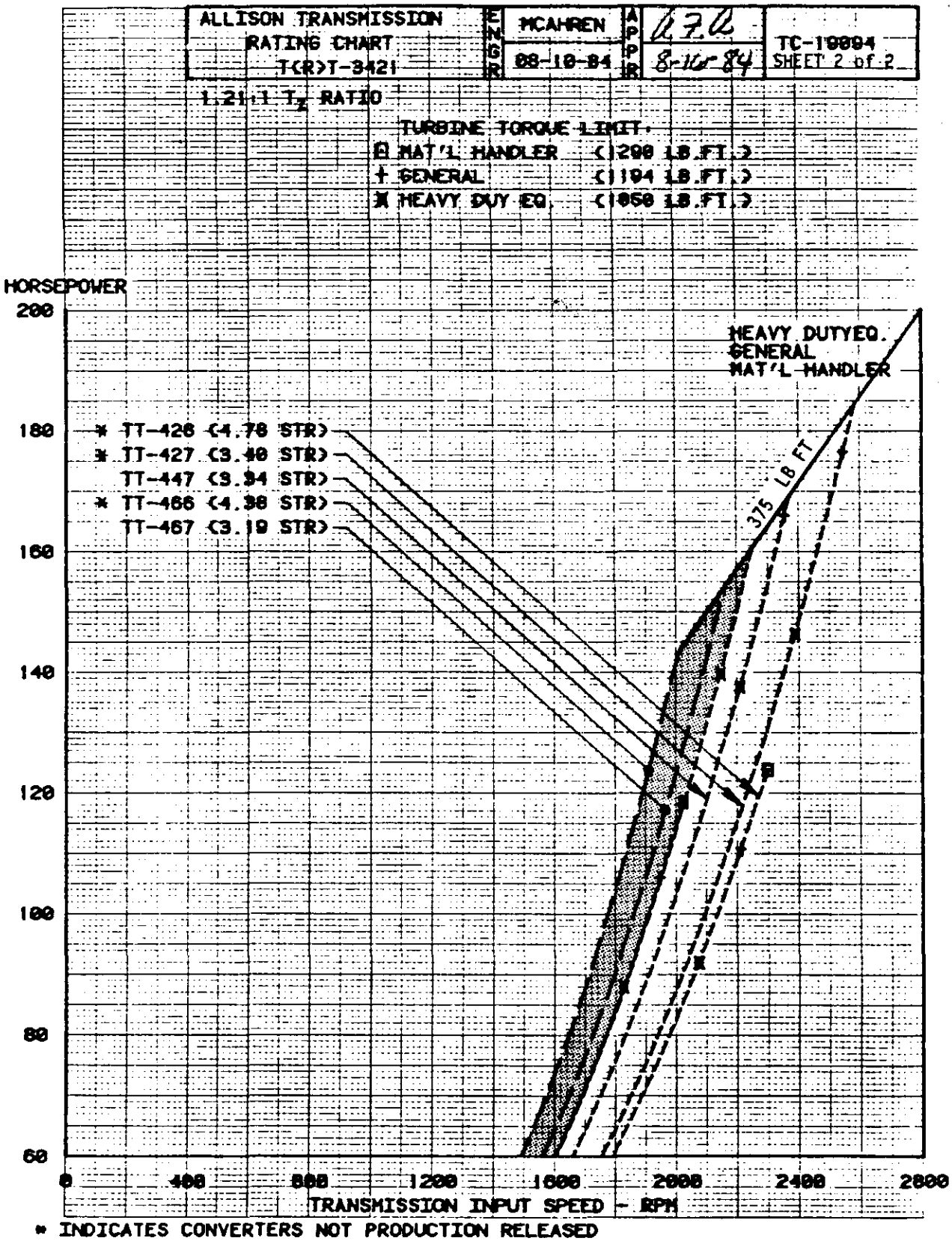
  If the converter speed characteristics are represented by a band (shaded area), the power curve of the engine must intersect both lines of the converter within the rating envelope.

  LOCKUP OPERATION (Transmissions with Lockup)

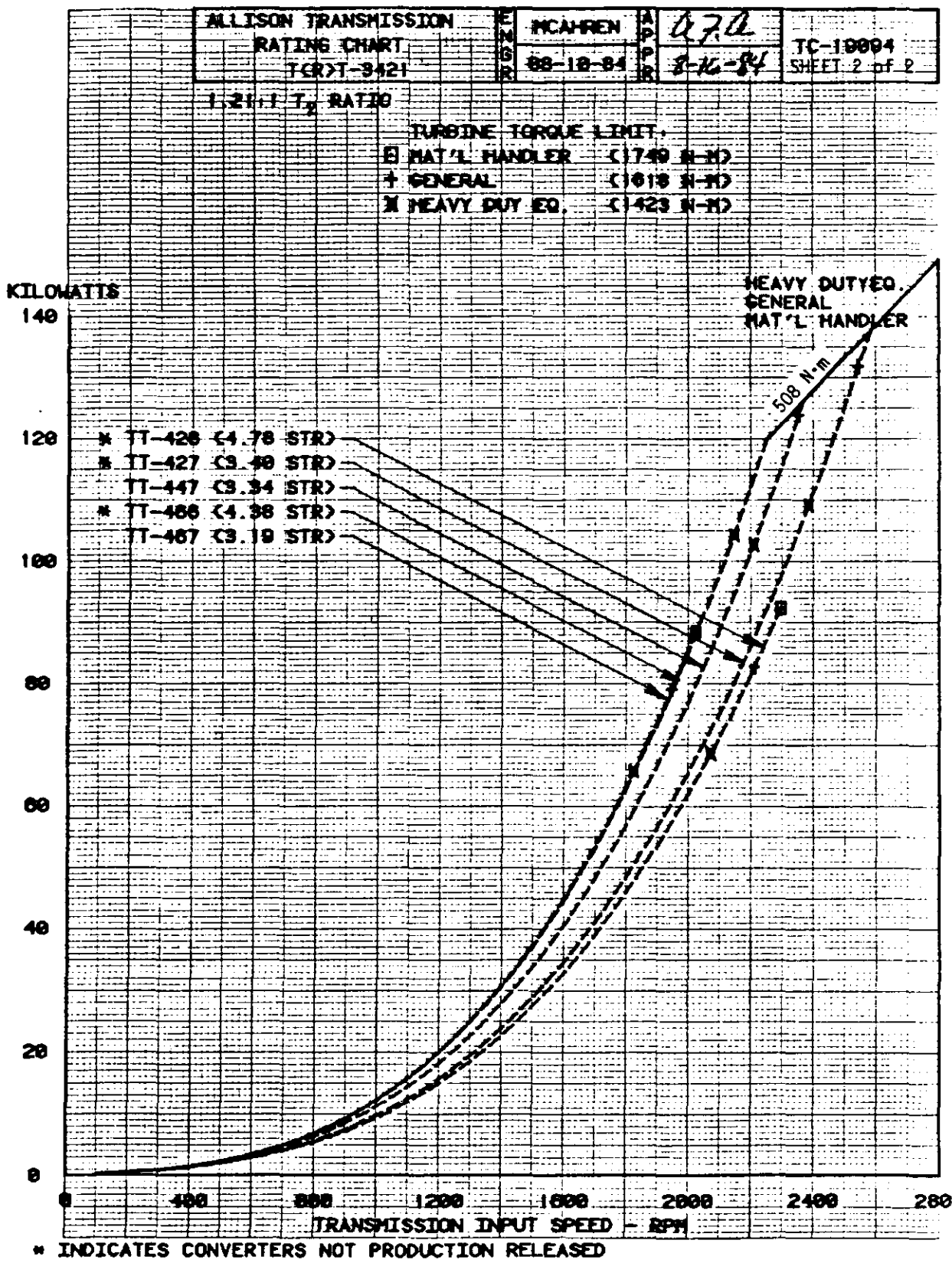
  The engine power curve must fall below the solid-line envelope for all speeds defined by the rating envelope.


ALLISON TRANSMISSION
RATING CHART
T(R)T-3421
ENGR
MCAHREN
08-10-84
APPR
8-16-84
TC-19084
SHEET 1 of 2
.826:1 T_2 RATIO
TURBINE TORQUE LIMIT:
MAT'L HANDLER (1800 LB.FT.)
GENERAL (1750 LB.FT.)
HEAVY DUY EQ. (1530 LB.FT.)
HORSEPOWER
200
180
160
140
120
100
80
60
HEAVY DUTY EQ.
GENERAL
MAT'L HANDLER
375 LB FT
* TT-424 (6.70 STR)
TT-425 (5.19 STR)
TT-445 (4.92 STR)
TT-444 (6.79 STR)
TT-465 (4.87 STR)
* TT-464 (6.72 STR)
0
400
800
1200
1600
2000
2400
2800
TRANSMISSION INPUT SPEED - RPM
* INDICATES CONVERTERS NOT PRODUCTION RELEASED


ALLISON TRANSMISSION
RATING CHART
T(R)T-3421
ENGR
MCAHREN
08-18-84
APPR
8-16-84
TC-19094
SHEET 1 of 2
.826:1 T_4 RATIO
TURBINE TORQUE LIMIT:
⊡ MAT'L HANDLER (2562 N-M)
+ GENERAL (2372 N-M)
⊠ HEAVY DUY EQ. (2074 N-M)
KILOWATTS
140
120
100
80
60
40
20
0
* TT-424 (6.70 STR)
TT-425 (5.19 STR)
TT-445 (4.82 STR)
TT-444 (6.79 STR)
TT-465 (4.87 STR)
* TT-464 (6.72 STR)
HEAVY DUTYEQ.
GENERAL
MAT'L HANDLER
508 N·m
0
400
800
1200
1600
2000
2400
2800
TRANSMISSION INPUT SPEED - RPM
* INDICATES CONVERTERS NOT PRODUCTION RELEASED



* INDICATES CONVERTERS NOT PRODUCTION RELEASED


ALLISON TRANSMISSION
RATING CHART
T(R)T-3421
ENGR MCAHREN 08-10-84
APPR 8-16-84
TC-10094
SHEET 2 of 2
1.21:1 T_q RATIO
TURBINE TORQUE LIMIT,
⊡ MAT'L HANDLER (1749 N-M)
+ GENERAL (1618 N-M)
✱ HEAVY DUY EQ. (1423 N-M)
KILOWATTS
140
120
100
80
60
40
20
0
* TT-426 (4.76 STR)
* TT-427 (3.40 STR)
TT-447 (3.34 STR)
* TT-466 (4.38 STR)
TT-467 (3.19 STR)
HEAVY DUTY EQ.
GENERAL
MAT'L HANDLER
508 N·m
0
400
800
1200
1600
2000
2400
2800
TRANSMISSION INPUT SPEED - RPM
* INDICATES CONVERTERS NOT PRODUCTION RELEASED

III. SUPPORT EQUIPMENT

This section describes the required support equipment for the cycling transmissions and lists the suppliers of these items. The reliability and warranty coverage of these components are the responsibility of the supplier. Components from sources other than DDA have been evaluated only for funtional compatibility with the DDA product.

Engine Adaptation Pieces

DDA Adaptation Drawings describe the physical adaptations of our transmissions with the various engines manufactured.

Input and Output Yokes and Flanges: (Ref. AS 22-008, AS 32-006)

Yokes and flanges can be purchased with the transmission as a specified option or directly from the flange manufacturer.

Borg Warner
Mechanics Division
2020 Harrison Avenue
Rockford, IL 61101
Phone: (815) 398-3000

Dana Corporation
Heavy Duty Marketing Division
P.O. Box 321
Toledo, OH 43691
Phone: (419) 866-1841

Twin Disc, Inc.
1340 Racine Street
Racine, WI 53403
Phone: (414) 634-1981

Shift Controls: (Ref. AS 32-001, AS 32-008)

Reference sources listed below:

American Standard
Wabco Fluid Power Division
1953 Mercer Road
Lexington, KY 40505
Phone: (606) 254-8031

Bennett Enterprises, Inc.
2649 Manana Drive
Dallas, TX 75220
Phone: (214) 351-9991

Weatherhead Company
Williams Air Control Division
14100 S.W. 72nd Avenue
Portland, OR 97223
Phone: (503) 639-3151

Clutch Cut-off Controls: (Ref. AS 00-027)

An air-actuated clutch cut-off feature is available as an option. A small air actuator is required to control the clutch cut-off feature.

Air Mite Devices, Inc.
4739 W. Montrose Avenue
Chicago, IL 60641
Phone: (312) 286-3393

Speedometer Drive: (Ref. AS 22-015)

Cycling transmissions use an SAE 5/32 heavy-duty drive.

Temperature and Pressure Gages: (Ref. AS 00-045)

Temperature and pressure gages are available with properly identified operating bands as shown on AS 00-045. The temperature gage is a capillary type with three different capillary lengths available. These gages may be ordered from DDA Service Parts:

Temperature Gage Part No.	Capillary Length
23010422	3.20–3.35 m 10'6"–11'0"
23010423	1.83–1.98 m 6'0"–6'6"
23010424	1.22–1.37 m 4'0"–4'6"

Pressure Gage: See AS 00-045

Neutral Start Switch: (Ref. AS 00-052)

These switches may be ordered from:

Part No.	Source
92102	Cole Hersee Company 22 Old Colony Avenue Boston, MA 02127 (617) 268-2100
21-380	Joseph Pollack Corporation 195 Freeport Street Boston, MA 02122 (617) 282-9550

The twin turbine transmissions have incorporated a provision for O.E.M. supplied neutral start switches since 1971. This provision is located on the control valve body on the end of the selector valve opposite the clevis connection, as shown on drawing AS 00-052. The selector valve has a raised land which lines up with the neutral start switch hole centerline to actuate the switch when in neutral position.

A design change has been made to this raised land on the selector valve that may affect the O.E.M. switch installation. The change as shown on the referenced drawing results in a larger "switch on" dimension (from .641 - .668 in. to .656 -.694 in.) which, depending on switch installation, may result in some switches not contacting in the neutral position. This is notification for all users of this provision to check their switch installation.

This change was made to reduce the "switch on" valve stroke range to assure clutch pressure will not be obtained with an activated switch. This condition can only occur with the valve out of detent due to stiff, worn or misadjusted linkage and is not possible with the valve in the detent position.

Effectivity of this change will be determined by the Transmission Sales department. The transmission effective serial number will be provided upon implementation.

Directional Signal Switch: (Ref. AS 32-001, AS 32-008)

Reference sources listed below:

Description	Vendor Part No.	Source
Transmission-mounted	S-1733-1500	Fasco Industries P.O. Box 2250 Shelby, NC 28150 Phone: (704) 482-9582

Connection parts, directional signal switch to vehicle wiring:

Description	Vendor Part No.	Source
(1) shell	5297887	Packard Electric, GM P.O. Box 431 Warren, OH 44486 Phone: (216) 399-3020
(2) sleeves	5297052	
(2) clips	2965638	

Power Take-offs: (Ref. AS 32-001, AS 32-008)

Reference PTO manufacturers listed below:

Dana Corporation
Power Equipment Division
P.O. Box 550
Chelsea, MI 48118
Phone: (313) 475-8641

Sperry Vickers Corporation
Tulsa Products Division
P.O. Box 6
Tulsa, OK 74115
Phone: (918) 836-3771

Heat Exchangers: (Ref. AS 00-051)

Heat exchanger manufacturers listed below:

Oil to Water

American Standard
Heat Transfer Division
P.O. Box 1102
Buffalo, NY 14240
Phone: (716) 897-2800

G & O Manufacturing Co.
138 Winchester Avenue
New Haven, CT 06508
Phone: (203) 562-5121

Modine Manufacturing Co.
1500 DeKoven Avenue
Racine, WI 53401
Phone: (414) 633-2411

Perfex Group
500 W. Oklahoma
Milwaukee, WI 53207
Phone: (414) 744-1000

Sen-Dure Products, Inc.
Bay Shore, NY 11707
Phone: (516) 665-0689

Harrison Radiator Division, GM
200 Upper Mountain Road
Lockport, NY 14094
Phone: (716) 439-3066

Heatex, Ltd.
2225 Lapierre St.
LaSalle 660, Quebec, Canada
Phone: (514) 365-6100

Stewart-Warner Corporation
Southwind Division
1514 Drover Street
Indianapolis, IN 46221
Phone: (317) 682-8411

Young Radiator Co.
2825 Four Mile Road
Racine, WI 53404
Phone: (414) 639-1010

Oil to Air

Dunham Bush, Inc.
Riverside Division
1850 Massachusetts Avenue
Riverside, CA 92507
Phone: (714) 684-0991

Hayden Inc.
1531 Pomona Road
Corona, CA 91720
Phone: (714) 735-4900

Karmazin
3776 Eleventh Street
Wyandotte, MI 48192
Phone: (313) 282-3776

External Main Circuit Oil Filters: (Ref. AS 22-004)

Filter manufacturers are listed below:

AC Spark Plug Division, GM
1300 N. Dart Highway
Flint, MI 48556
Phone: (313) 766-5000

Schroeder Corporation
101 Nichol Avenue
McKees Rock, PA 15136
Phone: (412) 771-4810

Parking Brake: (Ref. AS 32-001, AS 32-008)

A parking brake is available as an option with the transmission or may be purchased separately from the brake manufacturer.

Bendix
Automotive Controls Systems Group
401 North Bendix Drive
South Bend, IN 46634
Phone: (219) 237-2100

Rockwell International
Aftermarket Sales, Brakes
Troy, MI 48084
Phone: (313) 435-1382
(For nearest Rockwell Brake Distributor)

Auxiliary Heater

Auxiliary heaters can be adapted to the cycling transmissions.

Kim Hotstart Mfg. Co.
East 5724 Broadway, Box 42
Spokane, WA 99210
Phone: (509) 534-6171

General Electric (Calrod Industrial Heating Products)
One Progress Road
Shelbyville, IN 46176
Attn: Sales Manager
Phone: (317) 398-4411

Phillips Manufacturing Co.
8200 Grand Avenue, South
Minneapolis, MN 55420
Phone: (612) 888-4105

Dipstick and Filltube: (Ref. AS 32-001, AS 32-008)

Reference the Installation Manual for venting requirements. The contacts for special dipstick and filltube designers are listed below:

Estan Manufacturing Company
32053 Howard
Madison Heights, MI 48071
Phone: (313) 588-1137

Moeller Manufacturing Company
Greenville, MS 38701
Phone: (601) 335-2326

IV. INSTALLATION DRAWINGS

The Detroit Diesel Allison APPLICATION SPECIFICATION (AS) drawing for the TT 3000 series transmissions have been revised and updated to include the latest available information.

The TT 3000 series transmissions are represented by basic installation drawing AS 32-001 of model TT 3000-1. AS 32-008 installation drawing which references the original drawing in order to prevent duplication of information, provides the unique details of the TRT 3000-1. Figure 1 shows the transmission outlines of the TT 3000-1 and TRT 3000-1 Series.

New AS drawings are created with SI METRIC units, as noted above the drawing title block. The previous drawings using English units are being converted in order to follow the trend toward universal measurement.

Drawing Number	3000 Series AS Drawings Drawing Title	Applicable Model Codes A = TT 3000-1 B = TRT 3000-1 Above Models
AS 00-004	Single Filter Installation Data	A, B
AS 00-016	Flexplate Drive Data	A, B
AS 00-026	Shift Tower Gating Patterns	A, B
AS 00-027	Air-actuated Clutch Cutoff	A, B
AS 00-028	Inching Control Valve Body	B
AS 00-036	Flexdrive Characteristics	A, B
AS 00-045	Off-highway Transmission Gauges	A, B
AS 00-051	Cooler Oil Flow Data	A, B
AS 00-052	Neutral Start Switch Provision	A, B
AS 22-004	External Hydraulic Circuit Requirements	A, B
AS 22-008	Drive Flange Option	A, B
AS 22-015	Speedometer Drive Option	A
AS 22-036	Ground-driven PTO	A
AS 32-001	Basic Installation Drawing, TT 3420-1	A
AS 32-003	Implement and Steer Pump Clearance Information	A, B
AS 32-004	Implement Pump Mounting Flange and Spline Information	A, B
AS 32-005	Steer Pump Mounting Flange and Spline Information	A, B
AS 32-006	Drive Flange Recommendations	A, B
AS 32-008	Basic Installation Drawing, Two-speed Forward, Two-speed Reverse	B

Figure 1 TT 3000 and TRT 3000 Series Transmissions and Basic Drawings

REFERENCE:

Manuals

SA 1584 TT 3000 Service Manual
SA 1727 TRT 3000 Service Manual
SA 1519 TT, TRT 3000 Parts Catalog
SA 1336 TT, TRT 3000 Operators Manual

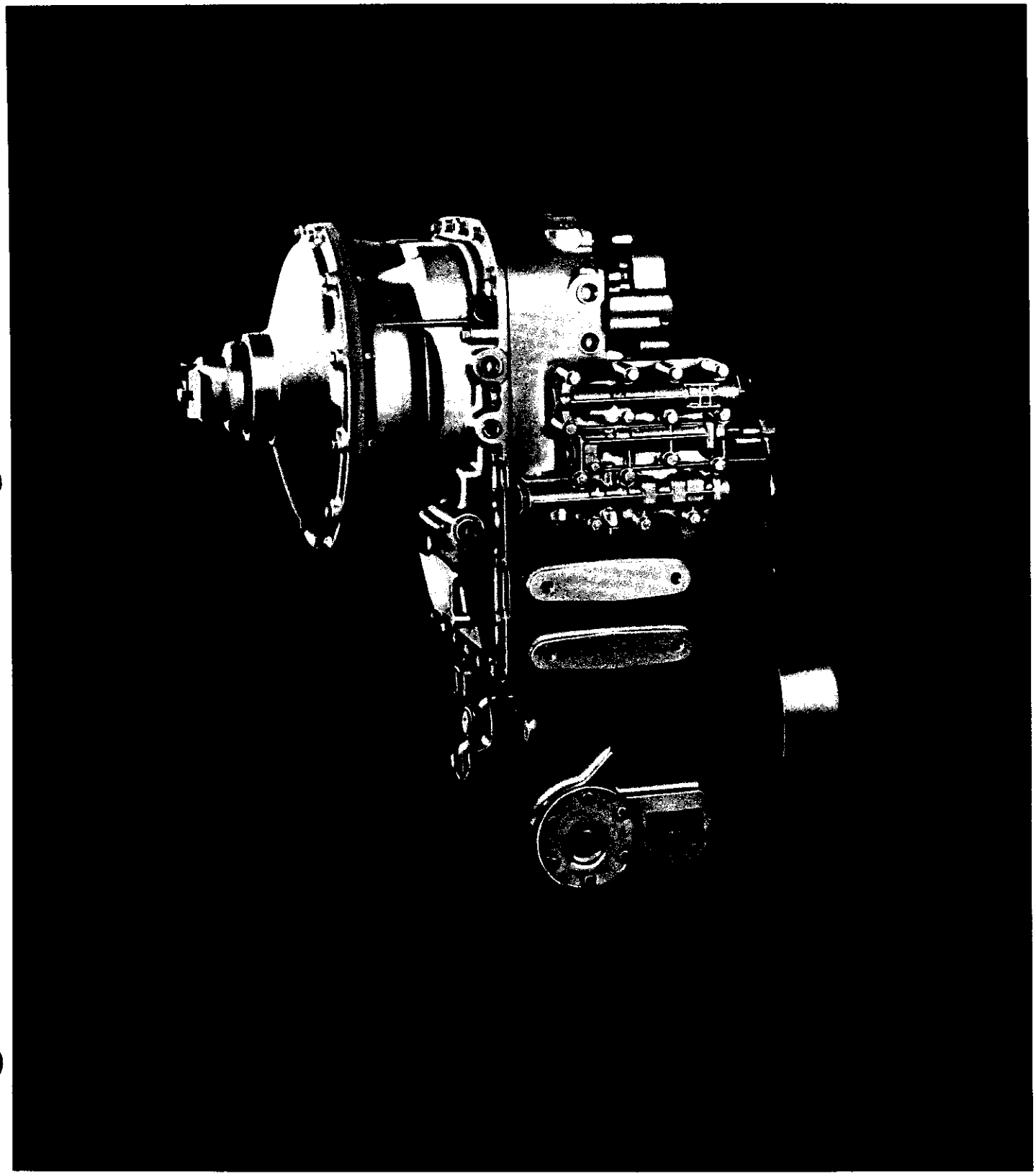
Prepared and Distributed by Sales Development, J5, Detroit Diesel Allison, P.O. Box 894, Indianapolis, Indiana 46206.

Allison Transmissions

cycling models

TT, TRT 3000 Series

up to 210 NHP (157 kW)



specifications

		T(R)T 3420-1	TRT 3220-1
rating	Input power, max. net input torque, max. net Input speed, max.	210 hp (157 kW) 400 lb ft (542 N•m) 2800 rpm	165 hp (123 kW) 310 lb ft (420 N•m) 2800 rpm
rotation	Input (viewed from input) Double output (viewed from input)	Right hand Right hand (forward ranges)	Right hand Right hand (forward ranges)
speeds	Forward Reverse	2 (TT) 2 (TRT) 1 (TT) 2 (TRT)	2 2
mounting	Direct Remote	SAE #3 converter housing with flexplate drive; 2 side mounting pads and cradle mounting recommended. Input flange or Torqmatic® coupling; 2 side mounting pads	
torque converter	Type	2 phase, 4 element, twin turbine with automatic phase transition	
	Stall torque ratios	Standard .826:1 T_2 Ratio: TT 260-5.11:1; TT 425-5.19:1; TT 444-6.79:1; TT 445-4.92:1; TT 465-4.67:1 Optional 1.211:1 T_2 Ratio: TT 447-3.34:1	

gearing

Type
- Range gears: Constant mesh, spur, planetary
- Transfer gears: Constant mesh, spur, in line

.826:1 T_2 Ratio*				Transmission Model	1.211:1 T_2 Ratio*			
Forward		Reverse			Forward		Reverse	
Low	High	Low	High		Low	High	Low	High
2.516:1	.699:1	2.320:1	—	TT 3420-1	3.687:1	1.024:1	3.398:1	—
2.035:1	.565:1	1.876:1	—	TT 3420-1	2.982:1	.828:1	2.748:1	—
2.179:1	.565:1	1.876:1	—	TT 3420-1	3.192:1	.828:1	2.748:1	—
2.516:1	.913:1	2.320:1	.842:1	TRT 3420-1/TRT 3220-1	3.687:1	1.337:1	3.398:1	1.233:1

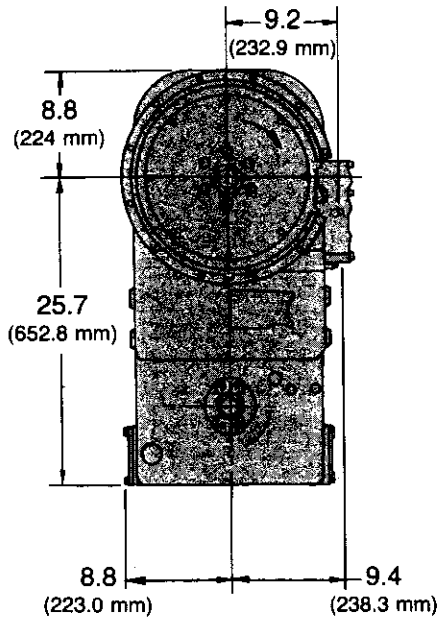
*Does not include torque converter ratio

clutches	Hydraulically-actuated, spring released, oil cooled, multidisk and automatically wear compensating	
parking brake (optional)	Type Size Rating	Internal expandable shoe 10 in x 3 in (254 x 76 mm) Max. intermittent, burnished 56,000 lb in (5988 N•m) @ 1350 lbs (6005 N) apply force. Brake supplied unburnished
power takeoff	Implement pump drive	
	Rating	160 hp (119 kW) max. intermittent power @ 2000-2800 rpm 120 hp (90 kW) max. continuous power @ 2000-2800 rpm
	Mounting pad	SAE C 2/4 bolt
	Spline size	SAE C, B (reducer)
	Ratio	1.00 × engine speed
	Accessory drive	
	Rating	70 hp (52 kW) max. continuous power @ 2000-3000 rpm
	Mounting pad	SAE B 2 bolt
	Spline size	SAE B
	Ratios	.91 × engine speed (standard); 1.00 × engine speed (optional)
	Emergency steer PTO (TT only)	
	Rating	30 hp (22 kW) max. continuous power @ 2000-3600 rpm
	Mounting pad	SAE A 2 bolt
	Spline size	SAE A
	Ratios	.846 × output speed or .684 × output speed; depending on gear ratios of transmission
control valve body	Types	Mechanical, hydraulic, pneumatic or inching control
oil system	Oil type Capacity (less external circuits) Filter	Hydraulic transmission fluid, type C-3 8.5 U.S. gals (32 liters) Customer furnished, remote mounted
size	Length, max. approx Width, max. approx Height, max. approx Weight, max. approx	24.4 in (620 mm) TT, 31.2 in (792 mm) TRT 18.2 in (462 mm) TT, 19.05 in (484 mm) TRT 34.5 in (876 mm) TT, 33.6 in (853 mm) TRT 1,149 lbs (521 Kg)

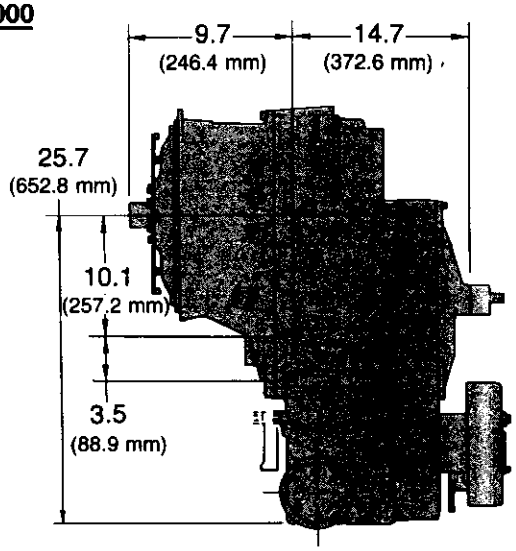
Note: All data and specifications subject to change without notice.

mounting dimensions

TT 3000

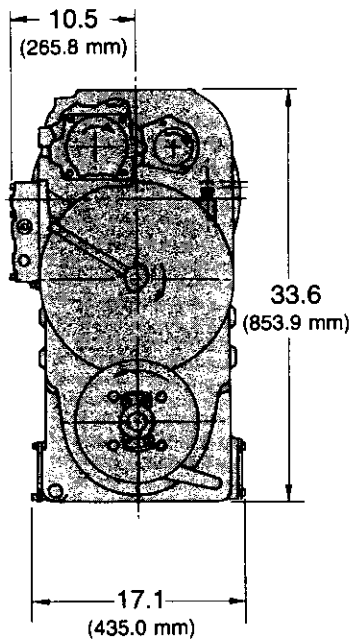


FRONT VIEW

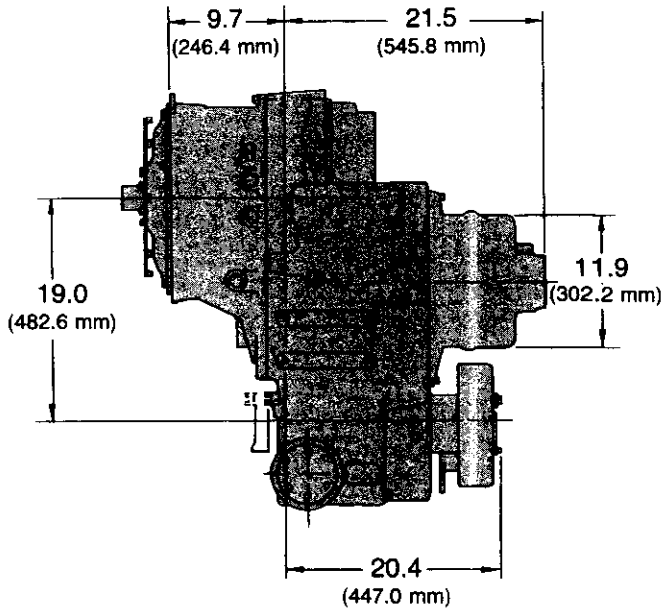


SIDE VIEW

TRT 3000



REAR VIEW



SIDE VIEW

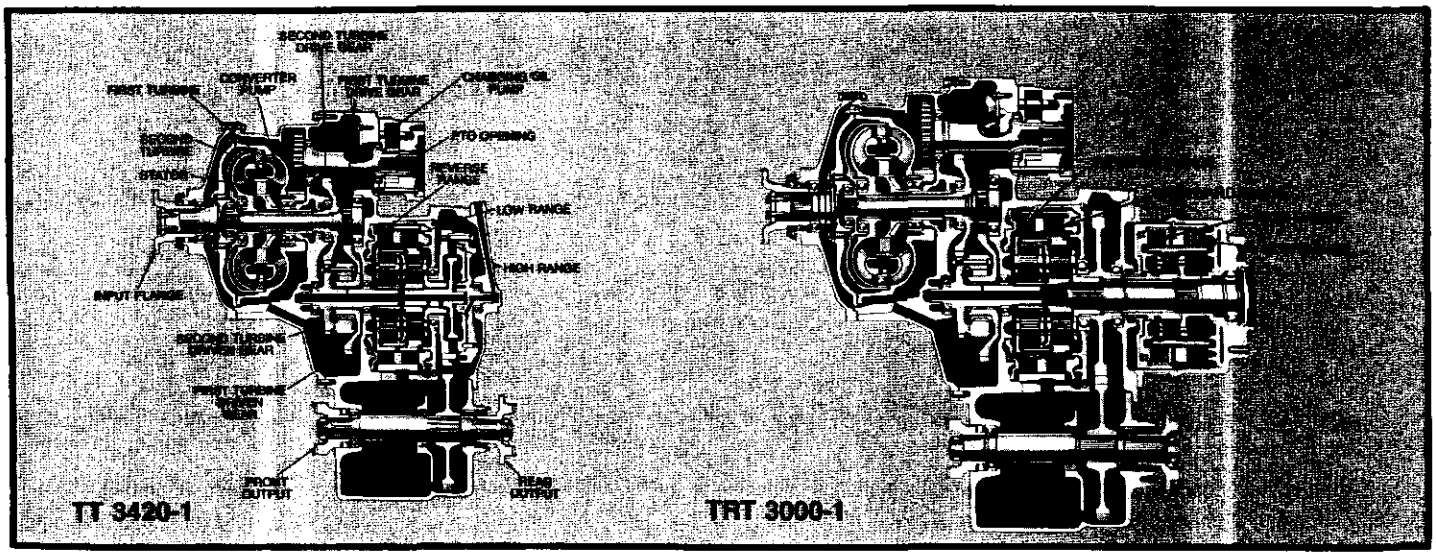
Note: Dimensions are given in inches with metric value in parentheses.

design features and options

- Transmission direct or remote mounted
- Torqmatic® coupling
- Choice of input and output flanges
- Front output disconnect
- Parking brake
- Wet or dry implement pump drive splines
- Magnetic speed pickup provision
- Neutral start provision
- Forward and reverse pressure taps

TT, TRT 3000 series cycling transmissions

Applications for this series transmission are as varied as the number of cycling vehicles and vocations. Typical applications include wheel loaders, material handlers, self-propelled cranes, rail equipment and winches.

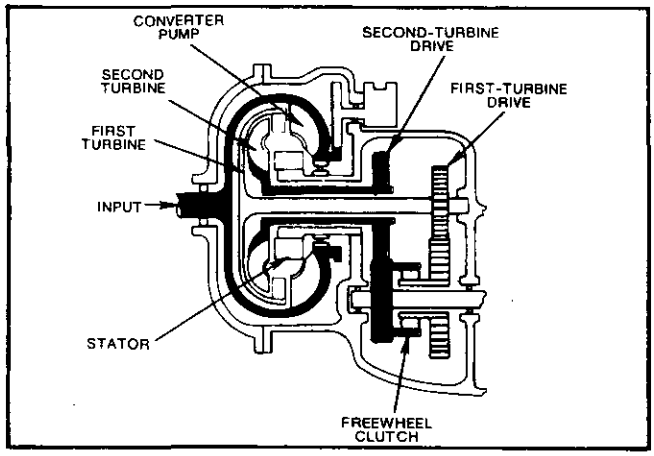


twin-turbine principle

The 3000 Series contain a twin-turbine torque converter. Essentially, this is a unit which has two turbines, one inside the other. Each turbine drives a different combining gear which drives the forward-reverse range gears.

When the load is started, oil flow within the converter causes the first turbine to turn, driving a low speed combining gear which, in turn, drives the range gears. As the load is reduced, due to increased vehicle movement, the higher velocity oil flow reaches the second turbine and causes it to turn. This drives the range gears through a higher speed combining gear. (The first turbine and its combining gear freewheel when the second turbine is operating at higher speeds.)

The result is automatic two-speed performance from the torque converter. When this is combined with two speeds in the range gearing, you get four-speed performance. Yet the operator only has two forward (and one or two reverse) shift lever positions to select.



'soft shift' system

Smooth shifting at full power while changing direction of travel is the direct benefit of the Soft Shift system—a standard feature of all cycling series transmissions.

Soft shift is a system of orifices and a trimmer in the main control valve body which modulates pressure to a dual-area piston providing a progressive application of force on the clutch. The metered flow of oil controls the torque peak automatically during clutch engagement. With Soft Shift, there is no more slowing down to shift, no more dangerous stalls. Shift shock is reduced, because . . .

SOFT SHIFT CONTROLS THE POWER.

This twin-turbine transmission, together with Soft Shift, offers an impressive array of advantages, including: faster hydraulic action, increased torque capacity; longer brake life; reduced cycle time.

WORLDWIDE REGIONAL OFFICES

Atlanta, Georgia (404/252-3314)
Oak Brook, Illinois (312/654-6600)
Dallas, Texas (214/659-5050)
Dearborn, Michigan (313/565-0411)
Edison, New Jersey (201/246-5074)
Fremont, California (415/498-5200)
Westlake Village, California (213/997-5405)
London, Ontario, Canada (519/452-5000)
Rotterdam, The Netherlands (010-290-000)
Dandenong, Victoria, Australia (797-7911)
Wembley, England (44-1-904-1749)
Coral Gables, Florida (305/446-4900)

OFFICES

Antwerp, Belgium
Biel Bienne, Switzerland
Copenhagen, Denmark
Helsinki, Finland
Lisbon, Portugal
Oslo, Norway
Paris, France
Ruesselsheim, Germany
Stockholm, Sweden
Wellingborough, England
Athens, Greece
Johannesburg, South Africa
Nairobi, Kenya
Adelaide, Australia
Brisbane, Australia
Sydney, Australia
Jakarta, Indonesia
Singapore
Tokyo, Japan
Bogota, Colombia
Buenos Aires, Argentina
Mexico City, Mexico
Santiago, Chile
Sao Paulo, Brazil

Detroit Diesel Allison

Detroit Diesel Allison
Division of General Motors Corporation
P.O. Box 894, Indianapolis, Indiana 46206
(317/244-1511)

SA 1518 10/81

Litho in U.S.A.

Allison Transmissions

SALES BRIEF

CODE
TOTAL UPDATE

Revised Date 3/84 No. 71

4000 SERIES CYCLING TRANSMISSIONS

I. PRODUCT DESCRIPTION

The TT 4000 Series power shift transmission is designed primarily for cycling applications using up to 250 kW (336 hp) net power.

The TT 4000 Series incorporates a twin turbine converter, engine-driven PTO's, planetary gearing, hydraulic clutches, front and rear outputs, forward and reverse pressure taps, optional clutch cutoff or inching, and a provision for a neutral start switch. The TT 4000 Series has the same smooth full-power directional shifting capability (soft shift), and the same 2-phase, 4-element converter with an automatic phase transition that has been successful in all twin turbine transmissions.

The TT 4000 Series transmission was released October, 1980 with several design improvements for increased reliability. These transmissions will be identified by advancing the last digit of the model number to "1" indicating the model change. This group of changes designated the "bolted hub configuration" will include the following product improvements:

- bolted second turbine hub
- higher capacity T_1/T_2 bearing
- ground sleeve retaining nut
- higher capacity T_2 drive gear bearing

Applications for this series of transmissions are as varied as the number of cycling vehicles and vocations. Examples are wheel loaders, material handlers, self-propelled cranes, rail equipment, and winches.

Basic Models: TT 4721-1 TRT 4821-1

Model Designations and Definitions:

TRT 4821-1	Twin turbine converter
TRT 4821-1	Equal number of forward & reverse ranges
TRT 4821-1	Transmission
TRT 4821-1	Transmission series
TRT 4821-1	Transmission capacity within series
TRT 4821-1	Number of forward ranges
TRT 4821-1	Number of major changes since release
TRT 4821-1	With dropbox

RATINGS:

Input Rating

	TT 4721-1		TRT 4821-1	
Max. input speed, rpm	2800		2800	
Max. net input torque*	597 N·m	440 lb ft	854 N·m	630 lb ft
Max. net input power*	175 kW	235 hp	250 kW	336 hp

*Net, as installed: inlet restriction, exhaust restriction, alternator, fan, idle steer pump, idle implement pump, and air compressor should be deducted when applicable.

Turbine Shaft Rating:

TT 4721-1. Applications:	Maximum Turbine Torque	
General and Loader:	2853 N·m	2104 lb ft
Material Handler:	3080 N·m	2272 lb ft

TRT 4821-1 Applications:	Maximum Turbine Torque			
	.846:1 T_2 Ratio		1.483:1 T_2 Ratio	
General and Loader:	3758 N·m	2772 lb ft	2148 N·m	1584 lb ft
Material Handler (straddle carrier, mobile crane, fork lift):	4059 N·m	2994 lb ft	–	
Compactor:	3535 N·m	2607 lb ft	–	
Heavy-duty Equipment (dozer):	2819 N·m	2079 lb ft	–	

Rating Chart References:

TT 4721-1	TC-14918
TRT 4821-1 with T_2 Ratio = .846:1	TC-14917
TRT 4821-1 with T_2 Ratio = 1.483:1	TC-19058

PRODUCT DESCRIPTION

Torque Converter

The TT 4000 Series transmission provides a 2-phase, 4-element, twin-turbine torque converter with automatic phase transition. The available converters and stall torque ratios are listed:

.846:1 T_2 Ratio Converters (to be used only with .846:1 T_2 transmission gear ratios:

Converter Models	Absorption Chart No.	Stall Torque Ratio
TT 445	TC-8860	4.92:1
TT 450	TC-9060	6.34:1
TT 465	TC-9062	4.67:1
TT 470	TC-9063	6.01:1
TT 615	TC-18920	5.25:1
TT 625	TC-10010	5.21:1
TT 645	TC-10011	4.91:1

1.483:1 T_2 Ratio Converters (to be used only with 1.483:1 T_2 transmission gear ratios):

Converter Models	Absorption Chart No.	Stall Torque Ratio
TT 626	TC-18760	2.76:1
(TT 646)	TC-19059	2.86:1

( ) indicates converter assembly is not production released, but parts are available.

Control Valve Body Assembly

A mechanically-actuated, hydraulic control valve body is used to provide a soft, powershift, range selection according to operator requirements. Low forward and reverse shifts are modulated. Optional valve bodies are available for inching control and hydraulic or pneumatic clutch cut-off.

Gearing

Gear Data:

range gearing	constant-mesh planetary
transfer gearing	constant-mesh in-line
gear type	spur

Gear Ratios:

	.846:1 T_2		1.483:1 T_2	
	Low	High	Low	High
TT 4721-1				
F:	2.710:1	.727:1	(4.740:1)	(1.272:1)
R:	1.983:1	–	(3.469:1)	
F:	2.181:1	.727:1		
R:	1.983:1	–		
TRT 4821-1				
F:	2.581:1	.692:1	4.515:1	1.210:1
R:	2.347:1	.629:1	4.106:1	1.100:1

NOTES: To obtain overall transmission torque ratios, multiply the applicable torque converter ratio times overall gear ratio.

( ) indicates that transmissions with these ratios are not production released, but parts are available.

Mounting

Direct.

Front adaptation: Modified SAE #2 converter housing with flexplate drive bolted to flywheel and converter hub piloted into flywheel.

Side pads: The transmission is supported strictly by side pads. There are four 5/8-11 tapped holes in each pad.

Cradle mounting between transmission side pads and engine-flywheel housing pads is recommended.

Remote.

Input:	The front of the transmission is unmounted and enclosed. An input flange for shaft and universal-joint coupling is required. A limited-stroke, TOROMATIC ® coupling (torsional damper) is available.
Side pads:	The transmission is supported by side pads. The center of gravity of the transmission is located within the side pad bolt pattern.

Output Configuration

The TT 4000 Series has two output locations available 24 inches below the input. The output shaft rotation is the same as the input rotation (as viewed from the input), clockwise. An optional disconnect is available for the front output.

Clutch Data

Type:	Multidisk, hydraulically-actuated, spring-released, oil-cooled, and automatically wear compensating.

Speedometer Drive

Availability:	Optional on TT 4721-1 and TRT 4821-1
Type:	SAE 5/32 heavy duty
Location:	Center of rear cover, see AS 42-012

Speedo-drive to output ratio:

TT 4721-1	.859:1
TRT 4821-1	1.017:1

Parking Brake (optional)

Description:	305 x 76 mm (12 x 3 in.) DCM expandable shoe, mechanically-applied
Static Burnished Rating*:	10,170 N·m (90,000 in. lb) @ 2560 N (567 lb) apply-lever force, lever length 187 mm (7.38 in.)

* Brake is supplied unburnished. Vendor indicates unburnished static rating may be 66 percent less.

Special Operational Control Provisions

Neutral Start Provision. Provision for installation of a neutral start switch connected in series with the vehicle start system is standard on all models. Reference: Basic Installation Drawing and AS 00-052.

Forward and Reverse Pressure Taps. The transmission valve body has taps which supply either forward or reverse hydraulic pressure that can be used for special operational controls or indicators. Reference: Basic Installation Drawing.

SPECIFICATIONS

Weight

Dry, approximate, depending on basic models and options:

TT 4721-1	678 kg	1495 lb
TRT 4821-1	744 kg	1640 lb
with TT 600 Converter (add)	7 kg	15 lb
Remote mounted (add)	18 kg	40 lb
Parking brake (add)	16 kg	35 lb

Oil System

Oil Capacity. Less external circuits: 37.8 liters (10 U.S. gallons), initial fill.

Oil Filter. Customer furnished, remotely mounted from transmission. Reference AS 42-003 for filter circuit requirements.

Oil Type. Hydraulic transmission fluid, C-3.

Oil Pump. Input driven, positive displacement, gear type.

Main Pressure. At full throttle.

TT 4721-1:

For wheel loader applications under 19,650 kg (43,350 lb):	930-1172 kPa	135–170 psi*
For all other applications:	1103-1344 kPa	160-195 psi*

TRT 4821-1:

For wheel loader applications under 29,500 kg (65,000 lb):	930-1172 kPa 135-170 psi*
For all other applications:	1103-1344 kPa 160-195 psi*

* Main pressure in high range may be as much as 68.95 kPa (10 psi) lower than in other ranges. These pressures are established for a converter-out temperature range of 60-73.8°C (140-160°F). As converter-out temperature approaches 121°C (250°F), main pressure may drop as much as 103.4 kPa (15 psi).

Oil Temperature.

Max. converter-out temperature: 135°C (275°F) continuous.

Power Take-off Provisions

Implement pump drive. Pad at rear of oil pump.

Standard ratio: 1.00 × engine speed

Rating:*

Max. intermittent power, at 2000 to 2800 rpm:	119 kW	160 hp
Max. continuous power, at 2000 to 2800 rpm:	89 kW	120 hp

Mounting pad:**	SAE C 2/4 bolt
Shaft splines:	SAE C, B (reducer)

Accessory drive.

Standard ratio: 1.00 × engine speed

Rating:*

Max. intermittent power, at 2000 to 2800 rpm:	119 kW	160 hp
Max. continuous power, at 2000 to 2800 rpm:	89 kW	120 hp

Mounting pad:**	SAE C-2/4 bolt
Shaft splines:	SAE C, B (reducer)

* 179 kW (240 hp) maximum combined rating for both pads.

** Customer-supplied gasket required to seal lubricated spline drive.

Selector Positions

TT 4721-1 Gear Ranges		TRT 4821-1 Gear Ranges
–	Reverse High	R_2
R	Reverse Low	R_1
N	Neutral	N
F_1	Forward Low	F_1
F_2	Forward High	F_2

TRANSMISSION RATING CHARTS

Allison transmission ratings are compatible with net engine power corrected to the SAE J1349 Engine Test Code. Therefore, when examining Allison transmission ratings against engines rated at some standard other than SAE J1349, it is important to determine whether an engine power correction is required.

Domestic engines are typically rated at SAE baseline conditions. The current rating standard is described by SAE J1349 Engine Test Code outlined below:

SAE J1349 ENGINE TEST CODE BASELINE

Condition	Metric	U.S.
Pressure-Total	100 kPa	29.61 in hg
Temperature	25°C	77°F
Vapor Pressure	1.0 kPa	.2961 in hg
Dry Baro Pressure	99 kPa	29.31 in hg
Dry Air Density	1.157 kg/m^3	.0722 lb/ft^3
Fuel Temperature	40 ± 3°C	104 ± 5.4°F

The following information provides a guide for adjusting naturally aspirated 4-cycle diesel engines to the SAE J1349 baseline. These adjustment guidelines are not applicable to 2-cycle diesel or spark ignition engines. It is recommended the specific engine manufacturer be consulted for corrected performance data.

ENGINE ALTITUDE AND TEMPERATURE BASELINE

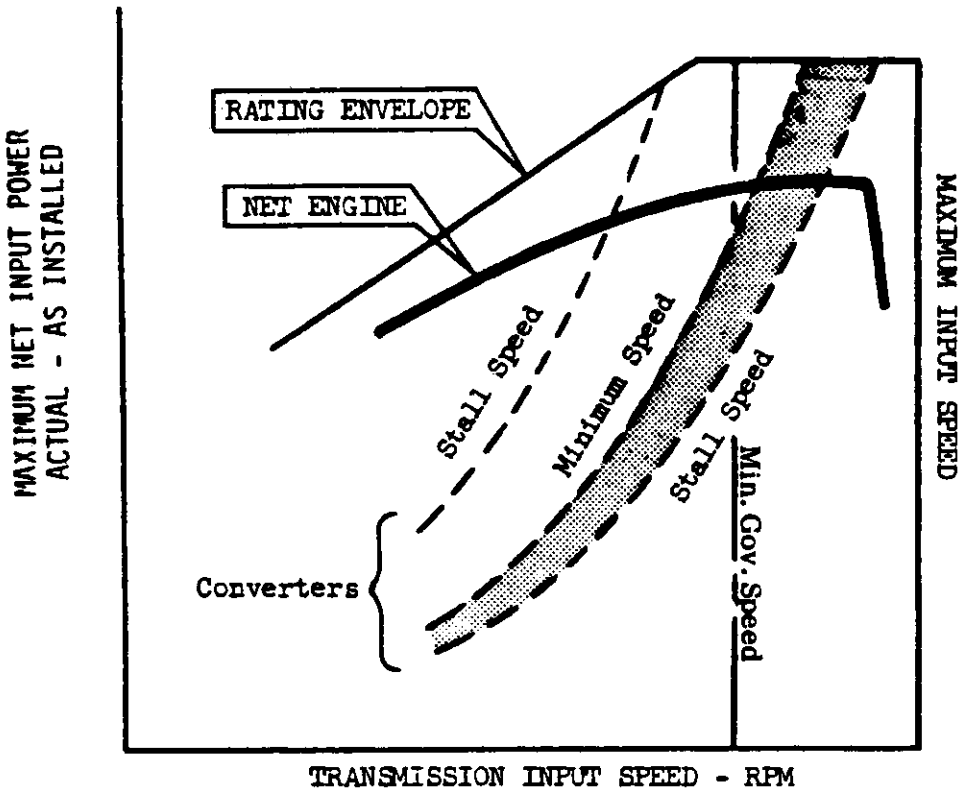
Rating Standard	Altitude Metre (Ft.)	Temperature °C (°F)	Power Modification for Adjusting Naturally Aspirated 4-Cycle Diesel Engines to SAE J1349
DIN 6270	305 (1000)	20.0 (68)	+0.5%
DIN 70020	Sea Level	20.0 (68)	-2.5%
BS AU141	Sea Level	20.0 (68)	-2.5%
BS 649	152 (500)	29.4 (85)	+1.0%
SMMT	152 (500)	20.0 (68)	-1.0%
Japanese Ind.	Sea Level	20.0 (68)	-2.5%
Gost-Russian	Sea Level	20.0 (68)	-2.5%

For performance at higher altitudes and temperature it is customary to derate engine power 3% for each 1000 ft elevation and 1% for each 10° F increase in temperature. Most advertised performance for Turbo-Charged Engines is depicted as being applicable up to a specific altitude and temperature. Therefore, these correction factors are to be used only when the engine operates at altitude or temperature that exceeds the maximum applicable limits.

Note: These 4-cycle diesel altitude and temperature power correction factors are to be used only in the absence of engine manufacturer supplied data.

TRANS. MODEL	CHART REF/DATE	REVISION
TT-4721	TC-14918, 2-17-84	o COMBINED CHARTS; ADDED TT-615 CONVERTER
TT-4821	TC-14917, 2-17-84	o DIVIDED CHARTS, o ADDED TT-615 CONVERTER
TT-4821	TC-19058, 2-20-84	o CHANGED TT-626 CONVERTER FOR TT-625

TYPICAL RATING CHART



A typical rating chart consists of a solid line envelope expressed in terms of power and speed, and a series of dotted lines each representing the capacity characteristics of the converters used in the transmission. In some instances, because of the converter's speed characteristics, the converter is defined by a band shown by dual dotted curves in which case the first line of the band represents the minimum speed characteristics and the second line the stall speed.

All rating charts carry a maximum input (governed) speed rating, whereas only a few have a minimum governed speed limit. In these cases, the full load governed speed of the engine must fall on or above the minimum governed speed line but cannot exceed the maximum input speed rating.

To determine whether a given engine is within the rating of a converter and transmission, the net engine curve must be plotted on the rating chart as follows:

- Correct gross engine to SAE J1349 baseline and deduct engine accessories.
- Plot this net engine power curve (corrected power less accessories) on converter or transmission rating chart.
- Investigate converter and lockup operation in the following manner after selecting proper converter.

  CONVERTER OPERATION (All Transmissions)

  The net engine power curve must intersect the converter stall line within the envelope as defined by the solid line envelope.

  If the converter speed characteristics are represented by a band (shaded area), the power curve of the engine must intersect both lines of the converter within the rating envelope.

  LOCKUP OPERATION (Transmissions with Lockup)

  The engine power curve must fall below the solid-line envelope for all speeds defined by the rating envelope.