



HITACHI
Inspire the Next

TACN Series TDCN Series

Power-Shift Transmission For Rail



Hitachi Nico Transmission Co., Ltd.

株式会社日立 NICO 传动设备简介

自从 1952 年 12 月新泻转换器有限公司 (Niigata Converter Co., Ltd., NICO) 于新泻县加茂市成立以来，我们一直通过我们的产品为社会做着广泛的贡献。特别是对于日本铁路业务来说，我们提供的产品动力换档变速箱、DHMU、DHL 和柴油机驱动的作业车用车轴齿轮箱等。

在近 70 年的历史中，我们的产品不仅在日本国内市场占有很高的份额，而且销往世界各地（亚洲、大洋洲、欧洲、南美等）。

我们仍将继续努力发展世界各地的铁路业务，根据使用地区特点提供我们的最佳产品

公司愿景

挑战是我们的价值

迄今为止，我们通过向市场提供新产品而成长。

从现在起，我们将继续挑战，开发新时代所需的产品。

我们的新产品和近年来的销售业绩如下

1. 并联式柴液混合动力传动内燃动车组

世界首次：我们在 2008 年开发了 1. 并联式混合动力传动内燃动车组用变速箱。该变速箱具有发动机驱动模式、电机驱动模式、电机辅助驱动模式和制动能再生模式。通过多种运行方式的组合，实现了柴液混合动力传动内燃动车组的最佳燃油效率。

2. 特殊的铁路车辆用变速箱

为了实现重轨下多种工况时的理想操作，我们的变速箱具有多种可选项。变速箱最主要的两个选项：低匀速运行系统和液力制动装置。可用于长距离下坡行驶。

铁路用变速箱

我们的变速箱是由高弹性联轴器、变矩器、2 档/3 档/4 档动力换档变速箱和先进的电子控制系统组成的。

标准规格

我们的变速箱被归类为“液压机械式变速箱”，它结合了变矩器和湿式多板式离合器的特性。我们的标准规格如下。

- **变矩器**
液力变矩器实现了车辆平稳无冲击起动，增加了车辆低速时的扭矩
- **动力换档变速箱**
动力换档变速箱提供 1e 前进/倒车档以及多个变速档。并且可以选择闭锁档。
- **TCU “变速箱控制器”**
TCU 具有自动平滑离合器换档/监控系统/异常警报等功能。

可选规格

您可以定制有以下选项的变速箱。

- **制动功能**
此功能是辅助刹车，以降低下坡时的车速。
【选配装置】液力制动器、摩擦片滑差制动、利用发动机特性制动
- **低匀速控制**
TCU 控制变速器制动力，实现车辆恒定低速。
【选配装置】摩擦片滑差制动
- **PTO：** 用于驱动发电机/油泵/风扇
- **PTI：** 接收液压马达或是电机的动力
- **其他**
 - 混合动力（并联方式）
 - 停车制动
 - 单端输出
 - 其他客户要求

对客户的希望

我们将用新技术来满足客户的新需求。如果您有任何问题、要求或想法，请联系我们。



Introduction of “Hitachi Nico Transmission Co., Ltd.”

Since 1952 when our predecessor company “Niigata converter” started operation, we extensively have contributed to society through our products for mainly Japanese railway business. Our products for railways are Power-shift transmission, Final drive gearbox, etc. for DHMU, DHL, and motor cars by diesel engine drive.

In the history of about 70 years, our products have not only had a high share in the domestic market but also been sold all over the world(Asia, Oceania, Europe, South America, etc.).

We continue efforts to develop the rail industry around the world by supplying our optimal products in accordance with regional characteristics in its operating areas.

Our visions

CHALLENGE IS OUR VALUE

Up to now, we have grown by supplying new products to the market. From now on, we will continue to challenge to develop new products required in each era too.

The update on our new special products and our sales achievements in recent years are as follows.

1. Parallel hybrid transmission for Diesel Hydraulic Multiple Units

World' first : we have developed the parallel hybrid transmission for Diesel Hydraulic Multiple Units in 2008. This transmission has engine driving mode, motor driving mode, motor-assisted driving mode and regeneration brake mode. The best fuel efficiency for Diesel Hydraulic Multiple Units is realized by combining several operation modes.

2. Special transmission for Rail-carrier

Various options for our transmissions have been requested to realize an ideal driving for rail-carrier carrying a lot of heavy rails. This transmission has two major options of the constant low speed system and the retarder brake for running on a long downhill.

As described above, we can produce not only the standard models but also the optimally customized models in accordance with your requirements. We look forward to hearing your precious suggestions.

Transmission for Railway applications

Our transmissions consist of a high-elastic coupling, a torque converter, a two-, three- or four-speed power-shift-transmission and an advanced electronic control system.

Standard specifications

Our transmission is categorized as “hydromechanical transmission” which combines a torque converter with a wet multiplate clutch. Our standard specifications are as follows.

Torque converter

Torque converter realizes a smooth shockless start of vehicle and increases the torque at a low speed of vehicle.

Power-shift-transmission

Power-shift-transmission provides forward/reverse shifts and multiple speed steps. And a direct clutch option is available.

TCU “Transmission Control Units”

TCU has the functions of an automatical smooth clutch shifting, a monitoring system, an abnormal alarm, etc.

Optional specifications

You can tailor a transmission by selecting the following options.

Brake function to reduce speed :

This function is an auxiliary brake to reduce the vehicle speed while the vehicle is running downhill in a mountainous area.

Optional device Hydraulic Retarder Brake, Multiple-disc Brake, Engine Brake

Constant low speed control :

TCU controls a transmission brake effort to realize a constant low speed of vehicle.

Optional device Multiple-disc Brake

Power Take Off (PTO) : Generator, Oil pump and Fan

Power Take In (PTI) : Oil motor and Electrical motor

Others :

- Hybrid (Parallel Hybrid)
- Parking Brake
- Cut-off-shifter (one-side-output)
- Customized design, etc.

Request to Customer

We can challenge new technologies to meet the new needs of customers. If you have any question, request and/or idea, please contact us.

Transmission

TACN series

Underfloor installation
For Diesel Hydraulic Multiple Units and Motor cars

Features and Benefits

- Covers a range of 150 to 588kW
- High-efficiency by direct-drive *
- Includes High-elastic coupling

*Remarks : Direct Clutch
High-efficiency of "Maximum 97%" is realized by the Direct Clutch transmitting the tractive effort directly to the wheels. High-efficiency improves the tractive effort and the fuel consumption.



Capacity chart

| Model Name | 100 | 200 | 300 | 400 | 500 | 600 | [kW] |
|------------------------------|-----|---------|---------|---------|-----|-----|------|
| TACN-22-1400 | | 150-210 | | | | | |
| TACN-22-1600 TACN-33-1600 | | 180-250 | | | | | |
| TACN-33-2000 TACN-44-2000 | | 230-300 | | | | | |
| TACN-33-3000 | | | 300-440 | | | | |
| TACN-22-3540 | | | | 390-588 | | | |

Applications examples



Transmission

TDCN series

Drop box-type For Locomotives and Motor cars

Features and Benefits

- Covers a range of 80 to 1000kW
- Easy-to-mount PTO
- Various options *

*Remarks : Various options for special purpose vehicles
Various options --- PTO, Multiple-disc brake, Hydraulic retarder, constant speed functions
special purpose vehicles --- Multiple tie tamper, Rail carrier, Catenary maintenance vehicle, etc.



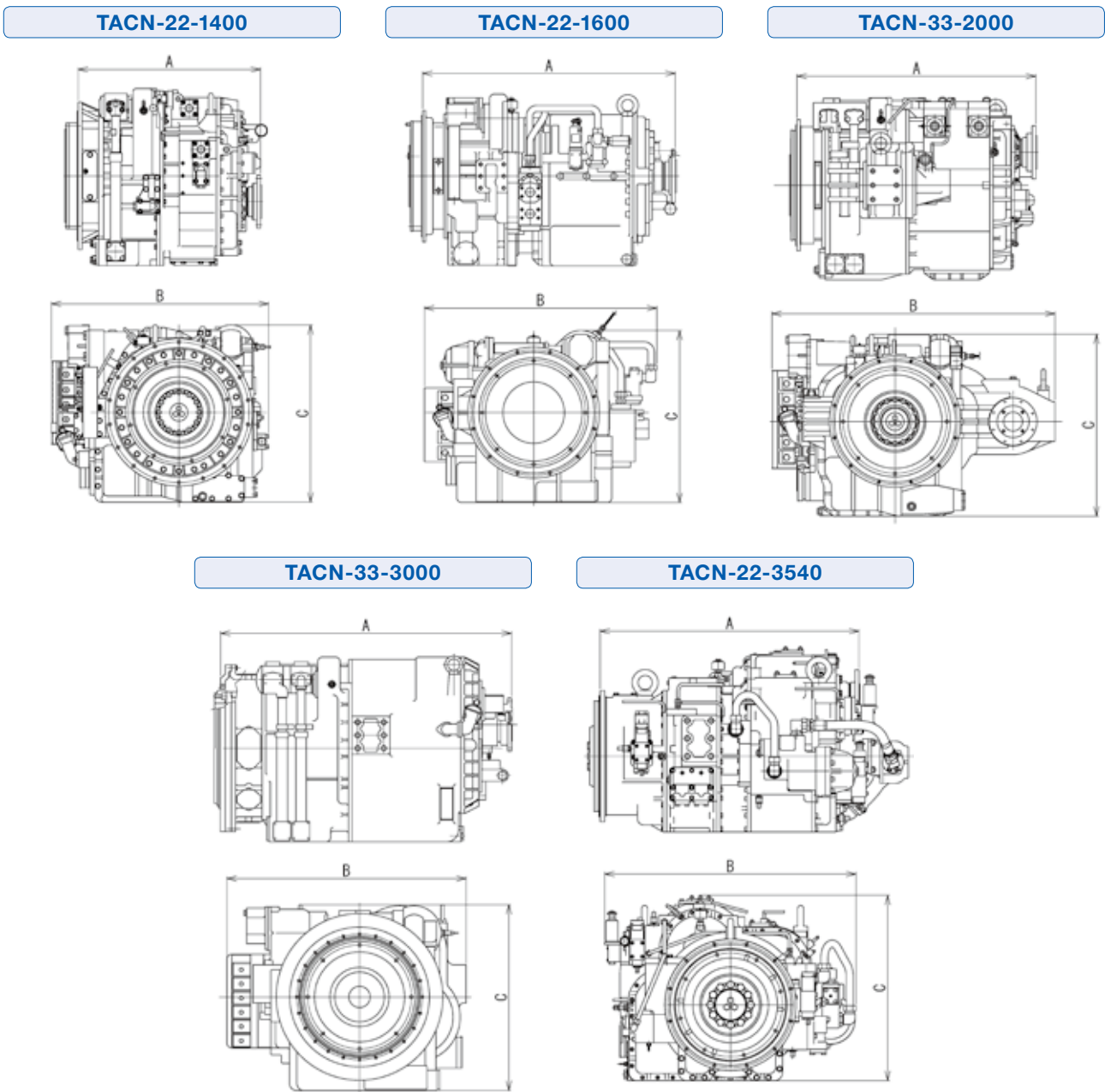
Capacity chart

| Model Name | 100 | 250 | 500 | 750 | 1000 | [kW] |
|------------------------------|--------|---------|---------|----------|------|------|
| TDCN-22-800 | 80-120 | | | | | |
| TDCN-22-1000 TDCN-33-1000 | | 180-250 | | | | |
| TDCN-22-1800 | | 250-310 | | | | |
| TDCN-22-1840 | | 290-350 | | | | |
| TDCN-22-3040 TDCN-33-3040 | | | 350-520 | | | |
| TDCN-22-6000 | | | | 520-1000 | | |

Applications examples



Transmission “TACN” series

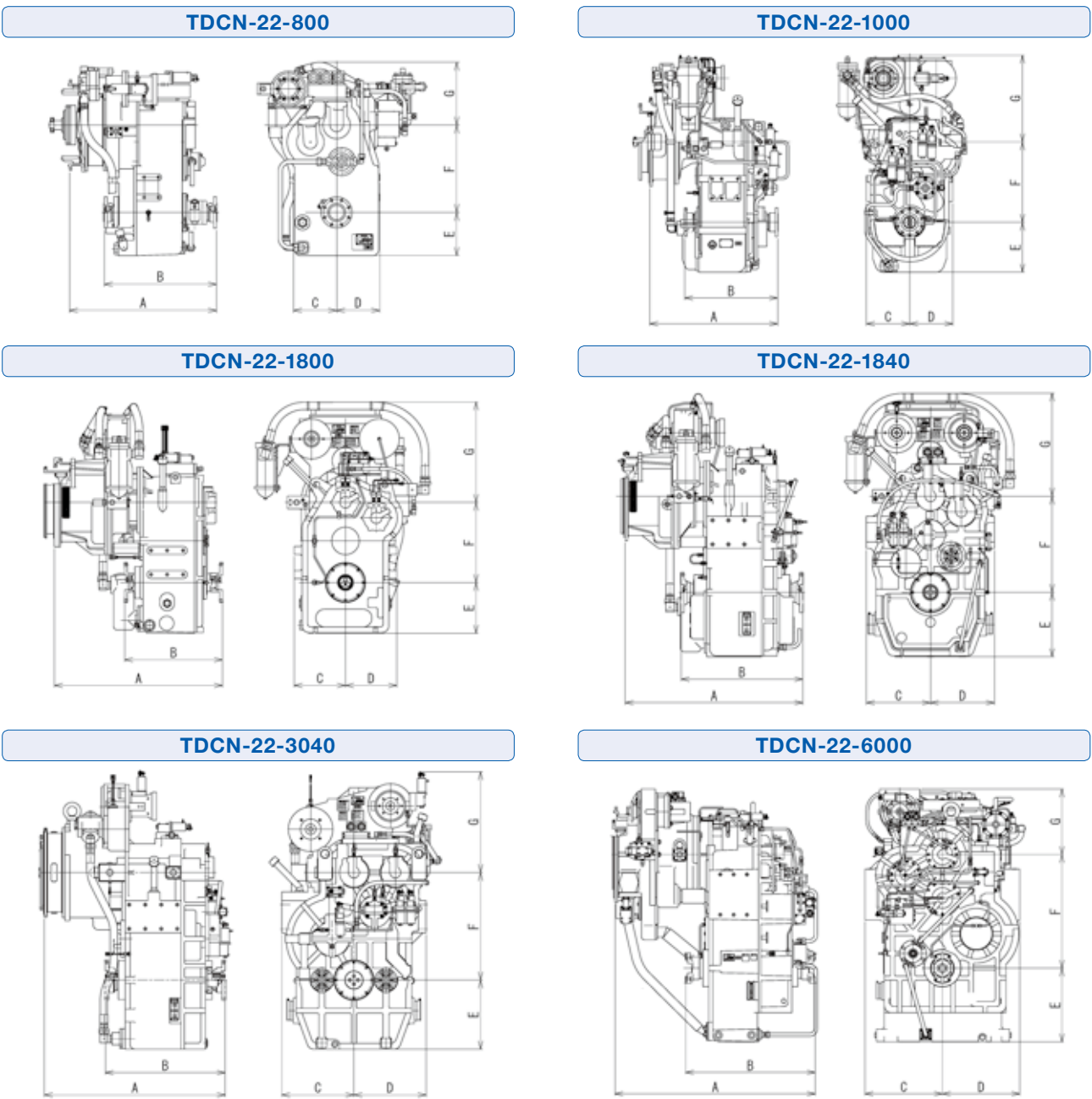


Technical Data

| Transmission Model | | TACN-22-1400 | TACN-22-1600 | TACN-33-2000 | TACN-33-3000 | TACN-22-3540 |
|----------------------|-------|--------------|--------------|--------------|--------------|--------------|
| Input power | kW | 210 | 250 | 300 | 440 | 588 |
| | PS | 250 | 340 | 420 | 600 | 800 |
| Input speed | min-1 | 1900 | 2100 | 2100 | 2100 | 2100 |
| Speed steps | - | 2 | 2 or 3 | 3 or 4 | 3 | 2 |
| PTO (Power take off) | Q'ty | - | - | 2 | - | - |
| Dry weight | kg | 580 | 900 | 1160 | 1200 | 1450 |
| Dimensions (mm) | A | 770 | 1067 | 1009 | 1228 | 1093 |
| | B | 917 | 980 | 1195 | 1010 | 1062 |
| | C | 750 | 730 | 770 | 785 | 783 |

* Reverser function is included in all models. * Specifications are subject to change without notice.

Transmission “TDCN” series



Technical Data

| Transmission Model | | TDCN-22-800 | TDCN-22-1000 | TDCN-22-1800 | TDCN-22-1840 | TDCN-22-3040 | TDCN-22-6000 |
|----------------------|-------|-------------|--------------|--------------|--------------|--------------|--------------|
| Input power | kW | 120 | 250 | 310 | 350 | 520 | 1000 |
| | PS | 163 | 336 | 420 | 470 | 700 | 1360 |
| Input speed | min-1 | 2200 | 2200 | 2100 | 2100 | 2100 | 2100 |
| Speed steps | - | 2 | 2 or 3 | 2 | 2 | 2 or 3 | 2 |
| PTO (Power take off) | Q'ty | 1 | 2 | 2 | 2 | 2 | 2 |
| Dry weight | kg | 520 | 1000 | 1200 | 1500 | 1800 | 3410 |
| Dimensions (mm) | A | 734 | 799 | 1048 | 1110 | 1128 | 1502 |
| | B | 560 | 581 | 610 | 760 | 748 | 972 |
| | C | 215 | 270 | 320 | 400 | 450 | 580 |
| | D | 215 | 270 | 320 | 400 | 450 | 580 |
| | E | 215 | 310 | 315 | 400 | 430 | 552 |
| | F | 435 | 500 | 500 | 600 | 670 | 850 |
| | G | 320 | 540 | 625 | 640 | 630 | 490 |

* Reverser function is included in all models. * Specifications are subject to change without notice.



405-3, Yoshino-cho 1-chome, Kita-ku, Saitama 331-0811, Japan

Phone: +81-48-652-7979 FAX: +81-48-652-8719

<https://www.hitachi-nico.jp/en/>



October 2019 in Japan