Ecolite – The Efficient Transmission Range for Modern Light Trucks

ZF Friedrichshafen AG

Highlights – Technology

Ecolite for modern, light trucks

- Compact design
- 6 gears
- Precise gear selection
- Low-noise
- Power take-offs (PTOs)
- For every kind of application

Highlights – Customer Value

Ecolite stands for:

- Experience
- Reliability
- Efficiency
- Safety
- Versatility
- Environmental friendliness

Ecolite PTO Program

	Transmission designation	PTO type	Output point	Output torque	Speed factor		Direction of rotation		Driven by			Operating mode	
					"f"[1]	"g"	counter-engine-wise	engine-wise	clutch dependent	engine dependent	drive dependent	Continuous operation	Short-term operation
Ecolite	6 S 700 TO	NL/1		600	0,57	-	o	-	o	-	-	o	-
		NL/4		430	0,73	-	-	o	o	-	-	-	o
		NL/6		400	1,10	-	-	o	o	-	-	-	o
	6 S 800 TO	NH/1		800	0,53	-	o	-	o	-	-	o	-
		NH/4		430	0,67	-	-	o	o	-	-	-	o
		NH/6		400	1,01	-	-	o	o	-	-	-	o
	6 S 1000 TO 6 S 1100 TO	NH/1		1.000	0,53	-	o	-	o	-	-	o	-
		NH/4		430	0,67	-	-	o	o	-	-	-	o
		NL/10	C	270 – 480	1,19 – 2,03	-	-	o	o	-	-	o	-
			D:NL/1	600	0,53	-	o	-	o	-	-	o	-
			D:NL/4	430	0,67	-	-	o	o	-	-	-	o

PTOs for Ecolite

N…/1

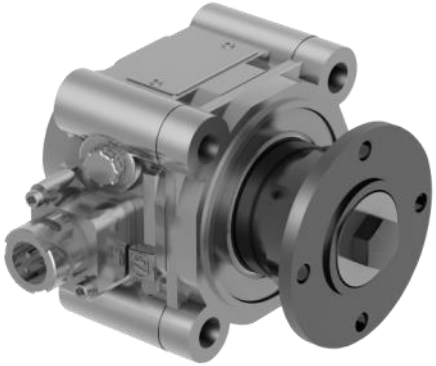
N…/4

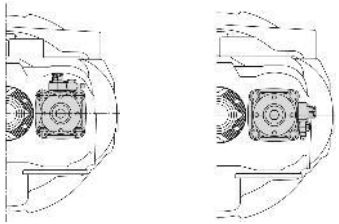
N…/6

NL/10

Power take-off	Permissible torque	6 S 700 TO	6 S 800 TO	6 S 1000 TO 6 S 1100 TO
		6.02 – 0.79	6.58 – 0.78	6.75 – 0.78
Type	Nm	Factor f1) see notes page		
NL/1	600	0.57		
NL/4	430	0.79		
NL/6	400	1.10		
NH/1	800		0.53	
NH/1	1,000			0.53
NH/4	430		0.67	0.67
NH/6	400		1.01	
NL/10 „C“	270 – 480			1.19 – 2.03
NL/10 „D“ NL/1	600			0.53
NL/10 „D“ NL/4	430			0.67

Ecolite
Clutch-Dependent PTO



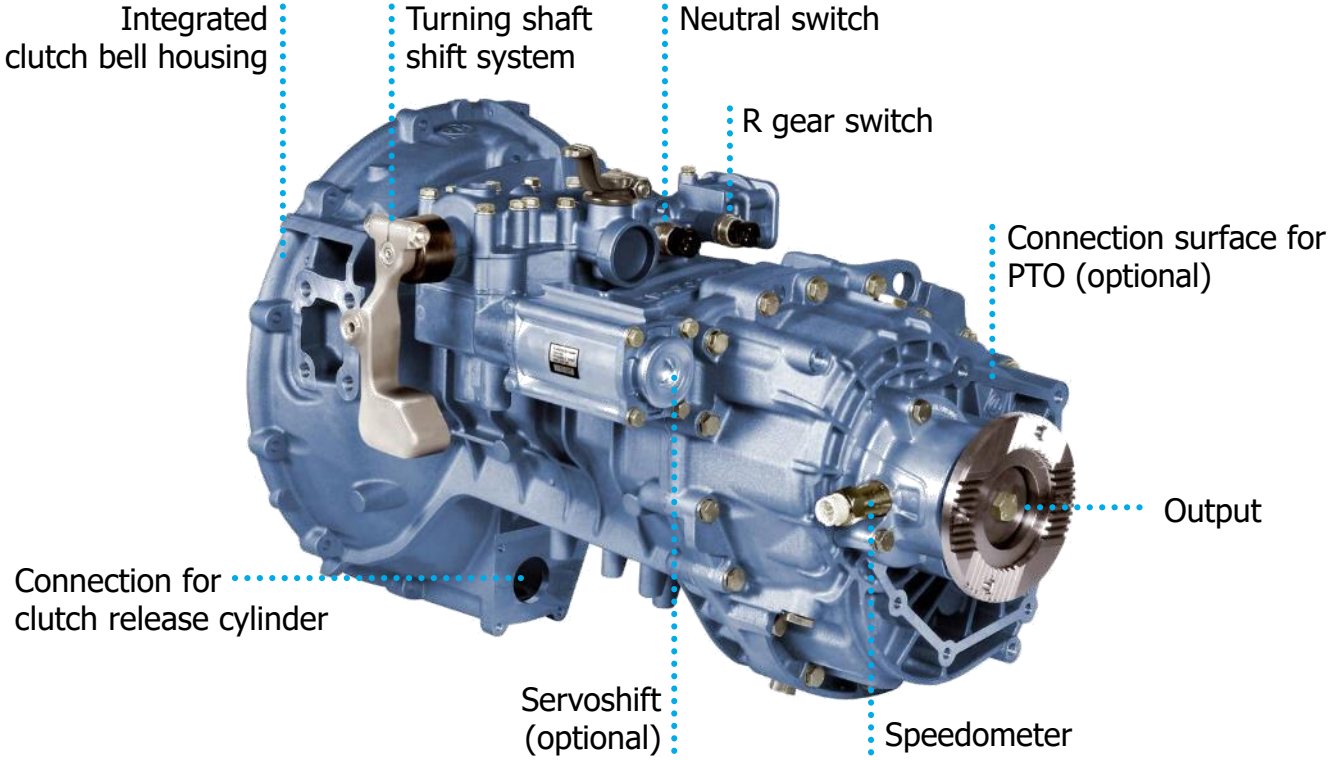
ZF NL/1 and NH/1 PTOs with integrated shift cylinder	
For driving:	Hydraulic pumps for example
Design:	**b** = with output flange
	c = for direct pump attachment
Operating mode:	Continuous operation
Axle offset:	Without (center of countershaft)
Possible installation positions:	
Output torque:	NL/1 max. 600 Nm
	NH/1 max. 1,000 Nm

Advantages for the Vehicle Manufacturer

Ecolite means:

- Minimum installation space
- New design options for the driver’s cabin
- Universally applicable
- Option: automatic 6-speed transmission

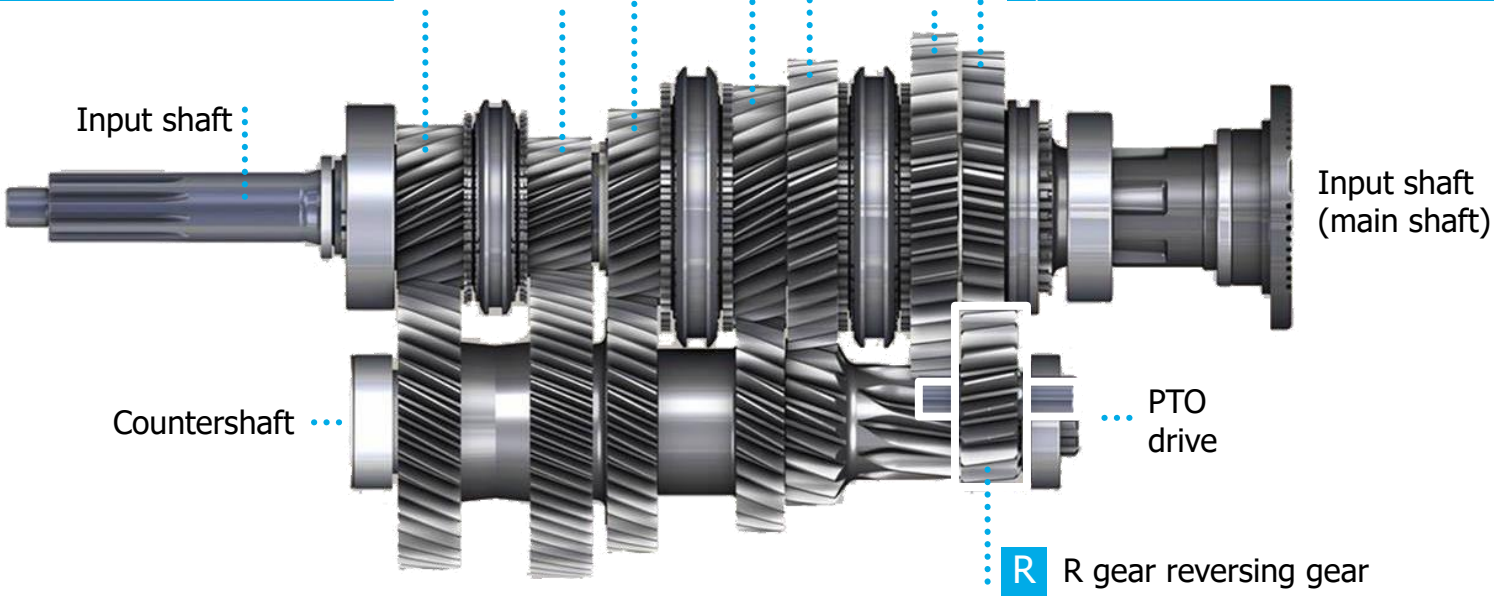
The Transmission System



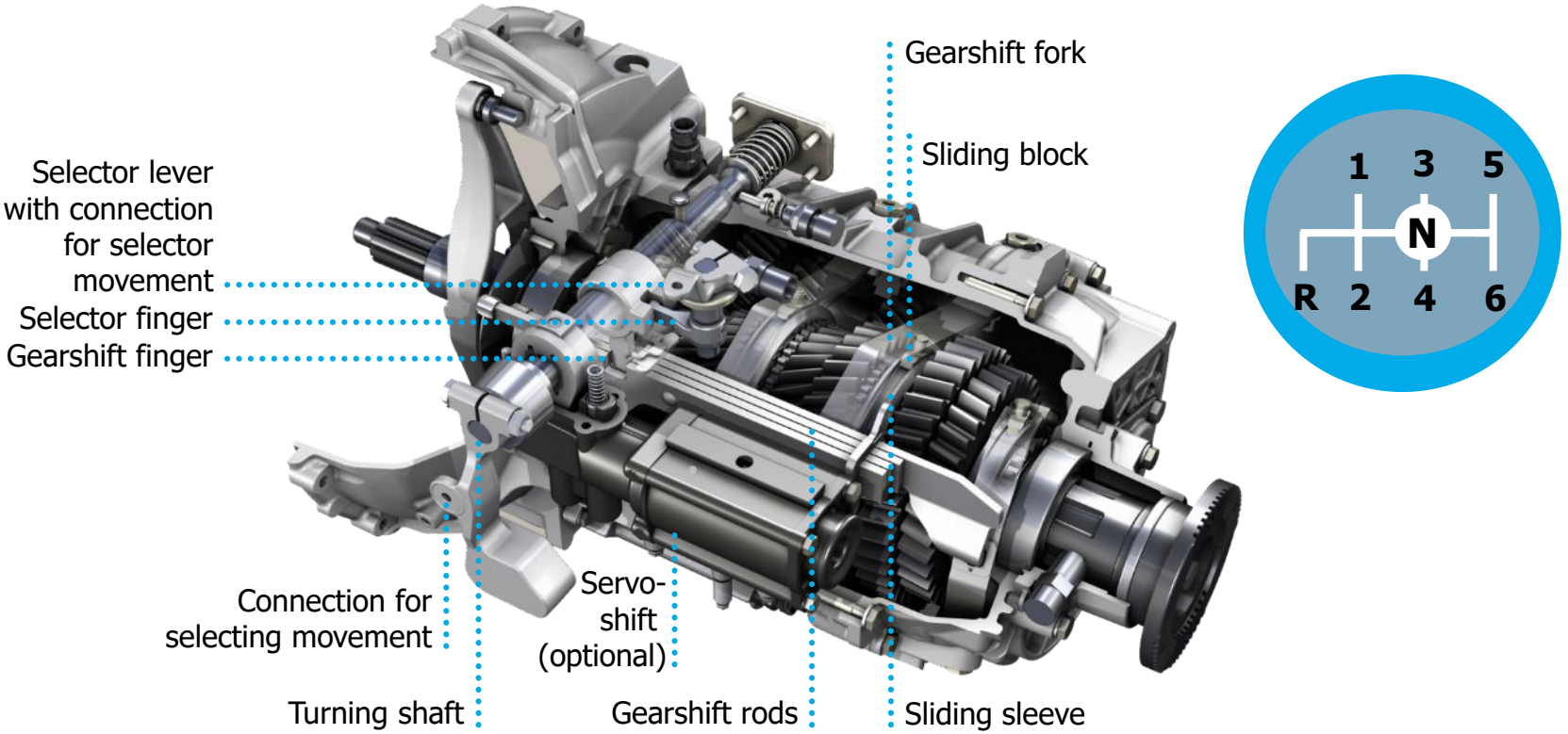
Shift System (Example)

Direct drive (TD)	K	6	5	4		**3**	**2**	**1**	**R**
Overdrive (TO)	K	5	6	4		**3**	**2**	**1**	**R**

(see figure)



Gear-Change Mechanism, (Cable-Controlled Gearshift)



Shifting of the Transmission

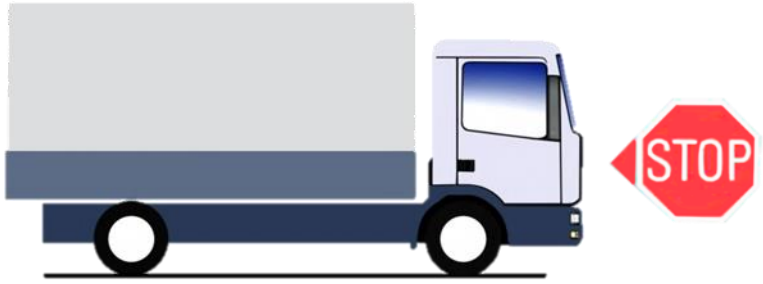
Operation

- Fully depress the clutch pedal
- Select shift gate
- Engage gear

Engaging Reverse Gear

Operation

- Stop the vehicle
- Fully depress the clutch pedal
- Wait for engine idling
- Select shift gate for R gear
- Engage gear

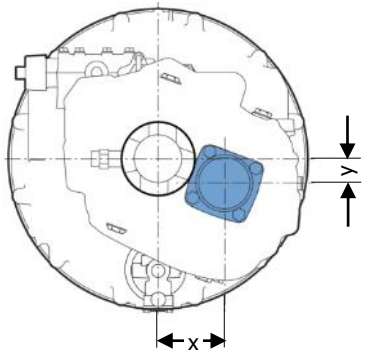


PTOs and Their Application

	N.../1	N.../4	N.../10*
Performance	high	medium	high
Short-term operation		●	
Continuous duty	●		●
Speed	low	medium	low / high
Drive	Clutch-dependent		
Tank trucks	●		●
Dumpers	●	●	
Loading crane	●	●	
Fire services			●
Articulated mast	●	●	
Waste collection vehicles			●

Connecting Dimensions for PTOs

6 S 700 / 800 / 1000 TO / 6 S 1100 TO



	X	Y
6 S 700 TO	108.1	39.3
6 S 800 TO	115	46.5
6 S 1000 TO	128	47
6 S 1100 TO		

6 S 1200 TD