Nederman

Instruction manual

Chip & swarf management system

Steel belt conveyor

TL4

Original instruction manual

INSTRUCTION MANUAL	EN

Translation of original instruction manual

ANVÄNDARMANUAL	SV	MANUAL DE INSTRUÇÕES	PT
BEDIENUNGSANLEITUNG	DE	MANUAL DE UTILIZARE	RO
BETJENINGSVEJLEDNING	DA	MANUALE D'ISTRUZIONE	IT
BRUKSANVISNING	NO	MANUEL D'INSTRUCTION	FR
FELHASZNÁLÓI KÉZIKÖNYV	HU	NAUDOJIMO INSTRUKCIJA	LV
HANDLEIDING	NL	NAVODILA ZA UPORABO	SL
İŞLETME KILAVUZU	TR	NÁVOD K OBSLUZE	CS
INSTRUKCJA UŻYTKOWANIA	PL	NÁVOD NA POUŽITIE	SK
KASUTUSJUHEND	ET	ΕΓΧΕΙΡΙΔΙΟ ΧΡΗΣΗΣ	EL
KÄYTTÖOHJEET	FI	НАРЪЧНИК С ИНСТРУКЦИИ	BG
LIETOŠANAS INSTRUKCIJA	LT	РУКОВОДСТВО ПО ЭКСПЛУАТАЦИИ	RU
MANUAL DE INSTRUCCIONES	ES		

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Figures

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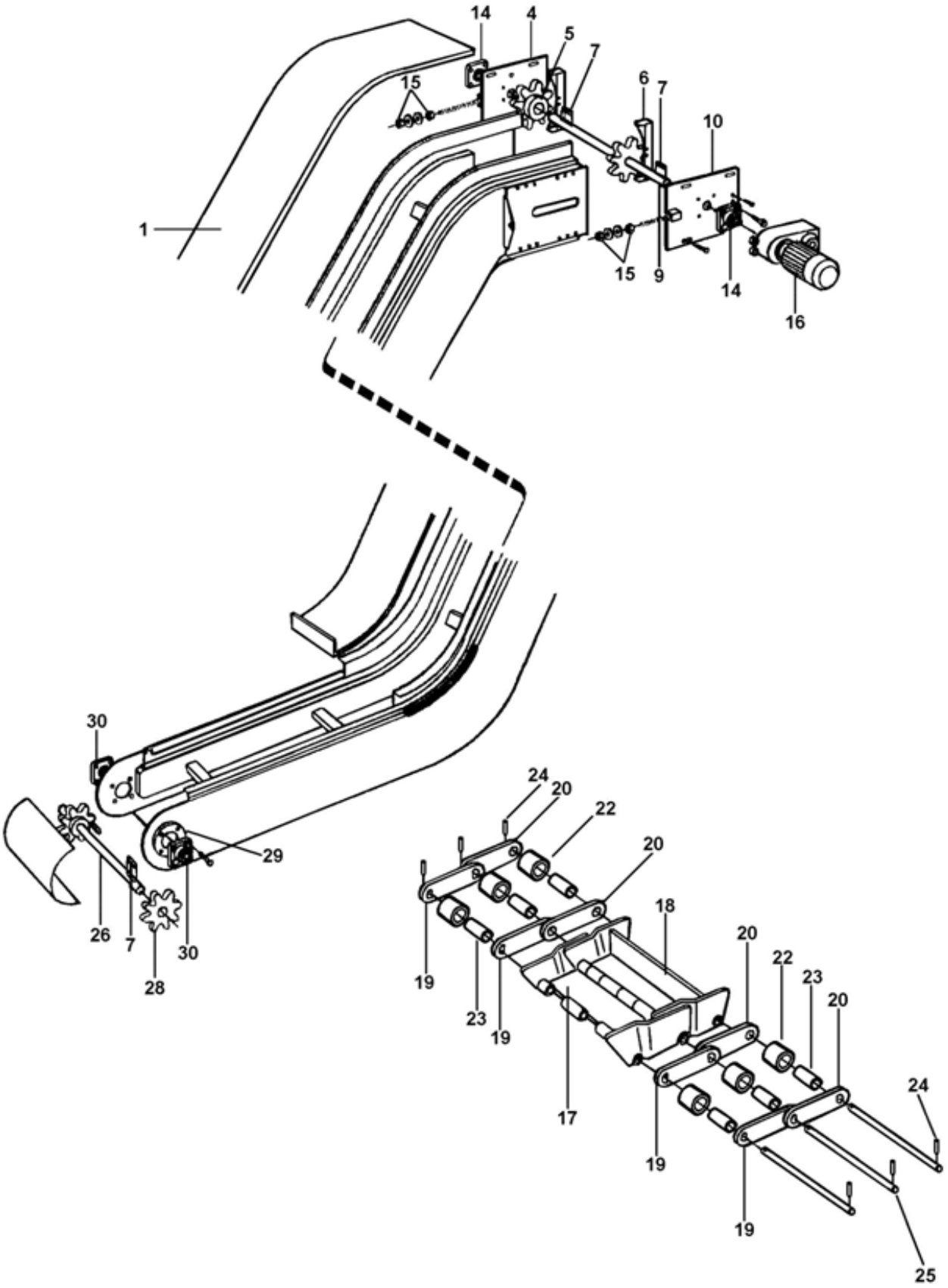
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English

Instruction manual

Chip & swarf management system

Steel Belt Conveyor

TL4

Table of contents

1 Declaration of conformity

Below is presented the document setting out the contents of the EC Declaration of Conformity, not including the serial number and the signature of the person empowered. The formal Declaration is attached to your ***TL4 Steel Belt Conveyor****.*

1. **DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY**

We,

Nederman Manufacturing Poland Sp. z o. o.
ul. Okólna 45 A
05-270 Marki, PL

herewith declare that

the machine:	**Steel Belt Conveyor**
type:	**TL4**
serial number:	
year of manufact.:	

is in conformity with the provisions of the Directive **2006/42/EC** with exclusion of point **1.3.7 Annex I** until correctly installed according to the manual.

Proper technical documentation for the above mentioned machine has been prepared according to Annex VII part B. Technical Dpt. Manager at NEDERMAN Manufacturing Poland Sp. z o. o. is responsible for this documentation.

The product is also in conformity with other following directives:

Low Voltage Directive **2006/95/EC**,

Electromagnetic Compatibility Directive **2004/108/EC**,

and complies with harmonized standards relating to EC Directives:

EN ISO 12100-1, EN ISO 12100-2, EN 60204-1

NEDERMAN Manufacturing Poland Sp. z o. o. furthermore declares that the partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive 2006/42/EC.

The identity and signature of the person empowered to draw up the declaration

Marki, *date*

2 Preface

This manual is for the correct installation, use and maintenance of this product. Read it carefully before using this product or carrying out maintenance. Replace the manual immediately if lost.

This product has been designed to meet the requirements of relevant EC directives. To maintain this status, all installation, repair and maintenance work for this product is to be carried out by qualified personnel using only original spare parts. Contact the nearest authorized distributor or NEDERMAN for advice on technical service and obtaining spare parts. Also read Chapter '4 Safety' thoroughly.

NEDERMAN continuously improves its products design and efficiency through modifications, and reserves the right to do so without introducing these improvements to previously supplied products. NEDERMAN also reserve the right to, without previous notice, modify data and equipment as well as operating and maintenance instructions.

2.1 Foreword

Your TL4 Steel Belt Conveyor has been manufactured by:

Nederman Manufacturing Poland Sp. z o. o.

ul. Okólna 45 A

05-270 Marki, Poland

Tel: +48 22 7616000

Fax: +48 22 7616099

E-mail: info@nederman.pl

www.nederman.com.pl

NEDERMAN Conveyors guarantee good design, quality components and skilled labour plus years of experience in swarf handling and swarf crushing. All these abilities have been used to design a product with high reliability and long service life. We are convinced that your experiences will confirm your choice of NEDERMAN Swarf Conveyors.

Length of life and reliability can, as with any machine tool, be prolonged with correct installation and correct maintenance. It pays off to follow our advice for maintenance.

This maintenance manual consists of instructions and spare parts list for your new NEDERMAN Steel Belt Conveyor. It also contains greasing instructions, exploded view and a simple schedule for trouble-shooting.

NEDERMAN Swarf Conveyors are normally used in all machine tools on the market as well as in swarf handling systems which NEDERMAN designs, sells and installs.

All Conveyors which leave our works are checked and do not need any additional maintenance other than stated in this manual.

For orders of spare parts and if you want to contact our engineers please find our phone number and address at the beginning of this chapter.

3 Notices on hazards

This document contains important information that is presented either as a warning, caution or note. See the following examples:

WARNING! Type of injury.
Warnings indicate a potential hazard to the health and safety of personnel, and how that hazard may be avoided.

CAUTION! Type of risk.
Cautions indicate a potential hazard to the product but not to personnel, and how that hazard may be avoided.

NOTE! Notes contain other information that is important for personnel.

4 Safety

This chapter contains important information that refer to a potential hazard to the health and safety of personnel, and how that hazard may be avoided.

Safety regulations:

- Electrical installations have to be done by qualified personnel only.
- At connection of voltage feed as well as at service and maintenance work on the conveyor the circuit breaker must be off.
- Test the emergency stop at installation and always when maintenance and service have been done.
- The conveyor must not be operated with the covers removed.
- The data sheet from the coolant supplier must be studied as parts from coolant can cause allergic reactions.

WARNING! Type of injury.
The floor around the conveyor might get slippery from coolant getting outside the machine.

5 Description

NEDERMAN Hinged Steel Belt Conveyors are designed to handle a variation of material in different shapes and forms. They can convey short, long or curley swarf, dry as well as wet. They can also convey parts. Ask NEDERMAN representative for details.

The TL4 type conveyors are suited for conveying of large quantities of long and bushy metal swarf as well as metal scrap.

• Flexible design to meet the most diverse installation layouts

• Belt design with robotic welded plates for long life

• Robust design of both belt and trough to cope with tough applications.

5.1 Function

The frame is designed to cover the chain wheels and its components for increased reliability. The material is conveyed on the upper side of the belt, with a minimum of power, to your scrap bin. To get a clean area around the

conveyor it is equipped with a top plate. Optional the frame can be welded waterproof.

Examples of installations where the NEDERMAN hinged belt conveyors are in successful use:

- Incorporated into machine tools to convey swarf from the machine into a scrap bin (as well as for conveying parts).
- In channels below floor level connecting several or a line of machines for automatic swarf removal.
- In press lines to remove press scrap from the machine area.
- In swarf handling systems.

5.2 Technical data

The hinged steel belt design has robotic welded plates for long life. The hinged steel belt conveyor has a robust design of both belt and trough to cope with tough applications.

Table 5-1: TL4 conveyor main technical data

Model	Chain pitch		Belt thickness	Height sidewings	Height flights	Capacity
	[mm]	[inch]	[mm]	[mm]	[mm]	[kg/h]
TL4	101.6	4	4	63	60	1000 - 3000

6 Main components

We continuously improve our products and their efficiency through the introduction of design modifications. We reserve the right to do this without introducing these improvements on previously supplied products. We also reserve the right, without previous notice, to modify data and equipment, as well as operating and maintenance instructions.

The conveyor consists of the following main components:

- Conveyor frame
- Precision hinged steel belt
- Drive system
- Accessories (standard or customized)

Flights or cleats can be welded at regular intervals onto the belt in order to increase the capacity of the conveyor. The belt is endless driven by a geared motor placed directly onto the shaft.

6.1 Accessories

7 Before installation

7.1 Delivery checks

Check the unit for any transport damage. In case of damage or parts missing, notify the carrier and your local NEDERMAN representative immediately.

7.2 Installation requirements

No specific foundation is required.

8 Installation

8.1 Installing the conveyor

Shorter conveyors will be delivered completely assembled, ready to install and to use. Longer conveyors will be delivered in sections.

The conveyor or the conveying pieces can be handled by a crane.

When frame junctions are used assure that the wheel path (the frame) is in level on both sides.

The belt side wings must overlap so that the rear part of the front side wing is conducted inside the front part of the rear side wing.

The conveyors shall be placed on a plane ground. They need not to be fastened, but it is an advantage to securely fasten the conveyors with expansion bolts, if it is possible. No dynamic forces are being transmitted from the conveyor.

The lubrication directions from the gear manufacturer have to be followed (see enclosure).

9 Using the steel belt conveyer

9.1 Before start-up

WARNING: Before any kind of activity, the SAFETY REGULATIONS (Chapter 4) must be read carefully, and the safety regulations must be strictly adhered to.

9.2 Operation

The operator should always be aware of the normal power consumption of the geared motor, normal flow of transported swarfs , the noise and the level of vibration. By considering the above mentioned factors and observing modifications one can be sure that the conveyor will function properly.

10 Maintenance

Read Chapter '4 Safety' before carrying out maintenance.

Installation, repair and maintenance work is to be carried out by qualified personnel using only original NEDERMAN spare parts. Contact your nearest authorized distributor or NEDERMAN for advice on technical service.

NOTE! The service intervals in this chapter are based on the unit being professionally maintained.

10.1 Maintenance instruction

NEDERMAN Swarf Crusher is very robust in design but should like every other production machine be regularly checked and maintained.

Daily checks should be made at the start of operations until a permanent maintenance schedule can be established. When this has been done only routine checks and general observations are necessary.

After approx. 3 months at one-shift operation, the conveyor shall be checked.

The following items shall be special attended:

1. Belt tension
2. The chain and its position in the frame
3. The rollers

It can be necessary to retighten the belt. The frame and the chain should be checked for eventual excessive wear. The rollers should be easy to move and should run freely. If necessary, the rollers should be greased.

The belt must be in the middle of the frame to avoid unnecessary wear. When tightening the belt, check that it will come in the middle of the frame, otherwise the shaft will not be in a straight angle to the conveying direction. The belt must then be tightened (untightened) with the tightening device, so that the belt will come into its correct position.

The conveyor must be checked in intervals. Damaged parts must immediately be replaced, otherwise the function of the conveyor will be disturbed and even other parts can be damaged, e.g. the belt and the frame.

Belt tightening

Proceed as follows by tightening the belt (see Fig. 2):

1. Loosen the bolts on the bearing plate [4] and the motor attachment [10].
2. Tighten or untighten with the tightening nuts [15].
3. Tighten the belt so much that it is possible to press it down about 5-10 mm just before the tail end.
4. If it is not enough to tighten the belt with the tightening device, it is necessary to take away 2 hinges (see belt disassembly).
5. After the tightening of the belt, the bolts mentioned in item 1 above shall be fastened.

NOTE! We recommend to take extra care in checking the belting and to follow the procedure above when tightening. If the belt is tightened too hard or too

loose, both conditions can cause problems in operation and damage the belt and the conveyor itself.

Belt disassembly

Disassembly of the hinged belt can be done for two reasons:

- To replace damaged parts.
- Cleaning and maintenance of the conveyor trough.

Hinged belt

The belt is to be disassembled in the following order (see Fig. 2):

1. Loosen the bolts on the bearing plate [4] and the motor attachment [10].
2. Untighten the belt by loosening the tightening nuts [15]. The nuts to be totally untightened.
3. Remove the motor [4 screws].
4. Remove the bearing and the motor attachment.
5. Locate the drive shaft [9] so that the belt shaft [25] will be positioned in the middle of the slot of the frame.
6. Remove the pipe pin [24] from the belt shaft.
   NOTE! We recommend to secure the belt so that it is not rolling back into the frame.
7. Pull out the belt shaft through the slot in the frame.
8. Unlink the chain links and the side wings, separate the belt and pull it out of the frame.
9. If you wish to exchange one belt plate, just exchange the damaged one.
10. Assembly takes place in the reverse order.

When you change the complete belt, please note that the side wings on the plate come in the correct position. The wings must overlap in the conveying direction, i.e. to avoid jamming and destruction of the wings. It is recommendable to note the position of the wings on the old belt for correct mounting of the new belt. You can also find the correct position in the exploded view in this manual.

It is possible to pull out and mount the belt with the motor.

When disassembling the belt as per above, run the motor forwards.

When mounting a new belt, put it over the drive shaft and run the motor in reverse.

Cleaning and maintenance of the conveyor shall be conducted due to existing conditions.

10.2 Lubrication

Gear

The gear manufacturer's specifications are to be followed (see enclosure).

NOTE! Some gears are delivered without oil. It is in these cases fully marked on the gear.

The manufacturer's specification is valid.

Drive

The drive shaft bearings are to be greased every 6th month with bearing grease of good quality (egg Statoil Uniway LI62 or similar).

Pulley wheel shaft bearing

When pulley wheel shaft bearings are used the shaft bearings are to be greased every 6th month.

It is to recommend to grease the bearings additionally, when the conveyor is placed outdoors. Bearing grease of good quality is to be used.

Table 10-1: Lubrication plan for steel belt conveyor TL4

Component	Location	Description	Reference height	Recommended lubrication	Quantity of lubrication	Recommended frequency
Grease nipples on TL4	Fig. 1	1) There are one grease nipple on each bearing. There are bearings on both pulley wheel and on the drive shaft.	10 cm and 300 cm	Castrol Entrepreneur Grease	10 ml	Every 2nd week at one-shift operation, or after longer stand stills.
Grease nipples on swivel chute	Fig. 2	2) There are four grease nipples on the outer diameter of the toothed wheel. The cups are equally spaced	300 cm	Castrol Entrepreneur Grease	10 ml	Every 2nd week at one-shift operation, or after longer stand stills.
Gearbox on TL4	Fig. 3	3) Remove the oil plug to fill the gearbox with oil. Note that the gearbox is filled with oil at delivery. There is also a oil plug on bottom of the gearbox which can be used to drain the gearbox of oil.	300 cm	Castrol Alpha SP 220	3.2 litres	Normal control of oil level. Change of oil every 10000 hours or every 2-3 years. At extreme conditions it can be necessary to change oil every 5000 hours. See separate maintenance manual for gearbox.
Gearbox on swivel chute	Fig. 4	4) The gearbox is placed under the upper horizontal part of the conveyor.	300 cm	Long lifetime lubrication	Not applicable	Maintenance free. See separate maintenance manual of gearbox.

10.3 Spare parts

Contact your nearest authorized distributor or NEDERMAN for advice on technical service or if you require help with spare parts. See also **www.nederman.com**.

Ordering spare parts

When ordering spare parts always state the following:

- Product serial number and NEDERMAN reference number (see the product identification plate).
- Article number and designation - see Table 10-2.
- Quantity of the parts required.

Table 10-2: Spare parts specification - see Fig. 2

Pos.	Article No.	Designation
1	Order based	Top cover 12” - 60”
4	Order based	Bearing plate
5	9003303	Chain wheel - Order based design
6	9003306	End protection
7	970381480	Key - Order based design
9	940327	Shaft 12” - Order based design
-	940328	Shaft 18” - Order based design
-	940329	Shaft 24” - Order based design
-	940330	Shaft 30” - Order based design
-	940331	Shaft 36” - Order based design
-	940360	Shaft 42” - Order based design
-	940370	Shaft 48” - Order based design
-	940365	Shaft 60” - Order based design
10	Order based	Motor attachment
14	97155	Flanged bearing - Order based design
15	970320024	Tightening nut
16	Order based	Geared motor
-	76374768	Steel Belt 4” x 9”
-	76374769	Steel Belt 4” x 12”
-	76374770	Steel Belt 4” x 18”
-	76374771	Steel Belt 4” x 24”
-	76374772	Steel Belt 4” x 30”
-	76374773	Steel Belt 4” x 36”
-	76374774	Steel Belt 4” x 42”
-	76374775	Steel Belt 4” x 60”
-	TL4-par	Pair of wheels
17	9003131	Belt plate with side wing 12”
-	9003132	Belt plate with side wing 18”
-	9003133	Belt plate with side wing 24”
-	9003134	Belt plate with side wing 30”
-	9003135	Belt plate with side wing 36”
-	9003136	Belt plate with side wing 42”
-	9003138	Belt plate with side wing 48”
-	9003137	Belt plate with side wing 60”
18	Order based	Flight 12” - 60”
19	940314	Inner link
20	940315	Outer link
22	940339	Roll
23	940340	Bushing
24	970360424	Pipe pin
25	9003121	Belt shaft 12”
-	9003122	Belt shaft 18”
-	9003123	Belt shaft 24”
-	9003124	Belt shaft 30”

Pos.	Article No.	Designation
-	9003125	Belt shaft 36”
-	9003126	Belt shaft 42”
-	9003128	Belt shaft 48”
-	9003127	Belt shaft 60”
26	Order based	Pulley wheel shaft 12” - 60”
28	9003303	Chain wheel - Order based design
29	9003308	Bearing plate - Order based design
30	970155	Flanged bearing - Order based design

11 Recycling

The product has been designed for component materials to be recycled. Its different material types must be handled according to relevant local regulations. Contact the distributor or NEDERMAN if uncertainties arise when scrapping the product at the end of its service life.

12 Troubleshooting

This trouble-shooting schedule only serves as a guide to probable reasons for faults. As mentioned earlier correct maintenance is the best insurance against the development of defects.

Table 12-1: Trouble shooting guide

Problem	Possible cause	Solution
The belt runs irregular.	The belt not tightened.	Tighten the belt.
Excessive wear on frame.	The belt uneven.	Adjust the tightening nuts.
The belt jammed.	The belt not tightened or scrap pieces block the conveyor.	Tighten the belt. If any foreign parts can have entered into the conveyor, it is necessary to disassemble the conveyor for inspection of belt and frame.
The belt ”squeaks”.	The belt too tight.	Release tension by adjusting the tightening nuts.

13 Acronyms and abbreviations

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