

SKF Belt Tension System



The SKF way to support transmission

- Easy
- Quick
- Repeatable



SKF Belt Tension System

An innovative solution for belt drives

It is known that belts need to be changed regularly, should have the correct tension and that belt drives need correct alignment. Good maintenance for belt drives requires time and effort.

Now belt maintenance can be done quickly and easily. The SKF Belt Tension System provides the solution. Once the SKF Belt Tension System is installed, belt adjustment and belt replacement can be done in minutes while keeping the required precision for alignment and belt tension. Checking the belt tension is reduced to connecting a hand-held hydraulic pump, reading the pressure on the gauge and adjust the pressure to the initially taken pressure, if necessary.

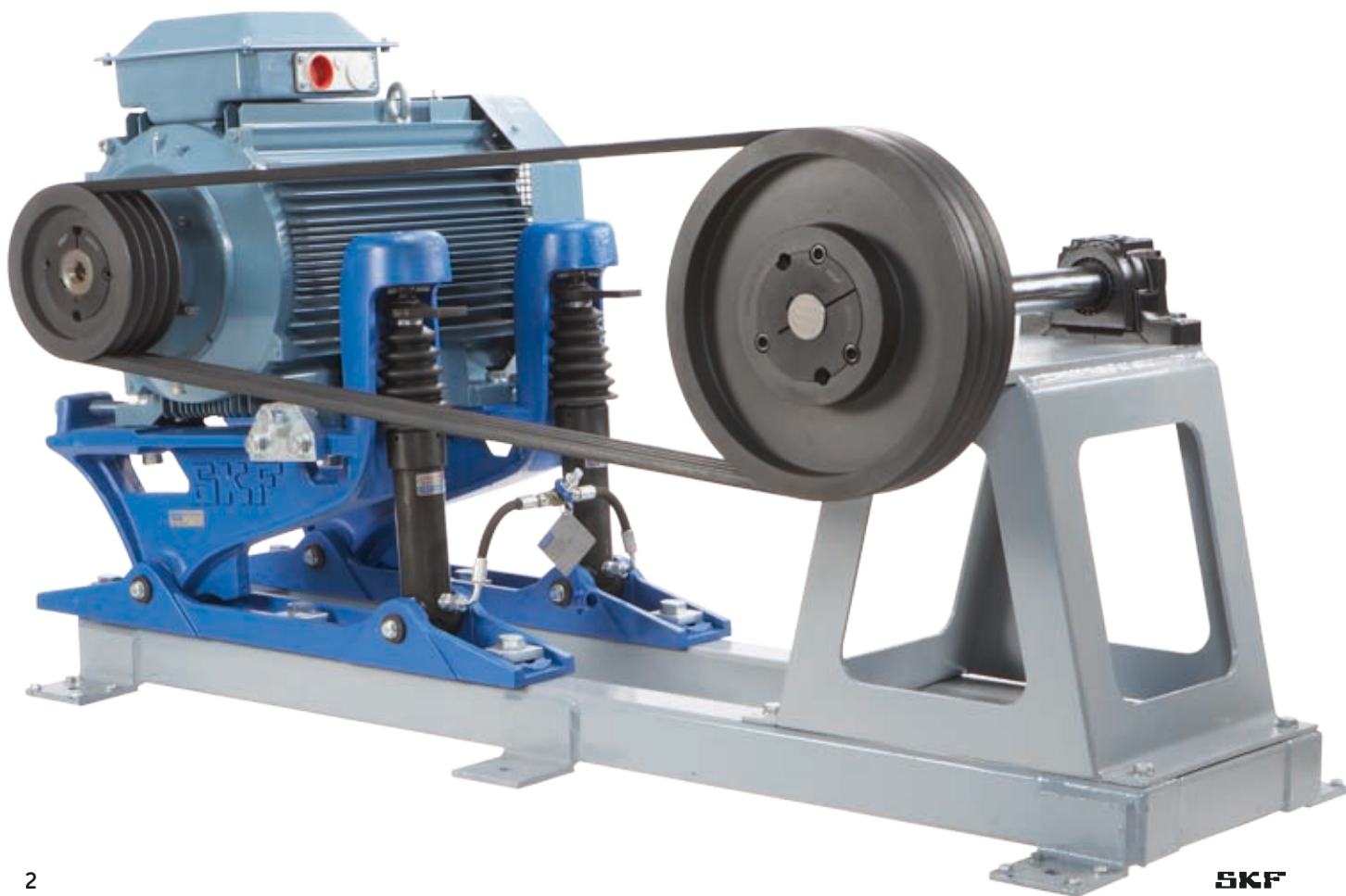
- **Easy alignment**
Alignment is necessary only once, independent of the number of belt replacements.
- **Quick adjustments**
Belt tension can be quickly adjusted.
- **Repeatable results**
Regular checks are possible and belt tension can be set by only adjusting the pressure.

Unique function provides various benefits

The SKF Belt Tension System enables controlled moving of the motor axis by hydraulic cylinders. With a hand-held hydraulic pump the cylinders of the SKF Belt Tension System are moved upwards or downwards. Increasing or releasing the hydraulic pressure moves the motor and increases or releases the belt tension which is directly related to the pressure in the cylinders.

Only two additional tools

To operate an SKF Belt Tension System, only a hand-held hydraulic pump with pressure gauge and a hammer are required.



Initial installation

For initial installation, the SKF Belt Tension System is mounted between the motor and support surface (→ **fig. 1**). As usual, motor and driven unit then need to be aligned. This should be done using laser alignment tools, e.g. the SKF Belt Alignment Tool TMEB 2.

Then the belt is installed. The belt is placed, as usual, over the two pulleys. A hand-held hydraulic pump, e.g. the SKF THPT 1, has to be connected (→ **fig. 2**). By increasing the hydraulic pressure (→ **fig. 3**), the SKF Belt Tension System moves the motor until the correct belt tension is reached (→ **fig. 4**). The hydraulic pressure for the correct tension of the belt is recorded for future re-adjustment.

As a last step, the cylinders are fixed mechanically and the hydraulic pump can be removed. Mechanical fixing is done easily with a hammer (→ **fig. 5**).

Easy and reliable tension check

Checking and adjusting the belt tension will become an easy exercise:

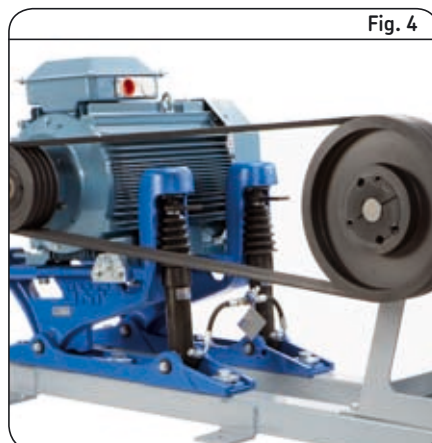
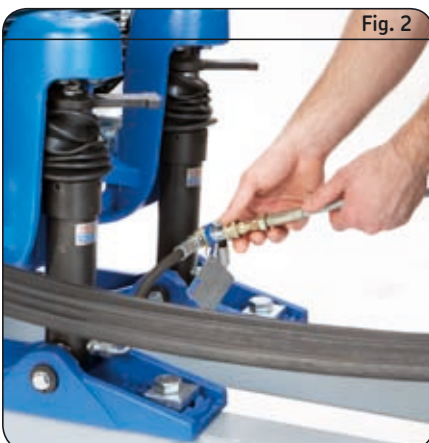
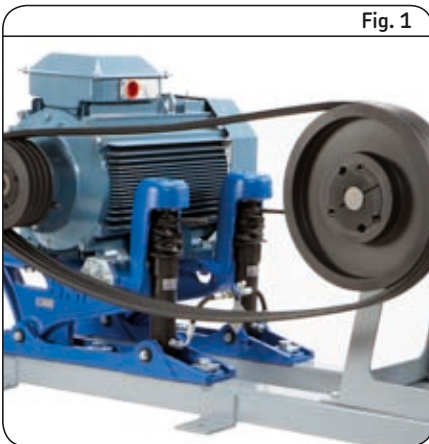
- Connect the hand-held hydraulic pump
- Pump up a low pressure
- Release the mechanical fixing
- Check the hydraulic pressure and, if necessary, increase it to the pressure that was noted during the initial installation
- Fix the cylinders again mechanically
- Remove the pump

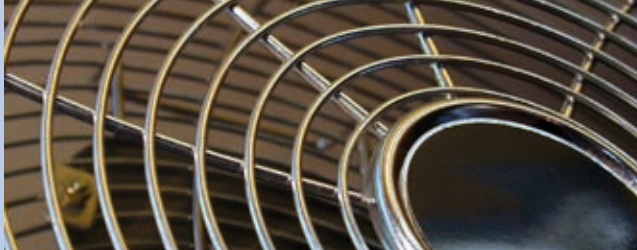
That means that maintenance is reduced to no more than checking the pressure value.

Quick belt replacements

A belt replacement is only little more than a tension check:

- Connect the hand-held hydraulic pump
- Pump up a low pressure
- Release the mechanical fixing
- Lower the motor, by release of the hydraulic pressure, until the belt hangs loose
- Replace the belt
- Pump until the correct pressure value is reached
- Fix the cylinders mechanically
- Remove the pump





Potential industries for using the SKF Belt Tension System

The SKF Belt Tension System is useful and time saving in all industries where short maintenance times, high production and consistently high quality is required, including:

- Food and beverage
- Pulp and paper
- Mining and mineral processing
- Metalworking
- Chemical and petrochemical
- Material Handling

For most common motor sizes there is an appropriate size of the SKF Belt Tension System: either the 1 cylinder or the 2 cylinder version.



*SKF Belt Tension System with 1 cylinder,
IEC motor class 160 – 180*



Reasons for implementing this unique SKF Belt Tension System

Mounting drive units within any kind of production or transportation system always requires precision for the correct positioning. Only this ensures a long service life of the belt and all associated components. The SKF Belt Tension System provides benefits for the belt-driven system by improving the reliability of the whole system.

Benefits for the belt-driven system:

- Assured repeatable maintenance quality
- Quick and reliable tension checks
- Easy preventive maintenance
- Safe, simple and fast belt replacement

Reliability for the whole system:

- Reduced costs, due to prolonged belt life
- Higher uptime of the whole system due to less time-consuming breakdowns
- Less vibrations and therefore also higher efficiency, due to correct belt tension
- Easy maintenance procedure thereby minimizing the risk of injuries

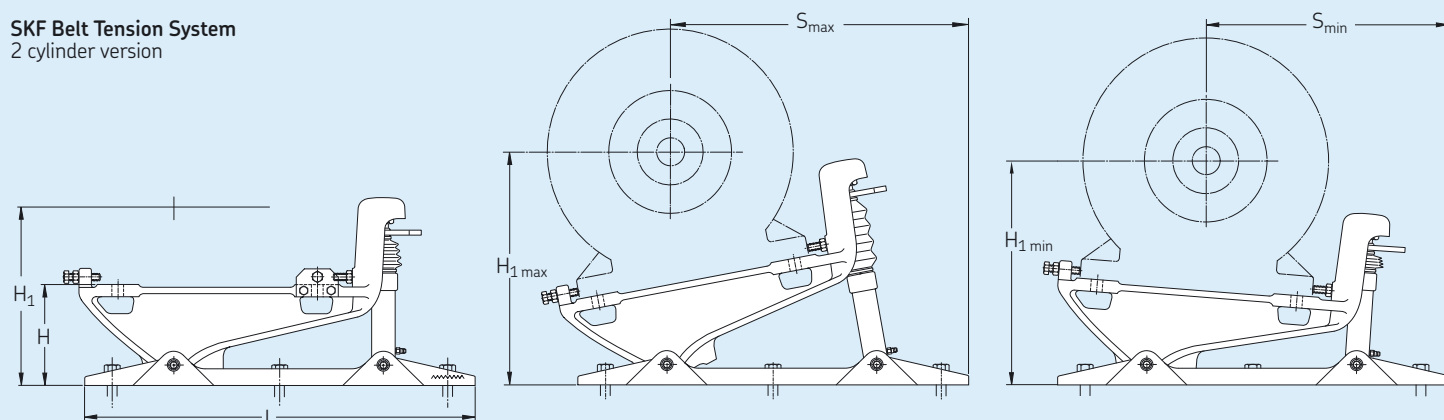
Motor sizes according to standards

The SKF Belt Tension System is available for nine IEC motor sizes. It is standardized to suit the range of IEC motor dimension classes from 160 up to 400. (acc. IEC 60072) In addition several NEMA standard motors can be mounted on the SKF Belt Tension System. In this case please compare your motor dimensions with the figures in **table 1** and **table 2**. For further information please contact SKF.



SKF Belt Tension System with 2 cylinders, IEC motor class 200 – 400

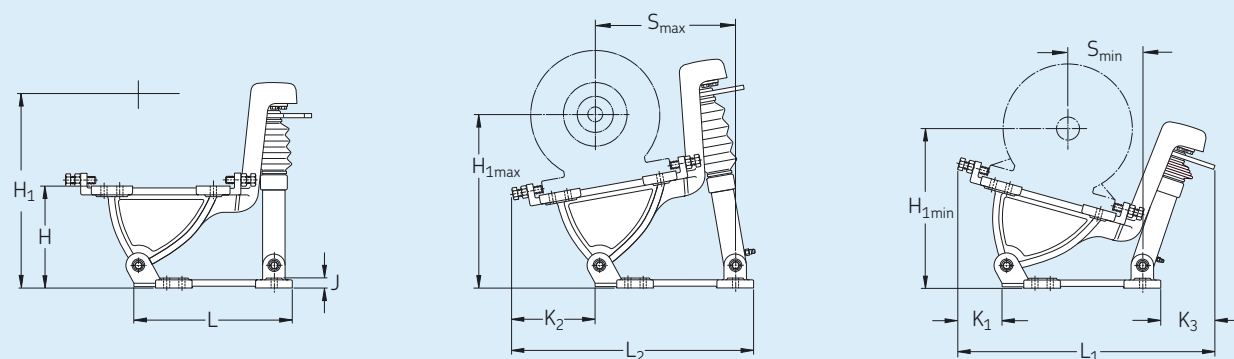
SKF Belt Tension System
2 cylinder version



Designation	IEC motor class	L	H	H ₁	H _{1 min}	H _{1 max}	S _{min}	S _{max}
	–	mm						
PHL 200/225 H1	200	812	250	457	433	468	436	574
	225	812	250	480	460	488	452	598
PHL 250/280 H1	250	930	250	506	484	517	520	656
	280	930	250	535	517	541	542	687
PHL 315 H1	315	1000	250	569	553	576	597	739
PHL 355 H1	355	1050	295	652	634	659	629	774
PHL 400 H1	400	1150	295	696	681	703	715	859

For belts longer than 8 m and tension angles greater than 45° please contact SKF. For applications that are not horizontally mounted please contact SKF. Accessories and spare parts available.

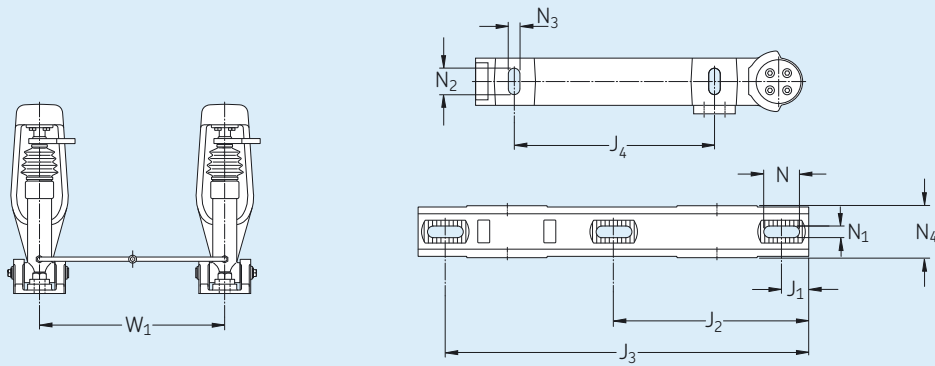
SKF Belt Tension System
1 cylinder version



Designation	IEC motor class	L	L ₁	L ₂	H	H ₁	H _{1 min}	H _{1 max}	K ₁	K ₂	K ₃	S _{min}	S _{max}
	–	mm											
PHL 160/180 H1	160	414	653	616	256	412	385	422	107	201	131	190	343
	180	414	679	643	256	433	408	440	134	228	131	196	358

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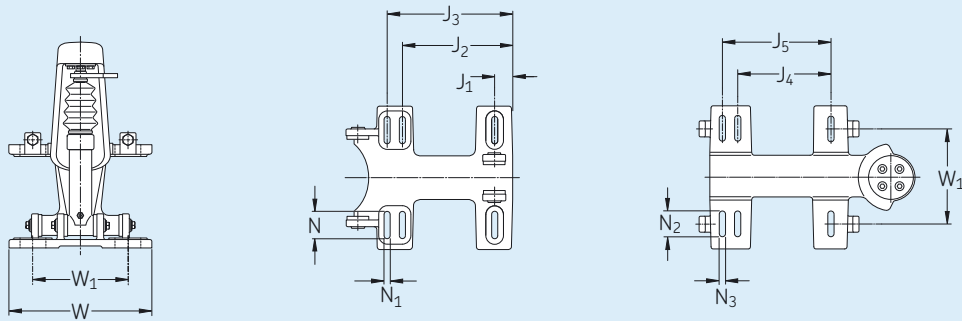
Table 1



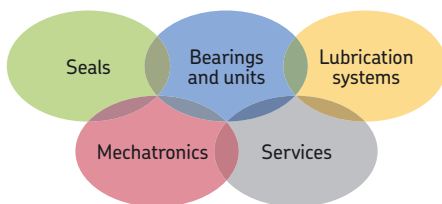
N	N ₁	N ₂	N ₃	N ₄	W ₁	J ₁	J ₂	J ₃	J ₄	used cylinders	mass
mm										–	kg
100	22	50	20	116	410 ^{*)}	70	394	743	318	2 x 35	116
100	22	50	20	116	410 ^{*)}	70	394	743	356	2 x 35	116
100	28	60	24	122	520 ^{*)}	70	453	861	406	2 x 35	138
100	28	60	24	122	520 ^{*)}	70	453	861	457	2 x 35	138
100	28	60	30	122	610 ^{*)}	70	488	931	508	2 x 35	152
100	33	70	35	141	730 ^{*)}	70	513	981	610	2 x 35	230
100	33	70	35	141	900 ^{*)}	70	563	1081	686	2 x 50	268

^{*)} Maximum distance with the standard flexible hydraulic hose. Longer hoses, depending on motor length, are available on request.

Table 2



N	N ₁	N ₂	N ₃	W	W ₁	J ₁	J ₂	J ₃	J ₄	J ₅	used cylinders	mass
mm											–	kg
71	16	69	16	360	249	50	304	329	254	279	1 x 35	50
71	16	69	16	360	249	50	304	329	254	279	1 x 35	50



The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide.

These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems.

A global presence provide SKF customers uniform quality standards and universal product availability.



SKF Power transmission products

are the vital link between moving parts. They play an important role in many industries. More than 27 000 power transmission items are offered with the high standard of SKF quality. The SKF world-wide warehouse and logistic system enable distributors and end users to have smaller stock levels and less capital invested in inventory. (www.skfptp.com)



SKF Belt Alignment Tool TMEB 2

Precision by laser alignment of the pulleys. With only 2 components (emitting and receiving) you get information about horizontal, vertical and parallel accuracy of pulley and belt. Reduced wear, increased life time, less vibrations and noise allows easy, time and cost saving work. (www.mapro.skf.com)



SKF Belt Frequency Meter

A two component system consisting of a hand-held meter attached to a sensor for contact-free belt tension measurement. The tool is easy to use and offers accurate measurement of belt tension for three belt types: V-Belts, Multi-V-Belts and Timing Belts. With the correct belt tension the service life of the whole belt drive is increased as well as the service life of associated bearings. (www.skfptp.com)

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Publication 6804 EN · August 2008

This publication supersedes publication 6702 EN

Printed in Germany on environmentally friendly paper.

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