



Hansen P4

Standardized single stage gear units with parallel shafts

Réducteurs standard à un étage à arbres parallèles horizontaux

Einstufige Normgetriebe mit parallelen horizontalen Wellen

Reductores normalizados de ejes paralelos de una etapa

Hansen P4

Single stage gear units

Réducteurs à un étage

The Hansen P4 gear units

The experience gained through years of close co-operation with the customer, enabled Hansen Industrial Transmissions nv to create the innovative Hansen P4 range of industrial gear units. This fourth generation of standardised, multistage gear units, launched in 1993, is market leading in quality and technology, and excels in reliability and durability.

To complement the current Hansen P4 programme of multistage gear units, Hansen Industrial Transmissions nv has introduced a brand-new and innovative range of single stage gear units, suitable for various applications requiring small reduction ratios, such as paper machines, pumps, compressors, etc.

Reliability, durability and serviceability - our customers' main requirements - have been combined with improved efficiency, low noise and fitness for use.

Our design team achieved an unprecedented balance between mechanical, thermal and bearing ratings, respecting Hansen's industrial gearboxes tradition of providing top quality solutions in a cost-efficient way.

The range of Hansen P4 single stage gear units caters for:

- five sizes with parallel, horizontal shafts
- two mounting positions
- R 20 range of ratios from 1.20 to 5.60
- mechanical power ratings of 100 kW up to 4 MW.

Les réducteurs Hansen P4

L'expérience acquise grâce à une étroite collaboration avec le client durant des années, a permis à Hansen Industrial Transmissions nv de concevoir une gamme de réducteurs industriels à plusieurs trains d'engrenages Hansen P4.

Cette quatrième génération de réducteurs standard à plusieurs étages, mise sur le marché depuis 1993, est le leader sur le marché quant à qualité et technologie. En plus elle se caractérise par une fiabilité et une solidité excellentes.

Pour compléter son programme de réducteurs à plusieurs étages Hansen P4, Hansen Industrial Transmissions nv lance sur le marché une nouvelle gamme de réducteurs à un étage, innovation parfaitement adaptée aux applications qui demandent de petits rapports de réduction comme: les machines à papier, les pompes, les compresseurs, etc.

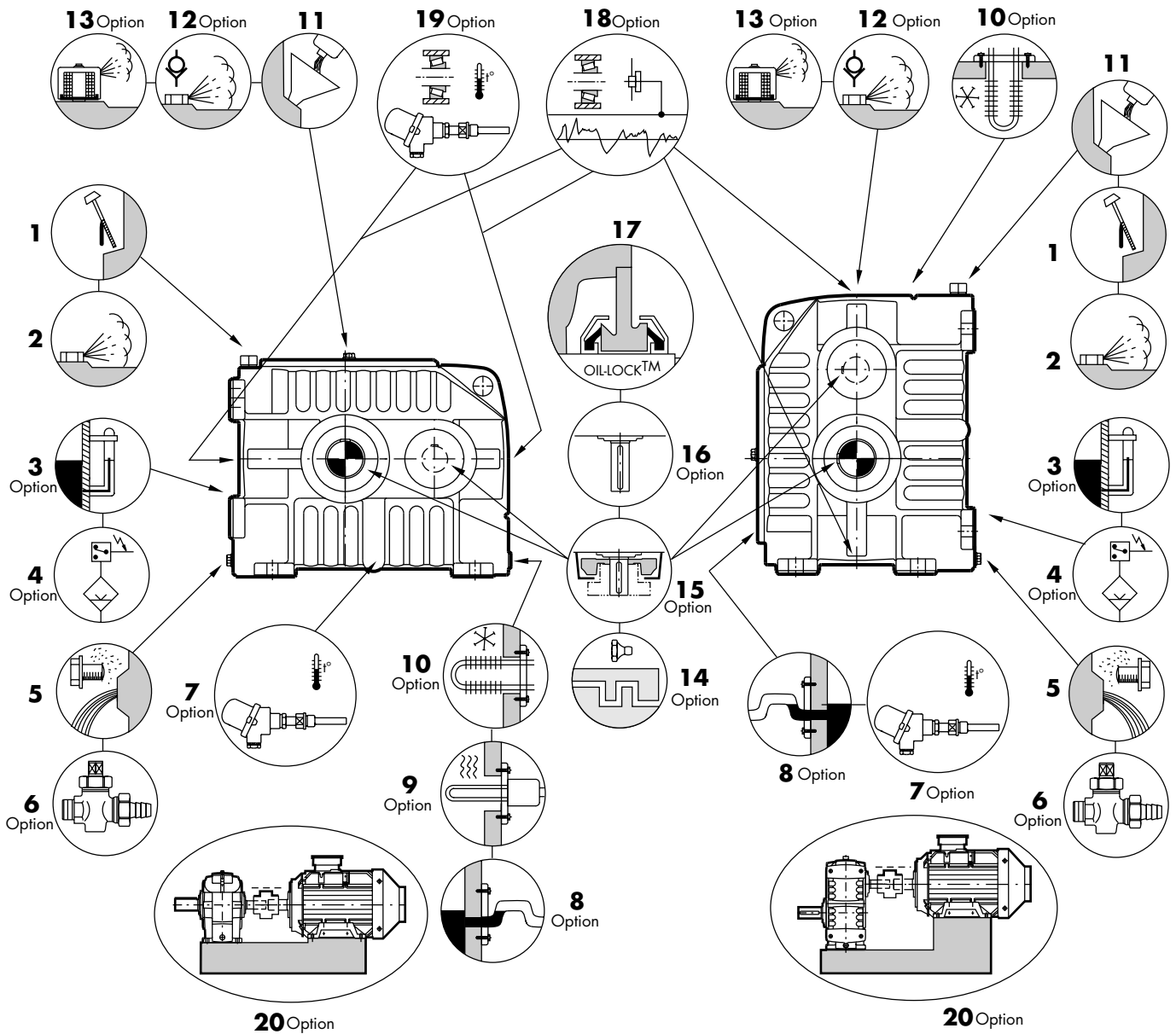
Fiabilité, solidité, utilité sont les exigences principales de la clientèle. Elles ont été combinées avec un plus haut rendement, un bruit réduit et flexibilité pour une adaptation aux applications spécifiques.

Nos ingénieurs sont parvenus à trouver un équilibre parfait entre puissance mécanique, puissance thermique et capacité des roulements, tout en respectant la tradition de Hansen industrial gearboxes de procurer une solution économique et de haute qualité.

La gamme des réducteurs à un étage Hansen P4 comprend:

- cinq tailles de réducteurs à arbres parallèles horizontaux
- deux positions de montage
- une progression R20 des rapports de réduction de 1,20 à 5,60
- une puissance mécanique nominale de 100 kW jusqu' à 4 MW.

GEAR UNIT STANDARD ACCESSORIES AND OPTIONS



: optional

- 1 dipstick
- 2 breather plug
- 3 oil level glass
- 4 oil level switch
- 5 magnetic plug and draining plug
- 6 drain cock with hose coupling
- 7 Pt 100 meter for oil sump temperature
- 8 oil overflow
- 9 heater at ancillary cover
- 10 cooling coil at ancillary cover
- 11 oil filler plug
- 12 anti-humidity breather plug
- 13 dust-proof breather plug
- 14 regreasable labyrinth (DIN 71412):
 - at high speed shaft
 - at low speed shaft

- 15 standard fan:
 - single standard fan at high speed shaft
 - second standard fan at low speed shaft
- 16 extended shaft end
 - at high speed shaft
 - at low speed shaft
- 17 Oil-Lock™ seal at high and low speed shaft
- 18 nipple for vibration sensor
 - at high speed shaft
 - at low speed shaft
- 19 Pt 100 meter for bearing temperature:
 - at high speed shaft
 - at low speed shaft
- 20 base plate M10

The gear unit

Coding



Type

- 1 : Series
2 :
3 :
4 :
5 :
5 bis :

- Q** : Hansen P4
H : Horizontal low speed shaft
P : Parallel shafts
Size: C -> G
Number of stages: 1
W : High speed shaft above low speed shaft
/: High speed shaft and low speed shaft in the same horizontal plane

Shaft arrangement

6 : High speed shaft extension:

R : right

7 : Low speed shaft extension :

L : left

Note: Only shaft arrangement LR or RL is possible

8 : Low speed shaft type :

Ratio

9 :

Basic components

Helical gears

Designed and rated:

- based on AGMA, ISO and long term field experience;
- for maximum load capacity, minimum losses and quiet operation.

The rating tables show the mechanical power ratings P expressed in kW, i.e. the power which the gear unit can transmit during 10h/day, at uniform load, whereby 5 peak torques up to 200% of the nominal torque and lasting not more than 5 seconds each, are allowed.

The mechanical power ratings shown in the tables relate respectively to input speeds of 1800, 1500, 1200, 1000, 900 and 750 RPM at the high speed shaft. They are also valid for full load speed which are max. 3% lower than the synchronous speeds.

Interpolation will yield power rating values for intermediate speeds. The power rating for speeds lower than 750 RPM is based on the continuous torque rating of that speed.

For input speeds exceeding 1800 RPM, please refer to us.

All geared components are manufactured from alloy steel, gas carburized, hardened and ground. The same applies to the high speed shafts.

Low speed shafts

The low speed shaft is only available in solid version.

Bearings

Heavy duty tapered roller bearings on all shafts.

Calculated in compliance with AGMA, ISO and renowned bearing manufacturers.

Housings

Made from grey pearlitic cast iron.

Machined on CNC machining centers.

Designed to ensure strength and rigidity.

Designed to dissipate heat.

Designed to minimise noise.

Systems

Lubrication

Lubricants: mineral and synthetic oils are allowed. Lubricants should always contain adequate EP-additives (refer to Service Manual).
Splash lubrication is standard.

The gear unit housing acts as a large oil sump

Pressure lubrication: if specified in the selection tables.

Optional equipment : refer to page A1

Sealing

Static: generalized use of sealing compound
inspection cover: gasket seal

Rotary: high and low speed shafts:

- Oil Lock™ : - dual purpose labyrinth
- maintenance free
- oil return to sump
- grease purged labyrinth seal optional.

Cooling

Heat generated in the gear unit while running, can be dissipated by:

- natural cooling through the housing
- fan cooling
- cooling coil
- combination of cooling coil and fan(s)
- oil-to-water or oil-to-air cooler
- central cooling system

For thermal check, refer to page A6

Cooling provisions

1. Fan cooling

A single fan is mounted on the high speed shaft. A second fan can be mounted on the low speed shaft. Free air entry at the suction side should always be guaranteed.

2. Water cooling coil

The extra thermal power rating P_{TC+} and the connection dimensions as shown in the catalog apply for a cooling system as indicated hereafter:

- a standard cooling coil made from copper alloy CuNi10Fe1Mn complying with DIN 17664 and allowing the use of fresh as well as seawater. (Maximum permissible water pressure: 8 bar)
- difference between oil bath and cooling water temperature is 60°C
- waterflow ranging between 5 and 18 l/min; precise specifications are shown on the certified dimensional drawing.
- dimensional drawings on page C5.

Remark: The cooling coil can be removed without disassembling the gear unit.

3. Air and water cooling system

When the fan cooling is either insufficient, or unsuitable because of the nature of the application or when a water cooling coil is not taken into consideration, an oil-to-air or oil-to-water cooling system may be recommended. For the dimensional drawings refer to us.

3.1. The standard oil-to-air cooling system

This system can either be connected to the gear unit or supplied with it as a separate element. (diagram, fig. page A4)

3.2. The standard oil-to-water cooling system

This system can either be connected to the gear unit or supplied with it as a separate element (diagram, fig. page A4).

3.3. For cooling with the newly designed **Manifold** with built-on motor and pump and built-in measuring equipment, please refer to us.

SELECTION

Mechanical power rating

Code	1 Q	2 H	3 P	4 G	5 I	5 bis	6 L	7 R	8 N	9 4
------	------------	------------	------------	------------	------------	-------	------------	------------	------------	------------

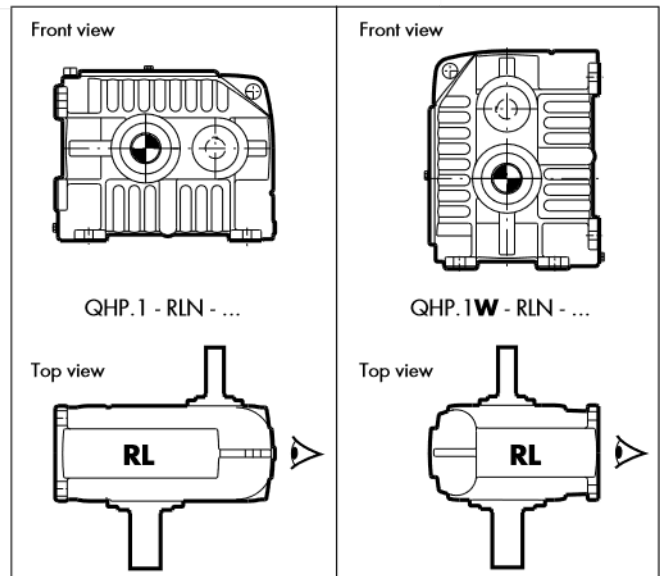
Procedure

1 Q	[Redacted]
2 H	[Redacted]
3 P	[Redacted]
	Application Load conditions Prime mover → SF Service factor SF
	Actual absorbed power P_a and/or Motor power P_m × SF ≤ P
4	[Redacted]
5 I	Number of stages → P Mechanical power rating P
9	[Redacted]
5 bis	W : High speed shaft above low speed shaft
6	[Redacted] R : right
7	[Redacted] L : left Note : only shaft arrangement LR or RL is possible
8 N	[Redacted]

Reference Data



Dimensional drawings



Detailed example of selection: see page A8

Other transmissions ratio's

Any arbitrary ratio between 1,2 and 5,6 can be matched with a maximum deviation of 1%.
For dimensional drawings see pages C1 up to C4.
Refer to us for the centre distance (dimension CA), for the exact ratio and power rating.

Customised centre distance: refer to us.

Hansen P4

Gear unit	Réducteur à engrenages	Zahnradgetriebe	Reductor	<table border="1"> <tr><td>Q</td></tr> <tr><td>H</td></tr> <tr><td>P</td></tr> <tr><td>C ▶ G</td></tr> <tr><td>I</td></tr> </table>	Q	H	P	C ▶ G	I	<table border="1"> <tr><td>P</td></tr> </table>	P
Q											
H											
P											
C ▶ G											
I											
P											
Horizontal low speed shaft	Arbre P.V. horizontal	Langsamdr. Welle: horizontal	Eje lento horizontal								
Parallel shafts	Arbres parallèles	Stirnräder	Ejes paralelos								
Size	Taille	Baugröße	Tamaño								
Single stage	Un étage	Einstufig	Una etapa								

Mechanical power ratings Puissances mécaniques nominales Nennleistungen Potencias mecánicas nominales kW

i _N	i _{ex}	min ⁻¹		Size - Taille - Baugröße - Tamaño				
		n ₁	n ₂	C	D	E	F	G
3,55	3,5263	1800	510	380	560	960	1650	2250
		1500	420	330	480	830	1450	1950
		1200	340	275	400	690	1200	1600
		1000	280	235	350	580	1050	1400
		900	255	215	320	520	940	1250
		750	210	185	270	430	800	1100
4,5	4,4211	1800	450	380	560	940	1650	2250
		1500	375	330	480	780	1450	1950
		1200	300	275	400	620	1200	1600
		1000	250	235	340	520	1050	1400
		900	225	215	300	470	940	1250
		750	190	185	255	410	790	1100
5	4,9333	1800	400	380	540	830	1650	2250
		1500	330	320	450	690	1400	1950
		1200	265	270	360	580	1100	1600
		1000	220	235	295	510	930	1400
		900	200	215	275	470	840	1250
		750	165	185	240	410	700	1050
5,6	5,6000	1800	360	280	400	740	1300	1800
		1500	300	250	340	620	1150	1550
		1200	240	200	275	490	910	1300
		1000	200	170	235	410	760	1100
		900	180	155	220	370	690	1000
		750	150	130	190	330	580	860

GHP.1.
P (kW)
J (kgm²)

Moments of inertia J related to the HSS Moments d'inertie J rapportés à l'arbre G.V. Massenträgheitsmomente J beziehen sich auf die SDW Momentos de inercia J relativos al eje rápido J kgm²

i _N	Size - Taille - Baugröße - Tamaño				
	C	D	E	F	G
1,2	0,115	0,26	0,52	1,55	3,8
1,25	0,1	0,22	0,45	1,35	3,3
1,4	0,11	0,245	0,49	1,45	3,6
1,6	0,115	0,25	0,5	1,5	3,7
1,8	0,065	0,15	0,3	0,89	2,15
2	0,07	0,155	0,32	0,94	2,3
2,24	0,085	0,185	0,37	1,1	2,65
2,5	0,045	0,1	0,205	0,59	1,45
2,8	0,05	0,115	0,235	0,68	1,7
3,15	0,04	0,095	0,195	0,56	1,4
3,55	0,02	0,07	0,19	0,47	1,1
4	0,025	0,07	0,205	0,51	1,15
4,5	0,04	0,085	0,24	0,6	1,35
5	0,02	0,055	0,145	0,36	0,83
5,6	0,03	0,065	0,17	0,42	0,96

i_N Nominal ratio i_N Rapport nominal i_N Nennübersetzung i_N Índice nominal
n_{1,2} Nominal speed (rpm) n_{1,2} Vitesse nominale n_{1,2} Nenndrehzahl n_{1,2} Velocidades nominales (r.p.m.)

Gear unit	Réducteur à engrenages	Zahnradgetriebe	Reductor	Q
Horizontal low speed shaft	Arbre P.V. horizontal	Langsamdr. Welle: horizontal	Eje lento horizontal	H
Parallel shafts	Arbres parallèles	Stirnräder	Ejes paralelos	P
Size	Taille	Baugröße	Tamaño	C ▶ G
Single stage	Un étage	Einstufig	Una etapa	I

High and low speed shaft in the same horizontal plane **Arbre G.V. et P.V. dans le même plan horizontal** **Schnell- und langs. dr. Welle in der gleichen horizontalen Ebene** **Ejes rápido y lento en el mismo plano horizontal**

The user is responsible for the provision of **safety guards** and correct installation of all equipment.

Certified dimensions upon request.

Les dispositifs de protection doivent être prévus par l'utilisateur. Celui-ci est responsable de l'installation correcte de l'ensemble.

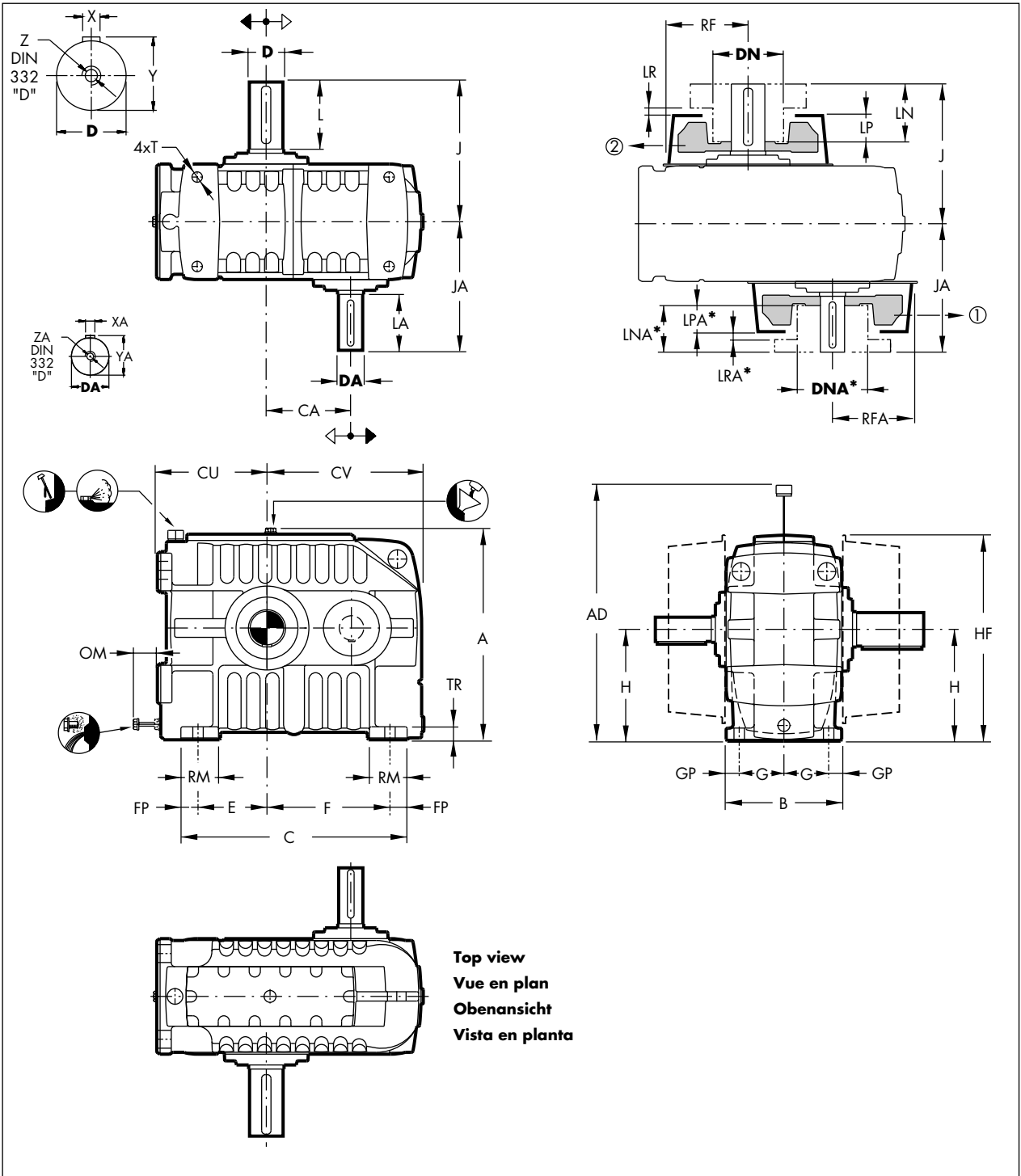
Dimensions définitives sur demande.

Der Benutzer ist verantwortlich für die Beistellung der **Schutzhauben** und das fachgemäße Aufstellen der gesamten Ausrüstung.

Verbindl. Abmessungen auf Wunsch.

El usuario es responsable del aprovisionamiento de los **dispositivos de seguridad** y de la correcta instalación de todo el equipo.

Plano de dimensiones certificadas, bajo petición.



Top view	Vue en plan	Obenansicht	Vista en planta
Shaft arrangements	Dispositions des arbres	Wellenanordnungen	Disposición de ejes

* If the available space is insufficient to mount the coupling, refer to us. An extended shaft end can be offered.

* Consultez nous si l'espace disponible est insuffisante pour le montage d'un accouplement. Un bout d'arbre allongé peut être offert.

* Bei nicht ausreichendem Raum zur Montage der Kupplung, ist Rückfrage empfohlen. Eine verlängerte Welle kann angeboten werden.

* En caso de que el espacio disponible para el montaje del acoplamiento no es suficiente, sírvanse consultarnos. Un eje prolongado puede ofrecerse.

Gear unit	Réducteur à engrenages	Zahnradgetriebe	Reductor	Q
Horizontal low speed shaft	Arbre P.V. horizontal	Langsamdr. Welle: horizontal	Eje lento horizontal	H
Parallel shafts	Arbres parallèles	Stirnräder	Ejes paralelos	P
Size	Taille	Baugröße	Tamaño	C ▶ G
Single stage	Un étage	Einstufig	Una etapa	I

High and low speed shaft in the same horizontal plane **Arbre G.V. et P.V. dans le même plan horizontal** **Schnell- und langs. dr. Welle in der gleichen horizontalen Ebene** **Ejes rápido y lento en el mismo plano horizontal**

The user is responsible for the provision of **safety guards** and correct installation of all equipment.

Certified dimensions upon request.

Les dispositifs de protection doivent être prévus par l'utilisateur. Celui-ci est responsable de l'installation correcte de l'ensemble.

Dimensions définitives sur demande.

Der Benutzer ist verantwortlich für die Beistellung der **Schutzhauben** und das fachgemäße Aufstellen der gesamten Ausrüstung.

Verbindl. Abmessungen auf Wunsch.

El usuario es responsable del aprovisionamiento de los **dispositivos de seguridad** y de la correcta instalación de todo el equipo.

Plano de dimensiones certificadas, bajo petición.

(1) approximate values
(1) valeurs approximatives
(1) Richtwerte
(1) valores aproximados

iN	CA					Oil (litres) - Huile (litres) - Öl (Liter) - Aceite (litros) (1)				
	QHPC1	QHDP1	QHPE1	QHPP1		QHPC1	QHDP1	QHPE1	QHPP1	QHPP1
1,2	181	211	242	302	362	15,5	20	33,5	52	83
1,25	175	204	233	291	349	15,5	20,5	34	52	84,5
1,4	188	219	250	313	375	14,5	18,5	31	47,5	77
1,6	199	232	265	332	398	13	17,5	28,5	43	69
1,8	173	202	230	288	346	14,5	18,5	31	47,5	77
2	184	215	245	307	368	13	17,5	28,5	43	69
2,24	200	234	267	334	401	11,5	15	25,5	37,5	59,5
2,5	171	200	228	286	343	13	17,5	28,5	43	69
2,8	188	219	250	313	375	11,5	15	25,5	37,5	59,5
3,15	183	213	244	305	365	11,5	15	25,5	37,5	59,5
3,55	166	190	237	285	332	12,5	17	26	41	65,5
4	179	205	256	307	359	11,5	15	23	35,5	58
4,5	198	227	283	340	396	9,5	12,5	18,5	29,5	45
5	172	196	245	295	344	11,5	15	23	35,5	58
5,6	191	218	273	327	382	9,7	12,5	18,5	28,5	45

	CA				
	QHPC1	QHDP1	QHPE1	QHPP1	QHPP1
Min.	166	190	228	285	332
Max.	200	234	283	340	401

Type Typ -Tipo	A	AD	B	C	CU	CV	E	F	FP
QHPC1	525	910	280	560	245	375	160	310	45
QHDP1	580	1010	310	615	295	415	185	330	50
QHPE1	695	1220	350	690	315	500	190	400	50
QHPP1	820	1440	400	770	395	575	230	440	50

Type Typ -Tipo	G	GP	H	J	OM	RM	T	TR	kg (1)
QHPC1	110	30	270	360	40	95	24	30	250
QHDP1	120	35	300	375	40	111	28	35	340
QHPE1	140	35	350	450	40	111	28	35	530
QHPP1	160	40	420	515	135	122	35	40	830

Type Typ -Tipo	Shafts Keys - Arbres Clavettes - Wellen Paßfeder - Ejes Chavetas ISO/R773-1969																
	1,2 ≤ iN ≤ 2,24																
	2,50 ≤ iN ≤ 5,60																
	D-m6	L	X	Y	Z	DA-m6	LA	XA	YA	ZA	JA	DA	LA	XA	YA	ZA	JA
QHPC1	80	180	22	85	M20	60	150	18	64	M20	330	50k6	120	14	53,5	M16	300
QHDP1	90	180	25	95	M24	80	180	22	85	M20	375	65m6	150	18	69	M20	345
QHPE1	105	220	28	111	M24	95	180	25	100	M24	400	80m6	180	22	85	M20	400
QHPP1	135	260	36	143	M30	115	220	32	122	M24	475	95m6	180	25	100	M24	435

Type Typ -Tipo	Fan - Ventilateur - Lüfter - Ventilador											
	①						②					
	DNA	LNA		LPA	LRA	RFA	DN	LN	LP	LR	RF	HF
	1,2 ≤ iN ≤ 2,24		2,50 ≤ iN ≤ 5,60									
QHPC1	210	125	95	70	30	230	210	155	70	30	230	530
QHDP1	210	155	125	70	30	230	210	155	70	30	230	560
QHPE1	280	155	155	105	40	295	280	195	105	40	295	680
QHPP1	280	195	155	95	40	295	280	235	105	40	295	750

QHP.1



Sumitomo Drive Technologies



Our global manufacturing and assembly facilities enable us to provide customers with these high-performance power transmission products. With our worldwide network, Sumitomo Drive Technologies also offers the most comprehensive support team for every aspect of the gear drive life cycle, from installation to maintenance, diagnostics and repair.

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Our Products

