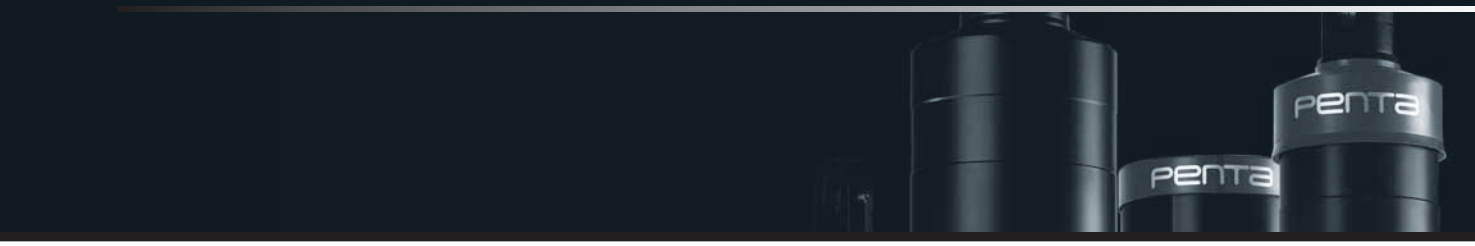
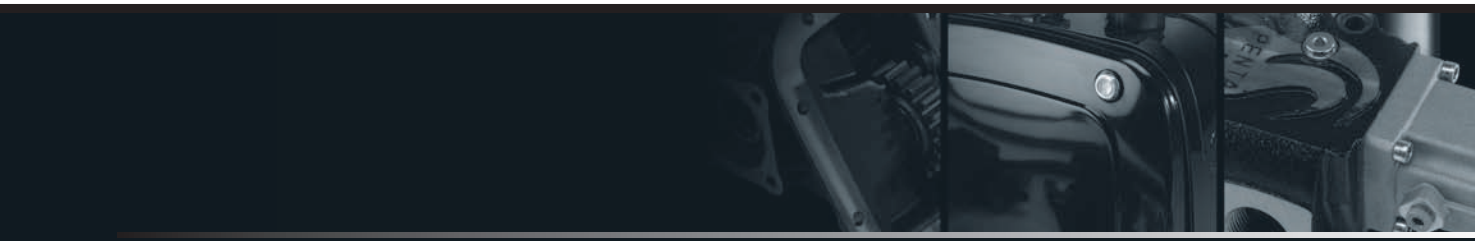
PENTA®
Interpump Hydraulics International



CYLINDERS | # FRONT MOUNT

Dettagli Tecnici • Technical Data • Détail Techniques • Technischedatum • Detalles Tècnicos



HF SERIES

DIFFERENT BY DESIGN

Index

PENTA® Interpump Hydraulics International

FRONT MOUNT HF SERIES

	2	**Quality System** Certificate
HF SERIES PINS TO EYE	4	**HF** Assembly
	5	**HF** 129 series
	6	**HF** 149 series
	7	**HF** 169 series
	8	**HF** 191 series
HFC SERIES WITH OUTER COVER	10	**HFC** Assembly
	11	**HFC** 129 series
	12	**HFC** 149 series
	13	**HFC** 169 series
	14	**HFC** 191 series
HFB SERIES EYE TO EYE	16	**HFB** Assembly
	17	**HFB** 129 series
	18	**HFB** 149 series
	19	**HFB** 169 series
	20	**HFB** 191 series
	21	Additional Types
	22	Selection Charts
	23	Warnings / Guarantee

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD

TÜV Italia

CERTIFICATO

Nr 50 100 2740 - Rev. 06

Si attesta che / *This is to certify that*

IL SISTEMA QUALITÀ DI
THE QUALITY SYSTEM OF

H.S. PENTA S.p.A.
SEDE LEGALE E OPERATIVA:
VIA PROVENTA 31
I-48018 FAENZA (RA)

È CONFORME AI REQUISITI DELLA NORMA
HAS BEEN FOUND TO COMPLY WITH THE REQUIREMENTS OF

UNI EN ISO 9001:2008

Questo certificato è valido per il seguente campo di applicazione
This certificate is valid for the following product or service range

Progettazione, fabbricazione ed assistenza di cilindri oleodinamici in particolare telescopici per ribaltabili; progettazione e costruzione dispositivi idraulici per cilindri oleodinamici, in particolare anticaduta e fine corsa (IAF 18)

Design, manufacture and after-sale service of telescopic hydraulic cylinders for tipping gears; design and construction of hydraulic devices for hydraulic cylinders, hose burst valves and end-of-stroke devices *(IAF 18)*

ACCREDIA

Per l'Organismo di Certificazione
For the Certification Body
TÜV Italia S.r.l.

Paolo Merenda
Direttore Certificazione

Data di emissione / *Issue date*
2012-05-15

Data di scadenza / *Expiry date*
2015-04-30

Organizzazione certificata per la prima volta in data 2003-05-20

"La validità del presente certificato è subordinata a sorveglianza periodica a 12 mesi e al riesame completo del sistema di gestione aziendale con periodicità triennale"

"The validity of the present certificate depends on the annual surveillance every 12 months and on the complete review of company's management system after three-years"

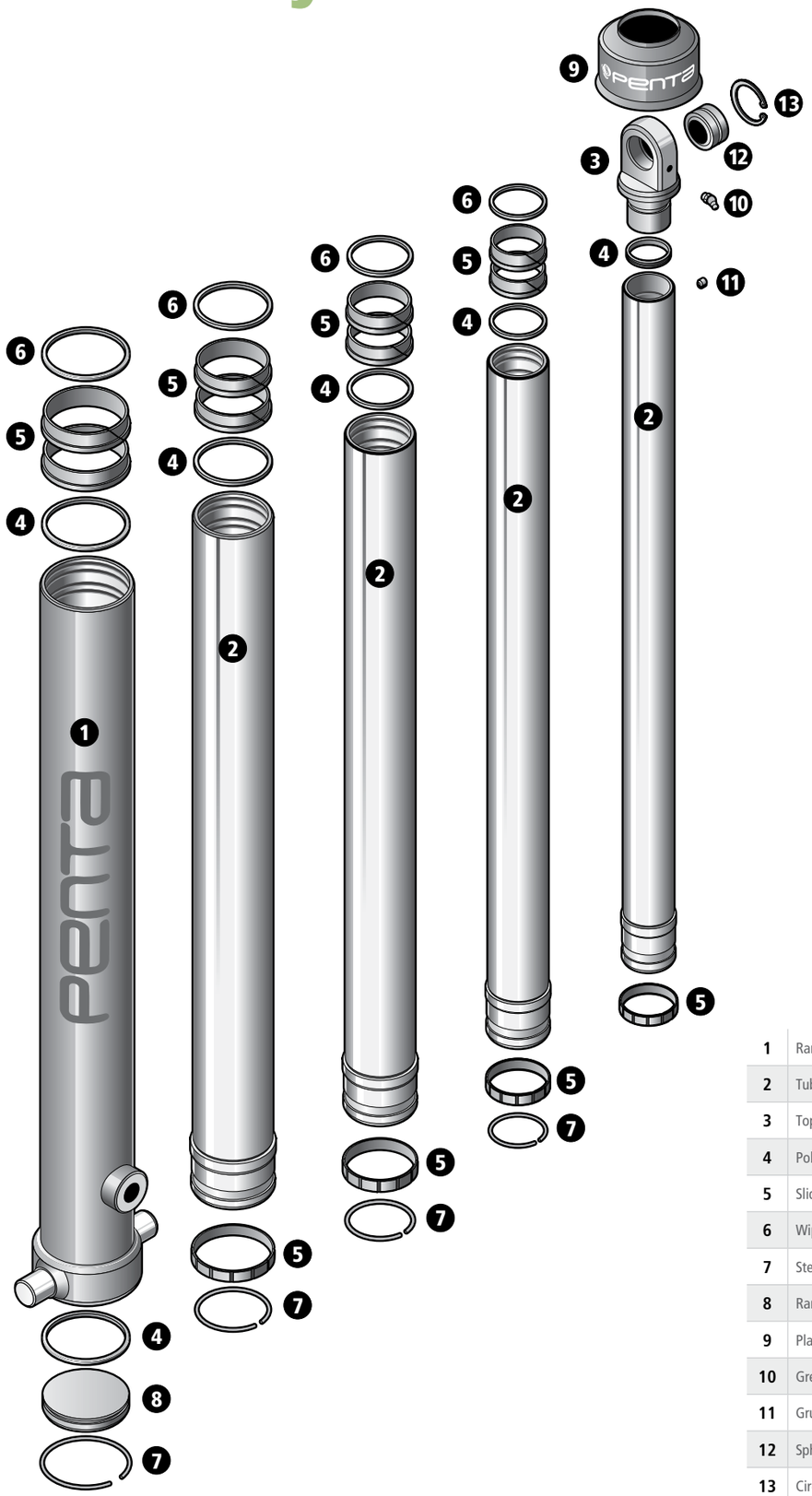
TÜV Italia S.r.l. • Gruppo TÜV SÜD • Via Carducci 125, Pal. 23 • 20099 Sesto San Giovanni (MI) • Italia • www.tuv.it

PINS TO EYE

HF SERIES

PINS TO EYE

HF Assembly

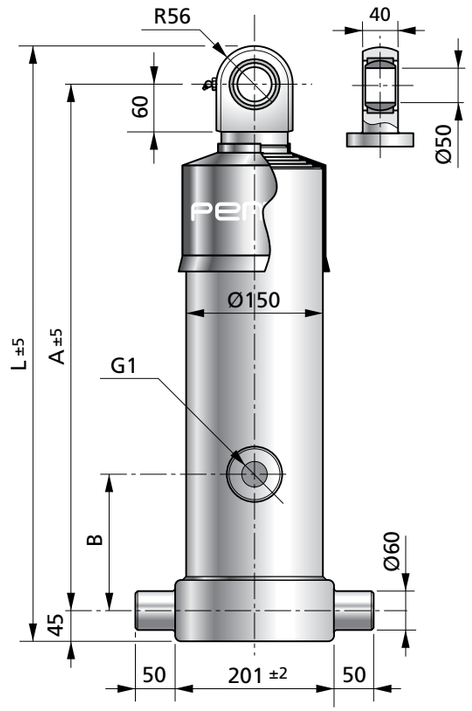


1	Ram tube
2	Tube stages
3	Top head
4	Polyurethan seal
5	Slider (Delrin)
6	Wiper seal
7	Steel circlip
8	Ram base
9	Plastic cap
10	Grease nipple
11	Grub screw
12	Spherical bearing
13	Circlip

PINS TO EYE

HF 129

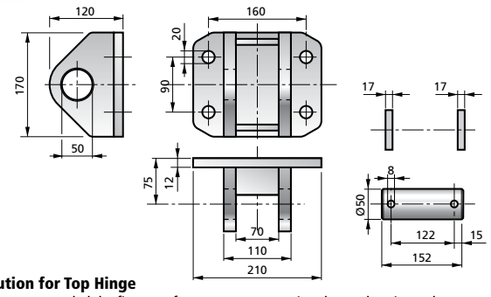
EFFECTIVE DIAMETER [mm] **129 - 111 - 95 - 80**



OPTIONAL

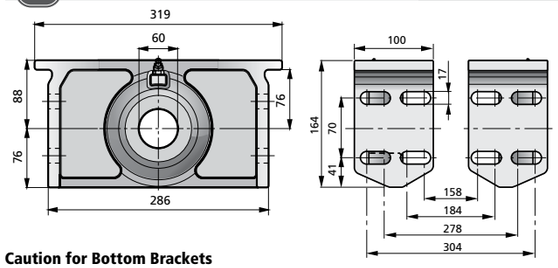
ACCESSORIES

TOP HINGE — **A40050013**



Caution for Top Hinge
It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.

BOTTOM BRACKET • PAIR — **A90060002**



Caution for Bottom Brackets
Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.

Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

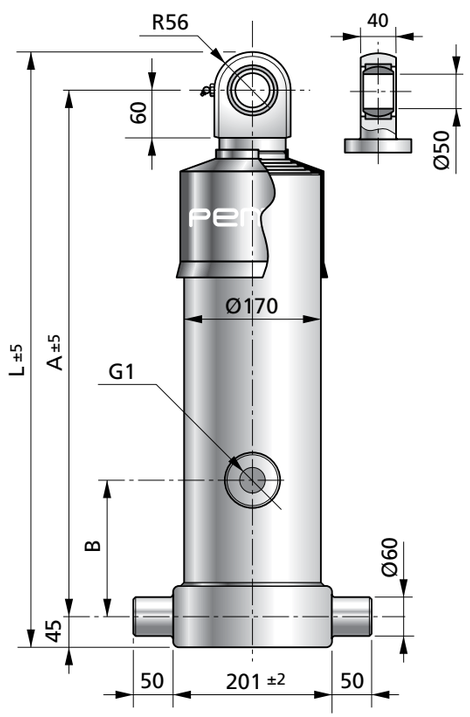
HF 129 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L [mm]	A [mm]	B [mm]
HF 3500 129 3	**4113601293010**	3	3500	123	34,7	200	**29-55**	1528	1427	190
HF 3840 129 3	**4114701293010**	3	3840	132	38,1	200	**29-55**	1683	1582	190
HF 4190 129 4	**4112351294010**	4	4190	128	36,4	200	**25-47**	1419	1318	190
HF 4370 129 4	**4112801294010**	4	4370	132	38	200	**25-47**	1464	1363	190

PINS TO EYE

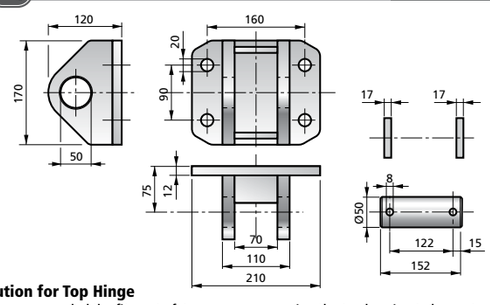
HF 149

EFFECTIVE DIAMETER [mm] 149 - 129 - 111 - 95 - 80



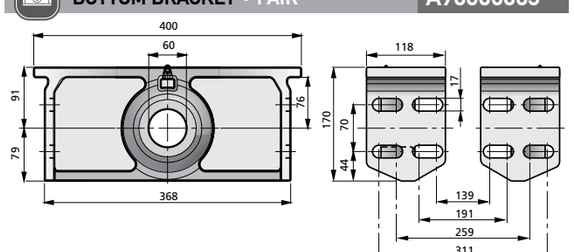
ACCESSORIES

TOP HINGE — A40050013



Caution for Top Hinge
It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.

BOTTOM BRACKET • PAIR — A90060003



Caution for Bottom Brackets
Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.

OPTIONAL

Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

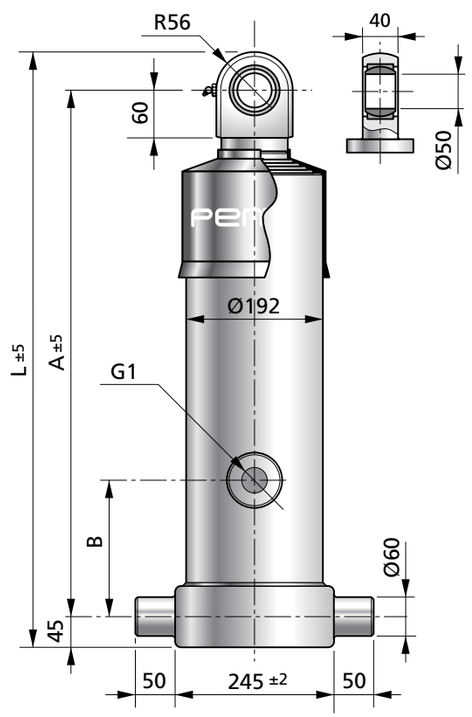
HF 149 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HF 4350 149 4	**4112801494010**	4	4350	154	51,3	200	**34-64**	1459	1358	190
HF 4650 149 4	**4113601494010**	4	4650	164	54,8	200	**34-64**	1534	1433	190
HF 4950 149 4	**4114301494010**	4	4950	172	58,4	200	**34-64**	1609	1508	190
HF 4620 149 5	**4111151495010**	5	4620	150	48,2	200	**29-54**	1305	1204	190

PINS TO EYE

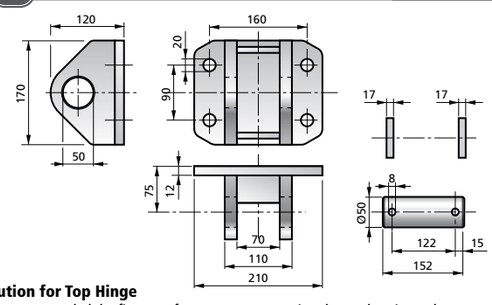
HF 169

EFFECTIVE DIAMETER [mm] 169 - 149 - 129 - 111 - 95



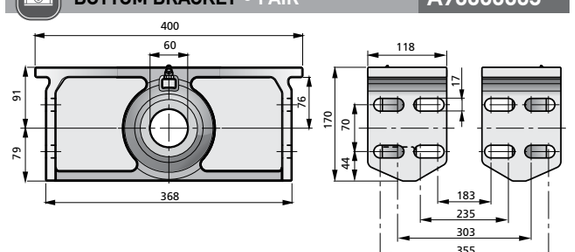
ACCESSORIES

TOP HINGE — A40050013



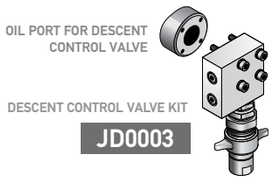
Caution for Top Hinge
It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.

BOTTOM BRACKET • PAIR — A90060003



Caution for Upper and Bottom Brackets
Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.

OPTIONAL



Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

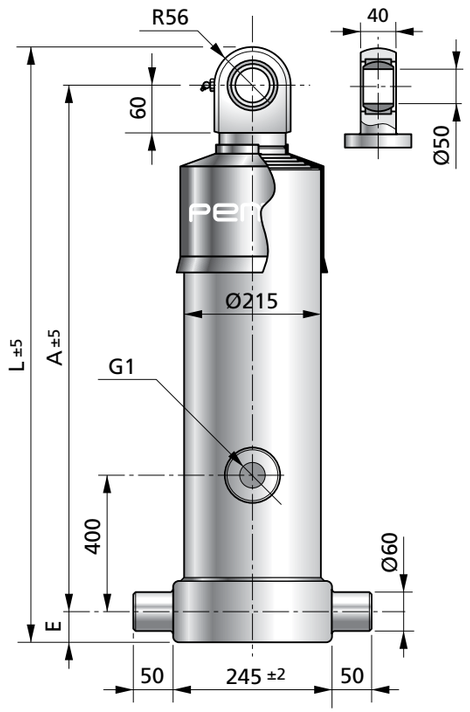
HF 169 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HF 4330 169 4	**4112801694010**	4	4330	193	67,6	200	**46-85**	1459	1358	190
HF 4630 169 4	**4113601694010**	4	4630	205	72,3	200	**46-85**	1534	1433	190
HF 4930 169 4	**4114301694010**	4	4930	214	77	200	**46-85**	1609	1508	190
HF 5090 169 4	**4114701694010**	4	5090	217	79,5	200	**46-85**	1649	1548	400
HF 5690 169 4	**4116801694010**	4	5690	246	88,9	200	**46-85**	1859	1758	400
HF 5420 169 5	**4112801695010**	5	5420	204	75,4	200	**39-73**	1470	1369	400
HF 5800 169 5	**4113601695010**	5	5800	215	80,6	200	**39-73**	1545	1444	400
HF 6170 169 5	**4114301695010**	5	6170	226	85,8	200	**39-73**	1620	1519	400
HF 6720 169 5	**4116001695010**	5	6720	250	93,5	175	**39-64**	1790	1689	400
HF 7120 169 5	**4116801695010**	5	7120	265	99,1	150	**39-55**	1870	1769	400
HF 7720 169 5	**4118001695010**	5	7720	280	107,4	130	**34-48**	1990	1889	400

PINS TO EYE

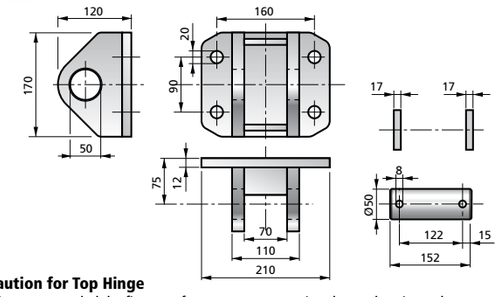
HF 191

EFFECTIVE DIAMETER [mm] 191-169-149-129-111-95



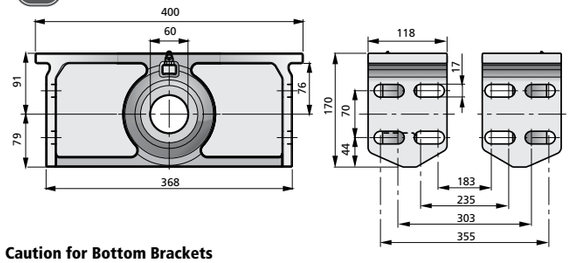
ACCESSORIES

TOP HINGE A40050013



Caution for Top Hinge
It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.

BOTTOM BRACKET • PAIR A90060003



Caution for Bottom Brackets
Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.

OPTIONAL

OIL PORT FOR DESCENT CONTROL VALVE

DESCENT CONTROL VALVE KIT
JD0003

Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

HF 191 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	E
HF 5170 191 5	**4112351915010**	5	5170	243	94,1	200	**52-97**	1431	1330	45
HF 5400 191 5	**4112801915010**	5	5400	251	98,2	200	**52-97**	1476	1375	45
HF 6150 191 5	**4114301915010**	5	6150	280	111,9	200	**52-97**	1626	1500	70
HF 7100 191 5	**4116801915010**	5	7100	323	129,3	200	**52-97**	1876	1775	45
HF 8050 191 5	**4118801915010**	5	8050	355	146,6	150	**52-73**	2066	1965	45
HF 6670 191 6	**4113101916010**	6	6670	270	108,9	200	**45-84**	1517	1416	45
HF 7390 191 6	**4114301916010**	6	7390	293	120,7	175	**45-73**	1637	1511	70

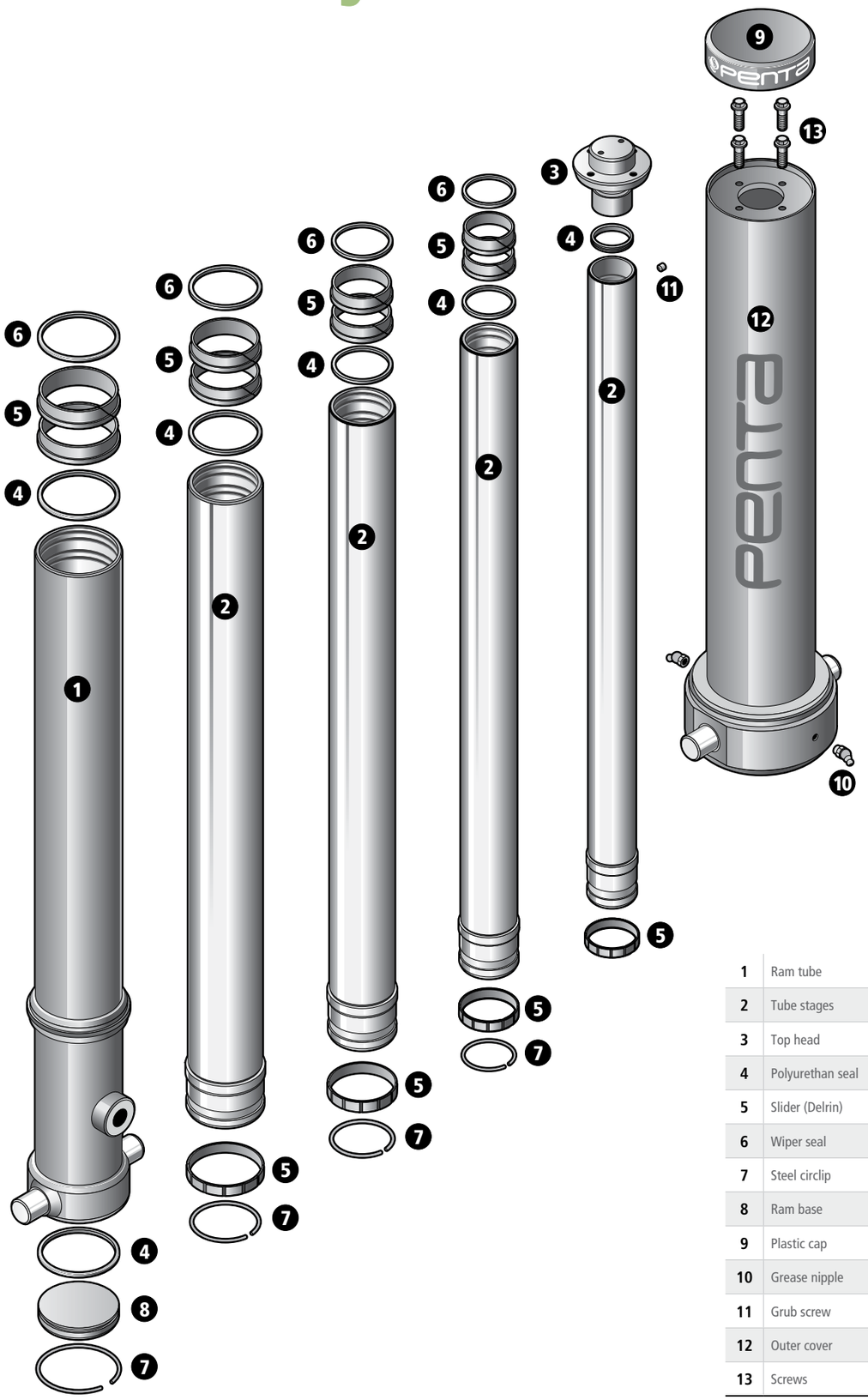
WITH OUTER COVER

HFC

SERIES

WITH OUTER COVER

HFC Assembly

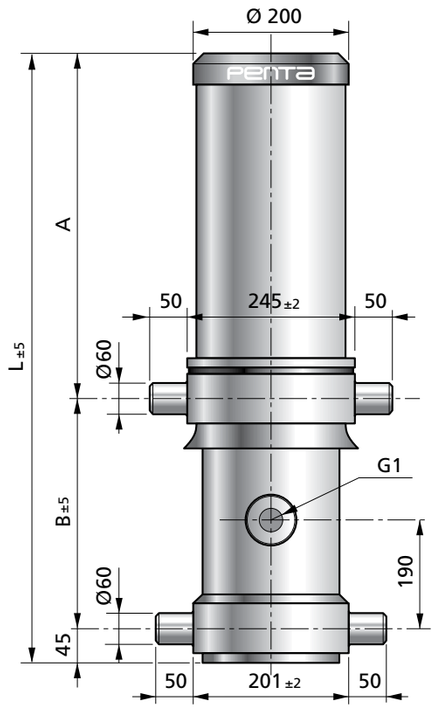


1	Ram tube
2	Tube stages
3	Top head
4	Polyurethan seal
5	Slider (Delrin)
6	Wiper seal
7	Steel circlip
8	Ram base
9	Plastic cap
10	Grease nipple
11	Grub screw
12	Outer cover
13	Screws

WITH OUTER COVER

HFC 129

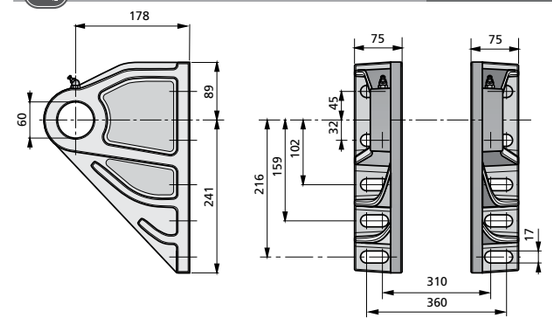
EFFECTIVE DIAMETER [mm] **129 - 111 - 95 - 80**



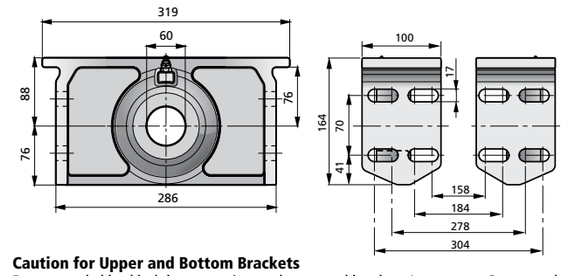
OPTIONAL

ACCESSORIES

UPPER BRACKET • PAIR — **A80060002**



BOTTOM BRACKET • PAIR — **A90060002**



Caution for Upper and Bottom Brackets
Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.

Pull-out

Dimension marked as **B** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **B** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

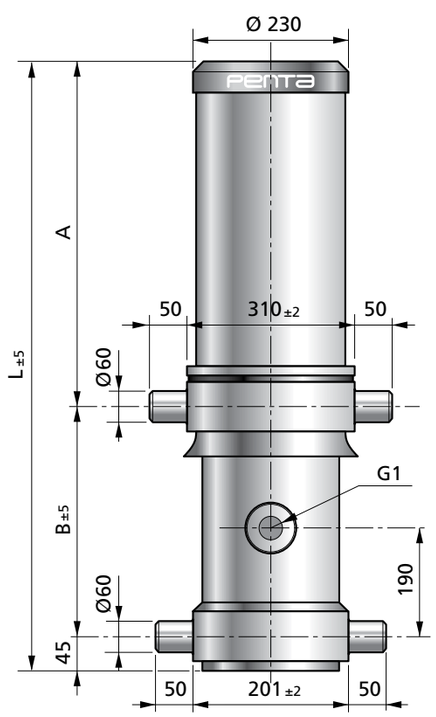
HFC 129 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L [mm]	A [mm]	B [mm]
HFC 3500 129 3	**4213601293010**	3	3500	167	34,7	200	**29-55**	1464	1108	311
HFC 3840 129 3	**4214701293010**	3	3840	178	38,1	200	**29-55**	1579	1214	320
HFC 4290 129 3	**4216801293010**	3	4290	195	42,6	200	**29-55**	1789	1424	320
HFC 4190 129 4	**4212351294010**	4	4190	168	36,4	200	**25-47**	1355	979	331
HFC 4370 129 4	**4212801294010**	4	4370	173	38	200	**25-47**	1400	1029	326
HFC 4670 129 4	**4213601294010**	4	4670	181	40,6	200	**25-47**	1475	1108	322

WITH OUTER COVER

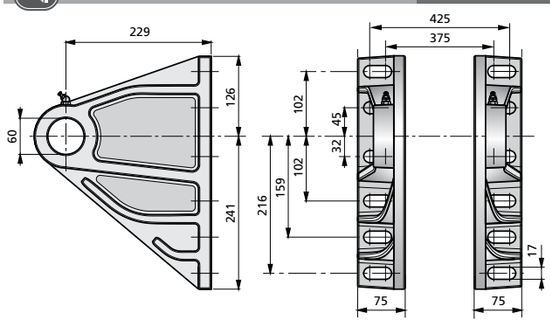
HFC 149

EFFECTIVE DIAMETER [mm] 149 - 129 - 111 - 95 - 80

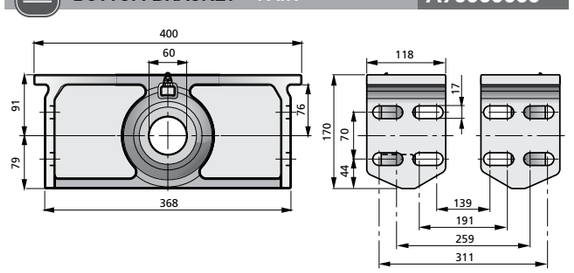


ACCESSORIES

UPPER BRACKET • PAIR A80060001



BOTTOM BRACKET • PAIR A90060003



Caution for Upper and Bottom Brackets
Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.

OPTIONAL

Pull-out

Dimension marked as **B** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **B** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

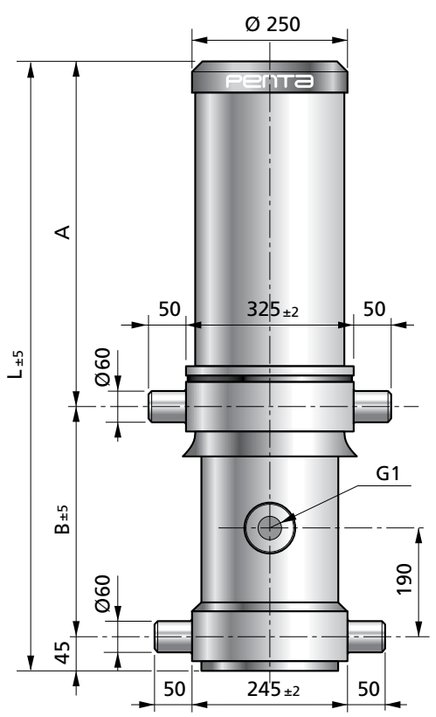
HFC 149 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HFC 4280 149 3	**4216801493010**	3	4280	258	57,2	200	**40-74**	1786	1423	318
HFC 4350 149 4	**4212801494010**	4	4350	225	51,3	200	**34-64**	1397	1023	327
HFC 4650 149 4	**4213601494010**	4	4650	235	54,8	200	**34-64**	1472	1107	320
HFC 4950 149 4	**4214301494010**	4	4950	244	58,4	200	**34-64**	1547	1173	329
HFC 5110 149 4	**4214701494010**	4	5110	250	60,3	200	**34-64**	1627	1253	329
HFC 4620 149 5	**4211151495010**	5	4620	213	48,2	200	**29-54**	1243	861	337

WITH OUTER COVER

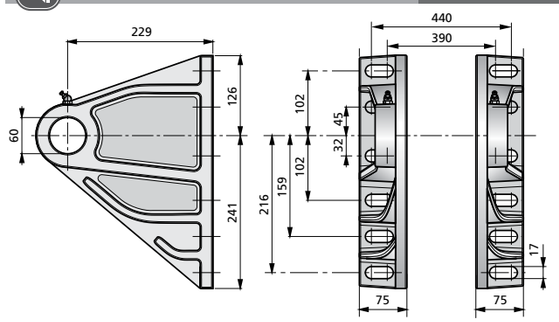
HFC 169

EFFECTIVE DIAMETER [mm] 169 - 149 - 129 - 111 - 95

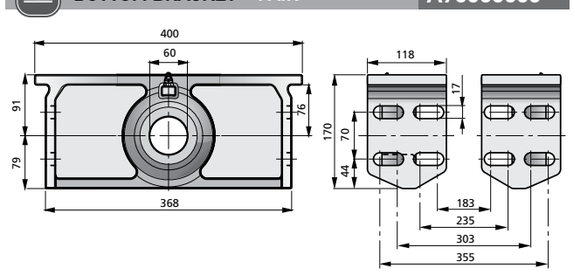


ACCESSORIES

UPPER BRACKET • PAIR A80060001

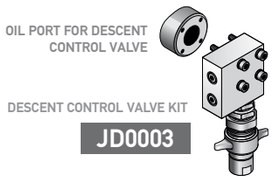


BOTTOM BRACKET • PAIR A90060003



Caution for Upper and Bottom Brackets
Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.

OPTIONAL



Pull-out

Dimension marked as **B** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **B** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

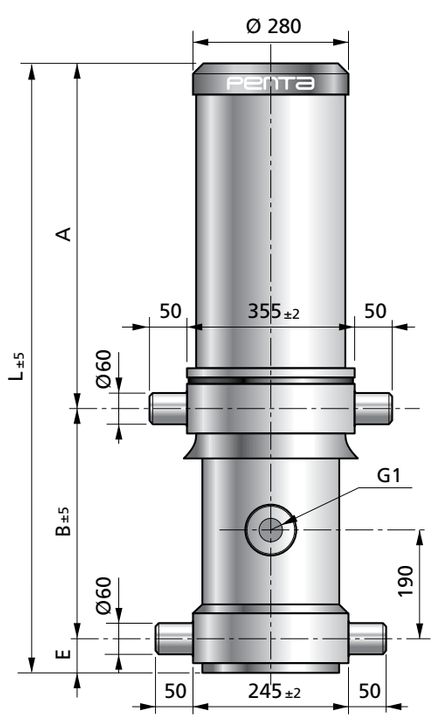
HFC 169 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HFC 4630 169 4	**4213601694010**	4	4630	290	72,3	200	**46-85**	1476	1104	327
HFC 4930 169 4	**4214301694010**	4	4930	308	77	200	**46-85**	1551	1188	318
HFC 5090 169 4	**4214701694010**	4	5090	310	79,5	200	**46-85**	1591	1217	329
HFC 5690 169 4	**4216801694010**	4	5690	343	88,9	200	**46-85**	1801	1423	333
HFC 5420 169 5	**4212801695010**	5	5420	294	75,4	200	**39-73**	1412	1034	333
HFC 5800 169 5	**4213601695010**	5	5800	308	80,6	200	**39-73**	1492	1104	343
HFC 6170 169 5	**4214301695010**	5	6170	320	85,8	200	**39-73**	1562	1188	329
HFC 6720 169 5	**4216001695010**	5	6720	345	93,5	200	**39-73**	1737	1349	343
HFC 7120 169 5	**4216801695010**	5	7120	360	99,1	200	**39-73**	1812	1438	329
HFC 8070 169 5	**4218801695010**	5	8070	389	112,3	200	**39-73**	2002	1619	338
HFC 9020 169 5	**4220601695010**	5	9020	421	125,6	155	**39-57**	2192	1674	473
HFC 9520 169 5	**4221601695010**	5	9520	439	132,5	140	**37-51**	2292	1781	466

WITH OUTER COVER

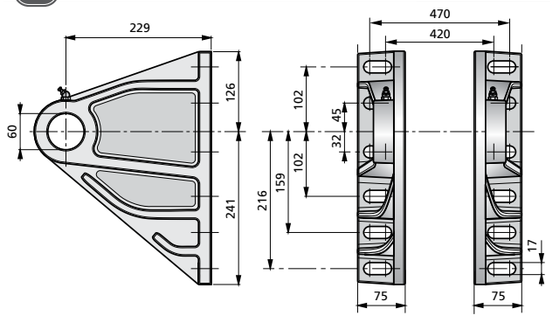
HFC 191

EFFECTIVE DIAMETER [mm] 191-169-149-129-111-95

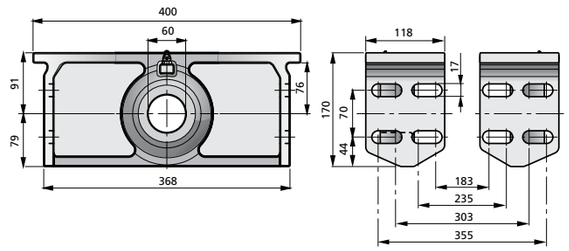


ACCESSORIES

UPPER BRACKET • PAIR A80060001



BOTTOM BRACKET • PAIR A90060003



Caution for Upper and Bottom Brackets
Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.

OPTIONAL

OIL PORT FOR DESCENT CONTROL VALVE

DESCENT CONTROL VALVE KIT

JD0003

Pull-out

Dimension marked as **B** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **B** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

HFC 191 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L [mm]	A [mm]	B [mm]	E [mm]
HFC 6150 191 5	**4214301915010**	5	6150	381	111,9	200	**52-97**	1577	1177	330	70
HFC 7100 191 5	**4216801915010**	5	7100	433	129,3	200	**52-97**	1827	1450	332	45
HFC 8050 191 5	**4218801915010**	5	8050	473	146,6	200	**52-97**	2017	1636	336	45
HFC 9000 191 5	**4220601915010**	5	9000	507	164	200	**52-97**	2207	1686	476	45
HFC 9500 191 5	**4221601915010**	5	9500	528	173,1	175	**52-85**	2307	1796	466	45
HFC 6670 191 6	**4213101916010**	6	6670	369	108,9	200	**45-84**	1468	1082	341	45
HFC 7390 191 6	**4214301916010**	6	7390	395	120,7	200	**45-84**	1588	1177	341	70

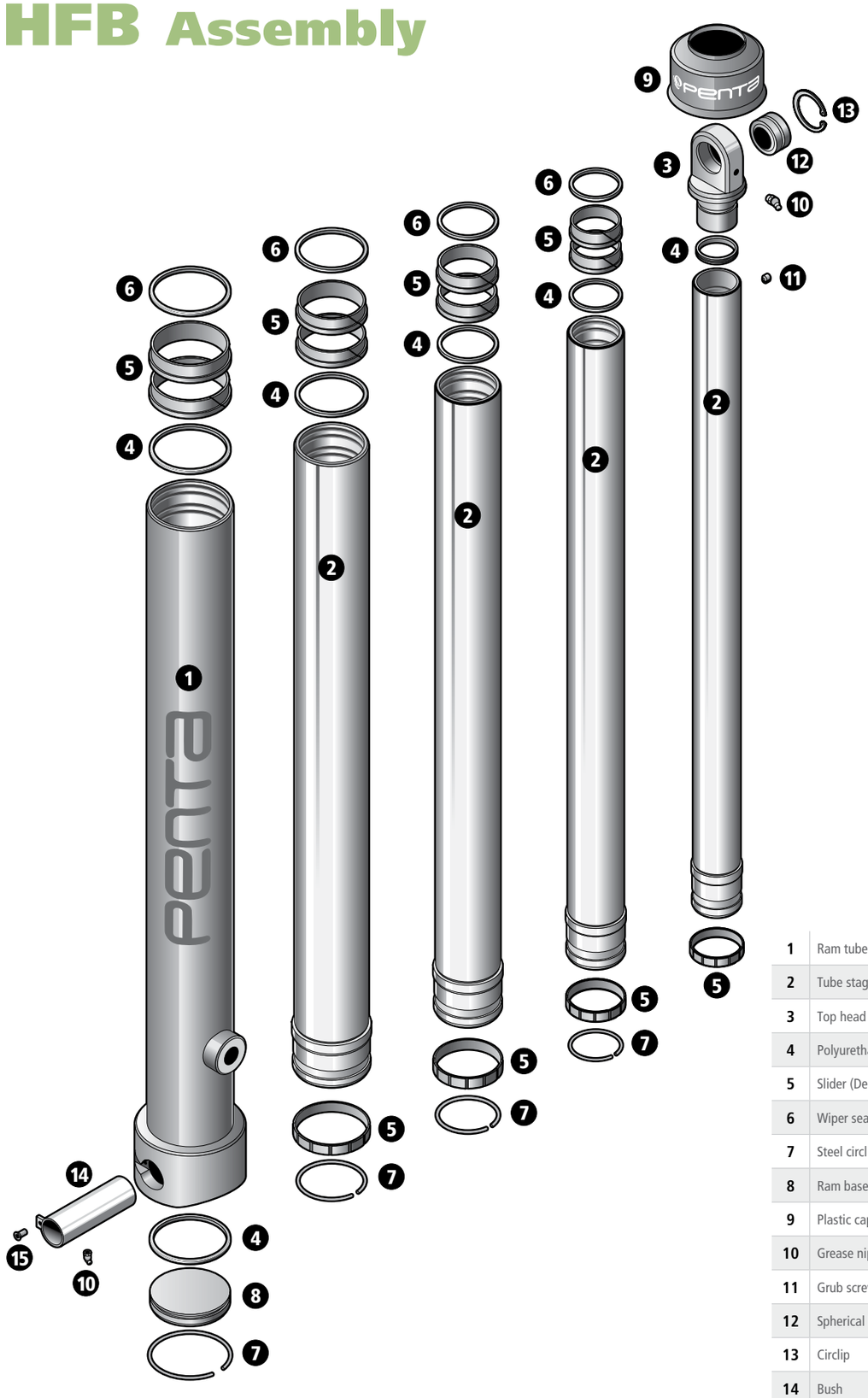
EYE TO EYE

HFB

SERIES

EYE TO EYE

HFB Assembly

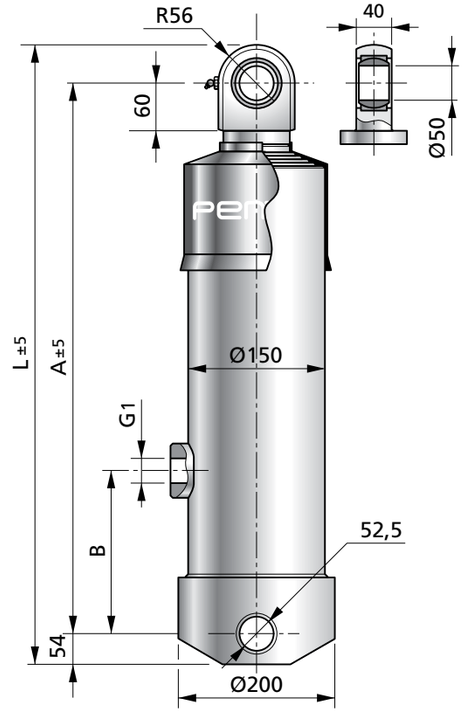


1	Ram tube
2	Tube stages
3	Top head
4	Polyurethan seal
5	Slider (Delrin)
6	Wiper seal
7	Steel circlip
8	Ram base
9	Plastic cap
10	Grease nipple
11	Grub screw
12	Spherical bearing
13	Circlip
14	Bush
15	Screw

EYE TO EYE

HFB 129

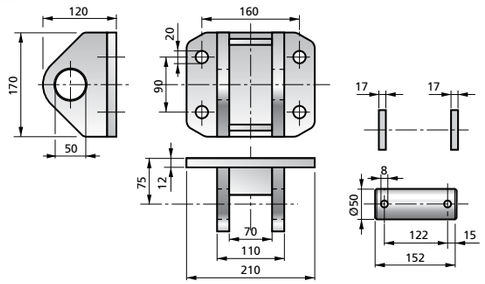
EFFECTIVE DIAMETER [mm] 129 - 111 - 95



OPTIONAL

ACCESSORIES

TOP HINGE A40050013



Caution for Top Hinge
It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.

Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

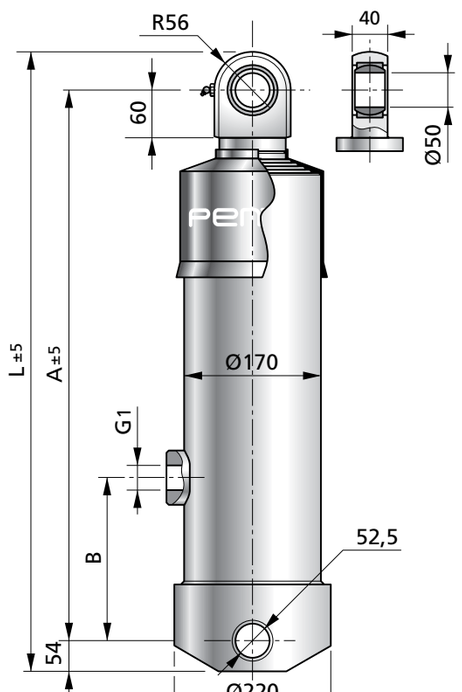
HFB 169 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L [mm]	A [mm]	B [mm]
HFB 3270 129 3	**4312801293010**	3	3270	124	32,5	200	**29-55**	1542	1432	300
HFB 3840 129 3	**4314701293010**	3	3840	142	38,1	200	**29-55**	1732	1622	300

EYE TO EYE

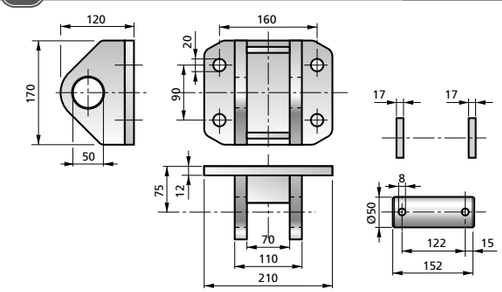
HFB 149

EFFECTIVE DIAMETER [mm] 149 - 129 - 111 - 95 - 80



ACCESSORIES

TOP HINGE A40050013



Caution for Top Hinge
It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.

Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

OPTIONAL

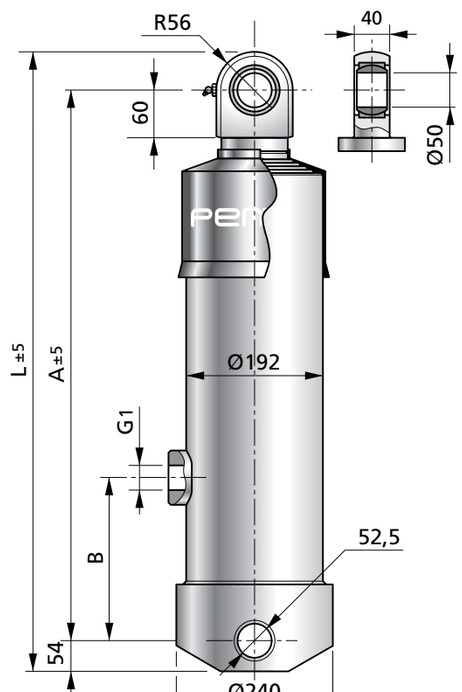
HFB 149 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HFB 3260 149 3	**4312801493010**	3	3260	156	43,3	200	**40-74**	1537	1427	300
HFB 3710 149 3	**4314301493010**	3	3710	172	49,5	200	**40-74**	1687	1577	300
HFB 3690 149 4	**4311151494010**	4	3690	150	43,5	200	**34-64**	1383	1273	300
HFB 3850 149 4	**4311551494010**	4	3850	155	45,4	200	**34-64**	1423	1313	300
HFB 4350 149 4	**4312801494010**	4	4350	168	51,3	200	**34-64**	1548	1438	300
HFB 4650 149 4	**4313601494010**	4	4650	177	54,8	200	**34-64**	1623	1513	300

EYE TO EYE

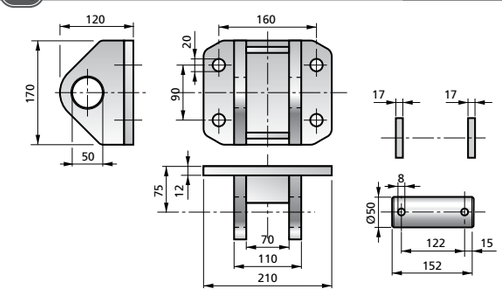
HFB 169

EFFECTIVE DIAMETER [mm] 169 - 149 - 129 - 111 - 95



ACCESSORIES

TOP HINGE A40050013



Caution for Top Hinge
It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.

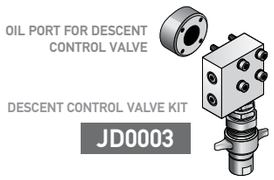
Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

OPTIONAL



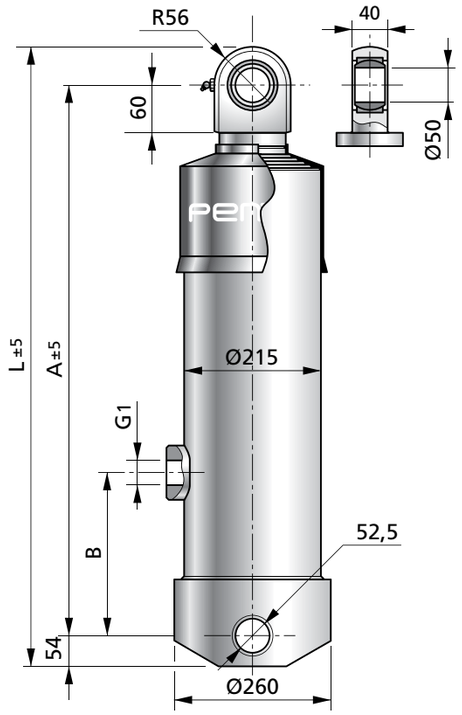
HFB 169 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HFB 4330 169 4	**4312801694010**	4	4330	203	67,6	200	**46-85**	1548	1438	300
HFB 5090 169 4	**4314701694010**	4	5090	229	79,5	200	**46-85**	1738	1628	300
HFB 4800 169 5	**4311551695010**	5	4800	197	66,7	200	**39-73**	1434	1324	300

EYE TO EYE

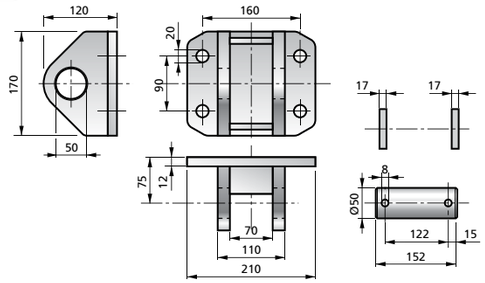
HFB 191

EFFECTIVE DIAMETER [mm] 191 - 169 - 149 - 129 - 111



ACCESSORIES

TOP HINGE A40050013



Caution for Top Hinge
It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.

Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed.
It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.

Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

OPTIONAL

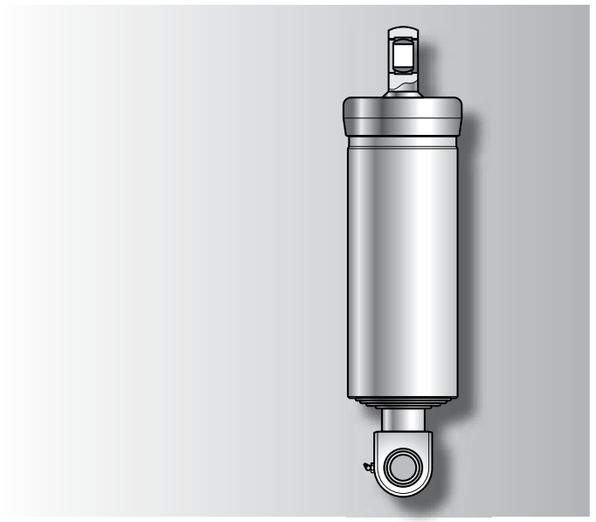
OIL PORT FOR DESCENT CONTROL VALVE

DESCENT CONTROL VALVE KIT
JD0003

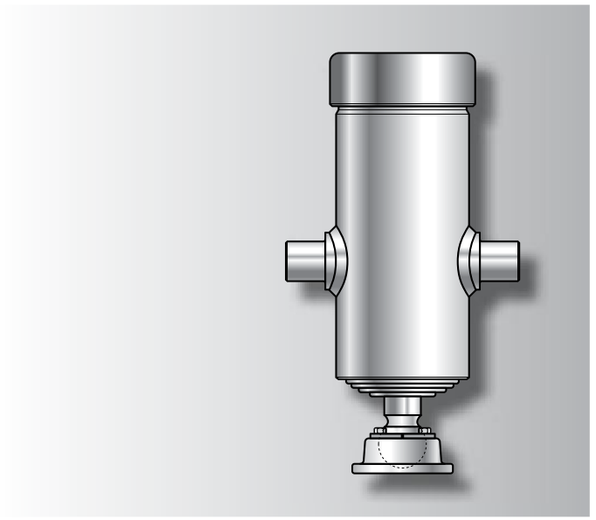
HFB 191 TECHNICAL DATA

MODEL	CODE	EXTENSIONS N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HFB 5400 191 5	**4312801915010**	5	5400	261	98,2	200	**52-97**	1565	1455	300
HFB 5770 191 5	**4313601915010**	5	5770	275	105,1	200	**52-97**	1640	1530	300
HFB 6150 191 5	**4314301915010**	5	6150	288	111,9	200	**52-97**	1715	1605	300
HFB 7100 191 5	**4316801915010**	5	7100	332	129,3	200	**52-97**	1965	1855	300

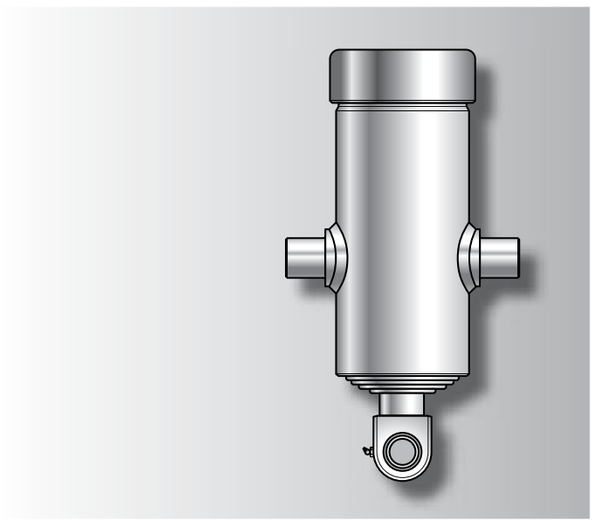
Additional Types



EYE TO EYE
HFS
SERIES

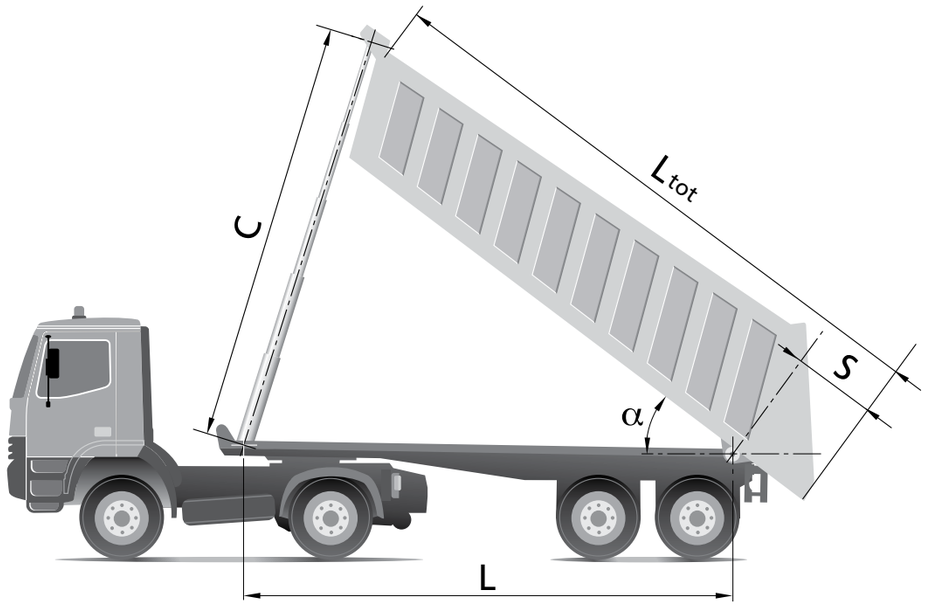


BALL TO PINS
HFR
SERIES



EYE TO PINS
HFRS
SERIES

Selection Charts



Stroke

L [mm]	BODY TILTING α [°]					
	40	45	48	50	55	60
4000	2736	3061	3254	3381	3694	4000
4500	3078	3444	3661	3804	4156	4500
5000	3420	3827	4067	4226	4617	5000
5300	3625	4056	4311	4480	4895	5300
5600	3831	4286	4555	4733	5172	5600
6000	4104	4592	4881	5071	5541	6000
6300	4309	4822	5125	5325	5818	6300
6600	4515	5051	5369	5579	6095	6600
7000	4788	5358	5694	5917	6464	7000
7300	4993	5587	5938	6170	6742	7300
7600	5199	5817	6182	6424	7019	7600
8000	5472	6123	6508	6762	7388	8000
8300	5678	6353	6752	7015	7665	8300
8600	5883	6582	6996	7269	7942	8600
9000	6156	6888	7321	7607	8311	9000
9300	6362	7118	7565	7861	8589	9300
9600	6567	7348	7809	8114	8866	9600
10000	6840	7654	8135	8452	9235	10000
10500	7182	8036	8541	8875	9697	10500
11000	7524	8419	8948	9298	10158	11000

POWER STROKE C [mm]

$$C_{[mm]} = 2L_{[mm]} \sin\left(\frac{\alpha_{[rad]}}{2}\right) \Rightarrow$$

$$\Rightarrow C_{[mm]} \cong \frac{3,1416}{180} \cdot \alpha_{[°]} \cdot L_{[mm]} \cdot \left(1 - \frac{9,8696}{777600} \alpha^2_{[°]}\right)$$

- The stroke is identified by crossing the pivot length (**L**) with the requested tipping angle (°).

Thrust

EXTENSION DIAMETER [mm]	PRESSURE [bar]						
	50	75	100	125	150	175	200
80	25	38	50	63	75	88	101
95	35	53	71	89	106	124	142
111	48	73	97	121	145	169	194
129	65	98	131	163	196	229	261
149	87	131	174	218	262	305	349
169	112	168	224	280	336	393	449
191	143	215	287	358	430	501	573

THRUST [kN]

$$S_{[kN]} = \frac{\pi}{4} d^2_{[mm]} \frac{p_{[bar]}}{10000} \Rightarrow$$

$$\Rightarrow S_{[kN]} \cong \frac{0,785}{10000} d^2_{[mm]} p_{[bar]}$$

- The thrust is a force generated by oil under pressure, which lifts the stage of the cylinder. "**d**" is the diameter of the stage.

Quick reference selection chart

TYPE	TOTAL MASS [ton]					
	97÷52	85÷45	74÷39	64÷34	55÷29	47÷25
191	5	6				
169		4	5			
149			3	4	5	
129					3	4

EXTENSION N.

- Depending on the total tipping weight, the chart identifies the most suitable model and number of stages available.

Warnings

User responsibility.
Incorrect selection or incorrect use of the here described component and its related items may cause death, personal injury and property damage. All the information here reported are intended for further investigations by users with technical knowledge. The user, as manufacturer of the completed machinery which will incorporate the here described components, is the solely responsible for the final selection of the components. The user must carry out necessary research and tests on components to determine whether, by its design and construction, all performance, endurance, maintenance, safety and warning requirements are met. The user must assure the compliance of the completed machinery with all appropriate laws, directives, norms, industry standards.
The normal application of telescopic cylinder is to lift up tipping bodies, loaded with different materials, and consequently discharge this material whilst the cylinder is extended all along its stroke.
The cylinder has been designed to provide only a linear pushing force. The cylinder is not a structural member and must not be used as a stabilizer or be subject to side or pulling load. The cylinder will not prevent the dump body or trailer from rollover or lateral tilt.
The body weight plus the max payload are the max tipping weight that can be raised by the cylinder. This value, calculated at the max pressure, is a rough indication of the tipping power of the cylinder and must be used as a first criteria for the selection of the cylinder. The real tipping mass can only be calculated by the design engineer of the completed machinery, and must take into account the geometry of the dump body, operating conditions and all reasonably foreseeable uses.

Never exceed the herein specified limits of the cylinder.
Cylinder rated pressure reflect only the capability of the pressure-containing envelope and not the force transmitting capability of mounting configurations.
The ordinary use of telescopic cylinder will not require any coating since the telescopic stages are exposed to atmospheric agents only during the tip-up operation, if duration is below 2 hours. Surface coatings can be supplied on request. H.S.PENTA warranty does not apply to any kind of corrosion of coated or non-coated parts.
When closed, leave the tipping control in descent position. The exposed surface of first moving stage may get rusty, but it will not affect the functionality of the cylinder.
Maximum extension speed less than 0.5 m/s.
Hydraulic oil temperature admitted between -40°C and +100°C.
In case the cylinders must be stored, do not remove the package. Store them in a dry place, not exposed to rain. Do not store the cylinders for more than 6 months.
User shall pay attention to stroke length, loading and cylinder mounting in order to avoid bending or buckling of the cylinder at any position.

Refer to www.hspenta.it for mounting instructions, hydraulic oil specification, user & maintenance, service, general precautions, general guarantee conditions.

Guarantee

1. Guarantee conditions

1.1 H.S.PENTA S.P.A. (hereinafter referred to as the "Company") guarantees the satisfactory operation of its hydraulic components, hydraulic cylinders, and respective accessories (hereinafter jointly referred to as the "Products") and the absence of flaws and defects in the same within the limits specified in these General Guarantee Conditions.

1.2 This guarantee of satisfactory operation has a validity of two (2) years from the date of sale of the Products.

1.3 The Company guarantees the conformity of the Products exclusively to Italian and European Community standards.

2. Guarantee coverage

2.1 Without prejudice to the content of the following Article 2.2 regarding hidden defects, the Products will be considered as having been accepted by the purchaser whenever within 5 days from delivery such latter has not provided the Company with written notice of the presence of flaws and/or defects.

2.2 Upon pain of relinquishing rights to coverage under the guarantee, the purchaser must provide the Company with written notice of the defect in conformity and/or flaw in the Product or part of the same, specifying the nature of the same in detail within 8 days of the date in which the purchaser has observed such defect in conformity and/or flaw.

2.3 The defective Products reported in such notice as per the sense and effect of Article 2.2 above must be conserved by the purchaser for the purpose of examination by the Company.
Following written request from the Company, the purchaser must send the defective Product(s) carriage paid to the latter or the party indicated by the same; whenever after the Company's examination, the Product is declared defective and as such is covered by these General Guarantee Conditions, the Company will reimburse the purchaser for the costs of shipping, while remaining expressly specified that such shipping costs must be within the average reference costs.
The purchaser relinquishes the right to coverage under guarantee whenever he does not permit every reasonable inspection of the Product requested by the Company or whenever after receiving written request from the Company for the return of the Product he fails to do so within 30 days of receiving such request.

2.4 Following transmission of due notice by the purchaser performed as per the sense and effect of previous Article 2.2, after ascertaining the existence of the defect or flaw, the Company can take any of the following courses of action at its own discretion:

(a) provide the purchaser with Products in replacement of those defective free-of-charge;
(b) repair the Products directly or through third parties at its own expense; or
(c) reimburse the price paid by the purchaser for the Products ascertained defective.

It is hereby agreed that any Products supplied in replacement of those proven defective must by shipped "ex-works" and that the defective Products returned to the Company will remain the property of such latter.

2.5 With the exception of those mentioned in Article 2.4 above, the costs and expenses incurred by the replacement or repair of the defective Products must be borne by the purchaser.
For mere purposes of example without excluding others, the purchaser must bear the costs for:

(a) consumptions caused by the removal of the defective Products from the machinery in which they were installed and the subsequent re-installation of the same;
(b) the transport of materials and/or equipment;
(c) lubricants and/or expendable materials necessary for the replacement or repair of the defective Products;
(d) the re-painting of the Products;
(e) the transfer expenses of the Company's personnel during checking for flaws and defects reported by the purchaser.

2.6 Nothing will be due to the purchaser by way of compensation for the time that the machinery in which the defective Products are installed remain out of operation for the repair or replacement of the same, and the Company must be considered expressly released from liability for any direct or indirect damage, cost or expense derived by such machinery inactivity.

2.7 For the parts of the Product replaced or repaired, the guarantee will be automatically extended for a new 2-year period from the date of such replacement or repair.

2.8 Except in case of fraudulent intention or serious neglect, the Company will not be liable in any way for any direct or indirect damage, cost, loss, or expense to persons and/or property derived from the operation and use of the Products and/or the interruption of activity of the machinery in which the Products are installed, given that the guarantee specified in Article 2 is the only remedy in the purchaser's favour.

3. Guarantee exclusions

3.1 The Company will not provide guarantee coverage for defects in conformity and/or flaws in the Product or any of its parts for any of the following cases:

(a) reasons due or linked to normal wear;
(b) the failure of the purchaser to correctly perform the procedures for the installation, use (or equivalent), and maintenance of the Products specified in the Use and Maintenance manual provided by the Company together with the Products;
(c) the incorrect use and/or operation of the Products or accident caused by the negligence, inexperience, or imprudence of the purchaser;
(d) the inadequate maintenance of the Products by the purchaser or modifications, repair and/or replacement made by the same without the Company's written consent;
(e) shock or impact against the vehicle or machinery in which the Products are installed; and
(f) causes other than defects in fabrication and/or engineering, working, and/or materials.

3.2 Guarantee coverage will also be excluded whenever:
(a) the Company is not placed in the conditions to promptly perform the necessary repair or replacement of defective Products;
(b) the Products are modified by the purchaser;
(c) the Products are used after the discovery of a flaw or defect;
(d) Repairs that are not authorized by the Company are made;
(e) the flaw or defect regards paint coatings and/or is represented by the corrosion of parts of the Product coated or not coated.

4. Applicable Law - Controversy

4.1 These General Guarantee Conditions are regulated by Italian Law with the express exclusion of the application of the United Nations Convention on international movable property sales contracts.

4.2 Any controversy derived from these General Guarantee Conditions, including those regarding their validity, interpretation, execution and resolution that cannot be settled out of court will be subjected to the exclusive decision of the Court of Ravenna, Italy.

"General guarantee conditions" 19/11/2008

Interpump Hydraulics International

H.S. Penta spa
via Proventa, 31
48018 Faenza RA - Italy
T +39 0546 664848
F +39 0546 664860
hspenta@hspenta.it
hspenta.it

• This catalogue cancels and replaces the previous ones.
HS PENTA reserves the right to make any improving changes without notice.
All right reserved.

© 2013 G.B.Studio - www.gbstudio.it - Cesena

Rev. 10.13

PENTA®
Interpump Hydraulics International

iHi

Dettagli Tecnici • Technical Data • Détail Techniques • Technischedatum • Detalles Tècnicos

H.S. Penta spa
via Proventa, 31
48018 Faenza RA - Italy
T +39 0546 664848
F +39 0546 664860
hspenta@hspenta.it
hspenta.it

INTERPUMP GROUP