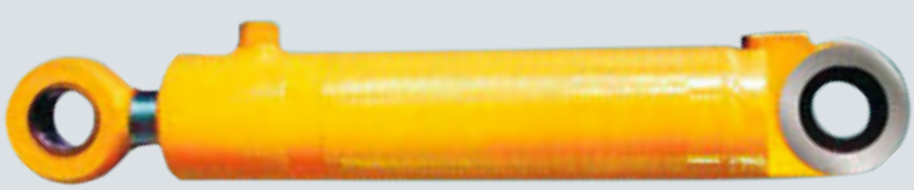
HYDRAULIC CYLINDER

Aariv Precision Pvt. Ltd.



Aariv Precision Pvt. Ltd

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HYDRAULIC CYLINDER

INTRODUCTION

AARIV PRECISION PVT. LTD. Is an ISO 9001-2015, ISO 14001-2015 and ISO 45001-2018 Certified Company, produce Superior engineered Hydraulic Cylinders in the trade name of AARIV Hydraulic cylinders to meet the industrial requirements. All of the manufactured Hydraulic Cylinders are designed and manufactured in house with state of art facilities on CNC machines. We manufacture Medium Duty, Heavy Duty, telescopic and Mill Cylinders for Mobile and industrial application.

We also make Hydraulic Cylinders as per customer requirement to meet the requirements.

Key Features:

- Bore Sizes available are...
- Stroke Length available from 10mm to 2000mm, If STROCK is more than 15 Times of Bore dia, please consult our engineers.
- Hydraulic Cylinder are Designed to operate between 180-250 bar.
- Compact and economical Design
- Cylinder barrel is made from high strength steel. And the bore is honed and polished to a 0.5-micron finish.
- The Piston rods are made from high carbon steel. Hard chrome plated and ground to a max. 0.2-micron finish.
- Bolted gland assembly facilitate assembly and disassembly and is torqued to preset limit. It houses a medium duty rod wiper to protect against contaminant ingress. It also houses a single acting rod seal and wear ring provides an extended bearing surface for longer life.
- The piston is tightened to a specified torque and welded for additional security. It houses a double acting piston seal with integral non-metallic wear rings to prevent metal to metal contact.
- A range of rod end cleaves is offered which includes spherical bearing options as well as male and female plain bore.
- Standard ports are NPTF with machined spot face. NPTF Threading for Zero Backlash fitting to prevent leakage.

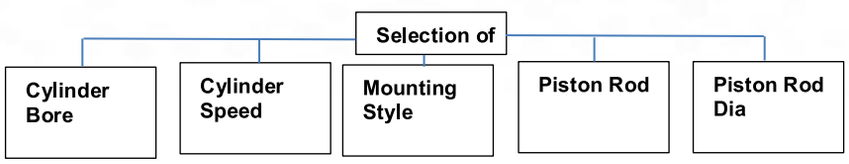
IDENTIFICATION CODE FOR VARIOUS REQUIREMENTS OF HYDRAULIC CYLINDERS

PARAMETER	SR.NO...	DESCRIPTION	MODEL CODE	
SERIES		USED IN ALL SERIES	AHC	
BORE DIA		SPECIFY IN MM		
MOUNTING TYPE	1	FIXED JOINT HEAD MOUNTING.	AHC1	
		TYPE-A	AHC1-A	
		TYPE-B	AHC1-B	
		TYPE-C	AHC1-C	
	2	TRUNNION MOUNTING	AHC2	
		TOP TRUNNION MOUNTING. – TYPE-A	AHC2-A	
		BOTTOM TRUNNION MOUNTING. – TYPE-B	AHC2-B	
		MIDDLE TRUNNION MOUNTING. – TYPE-C	AHC2-C	
	3	FOOT MOUNTING	AHC3	
	4	RECTANGULAR FLANGE MOUNTING	AHC4	
		HEAD RECTANGULAR FLANGE MOUNTING.	AHC4-A	
		BOTTOM RECTANGULAR FLANGE MOUNTING.	AHC4-B	
	5	CIRCULAR FLANGE MOUNTING	AHC5	
		HEAD CIRCULAR FLANGE MOUNTING	AHC5-A	
		BOTTOM CIRCULAR FLANGE MOUNTING	AHC5-B	
	6	JOINT HEAD SERIES -METRIC SERIES	AHC6	

ACCESSORIES ROD ENDS		BEARING /BUSH SERIES WITH FEMALE FITTING	AHC6-A	
		PLAIN BORE SERIES FEMALE FITTING	AHC6-B	
		BEARING /BUSH SERIES MALE FITTING	AHC6-C	
		BEARING /BUSH SERIES MALE FITTING	AHC6-D	
ROD DIA		SPECIFY DIAMETER IN MM		
STROKE		SPECIFY IN MM. FOR STROKE MORE THAN 1000MM CONSULT AARIV PRECISION PVT. LTD.		
PORT OPTION		PORT TYPE-NPTF		
		PORT TYPE- OTHER		
		PORT POSITION- 90 DEGREE TO PIN		
		PORT POSITION – IN LINE WITH PIN		
SPECIAL FEATURES		VITON SEALS		
		OTHER		
		SPECIFY DETAILS OR PROVIDE DRAWING		
		(OMIT IF NOT REQUIRED)		

Hydraulic Cylinder Selection Procedure

When selecting a hydraulic cylinder following steps to be taken:



Following parameters to be considered while selecting Hydraulic Cylinders:

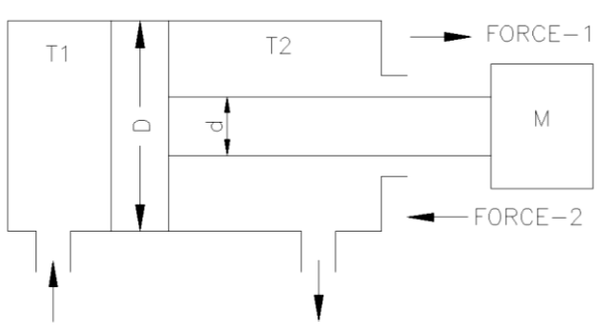
1. Max. Pressure
2. Weight of Moving Part
3. Mounting condition of Load and Application
4. Stroke
5. Operating Speed (meter/min)
6. Temperature condition
7. Vibration condition
8. Dust condition

Selection of Cylinder Bore

The Bore of a hydraulic Cylinder depends on the required cylinder **FORCE**

Push Side Cylinder Force = Force-1 = T1xP x β (kgf)

Push Side Cylinder Force = Force-2 = T2xP x β (kgf)



WHERE

T1 = Push side piston pressurized Area (cm^2) T1=π x D^2/4

T2 = Pull side piston pressurized Area (cm^2) T2=π x (D-d) ^2/4

D = Cylinder Bore (cm)
d = Diameter of Piston Rod (cm)
P = Operating Set Pressure (kg/ cm^2
β = Load factor (%)
When Deciding the actual cylinder output, the resistance in the cylinder applying part and the pressure loss in the piping and machines must be considered.
The Load Factor is the ration of the actual force loaded on to the cylinder to the theoretical force (Theoretical Cylinder force) calculated from the circuit set pressure. The general set points are shown below
:
For Low Speed Working: 55-75%
For High Speed working: 30-40%
(This catalogue is applying 70% as load factor in calculation)
All calculations based on basic input operating set pressure of 70 kgf/cm^2

Example -1: Force Capacity Calculation
For AHC1-A with piston rod dia of 56mm with an 80mm cylinder bore and 70 kg/cm^2 operating set pressure. Find the output of cylinder when piston is forwarding or reversing.
Forward Output-Kgf
=Set Pressure-P (kgf/cm^2) x Forward piston pressurized area-T1 (cm^2) x Load Rate-β (%))
=70x50.24x.7
=2461.76kgf
Backward Output-Kgf
=Set Pressure-P (kgf/cm^2) x Forward piston pressurized area-T2 (cm^2) x Load Rate-β (%))
=70x3.594x.7
=176.106 kgf

Example -2: Cylinder Selection v/s Force
Required Force 5000 kgf
Input Set Pressure = 70 Kgf/cm^2
Piston Pressurized area (cm^2) = Cylinder Output (kgf) ÷ Load Factor (%) /70(Cylinder Dia)
= (5000÷0.7)/70
=102.04 (cm^2)
Choose a piston pressurized area value which is near to 102 cm^2

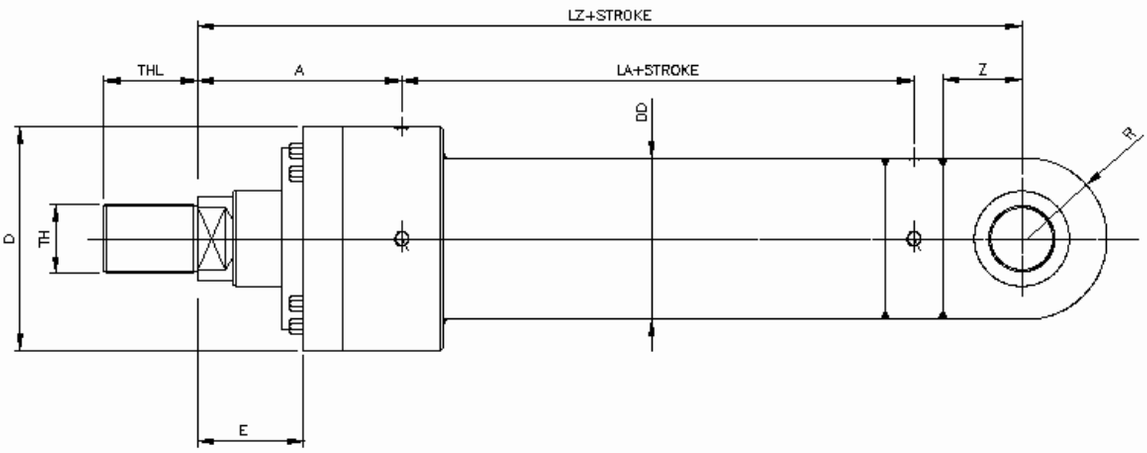
Forward and Reverse Force data with Load factor @100%

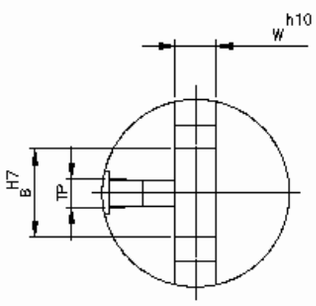
Bore size-mm	Piston Rod-mm	Operating Direction	Effective Sectional Area-cm^2	Output (kgf/cm^2)		
				70 kgf/cm^2	140 kgf/cm^2	210 kgf/cm^2
40	22	Forward	12.56	879	1758	2638
		Reverse	2.54	178	356	534
50	28	Forward	19.63	1374	2748	4121
		Reverse	3.80	266	532	798
63	36	Forward	31.16	2181	4362	6543
		Reverse	5.72	401	801	1202
80	45	Forward	50.24	3517	7034	10550
		Reverse	9.62	673	1346	2019
100	56	Forward	78.50	5495	10990	16485
		Reverse	15.20	1064	2128	3191
125	70	Forward	122.66	8586	17172	25758
		Reverse	23.75	1662	3324	4987
140	95	Forward	153.86	10770	21540	32311
		Reverse	15.90	1113	2225	3338
160	105	Forward	200.96	14067	28134	42202
		Reverse	23.75	1662	3324	4987

Standard Operating Limits:
Fluid: Hydraulic Mineral Oil
Viscosity: 2.8 to 380 CST
Oil Temperature: 30 Degree to 90 degree
Maximum Operating Speed 15 meters per minutes.

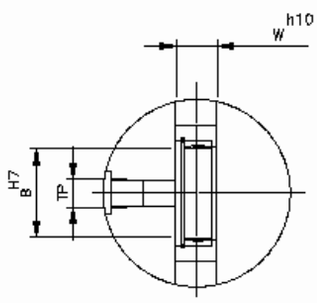
Non-Standard Cylinders
Any cylinder configuration outside of those detailed in this catalogue are subject to individual design and quotation

HEAVY DUTY HYDRAULIC CYLINDER FIXED JOINT HEAD MOUNTING – AHC-1

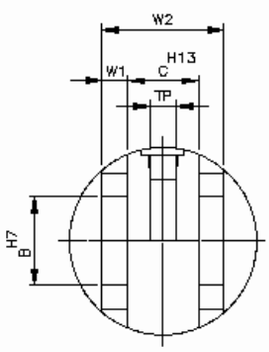




FIXED JOINT HEAD-AHC1-A



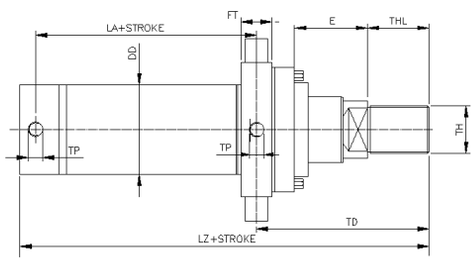
FIXED JOINT HEAD-AHC1-B



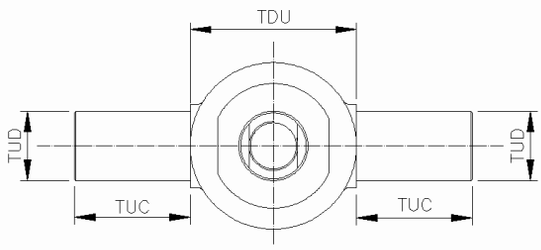
FIXED JOINT HEAD-AHC1-C

BORE -MM	ROD-MM	THREADING -TH	THL-MM	A	B	C	D	DD	E	TP-NPTF	W	W1	R	LA	LZ	Z	W2
40	22	M16x1.5	20	66	20	15	60	55	40	3/8”	20	8	24	75	163	30	31
	28	M20x1.5	25														
50	28	M20x1.5	25	78	25	27	75	65	45	3/8”	25	10	30	80	202	35	40
	36	M27x2	35														
63	36	M27x2	35	93	40	32	95	75	52	½”	32	12	38	100	204	45	49
	45	M33x2	45														
80	45	M33x2	45	112	50	40	120	95	60	½”	40	16	48	109	237	55	62
	56	M42X2	55														
100	56	M42X2	55	135	63	52	150	125	70	¾”	50	20	55	137	267	68	80
	70	M48X2	70														
125	70	M48X2	70	156	80	66	188	150	75	1”	63	25	70	170	322	90	100
	90	M64X3	90														
140	95	M64X3	90	172	90	72	210	165	80	1”	70	28	75	180	330	92	115
	105	M72X3	100														
160	105	M72X3	95	190	100	84	240	195	85	1.25”	80	32	85	217	495	95	129
	115	M80X3	110														

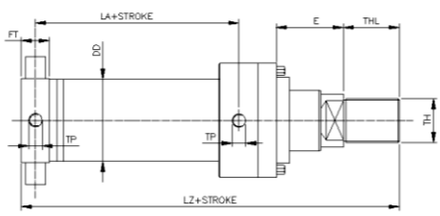
HEAVY DUTY HYDRAULIC CYLINDER TRUNNION MOUNTING – AHC-2



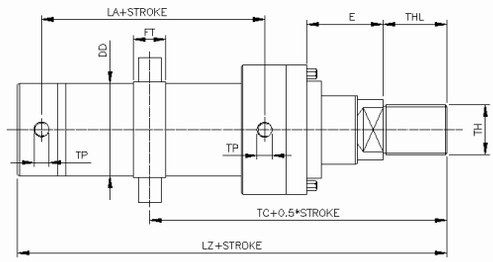
TOP TRUNNION MOUNTING – AHC2-A



MOUNTING DIMENSION FOR AHC2-A, B & C



BOTTOM TRUNNION MOUNTING – AHC2-B



MIDDLE TRUNNION MOUNTING – AHC2-C

BORE -MM	ROD-MM	THREADING -TH	THL-MM	E	DD	TP-NPTF	FT	LA	LZ	TUD	TDU	TUC	TD	TC
40	22	M16x1.5	20	40	55	3/8"	25	75	163	20	90	16	56	68
	28	M20x1.5	25											
50	28	M20x1.5	25	45	65	3/8"	30	80	202	25	105	20	57	74
	36	M27x2	35											
63	36	M27x2	35	52	75	½"	40	100	204	32	120	25	85	86
	45	M33x2	45											
80	45	M33x2	45	60	95	½"	55	109	237	40	135	32	95	96
	56	M42X2	55											
100	56	M42X2	55	70	125	¾"	65	137	267	50	160	40	120	128
	70	M48X2	70											
125	70	M48X2	70	75	150	1"	80	170	322	63	195	50	160	157
	90	M64X3	90											
140	95	M64X3	90	80	165	1"	90	180	330	70	215	55	165	190
	105	M72X3	100											
160	105	M72X3	95	85	195	1.25"	100	217	495	80	240	63	170	203
	115	M80X3	110											

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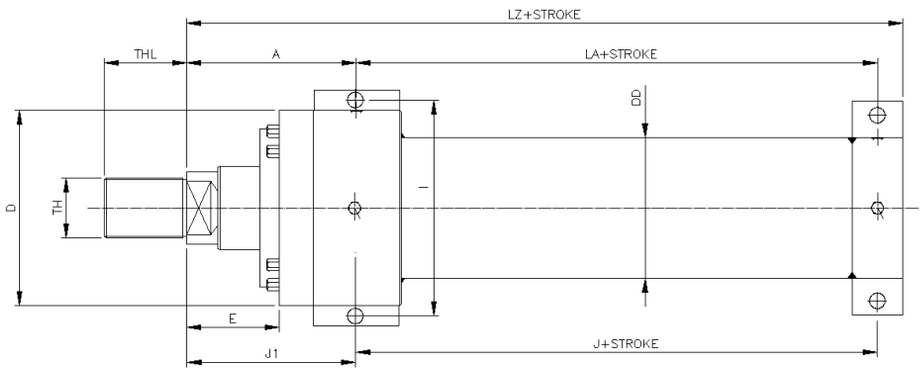
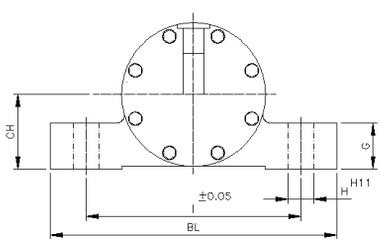
HEAVY DUTY HYDRAULIC CYLINDER FOOT MOUNTING – AHC-3



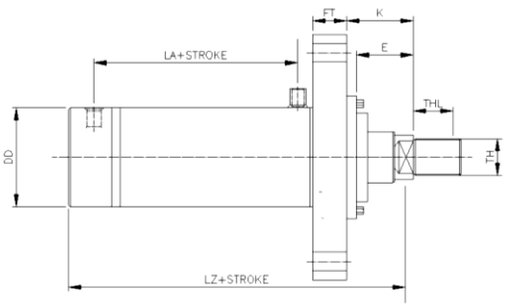


MOUNTING DIMENSION FOR AHC3

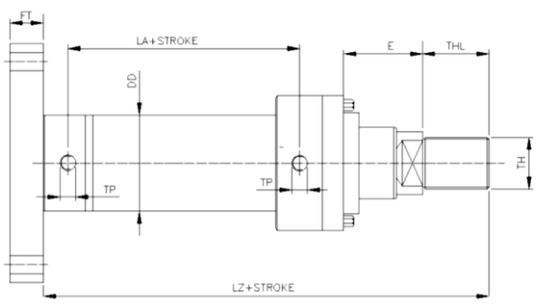
BORE -MM	ROD-MM	THREADING -TH	THL-MM	G	BL	I	DD	E	TP-NPTF	A	D	LA	LZ	CH	H
40	22	M16x1.5	20	15	80	65	55	40	3/8"	66	60	75	163	35	9
	28	M20x1.5	25												
50	28	M20x1.5	25	20	108	88	65	45	3/8"	78	75	80	202	40	11
	36	M27x2	35												
63	36	M27x2	35	25	120	95	75	52	½"	93	95	100	204	55	13.5
	45	M33x2	45												
80	45	M33x2	45	30	150	120	95	60	½"	112	120	109	237	65	17.5
	56	M42X2	55												
100	56	M42X2	55	35	190	150	125	70	¾"	135	150	137	267	80	22
	70	M48X2	70												
125	70	M48X2	70	40	230	185	150	75	1"	156	188	170	322	95	22
	90	M64X3	90												
140	95	M64X3	90	45	270	200	165	80	1"	172	210	180	330	110	22
	105	M72X3	100												
160	105	M72X3	95	50	290	235	195	85	1.25"	190	240	217	495	120	22
	115	M80X3	110												

NOTE:
J AND J1 = A AND LA/WILL BE SUPPLIED ACCORDING TO CUSTOMER REQUIREMENT

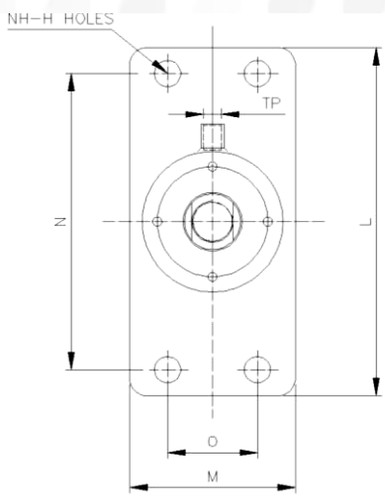
HEAVY DUTY HYDRAULIC CYLINDER RECTANGULAR FLANGE MOUNTING – AHC-4



TOP RECTANGULAR FLANGE MOUNTING TYPE-AHC4-A



BOTTOM RECTANGULAR FLANGE MOUNTING-TYPE-AHC4-B

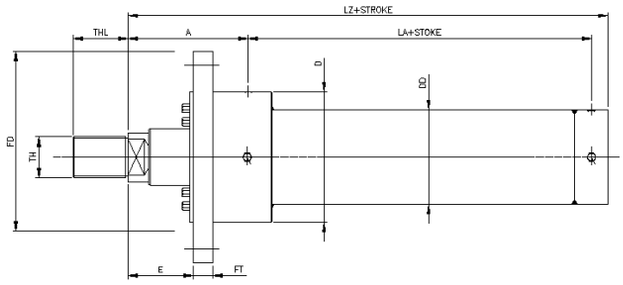


MOUNTING DIMENSION FOR AHC4-A & B

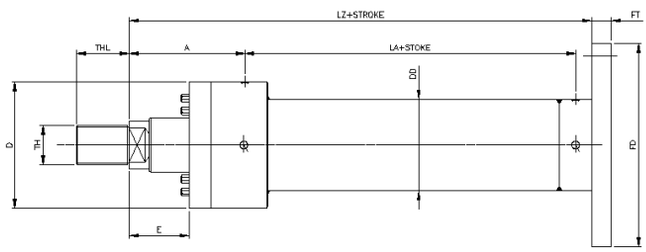
BORE -MM	ROD-MM	THREADING -TH	THL-MM	FT	N	C	DD	E	TP-NPTF	O	M	LA	LZ	NH	H	L
40	22	M16x1.5	20	16	98	15	55	40	3/8”	40.5	60	75	163	4	9	125
	28	M20x1.5	25													
50	28	M20x1.5	25	20	116.4	27	65	45	3/8”	48.2	72	80	202	4	11	150
	36	M27x2	35													
63	36	M27x2	35	25	134	32	75	52	½”	55.5	90	100	204	4	13.5	175
	45	M33x2	45													
80	45	M33x2	45	32	152.5	40	95	60	½”	63.1	110	109	237	4	17.5	200
	56	M42X2	55													
100	56	M42X2	55	32	184.8	52	125	70	¾”	76.5	130	137	267	4	22	245
	70	M48X2	70													
125	70	M48X2	70	32	217.1	66	150	75	1”	90.2	170	170	322	4	22	280
	90	M64X3	90													
140	95	M64X3	90	36	250	72	165	80	1”	110	190	180	330	4	22	300
	1050	M72X3	100													
160	105	M72X3	95	36	295	84	195	85	1.25”	125	214	217	495	4	22	325
	115	M80X3	110													

HEAVY DUTY HYDRAULIC CYLINDER CIRCULAR FLANGE MOUNTING – AHC-5

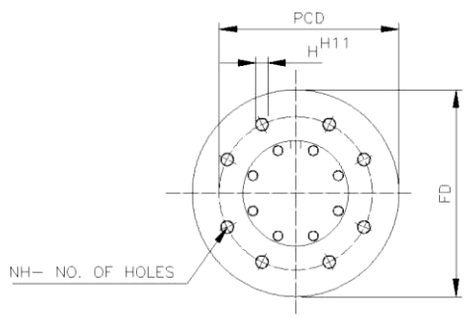
HYDRAULIC CYLINDER



HEAD MOUNTING -AHC5-A



BOTTOM MOUNTING -AHC5-B

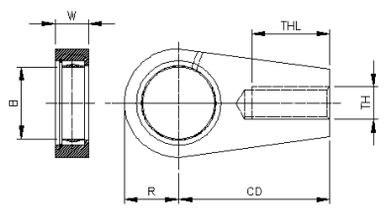


MOUNTING DIMENSION FOR AHC5-A & B

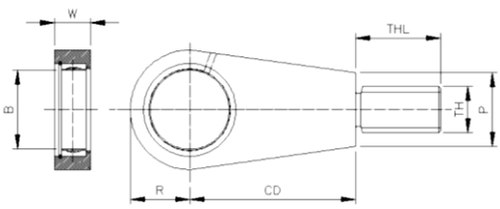
BORE -MM	ROD-MM	THREADING -TH	THL-MM	FT	FD	PCD	D	DD	E	TP-NPTF	NH	H	LA	LZ
40	22	M16x1.5	20	16	125	106	60	55	40	3/8"	8	9	75	163
	28	M20x1.5	25											
50	28	M20x1.5	25	20	150	126	75	65	45	3/8"	8	11	80	202
	36	M27x2	35											
63	36	M27x2	35	25	175	145	95	75	52	½"	8	13.5	100	204
	45	M33x2	45											
80	45	M33x2	45	32	200	165	120	95	60	½"	8	17.5	109	237
	56	M42X2	55											
100	56	M42X2	55	32	245	200	150	125	70	¾"	8	22	137	267
	70	M48X2	70											
125	70	M48X2	70	32	280	235	188	150	75	1"	8	22	170	322
	90	M64X3	90											
140	95	M64X3	90	36	300	250	210	165	80	1"	8	22	180	330
	105	M72X3	100											
160	105	M72X3	95	36	325	280	240	195	85	1.25"	8	22	217	495
	115	M80X3	110											

HYDRAULIC CYLINDER

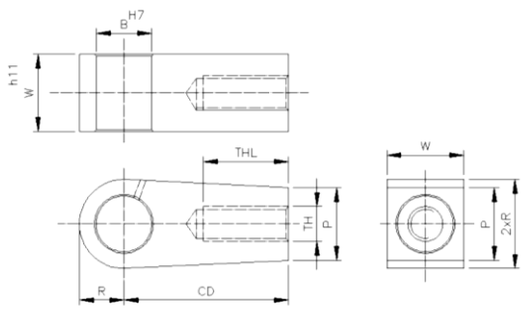
JOINT HEAD SERIES AHC6– METRIC SERIES



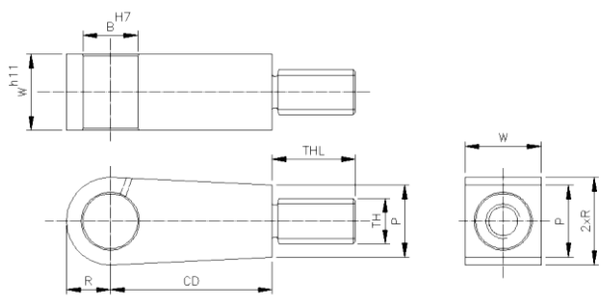
JOINT HEAD-AHC6-A



JOINT HEAD-AHC6-C



JOINT HEAD-AHC6-B



JOINT HEAD-AHC6-D

BORE - MM	ROD- MM	THREADING - TH	THL- MM	W-h11	CD-MM	R-MM	B-MM	P-MM
40	22	M16x1.5	20	20	55	23	20	25
	28	M20x1.5	25	25	65	30	25	40
50	28	M20x1.5	25	35	65	30	25	40
	36	M27x2	36	35	80	38	32	50
63	36	M27x2	35	42	80	38	32	50
	45	M33x2	45	42	98	48	40	65
80	45	M33x2	45	55	98	48	40	65
	56	M42X2	55	55	120	58	50	82
100	56	M42X2	55	60	120	58	50	82
	70	M48X2	70	60	150	72	63	105
125	70	M48X2	70	60	150	72	63	105
	90	M64X3	90	80	185	90	80	135
140	95	M64X3	90	80	185	90	80	135
	105	M72X3	100	90	200	100	90	150
160	105	M72X3	100	90	200	100	90	150
	115	M80X3	110	100	220	110	100	165

CERTIFICATE

This is to Certify that

Quality Management System

of

AARIV PRECISION PRIVATE LIMITED

PLOT NO. 1, MAHENDER COLONY, RANGE ROAD. VILLAGE-MAWAI,
FARIDABAD, 121008, HARYANA, INDIA

has been independently assessed by DBS

and is compliant with the requirement of:

ISO 9001:2015

For the following scope of activities:

MANUFACTURER OF HEAVY INDUSTRIAL AND RAILWAY EQUIPMENTS AND SPARE PARTS, HARD CHROME PLATED PISTON RODS, HARD CHROME PLATED GUIDE SHAFTS, AXLES, GUIDE SHAFTS.

Certificate Number: Q-205022020518

Date of Certification:	**5th February 2022**
1st Surveillance Audit Due:	**4th February 2023**
2nd Surveillance Audit Due:	**4th February 2024**
Certificate Expiry	**4th February 2025**

This Certificate is property of DBS Certifications and remains valid subject to satisfactory surveillance audits

Head of Certification

IAS ACCREDITED Management Systems Certification Body. MSCB-157

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

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142, IInd Floor, Avtar Enclave, Paschim Vihar, Delhi-110063, (INDIA) info@dbscertification.com, www.dbscertification.com

ACCREDITED BY :

International Accreditation Service (IAS) 3060, Saturn Street Suite 100, Brea, Ca 92821-1732, United States of America

CERTIFICATE

This is to Certify that

Occupational Health and Safety Management System

of

AARIV PRECISION PRIVATE LIMITED

PLOT NO. 1, MAHENDER COLONY, RANGE ROAD. VILLAGE -MAWAI, FARIDABAD, 121008, HARYANA, INDIA

has been independently assessed by DBS

and is compliant with the requirement of:

ISO 45001:2018

For the following scope of activities:

MANUFACTURER OF HEAVY INDUSTRIAL AND RAILWAY EQUIPMENTS AND SPARE PARTS, HARD CHROME PLATED PISTON RODS, HARD CHROME PLATED GUIDE SHAFTS, AXLES, GUIDE SHAFTS.

Certificate Number: Draft

Date of Certification:	**19th February 2022**
1st Surveillance Audit Due:	**18th February 2023**
2nd Surveillance Audit Due:	**18th February 2024**
Certificate Expiry	**18th February 2025**

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Head of Certification

IAS ACCREDITED Management Systems Certification Body. MSCB-157

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ACCREDITED BY :

International Accreditation Service (IAS) 3060, Saturn Street Suite 100, Brea, Ca 92821-1732, United States of America

CERTIFICATE

This is to Certify that

Environmental Management System

of

AARIV PRECISION PRIVATE LIMITED

PLOT NO. 1, MAHENDER COLONY, RANGE ROAD. VILLAGE -MAWAI, FARIDABAD, 121008, HARYANA, INDIA

has been independently assessed by DBS

and is compliant with the requirement of:

ISO 14001:2015

For the following scope of activities:

MANUFACTURER OF HEAVY INDUSTRIAL AND RAILWAY EQUIPMENTS AND SPARE PARTS, HARD CHROME PLATED PISTON RODS, HARD CHROME PLATED GUIDE SHAFTS, AXLES, GUIDE SHAFTS.

Certificate Number: Draft

Date of Certification:	**19th February 2022**
1st Surveillance Audit Due:	**18th February 2023**
2nd Surveillance Audit Due:	**18th February 2024**
Certificate Expiry	**18th February 2025**

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Head of Certification

IAS ACCREDITED Management Systems Certification Body. MSCB-157

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

Management System Certification DBS CERT

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OUR PRODUCT RANGE

HYDRAULIC CYLINDER

TRIPLE CROWNED GEAR COUPLING

CARDAN SHAFT/ UNIVERSAL JOINT

GEAR BOXES

PISTON ROD

HARDENED PIN

JOINT HEAD

CASTING ITEM

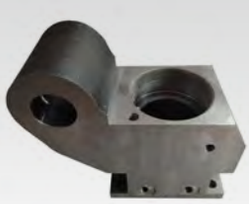
TRUNNION BOTTOM

HYDRAULIC MANIFOLDS

PIN (MILLED AND THREADED)

HYDRAULIC ADAPTERS

HYDRAULIC CYLINDER BODY



HYDRAULIC PRESSURE CYLINDER

FORGED FLANGE

MOUNTING PLATE

AARIV PRECISION PVT. LTD

Address: Plot No. 1, Range Road,
Mawai Industrial Area, Near Bharat Gas, Godown,
Faridabad, Haryana – 121003 (INDIA)
Email: jay.nair@aarivprecision.com | **Website:** www.aarivprecision.com
Phone: +91 – 9818822748