

IAR BALL SCREWS TECH - DATA



IAR BALL SCREWS

An edge for quality output at your end

Customers needed high-quality products hence the close interaction between product development, production, R&D efforts with state - of - the - art - technology, we have been able to deliver exactly where and when customers needed it. The modern production facilities are the common platform for customizing resources to ever changing specific needs. At IAR, the structure is being continually adapted in response to rapidly changing market conditions and client needs.

Modern engineering technology requires a highly efficient system for the smooth and precise transmission of rotary motion into linear motion to operate slides and other machine components. The recent trend has been to replace all conventional lead screws with precision ball screws. Thus the sliding friction in conventional lead screw is replaced by rolling friction resulting in reduced driving power, torque requirement and increased transmission efficiency.

Main Features

HIGH ACCURACY

IAR BALL SCREWS are manufactured to accuracy GRADE 10 as per DIN 69051, part 3 i.e. 0.010 mm lead error in 300 mm threaded length.

HIGH STIFFNESS

IAR BALL SCREWS are preloaded which in turn makes it more stiff.

HIGH EFFICIENCY

Since Sliding friction in conventional lead screw is replaced by rolling friction in BALL SCREWS, the transmission efficiency is considerably increased and very low driving power is required. (Refer Fig 1) the torque requirement is one third of the conventional lead screw.

ZERO BACKLASH

With precise pre loading, zero backlash is achieved in IAR BALL SCREWS. However desired backlash can be maintained as per customers requirement.

LONGER LIFE

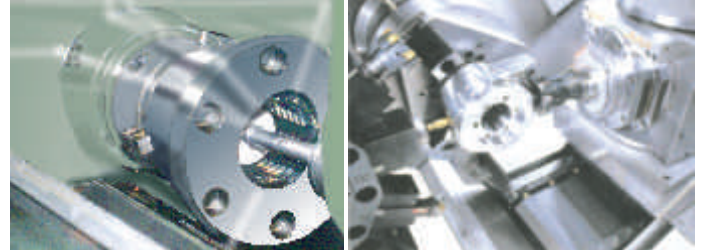
Because of the rolling contact of the steel ball between screw and nut, the friction wear in the hardened screw grooves is very small resulting into longer life of BALL SCREWS without reducing its original accuracy. This eliminates frequent compensating adjustments in machine slides.

Efficiency and Advantages :

- 1) High positioning accuracy : 0.010 mm error up to 300 mm thread length.
- 2) High stiffness.
- 3) Zero backlash, hence precise positioning.
- 4) No stick-slip effect.
- 5) Less heat generation.
- 6) Longer life.



Quality control with Laser beam



NO STICK - SLIP EFFECT

Since the rolling contact of the ball is utilised, the starting friction is minimised and tendency of inertia while fast positioning is eliminated. Very small accurate increments of movements may be obtained through rolling contract. In machine tool slide applications, this can result in a tremendous increase in tool life.

PRECISE POSITIONING

Due to zero backlash precise positioning accuracy is achieved even at low speeds.

LESSER HEAT GENERATION

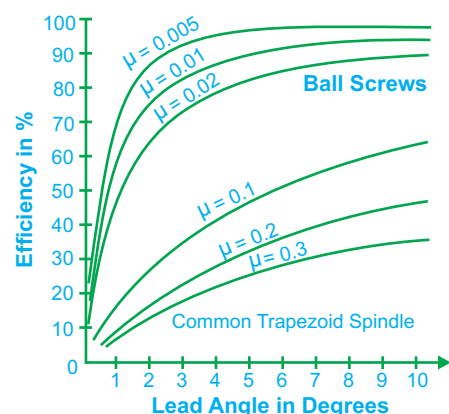
Even high load caused minimum heating up which means better positioning accuracy. This is achieved by smaller ball circuit.

COMPACTNESS

IAR manufactures BALL SCREWS with internal Ball return system, which enables use of smaller nut size. There are fewer balls per circuit, therefore less friction and reduced wear and tear.

PRELOAD

Preload may be defined as the use of one group of ball grooves in opposition to another group to eliminate backlash. (Refer Fig. 2) IAR BALL SCREWS are preloaded with double nuts to eliminate axial play, to increase overall stiffness and to improve positioning accuracy. IAR BALL SCREWS are preloaded to 10% of the dynamic load rating value. Higher values than this gives increased torque, lower efficiency and reduced service life.



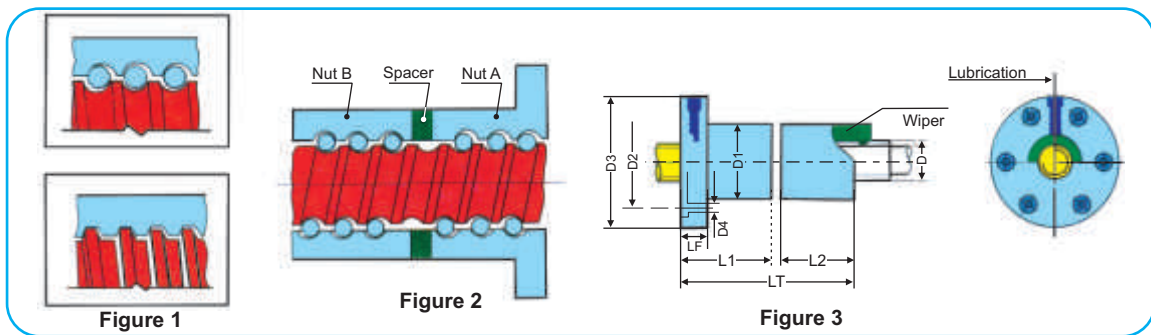


Figure 1

Figure 2

Figure 3

MODEL	Nut Dimensions													Load Rating N.		Stiffness			
	NOM DIA.	PITCH	BALL DIA.	NO.OF CKTS	D	DI	D2	D3	D4	LF	LI	L2	LT	DYNAMIC	STATIC	N (MICRON)			
IAR 1605	16	5	3.175	3	16	31	41	60	5.5	8	37	35	77	7,900	17,100	910			
			3.175	4										8,500	19,600	1200			
IAR 2005	20	5	3.175	3	20	38	46	64	6.5	10	37	35	77	9,500	21,000	960			
				4										42	40	88	13,000	28,000	1260
IAR 2010	20	10	3.175	3	20	38	48	62	5.5	12	60	55	121	7,500	19,000	960			
			3.175	4										71	65	140	11,200	25,500	1260
IAR 2505	25	5	3.175	3	24	40	54	70	6.5	10	37	35	77	10,800	26,000	1240			
				4										42	40	88	14,500	35,000	1660
				5										47	45	98	17,000	44,000	2040
IAR 2510	25	10	3.175	3	24	42	56	72	6.5	12	60	55	121	9,600	21,000	1240			
				4										71	65	140	12,300	32,000	1660
IAR 3205	32	5	3.175	3	30	48	62	78	8.5	12	37	35	77	12,300	34,000	1500			
				4										42	40	88	16,500	45,250	2020
				5										47	45	98	19,250	57,000	2540
IAR 3210	32	10	6.350	3	30	55	66	82	8.5	14	60	55	119	29,000	65,500	1500			
				4										70	65	139	38,000	88,000	2020
				5										80	75	159	45,000	1,10,000	2540
IAR 4005	40	5	3.175	3	38	56	67	82	8.5	14	42	37	83	13,500	43,000	1800			
				4										47	42	93	18,500	57,000	2400
				5										52	47	103	21,000	71,000	3000
				6										57	52	113	25,000	85,000	3600
IAR 4010	40	10	6.350	3	38	63	76	94	10.5	16	62	57	123	33,250	83,500	1800			
				4										72	67	143	44,500	1,11,500	2400
				5										82	77	163	51,500	1,39,000	3000
				6										92	87	183	60,500	1,68,000	3600
IAR 4020	40	20	6.350	3	38	64	78	98	10.5	16	105	100	213	46,800	93,300	2330			
				4										105	100	213	46,800	93,300	2330
IAR 5005	50	5	3.175	5	48	70	84	102	8.5	16	57	47	103	30,500	88,000	3300			
		6		59										51	113	34,000	1,02,000	4000	
IAR 5010	50	10	6.350	3	48	73	86	105	10.5	16	62	57	123	38,000	1,05,000	2050			
				4										72	67	143	50,500	1,41,000	2700
				5										82	77	163	58,250	1,76,500	3400
				6										92	87	183	68,000	2,11,500	4100
IAR 5020	50	20	6.350	3	48	75	89	109	10.5	16	105	100	213	49,700	1,17,000	2470			
IAR 6310	63	10	6.350	6	60	89	106	133	13	22	94	89	189	83,000	2,42,000	3700			
				8										122	117	245	1,02,000	2,98,000	4500
IAR 6320	63	20	6.350	4	60	91	108	135	13	22	135	132	273	64,000	1,92,000	3500			
IAR 7010	70	10	6.350	6	70	100	117	143	13	22	94	89	189	96,000	2,56,000	3900			
				8										122	117	245	1,15,000	2,98,000	4100
IAR 7020	70	20	9.525	5	70	105	123	150	13	22	160	155	321	1,19,000	3,09,000	3600			
IAR 8010	80	10	6.350	6	80	110	127	153	13	22	94	89	189	1,07,700	3,21,000	4200			
IAR 8020	80	20	9.525	4	80	115	132	158	13	22	135	132	273	1,25,00	3,37,000	4400			

Note :
 All Dimensions are in mm.
 Standard Supply is RHS Ball Screws.
 The Static & Dynamic Loads Of IAR Ball Screws are Obtained According To The Din 69051.

We Reserve The Right To Change The Specification Of Our Products Without Any Notice.

Lubrication Hole Upto 32 X 10 Ball Screw is M6 & For Higher Sizes is M8.
 Ball Screws With LHS Orientation Can Be Supplied On Request.
 Ball Screws Upto 3800mm Threaded Length are Manufactured By IAR.

Salient Features :

STORAGE

BALL SCREWS are sensitive to shocks, bending and contamination. Therefore they are specially treated and handled with care before despatch. During storage, bending, corrosion and other damages should be avoided.

TEMPERATURE RANGE

Range of operation of IAR BALL SCREWS is 20° to 120°C.

ACCURACY

Depending on the accuracy, BALL SCREWS are divided in the following categories:

A) Precision Grade. B) General Grade. C) Transport Grade.

At present IAR manufactures only precision grade

BALL SCREWS. IAR BALL SCREWS are manufactured to accuracy grade 10 and 25 as per DIN 69051 i.e. 0.01 mm or 0.025 mm lead error in 300 mm length, lead to lead error is .006 mm.

NOMINAL LIFE EXPECTANCY

The life expectancy of a BALL SCREW is primarily governed by fatigue which takes place each time a ball passes over a point on the track. Stresses are induced at that point which are proportional to the applied force. The nature of internal deflection of IAR BALL SCREWS minimises fatigue and are carefully calculated for fatigue life.

Applications of IAR Ball Screws :



The BALL SCREWS are generally used in the following applications :

Precision Machine Tools, Milling Turning Drilling, Boring, Shaping, EDM, Tool Grinding Machines etc.

INDUSTRIAL MACHINERY : Printing and Paper Machines, Drafting Machines, Textile and Medicine Production Machines etc.

ELECTRONIC MACHINERY : Robots, Electronic equipments, Measuring instruments, Computers.

DEFENCE INDUSTRY : Missile & Rocket Launches, Cannon Supporters, Valve Operators, Artificial Satellites, Antenna Leg Actuator, Warships etc.

At IAR we are engaged in non-conventional energy resources and machine tool functions. The present engineering technology that demands high efficient systems that in turn demands speed, accuracy, high productivity and ease of maintenance. We always think of your productivity in place and pace as well. We manufacture following International Standard range of products besides Ball Screws with comprehensive service support from design to completion.

- ▶ **Duroflex Flexible Couplings.**
- ▶ **Pavaman Skid Rollers.**
- ▶ **Tork Adjustable Shock Absorbers.**
- ▶ **Precision Lock Nuts.**
- ▶ **Angular Contact Bearings.**



An ISO 9001 Certified Company

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