

## TECHNICAL FEARTURES

### High LEAD Accuracy :

IAR ball screws are manufactured to accuracy GRADE 3 & GRADE 5 as per DIN 69501, i.e. 23 microns lead error in 300 mm threaded length.

Unit:  $\mu\text{m}$

PRECISION BALLSCREW					
ACCURACY GRADE		C3		C5	
EFFECTIVE THREAD LENGTH		REPRESENTATIVE TRAVEL DISTANCE ERROR	FLUCTUATION	REPRESENTATIVE TRAVEL DISTANCE ERROR	FLUCTUATION
ABOVE	OR LESS				
100	315	10	13	15	5
315	400	12	13	23	15
400	500	15	13	27	15
500	630	16	15	30	15
630	800	18	18	35	25
800	1000	21	21	40	27
1000	1250	24	24	46	30
1250	1600	29	29	54	35
1600	2000	35	35	65	40
2000	2500	41	41	77	46
2500	3150	50	50	93	54
3150	4000	62	60	115	65
4000	5000	76	41	140	77

### FLUCTUATION IN THREAD LENGTH

Unit:  $\mu\text{m}$

FLUCTUATION BALLSCREW		
ACCURACY GRADE	C3	C5
Fluctuation/300mm	8	15
AXIS PLAY (SINGLE NUT)	10	15
AXIS PLAY (DOUBLE NUT)	0	3

# ERROR vs DISTANCE PLOT

# TEST FOR LINEAR ERROR



Error against distance - Linear

Machine:KISHORE IND	Axis:X-AXIS	Max value: 0.014959
Serial No:40X20X950	Location:MID AXIS	at distance: 88.0000
Date:13:09 Aug 18 2010	Filename: KISHORE_INDUSRITrig	Min value: -0.015019
By:IAR,PUNE (KIRAN)	Trigger step: 2.0000 mm	at distance: 172.0000



accuracy. This eliminates the frequent compensating adjustments in machine slides.

### **No Stick -Slip Effect :**

Since rolling contact of the Balls is utilized the starting friction is minimized and the tendency of Inertia while positioning is eliminated.

### **PRECISE POSITIONING**

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

### **LESSER HEAT GENERATION**

Even high load causes 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 & tear.

### **PRELOAD**

Preload may be defined as the use of one group of ball grooves in opposition to another group to eliminate backlash. 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.

### **STORAGE**

**STORAGE BALL SCREWS ARE SENSITIVE TO SHOCKS, BENDING AND CONTAMINATION. THEREFORE THEY ARE TREATED AND HANDLED WITH CARE BEFORE DISPATCH. DURING STORAGE, AND BENDING CORROSION AND OTHER DAMAGES SHOULD BE AVOIDED. TEMPERATURE RANGE -20 DEG C TO 120 DEG C. ACCURACY DEPENDING ON THE ACCURACY, BALL SCREW IS DIVIDED IN THE FOLLOWING GRADES.**

- A) PRECISION GRADE.**
- B) GENERAL GRADE.**
- C) TRANSPORT GRADE.**

**AT PRESENT IAR MANUFACTURE ONLY PRECISION GRADE BALL SCREWS. IAR BALL SCREWS ARE MANUFACTURED TO ACCURACY GRADE 10 TO 25 AS PER DIN 69501 I.E. 0.010 MM OR 0.023 MM LEAD ERROR IN 300 MM LENGTH. LEAD TO LEAD ERROR 0.006 MM.**

### **QUALITY : CUSTOMER SATISFACTION IS OUR AIM**

**WE ARE COMMITTED TO PROVIDE SUPERIOR QUALITY PRODUCTS IN COMPLIANCE WITH THE INTERNATIONAL STANDARDS. WE HAVE A TEAM OF QUALIFIED ENGINEERS WHO ENSURE THAT EACH OUTGOING COMPONENT HAS ZERO DEFECTS. TO FURNISH SUPERIOR QUALITY PRODUCTS, WE MAKE USE OF AUTOMATED MACHINES BASED ON MODERN WORKING PRINCIPLES. WE HAVE A TEAM OF EXPERTS TO MONITOR THE VARIOUS MANUFACTURING PROCESSES IN ORDER TO ENSURE THE REQUISITE QUALITY. STRINGENT QUALITY CONTROL POLICIES ARE FOLLOWED AT VARIOUS STAGES OF PRODUCTION RIGHT FROM RAW MATERIAL PROCUREMENT TILL THE DELIVERY OF END PRODUCTS. WE PROCURE RAW MATERIALS FROM REPUTED SUPPLIERS AND VENDORS IN ORDER TO ENSURE HIGH QUALITY STANDARDS AT THE FIRST STAGE OF PRODUCTION. WE ENSURE:**

- IN-HOUSE QUALITY TESTING FACILITIES**
- PROFILE PROJECTOR**
- TRI MOS WITH COMPUTER OUT PUT**
- DIGITAL INSTRUMENTS**

## WELL EQUIPPED INSPECTION ROOM.

### **FAST PRODUCTION LINE.**

IAR has a fast production line and minimum delivery/dispatch time with high accuracy grade.

#### **Lubrication of ball screws**

##### **1. Oil lubrication**

Oil lubrication by means of a central lubrication system has the advantage that it is always possible for an adequate film of lubricant to build up and for low heating of the ball screw to occur due to the improved heat transfer. Furthermore any excess oil is removed by the wiper. The viscosity of the lubricant to be used depends primarily on the speed and the ambient temperature as well as the loading. In order to guarantee an adequate film of lubricant at all times and under all operating conditions, a somewhat higher viscosity of lubricant should be aimed for. If the ball screw speeds are less than 20 rpm and/or high loading is to be expected, it is recommended that a circulating oil with active ingredients to increase the ageing resistance of the corrosion protection as well as additives for increasing the loading capability and improving the protection against wear in accordance with C-LP to DIN 51517 Part 3 is used. The amount of oil required for each ball revolution is about 3-6 cm<sup>3</sup>/h. With immersed lubrication, it is sufficient if the oil level is maintained at the centre of the lowest roller when installed horizontally.

##### **2. Grease lubrication**

Lubrication of ball screws with grease suggests itself when it is not possible to install central lubrication systems and low speeds are to be expected. Further advantages are the improved sealing effect, the avoidance of running dry and the independence from the installation orientation. The re-lubrication intervals are to be agreed with Kammerer for each application in order to avoid damage due to lack of lubrication. Lubricating greases are divided into NLGI classes according to DIN 51818 corresponding to their flexing penetration. In normal cases (operating temperature – 20 °C to +120 °C), class K2k water resistant greases to DIN 51825 are to be used for ball screws. In special cases, greases to NLGI 1 (for very high speeds) or NLGI 3 (for highest loads or low speeds) are possible.