

**PERFORMANCE REPORT OF  
AJAX SELF LOADING  
CONCRETE MIXER - "ARGO 4000"**

**TEST ORDER NO. BL/193/8/2019/2**

**Dated : 02.08.2019**

**OCTOBER 2019**

**REPORT FOR**

***M/s. Ajax Engineering Pvt. Ltd.  
#253/1, 11th Main, Phase III, Peenya Industrial Area,  
Bengaluru - 560 058, Karnataka, India.***



**BUREAU VERITAS (INDIA) PRIVATE LIMITED**

**Construction Services Laboratory**

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To : M/s Ajax Engineering Pvt. Ltd., Bengaluru.

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**A. INTRODUCTION :**

On reference from M/s. Ajax Engineering Pvt. Ltd., #253/1, 11<sup>th</sup> Main, Phase III, Peenya Industrial Area, Bengaluru - 560 058, Karnataka, India, vide their Letter Dated 03.07.2019. Performance of Self Loading Concrete Mixer "ARGO 4000" was taken up at a site vide our Test Order No. BL/193/8/2019 Dated: 02.08.2019.

For evaluating the performance of self-loading concrete mixer, trials were conducted by adopting a theoretically proportioned concrete mix based on IS-10262-2019 and IS-456-2000 recommendations.

**B. MATERIALS:**

Cement	:	Dalmia. SRPC
<b>Aggregates</b>	:	
Fine Aggregate	:	Manufactured sand
Coarse Aggregate	:	Angular crusher broken coarse aggregate of size 20 mm and 12.5 mm.

Materials adopted during trials are conforming to relevant Indian Standards.



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## **DETAILS OF AJAX SELF LOADING CONCRETE MIXER: -** **“ARGO 4000”**

### **Specification: (As furnished by the customer)**

#### **Engine**

- 4 Cylinder turbo charged intercooled – 80.9 kW @ 2500 rpm.
- Bharat III Emission Certified

#### **Chassis**

- High tensile steel welded “Box” type construction

#### **Hydrostatic Drum Drive**

- Hydrostatic Drum Drive with high rotation for homogenous mix and drum lift for fast and complete discharge even on inclines.
- Drum Volume : 5.3 m<sup>3</sup>
- Concrete Output : 4m<sup>3</sup>
- Maximum Drum Rotation : 0 – 22 rpm
- Infinitely variable for mixing & discharge.

#### **Wheels**

- Tyre : 16.0/70-20 -14 PR

#### **Transmission**

- 4 wheel drive, 4 Speed Automotive hydrostatic transmission.
- Electro-hydraulic control for "slow" & "fast" speeds.
- Vehicle speed - 0 to 30 Kmph (forward and reverse)

#### **Brake**

- Wet discs available in front & rear axles.
- Hand operated parking brake acting on transmission shaft.

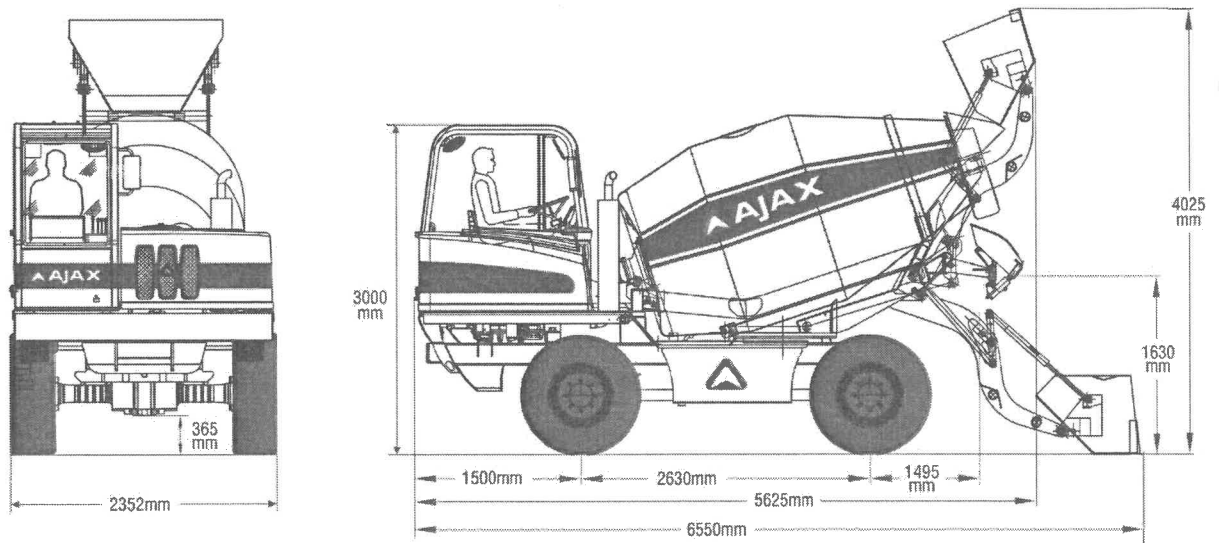
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## Electrical System

- Battery: 12V, 135 Amp-hr.
- Complete lighting & signalling system as per CMVR standards.

## Weight

- Net vehicle weight : 7610 kgs
- Gross vehicle weight : 17210 kgs



## C. PROCEDURE FOR BATCHING OF MATERIALS :

Trained operator of the self-loader uses mix design recipe for batching the materials. Concrete Batch Controller (CBC) fitted inside the operator cabin, aids the operator to know the weight of the aggregate batched. Loading is continued until the required quantity is batched.



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Aggregate is scooped by the loading bucket and loaded into the mixer. Similarly required quantity of cement is batched using loading bucket. Water is added to the mixer from the water tank fitted with a water meter. After batching all the constituents of concrete, the mixer is kept rotating.

Print out of the batched materials can be obtained using a batch printer fitted in the cabin.

#### **D. DESIGN MIX AND DETAILS OF TRIALS CONDUCTED**

Trials were conducted for M25 grade of concrete in the self loading Ajax mixer-  
“ARGO-4000” machine.

##### **I. MIX DESIGN ADOPTED**

###### **TRIAL -1 :**

Cement – 350 kgs

W/C – 0.49

Water – 171.5 kgs

Manufactured Sand – 780.5 kgs

20 mm – 638.5 kgs

12.5 mm – 425.6 kgs

##### **II. CONTROL MIX:**

Trial was done with Control Concrete ( without Chemical Admixture), Concrete samples were collected while unloading, one sample collected in the beginning and 2<sup>nd</sup> sample was collected in the middle and 3<sup>rd</sup> Sample collected at the end, to check the consistency of concrete mix in the same batch. Cubes were cast for determining the compressive strength at 7 days and 28 days.



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**TABLE – I**

**Fresh & Hardened Concrete Properties**

Sample No.	(Workability) Slump (mm)	Compressive Strength of Concrete in N/mm <sup>2</sup>	
		7 days	28 Days
Sample-1	70	24.9	32.8
Sample-2	50	25.8	33.5
Sample-3	45	26.5	34.9





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**E. INFERENCES :**

1. Calibration of batching systems was done, as informed by customer.
2. Mixing of concrete is achieved by rotation of mixer at a predetermined speed.
3. The concrete mix was found to be satisfactory in terms of workability. The increase in slump can be obtained by adding admixture.
4. Concrete mix was found to be satisfactory at different points in the mixer during unloading.
5. Cube Compressive strength of concrete was found to be satisfactory meeting the requirement of 28-day strength in all trials.

**F. CONCLUSION :**

The performance of self-loading concrete mixer "ARGO 4000" was found to be satisfactory in terms of homogeneity, cohesiveness, workability and compressive strength of concrete produced

  
22/10/2019  
SANJEEV PATGAR  
Manager Lab

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AJAX Argo 4000 machine

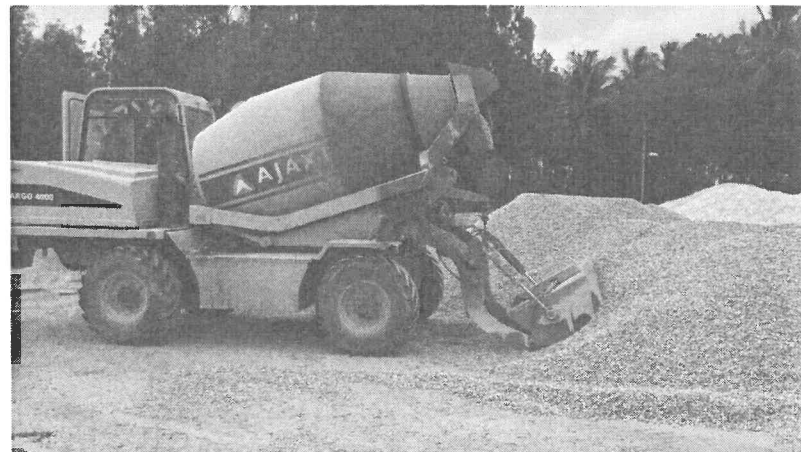


Loading of Cement through AJAX ARGO 4000

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Loading of Manufactured Sand through AJAX ARGO 40000



Loading of Coarse aggregate through AJAX ARGO 40000



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<b>G. REFERENCES:</b>		
1.	IS:10262-2019	Concrete Mix Proportioning - Guidelines (Second Revision)
2.	SP:23(S&T)-1982	Handbook on concrete mixes.
3.	IS:456-2000 (Reaffirmed 2016)	Code of Practice for plain & reinforced concrete. (Fourth Revision)
4.	IS:516-1959 (Reaffirmed 2013)	Method of test for strength of concrete.
5.	IS:383-2016	Indian Standard specifications for coarse and fine aggregates for concrete. (Third Revision)
6.	IS:1199-1959 (Reaffirmed 2013)	Indian Standard specifications for methods of sampling and analysis of concrete.
7.	IS:1199-2018 (Part 1)	Indian Standard specifications for methods of sampling and analysis of fresh concrete.
8.	IS:4926-2003 (Reaffirmed 2017)	Ready-Mixed Concrete - Code of Practice
9.	IS: 12330 – 1988 (Reaffirmed 2009)	Sulphate Resisting Portland Cement
10.	Neville, A. M.	“Properties of Concrete” 4 <sup>th</sup> Edition, – 1995- Publicity Pearson Education (Singapore) Pte. Ltd., Indian Branch, 482, FIE, Prathapganj Delhi 110092