Cat®
FB85

Feeder Breaker

Specifications

General Specifications

Gross Vehicle Weight	31 750 kg	70,000 lb
Seam Height	836 mm-1321 mm	34 in-52 in
Processed Material	Run of mine coal with minimum rock content	
Material Throughput	860 tonne/hr	950 ton/hr
Breaker Diameter	483 mm	19 in
Breaker Pick Force (variable)	39 916 kg	88,000 lb
Material Compressive Strength	117 MPa	17,000 psi
Total Horsepower	150 kW	200 hp
Intake End Design	Ram car, 3 way dump, hopper with sideboards	
Tractive Effort	16 163 kg	35,634 lb
Tram Speed	0-13.7 m/min	0-45 ft/min

Frame Plate

Main Frame Side Plate	AR steel
Top Deck Plate	HR steel and CCO
Breakershaft Impact Plate	HSLA steel and CCO
Bottom Deck Plate	AR steel

Conveyor Chain

Ultimate Strength	90 720 kg	200,000 lb
Pitch	89 mm	3.5 in
Pin Diameter	24 mm	0.94 in
Flight Dimension	64 mm × 127 mm	2.50 in × 5 in
Flight Construction	One piece solid barstock	
Flight Attachment Method	Mounts to extended pins on the chain	
Take Up Method	Grease cylinder with steel shims	

Headshaft

Shaft Diameter	127 mm	5 in
Bearing Bore	125 mm	4.94 in
Drive Attachment Method	Splined	

Tailshaft

Shaft Diameter	100 mm	3.94 in
Bearing Bore	100 mm	3.94 in
Chain Engagement	Roller	

Crawler

Drive Method	Torque hub, 36:1 planetary reduction	
Hydraulic Tram Motor	Low speed, high torque Geroler 311 cc	
Pad Width	381 mm	15 in
Take Up Method	Grease cylinder with steel shims	
Tractive Effort	16 163 kg	35,634 lb
Tram Speed	0-13.7 m/min	0-45 ft/min
Ground Pressure	21 445 kg/m^2	30.5 psi
Grade (maximum)	15%	
Freewheel Tow (unlimited distance)	134 m/min	5 mph
Parking Brake	Yes	
Overload Protection Method – Hydraulic Relief set at	155 bar	2,250 psi

Breakershaft

Shaft Diameter	203 mm	8 in
Bearing Bore	157 mm	6.19 in
Breakershaft RPM	61	
Bit to Flight Clearance	25 mm-127 mm	1 in-5 in
Adjustment Method Manually (in increments)	50 mm	2 in
Breaker Pick Force (variable)	39 916 kg	88,000 lb
Breaker Tip to Tip Diameter	483 mm	19 in
Breaker Bit Description	Carbide tip hardface protection tapered shank	
Overload Protection Method	Underspeed sensor	

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Power Unit

Electric Motor	200HP/AC/3PH/TEFC/MINE DUTY
Gear Reducer	15:1 right angle triple reduction 262 mechanical hp
Electric Motor/Reducer Coupling	Flexible element coupling
Overload Protection Method	Friction disc clutch and amp overload relay
Drive Chain	ASA 180-2 roller chain
Driven/Drive Sprocket Ratio	27/14
Main Hydraulic Pump	Axial piston open loop load sense 165 cc
Piggyback Hydraulic Pump	Priority flow fixed disp. gear 16 cc or 25 cc
Electric Motor/Pump Coupling	Flexible element coupling
Drive Chain Tensioning Method	Grease cylinder with steel shims

Conveyor Drive

Gear Reducer	29:1 parallel triple reduction 220 mechanical hp	
Conveyor Hydraulic Motor	Radial piston motor 250 cc	
Overload Protection Method	Hydraulic relief and high pressure switch	
Conveyor Chain Speed	0-31 m/min	0-102 ft/min

Hydraulic

Main Hydraulic Pump	Axial piston open loop load sense 165 cc	
Piggyback Hydraulic Pump	Priority flow fixed disp. gear 16 cc or 25 cc	
Hydraulic Tram Motor	Low speed, high torque Geroler 311 cc	
Conveyor Hydraulic Motor	Radial piston motor 250 cc	
Control Valve Stack	Proportional spool valve load sense 8 section	
Conveyor Circuit Relief Pressure	345 bar	4,800 psi
Tram Circuit Relief Pressure	155 bar	2,250 psi
Hydraulic Hose Rating	345 bar	5,000 psi
Hydraulic Hose Fitting Type	JIC and face seal	
Oil Reservoir	454 L	120 gal
High Oil Temperature Switch Setting	74° C	165° F
High Oil Pressure Switch Setting	345 bar	5,000 psi
Reservoir Low Oil Level Switch	Yes	
Reservoir Oil Thermometer and Sight Glass	Yes	
High Pressure Filter	5 micron rating	
Return Pressure Filter	5 micron rating	
Oil Reservoir Breather Element	5 micron rating	
Heat Exchanger Style	Air over oil and/or water over oil	
Hydraulic Cylinder, Frame Lift and Tilt Double Acting – Stroke	305 mm	12 in
Hydraulic Fluid Cleanliness Level	ISO 4406 16/14/12	
Oil Reservoir Power Fill	Yes	

Electrical

Electric Motor	200HP/AC/3PH/TEFC/MINE DUTY
Belt Sequence Sensor	Detects operation of the conveyor belt and will stop the conveyor chain when the conveyor belt is not moving and will restart the conveyor chain when the conveyor belt restarts.
Breakershaft Overload Protection	Underspeed sensor
High Oil Temperature Switch	Yes
High Oil Pressure Switch	Yes
Reservoir Low Oil Level Switch	Yes
Remote Conveyor Start Method	Standard – tilt switch Optional – photo eye, push button station and radio transmitter
Radio Remote (optional)	Wireless control of tram, tilt cylinder and lift cylinder sections of the hydraulic valve stack
Main Electrical Enclosure	
IP 65 Rating	Dust tight and low pressure wash down
Conveyor Speed Control	Potentiometer
Circuit Overload Protection	Circuit breaker
Contactor Type	Vacuum
Electric Motor Protection	Amp overload relay

Programmable Logic Control (PLC) (Optional)

Basic Operating Principal of PLC (if equipped):

- Monitor the operating status of the feeder and warn/shut down when machine damage will occur
- Control the conveyor speed based on breakershaft electric motor current draw to protect components during high loads and conveyor jams
- Facilitate above ground communication and control through Ethernet connections

Typical Functions to be monitored by PLC (if equipped):

- Hydraulic oil temperature
- Hydraulic oil level
- Component temperatures such as electric motor, gear reducer, bearings
- Hydraulic system pressure
- Hydraulic pump suction vacuum
- Breakershaft electric motor current draw, 3 phase current and 3 phase voltage
- Conveyor chain speed
- Hour meter for preventative maintenance scheduling
- Counter for number of times the hauler vehicles dump and time between dumps for statistical data gathering
- Power consumption

Electrical (continued)

Electrical Safety Features	
Emergency Stop Button	Quantity one, located on main electrical enclosure cover
Panic Strip, Intrinsically Safe	Quantity two, one centrally located on each side of feeder
Tram/Conveyor Mode Switch	Provide lockout of hydraulic • Tram mode – conveyor function disabled • Convey mode – tram/cylinder function disabled
Neutral Start Switch	Machine will not start unless tram levers are in neutral
Radio Remote Deadman Switch	Remote operation of the machine cannot occur without deadman switch being engaged
Siren/Flashing Light	Siren will sound upon initial machine start up and prior to each restart of the conveyor chain. The light will flash the entire time there is power on the machine.

Fire Suppression

Manufacturer/Type	Approved Ansul dry chemical inspected by certified Ansul technician
Discharge Points	8 required
Activation Points	2
Chemical Cylinders	2 @ 7.5 kg (20 lb) each
Pressure Cylinders	2 pressure actuators

Dust Suppression

Type of Sprays	Conical
Number of Sprays and Location	Six total located at upper hose crossover, three spraying inby and three spraying outby
Activation Method	Standard – pendulum switch Optional – electro-hydraulic solenoid activated by forward hydraulic pressure on conveyor motor
Filtration	"Y" strainer at inlet
Pressure Regulator Adjustable	0-8.6 bar 0-125 psi
Machine Washdown Hose	Connected to "Y" strainer clean out connection

Greasing System

Grease Delivery Method	Manual
Number of Manifold	Quantity three, main, electric motor and gear reducer
Main Manifold Location	Near the operator's station
Main Manifold Serviced Components	Tailshaft, breakershaft, and headshaft
Electric Motor and Reducer Manifold Location	Near theelectric motor and reducer

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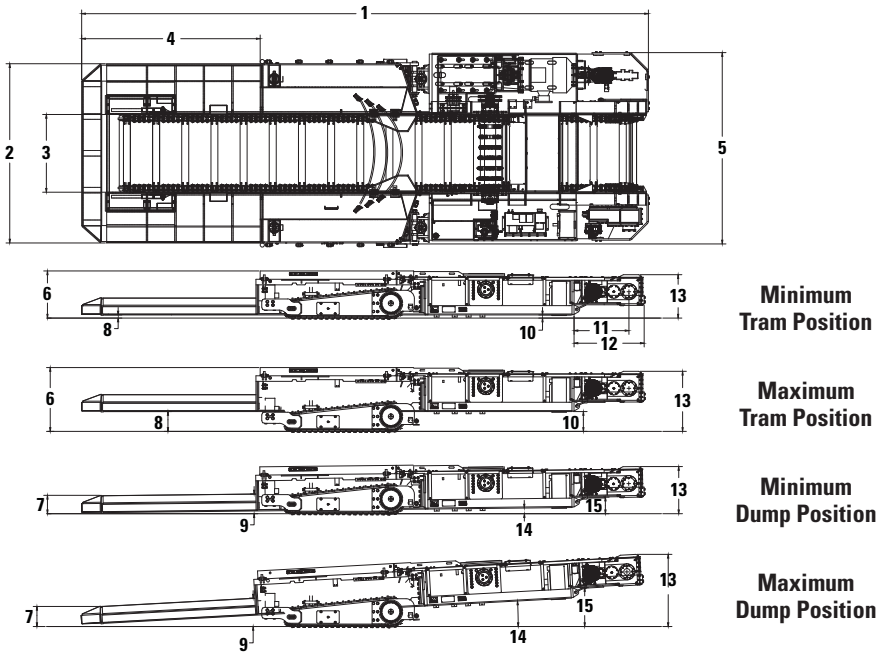

Dimensions (All dimensions are approximate.)

1	Overall Length		10 363 mm	34 ft 0 in
2	Receiving End Width		3277 mm	10 ft 9 in
3	Conveyor Width		1422 mm	56 in
4	Length – Front of Hopper to Back Plate		3264 mm	128.5 in
5	Overall Width		3499 mm	11 ft 5.75 in
6	Height with 152 mm (6 in) Sideboards	Minimum Tram Position	863 mm	33.96 in
		Maximum Tram Position	1167 mm	45.96 in
7	Height of Hopper	Minimum Dump Position	337 mm	13.27 in
		Maximum Dump Position	367 mm	14.47 in
8	Ground Clearance – Receiving End	Minimum Tram Position	56 mm	2.21 in
		Maximum Tram Position	361 mm	14.2 in
9	Distance Ground to Top of Hopper	Minimum Dump Position	362 mm	14.24 in
		Maximum Dump Position	519 mm	20.44 in
10	Ground Clearance	Minimum Tram Position	56 mm	2.21 in
		Maximum Tram Position	361 mm	14.21 in
11	Distance from Head Shaft to Main Frame		1003 mm	39.5 in
12	Distance from Discharge to Main Frame		1283 mm	50.5 in
13	Frame Height – Fixed	Minimum Tram Position	793 mm	31.21 in
		Maximum Tram Position	1098 mm	43.21 in
		Minimum Dump Position	864 mm	34 in
		Maximum Dump Position	1321 mm	52 in
14	Discharge Angle	Minimum Dump Position	1°	
		Maximum Dump Position	3°	
15	Ground Clearance – Discharge End	Minimum Dump Position	304 mm	11.98 in
		Maximum Dump Position	712 mm	28.02 in

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